

JOURNAL OF ADVANCED MILITARY STUDIES

JAMS

Vol. 15, No. 1, 2024



JOURNAL OF ADVANCED MILITARY STUDIES

JAMS

MCUP

Published by Marine Corps University Press
2044 Broadway Street | Quantico, VA 22134

MARINE CORPS UNIVERSITY
BGen Maura M. Hennigan, USMC
President

Col Mark R. Reid, USMC
Chief of Staff

SgtMaj Stephen J. Lutz, USMC
Sergeant Major of MCU

EDITORIAL STAFF

Ms. Angela J. Anderson
Director, MCU Press

Mr. Jason Gosnell
Managing Editor/Deputy Director

Ms. Stephani L. Miller
Manuscript Editor

Mr. Christopher N. Blaker
Manuscript Editor

ADVISORY BOARD

Dr. Rebecca J. Johnson
Provost
Marine Corps University

Col Christopher Woodbridge, USMC
(Ret)
Editor, *Marine Corps Gazette*

Col Jon Sachrison, USMC (Ret)
COO, MCU Foundation

SCHOOLHOUSE DIRECTORS

Colonel Greg Poland, USMC
School of Advanced Warfare

Colonel James W. Lively, USMC
Expeditionary Warfare School

Colonel Brian Sharp, USMC
Marine Corps War College

Colonel Andrew R. Winthrop, USMC
Command and Staff College

Journal of Advanced Military Studies

(Print) ISSN 2770-2596

(Online) ISSN 2770-260X

DISCLAIMER

The views expressed in the articles and reviews in this journal are solely those of the authors. They do not necessarily reflect the opinions of the organizations for which they work, Marine Corps University, the U.S. Marine Corps, the Department of the Navy, or the U.S. government. When necessary, errata will be published immediately following the book reviews. MCUP products are published under a Creative Commons NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0) license.

Established in 2008, MCU Press is an open access publisher that recognizes the importance of an open dialogue between scholars, policy makers, analysts, and military leaders and of crossing civilian-military boundaries to advance knowledge and solve problems. To that end, MCUP launched the *Journal of Advanced Military Studies* (JAMS) to provide a forum for interdisciplinary discussion of national security and international relations issues and how they have an impact on the Department of Defense, the Department of the Navy, and the U.S. Marine Corps directly and indirectly. JAMS is published biannually, with occasional special issues that highlight key topics of interest.

ARTICLE SUBMISSIONS

The editors are looking for academic articles in the areas of international relations, geopolitical issues, national security and policy, and cybersecurity. To submit an article or to learn more about our submission guidelines, please email MCU_Press@usmcu.edu.

BOOK REVIEWS

Send an email with a brief description of your interests to MCU_Press@usmcu.edu.

SUBSCRIPTIONS

Subscriptions to JAMS are free. To join our subscription list or to obtain back issues of the journal, send your mailing address to MCU_Press@usmcu.edu.

ADDRESS CHANGE

Send address updates to MCU_Press@usmcu.edu to maintain uninterrupted delivery.

INDEXING

The journal is indexed by ProjectMUSE, Scopus, ScienceOpen, EBSCO, ProQuest, Elsevier, OCLC ArticleFirst, Defense Technical Information Center, Journal Seek, IBZ Online, British Library System, Lancaster Index to Defense and International Security Literature, and AU Library Index to Military Periodicals.

**FREELY AVAILABLE AT
WWW.USMCU.EDU/MCUPRESS**

Contents

Vol. 15, No. 1

From the Editor	7
THE MILITARIZATION OF SPACE	
Introduction <i>Eliahu H. Niewood, ScD; and Matthew Jones, PhD</i>	11
Military Spacesteading: Space-based Logistics Mediums for Future Beachheads <i>Major Robert Billard Jr., USMC</i>	18
The Void Above: The Future of Space Warfare and a Call to Update the Rule of International Space Law <i>Alan Cunningham</i>	30
The Soviet <i>Sputniks</i> and American Fears about the Militarization of Outer Space <i>Tom Wilkinson</i>	41
Marine Corps and Space Force Integration for a More Lethal Joint Task Force to Counter China <i>Colonel Josh Bringham, USMC</i>	60
A Call for Space-Domain Intelligence Training <i>Lieutenant Colonel Genelle M. Martinez, USSF</i>	88
Kim Jong United: How a Future North Korean ASAT Threat Makes Strange International Bedfellows and Novel Opportunity <i>Second Lieutenant Max A. Schreiber, USSF</i>	101

Characterizing Future Authoritarian Governance in the Space Domain <i>Julian G. Waller, PhD</i>	115
Space Technology and Its Military Application: Options for Pakistan <i>Shamaila Amir, PhD; and Nazia Abdul Rehman, PhD</i>	136
Breaking the Newtonian Fetish: Conceptualizing War Differently for a Changing World <i>Ben Zweibelson, PhD</i>	153
REVIEW ESSAY	
The Sky Is Not the Limit: The Unknowable Future of Space <i>José de Arimatéia da Cruz, PhD/MPH</i>	203
BOOK REVIEWS	
<i>Bitskrieg: The New Challenge of Cyberwarfare</i> By John Arquilla Reviewed by Anabela P. Brízido	217
<i>The Culture of Military Organizations</i> Edited by Peter R. Mansoor and Williamson Murray Reviewed by Philip C. Shackelford	218
<i>Capturing Aguinaldo: The Daring Raid to Seize the Philippine President at the Dawn of the American Century</i> By Dwight Sullivan Reviewed by Lieutenant Colonel Daniel Schoeni	220
<i>Women, Peace, & Security in Professional Military Education</i> Edited by Lauren Mackenzie, PhD; and Lieutenant Colonel Dana Perkins, PhD Reviewed by Colonel Cornelia Weiss (Ret)	223
<i>Special Reconnaissance and Advanced Small Unit Patrolling: Tactics, Techniques and Procedures for Special Operations Forces</i> By Lieutenant Colonel Ed Wolcoff (Ret) Reviewed by Benjamin B. Wilson	226

<i>Right and Wronged in International Relations: Evolutionary Ethics, Moral Revolutions, and the Nature of Power Politics</i>	227
By Brian C. Rathbun Reviewed by Phil W. Reynolds	
<i>Intelligence and the State: Analysts and Decision Makers</i>	229
By Jonathan M. House Reviewed by David Myrtle	
<i>Maoism: A Global History</i>	232
By Julia Lovell Reviewed by Second Lieutenant David T. Tung	

The Sky Is Not the Limit **The Unknowable Future of Space**

José de Arimatéia da Cruz, PhD/MPH

Understanding Space Strategy: The Art of War in Space. By John J. Klein. New York: Routledge, 2019. Pp. 258. \$144 (hardcover); \$43.96 (paperback and ebook).

The Power of the Space Club. By Deganit Paikowsky. New York: Cambridge University Press, 2017. Pp. 263. \$108 (hardcover); \$34.99 (paperback); \$33.24 (ebook). <https://doi.org/10.1017/9781108159883>.

The Politics of Space Security: Strategic Restraint and the Pursuit of National Interests. By James Clay Moltz. Stanford, CA: Stanford University Press, 2019. Pp. 400. \$38.00 (paperback and ebook).

US Presidents and the Militarization of Space, 1946–1967. By Sean N. Kalic. College Station: Texas A&M University Press, 2012. Pp. 224. \$40.00 (hardcover).

Space and Defense Policy. Edited by Damon Coletta and Frances T. Pilch. New York: Routledge, 2009. Pp. 368. \$176.00 (hardcover); \$55.16 (paperback and ebook).

The security environment is also affected by *rapid technological advancements and the changing character of war*. The drive to develop new technologies is relentless, expanding to more actors with lower barriers of entry, and moving at accelerating speed.¹

Dr. José de Arimatéia da Cruz, MPH, is a professor of political science at Georgia Southern University, Savannah Campus, and a research professor at the U.S. Army War College's Center for Strategic Leadership, Homeland Defense and Security Studies, Strategic Landpower Futures Group. The views expressed in this article are solely those of the author. They do not necessarily reflect the opinions of Marine Corps University, the U.S. Marine Corps, the Department of the Navy, the Department of the Army, or the U.S. government. <https://orcid.org/0009-0005-6612-094X>.

Space is no longer the last frontier once popularized by science fiction television shows and literature. The science fiction of space is the science reality of nations worldwide today. The space domain is a complex environment of push and pull factors composed of technological concepts, context, and warfighting concepts. The potential for conflicts in outer space is driving its technological development. Today, the space domain is a contested environment. The United States is no longer the only player in the game either. In addition to sovereign nations such as China, Russia, India, Iran, and Brazil, several private enterprises and billionaires compete and contest the space domain. For example, the first of Russia's self-financed space tourists, American businessman Dennis Tito, took off from Baikonur Cosmodrome in Kazakhstan on 28 April 2001 for the *International Space Station (ISS)*.² *Space Operations*, Joint Publication 3-14, defines the space domain as the area above the altitude where atmospheric effects on airborne objects become negligible. United States Space Command's (USSPACECOM) area of responsibility (AOR) surrounds the Earth at altitudes equal to, or greater than, 100 kilometers (54 nautical miles) above mean sea level.³ Space Operations specifies that space situational awareness (SSA)

is the requisite foundational, current, and predictive knowledge and characterization of space objects and the OE upon which space operations depend—including physical, virtual, information, and human dimensions—as well as all factors, activities, and events of all entities conducting, or preparing to conduct, space operations. Space surveillance capabilities include a mix of space-based and ground-based sensors. SSA is dependent on integrating space surveillance, collection, and processing; environmental monitoring; status of US and cooperative satellite systems; understanding of US and multinational space readiness; and analysis of the space domain.⁴

In *Space Domain Awareness: Doctrine for Space Forces*, Space Doctrine Publication 3-100, space is considered an integral part of homeland defense and a highly contested environment, and “superior knowledge of the natural environment provides space actors with the means to plan and execute operations better than their competitors and adversaries.”⁵ Understanding the operational space environment is a force multiplier to the spacefaring warriors of the U.S. Space Command. The ability of spacefaring warriors to understand space's operational environment is a prerequisite for the joint force's commander “to execute operations; the vast distances, orbital constraints, and physical characteristics associated with space operations present some unique challenges.”⁶ Space protection is the responsibility of the U.S. Space Command and the U.S. Space Forces. According to the Department of Defense, the U.S. Space Command conducts operations in, from, and to space to deter conflict and, if necessary, defeat aggression and defend U.S. vital interests. The U.S. Space Force, however, organizes, trains, and equips troops (space guardians) during peacetime to present them to the combatant commands (i.e., U.S. Space Command) during a time of space conflict or war.⁷ As people worldwide depend on the sea, air, and space for their prosperity, understanding the space environment plays a vital role in the United States' national security strategy. Each of the five books reviewed provides the necessary foundations on the different components of space power to think strategically about contemporary space policy.

John J. Klein's *Understanding Space Strategy: The Art of War in Space* attempts to put space and warfare within the context of the general theory of strategy and provide a

compelling foundation for discussing space strategy as a practical matter.⁸ In his seminal work, *The Peloponnesian War*, the greatest strategist thinker, Thucydides, argued that nations go to war for three reasons, namely, fear, honor, and interest. As space becomes a force multiplier in future conflicts, spacefaring countries, especially China, will go to war for the same reasons as during the Peloponnesian War. According to Klein, when considering the character of war in space, four areas are significant: civil, commercial, intelligence, and military.⁹ Regarding civil space activities, Klein discusses the government's efforts to explore space and advance human understanding. Civil space activities include humans and robotic exploration and science missions to advance humanity's knowledge of the Earth, the solar system, and the universe.¹⁰ According to Klein, commercial activities include those "where companies provide services intending to make a profit, whether in the near or long-term."¹¹ The intelligence sector includes "intelligence, surveillance, and reconnaissance missions conducted by government agencies for national security purposes."¹² Finally, military space activities "seek to achieve political objectives through offensive or defensive operations, whether into, through, or from space."¹³

The commercialization of space is another critical topic Klein discusses. Given the sizable number of satellites in orbit, Klein argues that the commercialization of space will change day-to-day space operations and shape space strategy. Klein asserts that significant commercial space activities "will influence both the political ends and available means for implementing a space strategy."¹⁴ Klein highlights three critical areas for consideration as spacefaring nations move forward with their commercialization of space. Countries should minimize debris and hazards to operations, coordinate rendezvous and proximity operations, and minimize electromagnetic interference.¹⁵ Commercializing space will also provide less capable space nations with both offensive and defensive strategic capabilities vis-à-vis the most powerful spacefaring countries. Those capabilities can be either military or nonmilitary. Klein states that less powerful spacefaring nations could use other instruments of state power, such as diplomacy, economics, and informational instruments of power.¹⁶ Less powerful spacefaring nations can access the "space club" by "establishing a notable presence in space and then proposing international treaties, agreements, principles, or resolutions that advance their interests on relevant issues."¹⁷ For example, space is more significant in the U.S. Southern Command's mission.¹⁸ As reported by the Southern Command, four nations in SOUTHCOM are "part of the NASA-led Artemis Accords: Argentina, Brazil, Colombia, and Ecuador."¹⁹ Those four nations could propose new international treaties, agreements, or principles, or worse yet, ally with China, which already has space capabilities in South America, undermining other more powerful spacefaring nations, such as the United States, in its neighborhood. Also, those less capable spacefaring nations "can use economic measures to contest command of space and achieve modest results."²⁰ Less powerful spacefaring nations can accomplish such an objective if they "provide a unique commercial or business service that can threaten to withhold its space-based services in the hopes of negotiating better terms or some contentious issue."²¹

While the commercialization of space has opened a lacuna for less powerful spacefaring nations to be more active in the "space club" or try to gain access to it, several constraining factors will prevent such countries from becoming key players in the politics of space. Klein argues that three conditions must be satisfied for less powerful nations to become space-warfare nations: technological development, doctrinal in-

novation, and organization adaptation.²² For those three preconditions to exist, there needs to be a transformation in the spacefaring nation. Transformation is “a revolutionary or significant improvement in hardware, tactics, or doctrine, and this term gained popularity in the early 2000.”²³

The commercialization of space warfare is a double-edged sword. Thucydides argues in *History of the Peloponnesian War* that “war is a matter not so much of arms as of money.”²⁴ While the commercialization of space allows for interdependence among nations, it also presents several challenges with governments using and integrating commercial products and services offered by other countries, especially if the country providing some essential space materials becomes an adversary or political foe. Furthermore, as Klein states, there are challenges of “independent verification and validation of commercial data; tradeoffs in data quality, reliability, availability, and quantity; data sharing policies; and the risk of relying on commercial operators to provide mission-critical government data in times of conflict.”²⁵

War is a nasty business. The nature of it is enduring. However, its characters are in a constant state of flux, adapting and adjusting to new technological revolutions. With the addition of space as a warfighting domain, the United States must be constantly vigilant. Significant, small, middle, and emerging powers will use the space domain in future conflicts. It has been reported that both China and Russia are pursuing nondestructive and destructive counterspace weapons capabilities, such as jammers, lasers, kinetic-kill or antisatellite (ASAT) systems, and cyberattack capabilities.²⁶ As former president Donald J. Trump stated at the establishment of the U.S. Space Command, “As the newest combatant command, SPACECOM will defend America’s vital interests in space—the next warfighting domain.”²⁷ Trump also goes on to say, “Our freedom to operate in space is also essential to detecting and destroying any missile launched against the United States. . . . So, just as we have recognized land, air, sea, and cyber as vital warfighting domains, we will now treat space as an independent region overseen by a new unified geographic combatant command.”²⁸

Spacefaring nations are rational thinkers. They understand the value of space as a fighting domain. Therefore, they will assess the value of a space force and whether they can afford such an investment into infant space commerce. If the cost of developing a native space industry is too high for a spacefaring aspiring nation, they can join a nation-state space club. Deganit Paikowsky develops the concept of a nation-state space club in her book *The Power of the Space Club*. According to Paikowsky, a nation-state club is a “structure that separates a small and limited number of countries from the rest of the world because they possess unique capabilities that do not exist in most countries.”²⁹ Whether or not to join a nation-state space club is a rational decision-making process carried out by spacefaring nations. By entering the club, the partnering nation gains legitimacy and recognition by other nation-states as a powerful nation since joining a club recognizes the distinction between us and them. Being part of this exclusive group of spacefaring nations has both tangible and intangible benefits since club members “share responsibility for their actions and are expected to act by the norms and standards developed in the club.”³⁰ The concept of a space club dates back to the early 1960s. Paikowsky explains that “the politics of space, characterized by an inherent tension between competition, limited cooperation, and controls on the transfer and flow of technology, produced the integration of what has been termed space club.”³¹

Individuals like nation-states join clubs or organizations for several reasons. In-

dividuals may join a club or gym to get in shape or take better care of their health. Nation-states may join a club to gain access to resources that otherwise would not be available, promote legislation that can change the game's rules to accommodate their wishes or desires better, etc. Paikowsky points out that "scholars in sociology, psychology, and economics observe that, in human society, joining a club or a clique is a means to define and visually display 'who we are,' shaping and reflecting one's power and reputation in a way that will elevate one's status, image, and self-esteem in non-violent, but competitive ways."³² Paikowsky also argues that there are two types of clubs based on the typology of nation-state clubs. A club can be either formal or informal. The differences are based on characteristics such as organizing mechanisms, the process of joining the club, club membership, and interaction among members.³³

Nation-state clubs are not *ex nihilo* organizations. Those organizations exist through processes and the interaction of various actors, stakeholders, lobbyists, non-governmental organizations (NGOs), etc., each fighting for power and agency. According to Paikowsky, nation-state clubs emerge through five stages. In the first stage of the process, key players, usually the superpowers, develop unique capabilities to project power and achieve leadership and competency. In the second stage, the international community's superpowers socialize with the club's newcomers. The superpowers, argues Paikowsky, socialize states to accept their interpretation of power and adopt collectively held norms about power, standing, and prestige. The third stage occurs when a positive reinforcement cycle of these conventions and norms ensues. That is, certain states emulate the key players and develop their capabilities. In the fourth stage, belonging to a club may seem unfair to the newly inducted members since key players offer cooperation while imposing restrictions and limitations on the diffusion of knowledge and transfer of technology and other critical elements. The fifth state of the nation-state club involves interaction among members while simultaneously involving control aimed at setting boundaries to exclude others from joining and marking individual states that acquired the means and symbols of power and separate them from the others. The sixth and final stage of the process is the most important. With the enlargement of the club, members may see the club's advantages as no longer enhancing their political, military, and economic objectives; therefore, they may exit the club or, worse yet, create a new one.³⁴

Another vital contribution to the space literature by Paikowsky's book is the discussion of techno-nationalism versus techno-globalism paradigms of space development. Those are two important ideas about how nation-states develop their infant space industry. Techno-nationalism refers to "the development and use of advanced technologies to achieve a state's domestic and international objectives."³⁵ Countries such as Brazil, India, and Iran have all used techno-nationalism to achieve national and international prestige by developing their space industries. Regarding India, as Paikowsky contends, "In their eyes, India's history as an ancient, powerful nation, and the fact that the Indian people are one of the world's largest peoples, demands that India be a world power."³⁶ Brazil also developed its infant space industry during the military dictatorship of the 1960s. The idea of *grandeza*, or greatness, was one of the driving forces behind the military development of Brazil's military-industrial complex. In fact,

Brazil's first act, from the 1960s through about the turn of the century, included many common elements in growing space programs. It had a sounding rocket program for science and technology research as a precursor to an orbit-

al launch vehicle. It conducted satellite research and inked agreements with spacefaring nations to build and launch satellites and space assets. And it built a launch facility in Alcântara in the country's far north.³⁷

Techno-globalism has replaced techno-nationalism in the age of globalization and the introduction of neoliberalism. In the post–Cold War international system and the “end of history, the politics of space became more oriented toward techno-globalism, in which technological development is used to leverage the advantages of globalization to enrich the national system of innovation.”³⁸ Techno-globalism, like neoliberalism, advocates removing or relaxing all economic barriers and increasing cooperation and commercialization among nations. Techno-globalism strongly believes in the ideas of economic interdependence among nations.

Two competing hypotheses guide Paikowsky's *The Power of the Space Club*. The first hypothesis is that “states that define themselves as powers will emulate the superpowers by developing indigenous space capabilities. These states will justify their decisions by arguing that this action is expected of them due to their status.”³⁹ The second hypothesis is that states “are not powers but aspire to upgrade their power. International standing will develop national space capabilities and thereby try to join the club.”⁴⁰ In the final analysis, the two hypotheses can be summarized as follows. Countries develop space programs for two reasons: they assume that this is expected of them to maintain their power and international standing, or they aspire to higher power and status for geopolitical and/or domestic reasons, regardless of clear, tangible cost/benefit consideration.⁴¹

Another vital contribution to the politics of space security is James Clay Moltz. In his 2019 tour de force, *The Politics of Space Security*, Moltz, the chairperson of the Department of National Security Affairs at the Naval Postgraduate School, examines the history of international politics of the space age from 1957 to the modern day. It is a difficult undertaking, but Moltz argues that by taking such a longitudinal approach to space politics, he hopes to “explain past outcomes and draw some practical lessons for the future . . . to focus on space security issues and turning points in the management of military space threats as experienced to date.”⁴² Moltz's thesis is that there is a compelling logic to exercise military restraint by all actors in space because of their shared national interest in maintaining safe access to critical regions of space—especially low Earth orbit, which is from around 60–1,000 miles in altitude.⁴³ In other words, given space's domain interconnection and interdependence, “environmental factors have played an influential role in space security over time and provide a useful context for considering the future.”⁴⁴ Unlike the other books under review, Moltz provides the readers with a clear operational definition of space security.

Moltz defines *space security* as “the ability to pace and operate assets outside the Earth's atmosphere without external interference, damage, and destruction.”⁴⁵ This definition makes it clear that to be part of the “space club,” a state must be able to launch a spacecraft into space and maintain its operation. This distinction creates artificial boundaries between spacefaring nations and the space wannabes as space becomes an essential operational domain and space becomes more commercialized. Moltz divides his book into three sections, making it easy for readers to understand the chronological development of space security. Part I, “Explaining Space Security: Concepts and Historical Comparisons,” covers the existing literature, its strengths and weaknesses, and possible alternative explanations for space outcomes. In part II, “Reassessing

Twentieth-Century Space Security,” Moltz provides a detailed history of U.S.-Soviet space security relations, focusing on how more limited forms of competition emerged from initially hostile, open-ended, and military-led space programs. In the final section of the book, part III, “Considering Twenty-First Century Space Security,” Moltz examines the new dynamics in international space activities with the proliferation of spacefaring nations and the commercialization of space. Moltz pays particular attention to China’s rise as a significant space power in this context. According to the U.S. Department of Defense’s *2022 National Defense Strategy*, the People’s Republic of China (PRC) is a pacing challenge to the United States.⁴⁶ The *National Security Strategy* released in October 2022 calls the PRC “America’s most consequential geopolitical challenge.”⁴⁷ China became a concern to the United States and the rest of the world when it launched an antisatellite (ASAT) weapon on 11 January 2007. This marked the beginning of China as a spacefaring nation and established it as a major space player. It also marks “the first violation of a tacit norm of no destructive ASAT testing in place since the U.S. test in 1985.”⁴⁸ Not only did the United States react to China’s behavior but talks of a potential “Space Pearl Harbor” began to circulate among the U.S. government leadership.⁴⁹ The United States was not the only nation to react to China’s violations of space norms. India announced plans to develop its ASAT weapons through its missile defense capabilities.⁵⁰ The European countries took a different approach. Rather than panicking at China’s actions, they “continued to cooperate in their joint effort to develop and agree on final language for their space Code of Conduct.”⁵¹

China and other space-aspiring nations challenging the United States’ dominance in space should be no surprise to any astute international relations or political science student. Henry A. Kissinger once said, “History is the memory of states.”⁵² When the Soviets launched Sputnik on 4 October 1957, thus inaugurating the space age, the United States quickly reacted. Committed to avoiding a “nuclear Pearl Harbor,” the Dwight D. Eisenhower administration created the Advanced Research and Projects Agency (ARPA) in November 1958 “to work on the military space program of the United States.”⁵³ Furthermore, Eisenhower, using the power of the executive branch, ordered the newly created National Aeronautics and Space Administration (NASA) to run the civilian space program.⁵⁴ The John F. Kennedy administration also established the National Security Action Memorandum (NSAM) no. 156 Committee, “an ad hoc group of senior advisors to provide guidance and oversight for the administration’s development of space policy.”⁵⁵

Moltz argues that the debate regarding outer space as a domain of cooperation or conflict is broken down between two perspectives: space defense and space sanctuary. Further, either perspective follows one of the four schools of thought regarding the debate on space security: space nationalism, technological determinism, social interaction, and global institutionalism.⁵⁶ Space nationalism derives its inspiration from three sources: the political theory of realism, the competitive history of great power competition, and the context of the Cold War hostility.⁵⁷ From this perspective, spacefaring nations are engaged in a zero-sum game where one superpower’s victory represents another’s loss. This perspective has as its founding fathers Thucydides, Thomas Hobbes, and Niccolò Machiavelli who believe that “notions of duplicity, power-seeking, and brutality are likely.”⁵⁸ Space nationalism is a realist perspective of space warfare. While the space nationalism school sees the world as a zero-sum game driven by competition, the global intuitionism school “emphasizes the possible role of new forms of shared

human and scientific thinking, supported by international cooperation, treaties, and organizations, in providing space security rather than weapons-based approaches.”⁵⁹ Dutch lawyer Hugo Grotius and German philosopher Immanuel Kant inspired global institutionalism.

Technological determinism is the third school of thought concerning outer space as a source of conflict or cooperation. This school of thought has focused “not on political factors but instead on technology and the resulting structural context of space decision-making.”⁶⁰ The technological determinism school of thought has also been known as the “collective or public goods” approach, especially within European politics.⁶¹ The final school of thought is social interactionism. This approach “rejects the notion of the inevitability of space weapons, given the availability of policy tools among space-faring states to interact with one another, bargain, and prevent the deployment of harmful weapons, which could damage other priorities they have in space.”⁶²

Regardless of the four schools of thought concerning cooperation or conflict among nations, the fact is that despite the strategic restraints exercised by spacefaring governments since the early 1950s, the commercialization of space and the addition of more players involved in it, the norms, and regulations that have tended to keep space safe will be challenged and contested in the future. To maintain space as a haven, the United States must take the lead and lead by example. The office of the president of the United States, in the future, will inherit a more complex world when it comes to space. Therefore, that individual will play a tremendous role in the future of the United States.

Sean N. Kalic’s *US Presidents and the Militarization of Space, 1946–67*, argues that space becomes a national security issue that demands attention, discussion, and forethought.⁶³ Yet, before Kalic’s book, “there was no single study covering the evolution of the effort by US presidents to build a policy focused on the use of space for peaceful purposes.”⁶⁴ Before discussing the key differences between administrations vis-à-vis space as a force multiplier, Kalic operationalized the militarization of space and weaponization of space. Those two concepts are essential to understanding the evolution of U.S. space policy during the 1946–67 time frame. By militarizing space, Kalic argues that the idea is “the use of space-based systems to collect, gather, and disseminate photographic intelligence, communications data, weather data, signals intelligence, and strategic reconnaissance.”⁶⁵ As it can seem from the concept’s operationalization, the militarization of space does not connote with the use of force in an aggressive sense. Instead, the militarization of space “conveys an interest in the use of space for non-aggressive military purposes.”⁶⁶ The weaponization of space, on the other hand, means “the use of space-based systems to defend against the use of other space-based weapons or to deny an enemy access to space, the use of space-based weapons to target terrestrial sites, and the use of space weapons to destroy an enemy’s space-based assets.”⁶⁷ The definition of weaponization of space implies the aggressive use of force and space-based systems to contain an adversary.

The intellectual impetus for developing a U.S. military space program has its roots between 1945 and 1952. Individuals, including those at the U.S. Navy, U.S. Air Force, and Rand Corporation were essential for ideas to become a reality. For them, “a man-made satellite would be a great value in presenting the United States as the world’s technological leader, a vital asset in the emerging Cold War with the Soviet Union.”⁶⁸ However, the Harry S. Truman administration did little to advance the age of spacefar-

ing. The advancement of Communism, instead, was Truman's primary concern in the early days of the Cold War. As Kalic pointed out, "concern over communist expansion in the early Cold War drove Truman to focus on the development of national security strategies to contain communism rather than on a satellite program that might not have fruitful military applications."⁶⁹ Space would gain a prominent position with the U.S. government during the Eisenhower, Kennedy, and Lyndon B. Johnson administrations. Those three presidents recognized the "universal significance of space and openly support US military satellites and space programs as essential to the national security of the United States and the preservation of world peace."⁷⁰ In fact, as Kalic also points out, "by the time of Eisenhower's inauguration in 1953, the space age had already begun and the tenets of American future national space policy had been defined."⁷¹ Eisenhower was a proponent of the militarization of space without advocating its weaponization.⁷²

John F. Kennedy's presidency marked the continuity of Eisenhower's military space program while seeking an arms control agreement with the Soviet Union. As Kalic points out, "the majority of the space programs advocated by Kennedy had already been under development during the Eisenhower administration, and Kennedy merely wanted to continue funding the projects already underway."⁷³ Kennedy stated, "space is our great new frontier."⁷⁴ Appearing before Congress on 25 May 1961, President Kennedy highlighted his four major goals for the U.S. space program. First, he recommended that the United States land a man on the Moon and return him safely by the decade's end. This is Kennedy's "moonshot." Second, he asked Congress for an additional \$23 million to fund the Project Rover nuclear rocket. Third, Kennedy asked Congress for an extra \$50 million to accelerate the communication satellite program to enable global communication. Finally, he asked Congress for \$75 million for weather satellites.⁷⁵ President Kennedy eventually broke away from Eisenhower's space policy and established his "four basic principles" to reshape the U.S. space program. Kennedy's priorities to advance the U.S. space program were "scientific, commercial/civilian, military, and national prestige."⁷⁶

During Lyndon B. Johnson's presidency, the United States fulfilled its commitment to becoming a spacefaring nation. Johnson, who had served on several key committees in Congress, especially the Armed Services Committee and the Satellite and Missile Programs Subcommittee, and participated in several discussions regarding the Soviet Union launching of Sputnik 1 and 2, had expertise regarding the U.S. space program like no other president before him. Johnson saw the launching of Sputnik 1 and 2 as an existential concern to the United States' national security. Johnson took several steps to show his commitment to the U.S. space program. For example, he supported "a national space program encompassing both the military and civilian programs."⁷⁷ Furthermore, Johnson's space program was intended to showcase the United States as a spacefaring nation while strengthening the U.S. military space program.⁷⁸

Sean N. Kalic's *US Presidents and the Militarization of Space, 1946–67* calls our attention to an often-misunderstood idea regarding the U.S. space program. The United States did not "seek to race the Soviet Union to arm the heavens, but rather strove to develop a military and civilian space program and policy that advocated the use of space for peaceful purpose."⁷⁹ The first era of the space age, between 1946 and 1967, was characterized as "an ongoing commitment to the peaceful use of space for the benefit of all."⁸⁰

Damon Coletta and Frances T. Pilch's *Space and Defense Policy* argue that space

power is “poised to influence policies affecting the national defense of many states.”⁸¹ Therefore, the United States must avoid its linear thinking regarding space, its complexities, and how friends and foes will respond to the proliferation of space programs and the commercialization of space. It is time to discuss the risks, the strategic decisions, and the recognition that China will be a “pacing” challenger to the international rules-based order. With that in mind, Coletta and Pilch bring together scholars and practitioners of space to “organize a groundbreaking conversation about defense that will lead actors in the world, and the United States in particular, toward responsible and successful application of space power.”⁸² Given the importance of space in future conflicts, new actors, including nonstate strategic actors, are attempting to join the “space club,” thus posing a threat to the United States and its allies’ national security. Spacefaring nations and new actors will interact with the international system in two ways. According to Coletta and Pilch, spacefaring countries and new actors will be competitively maneuvering, for advantage concerning other states, and establishing of norms for mutually beneficial cooperation.⁸³ Nation-states and nonstate actors alike cannot ignore the importance of space as a force multiplier. Viewed from this perspective, space “acts more as a highway, allowing global access for surveillance and communication systems that provide an order of magnitude improvement in coverage compared to land, air, or maritime alternatives.”⁸⁴

Coletta and Pilch, like the other authors here under review, also stress the interconnection between space and the economy. They stated, “it would be difficult to overstate how important commercial space activity is to the US position as the world’s premier military and economic power.”⁸⁵ Commercial space activities are vital to the United States’ national security. First, commercial space activities provide important services and products to other federal government agencies and intelligence communities. Second, commercial satellites are vital to the well-being of the U.S. economy as its citizens rely on robust and resilient internet connectivity for everything in their daily lives, such as banking, transportation, and vacationing. Finally, commercial satellites interlink banks worldwide via the Society for Worldwide Interbank Financial Telecommunication (SWIFT). It is no exaggeration to say that today’s business environment’s dependency on commercial space satellites has led to the end of geography, where geographic boundaries are hollow. Of course, given its great reliance on commercial space satellites and the globalization of the space industry, the United States is quite vulnerable to cyberattacks by nefarious nation-states and nonstate actors intending to disrupt the United States’ economic well-being. As Coletta and Pilch pointed out, “the globalization of the world economy, along with new multinational alliances, raises national security questions. US firms that enter foreign markets or merge with foreign companies pose national security issues.”⁸⁶

In his testimony to the House Armed Services Committee, John D. Hill, the Defense Department’s principal director for space policy, stated that “space-based capabilities are vital to U.S. national security in today’s era of de-stabilizing challenges from Russia and undeniable strategic competition with China.”⁸⁷ Coletta and Pilch argue, “After 16 years of struggle, the Russian space industry has constituted itself as a leading edge of the country’s twenty-first-century economy . . . space tourism and the private marketing of space ventures may well be the wave of the future in space.”⁸⁸ Since the launch of its first human spaceflight in October 2003 in Shenzhou, China has been the leading nation in a second space race.⁸⁹

Despite the Hobbesian nature of the post–Cold War international system space domain with the rise of new challenges and newcomers, the United States still has options for addressing the “pacing” threat and “acute” challenge from China and Russia, respectively. The United States has four options that it could take in dealing with Russia and China. First, the United States could reduce cooperation, as advocated by some critics who argue that the United States has not taken advantage of its lone superpower status in the aftermath of the collapse of the Soviet Union and the end of the Cold War. Second, rather than reduce cooperation, the United States could pursue a policy of limited preventive collaboration and space defenses. According to this approach, there would be some “forms of international cooperation in combination with a well-funded research and development strategy aimed at the future testing and deployment of a limited number of space weapons, largely for defensive purposes.”⁹⁰ The third option for the United States is to pursue moderate cooperation, with weapons research only but as a hedge. This third option allows for the creation of “rules of the road” or “rules of space” governing space behavior and means of reducing mutual space vulnerabilities through “non-offensive techniques.”⁹¹ The final option for the United States is to pursue high levels of cooperation with no weapons research and a new treaty. According to this option, the United States would “seek engagement with both countries [China and Russia] and accept their call for a formal international treaty banning space weapons, including establishing an international verification system.”⁹²

Each one of the options available for the United States is driven by four major camps regarding the weaponization of space. The four major camps are as follows: space hawks, inevitable weaponizers, militarization realists, and space doves.⁹³ The space hawks argue that “space already is or holds the potential to become the dominant source of military power.” Therefore, space hawks urge the United States to “move quickly and directly to develop and deploy space weapons to control and project power from this dominant theater of combat operations.”⁹⁴ Furthermore, space hawks “oppose virtually all space-related arms control on regulation because of its potential to slow or derail rapid and direct space weaponization by the United States.”⁹⁵ The second group is the inevitable weaponizers or skeptics of space weaponization. Members of this group are not convinced that “space weaponization would be beneficial for US or global security, and they are unsure that space will prove to be a decisive theater of combat operations.”⁹⁶ Militarization realists are different from traditional realists. Traditional realists believe the international system is an arena for competition and a power struggle. Traditional realists view the global system from a Hobbesian state of nature where life is “solitary, poor, nasty, brutish, and short in a state of anarchy.” Militarization realists oppose space weaponization since they believe the United States is better serviced by maintaining a status quo in space.⁹⁷ Given the low political and technological barriers for spacefaring wannabes, they argue that if the United States takes the lead in weaponizing space, it will become easier for other nations to follow.⁹⁸ They also support space-related regulations and arms control to prevent other countries from “weaponizing or even militarizing space.”⁹⁹ The final group is the space doves. Space doves oppose the weaponization of space based on moral, religious, ideological, and arms control principles. Furthermore, the space doves subscribe to the principles of President Eisenhower’s “space for peaceful purposes” policy.¹⁰⁰ Finally, space doves believe that in the aftermath of the post–Cold War, “there is no rationale for space weaponization that is strong enough to overturn the basic strategic logic America developed at the opening of the space age.”¹⁰¹

The future of spacefaring nations and the commercial space industry holds tremendous promise and potential, as pointed out by James N. Mattis's quote at the beginning of this article. As technology advances and access to space becomes more affordable and accessible, we expect to see an increasing number of nations and private companies participating in space exploration and utilization. This expansion will lead to exciting discoveries, economic opportunities, and advancements in our understanding of the universe and the use of space as a force multiplier. However, it also comes with challenges such as sustainability, regulation, and international cooperation and competition that all key players must address to ensure a responsible and prosperous future in space to avoid a space security dilemma or Thucydides trap.¹⁰² In conclusion, as we continue to push the boundaries of human spacefaring, collaboration between governments and the commercial sector will play a pivotal role in shaping the trajectory of our cosmic journey while avoiding Amara's Law.¹⁰³

Endnotes

1. *Summary of the 2018 National Defense Strategy of the United States of America: Sharpening the American Military's Competitive Edge* (Washington, DC: Department of Defense, 2018). Emphasis in original.
2. James Clay Moltz, *The Politics of Space Security: Strategic Restraint and the Pursuit of National Interests* (Stanford, CA: Stanford University Press, 2008), 265.
3. *Space Operations*, Joint Publication 3-14 (Washington, DC: Joint Chiefs of Staff, 2020), vii.
4. *Space Operations*, ix.
5. *Space Domain Awareness: Doctrine for Space Forces*, Space Doctrine Publication 3-100 (Washington, DC: U.S. Space Force, 2023), 11.
6. *Space Domain Awareness*, 18.
7. Stephen M. McCall, *Space as a Warfighting Domain: Issues for Congress*, IFI 1895 (Washington, DC: Congressional Research Service, 2021), 1.
8. John J. Klein, *Understanding Space Strategy: The Art of War in Space* (New York: Routledge, 2019), ix.
9. Klein, *Understanding Space Strategy*, 7.
10. Klein, *Understanding Space Strategy*, 7.
11. Klein, *Understanding Space Strategy*, 7.
12. Klein, *Understanding Space Strategy*, 7.
13. Klein, *Understanding Space Strategy*, 7.
14. Klein, *Understanding Space Strategy*, 11.
15. Klein, *Understanding Space Strategy*, 12–13.
16. Klein, *Understanding Space Strategy*, 33.
17. Klein, *Understanding Space Strategy*, 33.
18. C. Todd Lopez, "Space Plays Larger Role in U.S. Southern Command's Mission," DOD News, 4 August 2023.
19. Lopez, "Space Plays Larger Role in U.S. Southern Command's Mission."
20. Klein, *Understanding Space Strategy*, 33.
21. Klein, *Understanding Space Strategy*, 34.
22. Klein, *Understanding Space Strategy*, 57.
23. Klein, *Understanding Space Strategy*, 57.
24. Quoted in Klein, *Understanding Space Strategy*, 178.
25. Klein, *Understanding Space Strategy*, 183.
26. "Space as a Warfighting Domain," 1.
27. "Remarks by President Trump at Event Establishing the U.S. Space Command," speech, U.S. Space Command, 29 August 2019.
28. "Remarks by President Trump at Event Establishing the U.S. Space Command."

29. Deganit Paikowsky, *The Power of the Space Club* (New York: Cambridge University Press, 2017), 33, <https://doi.org/10.1017/9781108159883>.
30. Paikowsky, *The Power of the Space Club*, 34.
31. Paikowsky, *The Power of the Space Club*, 73.
32. Paikowsky, *The Power of the Space Club*, 29.
33. Paikowsky, *The Power of the Space Club*, 35.
34. Paikowsky, *The Power of the Space Club*, 39–41.
35. Paikowsky, *The Power of the Space Club*, 16.
36. Paikowsky, *The Power of the Space Club*, 176.
37. Shelli Brunswick, “Order and Progress—Brazil’s Second Act in Space,” *SpaceNews*, 17 March 2022.
38. Paikowsky, *The Power of the Space Club*, 183.
39. Paikowsky, *The Power of the Space Club*, 14.
40. Paikowsky, *The Power of the Space Club*, 14.
41. Paikowsky, *The Power of the Space Club*, 14.
42. Moltz, *The Politics of Space Security*, 3.
43. Moltz, *The Politics of Space Security*, 5.
44. Moltz, *The Politics of Space Security*, 46.
45. Moltz, *The Politics of Space Security*, 11.
46. *2022 National Defense Strategy* (Washington, DC: Department of Defense, 2022), 4.
47. *National Security Strategy* (Washington, DC: White House, 2022), 11.
48. Moltz, *The Politics of Space Security*, 261.
49. Moltz, *The Politics of Space Security*, 262.
50. Moltz, *The Politics of Space Security*, 306.
51. Moltz, *The Politics of Space Security*, 306.
52. Robert B. Zoellick, *America in the World: A History of U.S. Diplomacy and Foreign Policy* (New York: Twelve, 2020), 11. Zoellick quotes Kissinger from his first published work, *A World Restored: Metternich, Castlereagh and the Problems of Peace, 1812–22* (Boston, MA: Houghton Mifflin, 1957), 331.
53. Sean N. Kalic, *US Presidents and the Militarization of Space, 1946–1967* (College Station: Texas A&M University Press), 42.
54. Kalic, *US Presidents and the Militarization of Space*, 42. President Eisenhower created NASA on 29 July 1958.
55. Kalic, *US Presidents and the Militarization of Space*, 66.
56. Moltz, *The Politics of Space Security*, 23.
57. Moltz, *The Politics of Space Security*, 24.
58. Moltz, *The Politics of Space Security*, 24.
59. Moltz, *The Politics of Space Security*, 27.
60. Moltz, *The Politics of Space Security*, 31.
61. Moltz, *The Politics of Space Security*, 34.
62. Moltz, *The Politics of Space Security*, 37.
63. Kalic, *US Presidents and the Militarization of Space, 1946–1967*, 1.
64. Kalic, *US Presidents and the Militarization of Space, 1946–1967*, 3.
65. Kalic, *US Presidents and the Militarization of Space, 1946–1967*, 5.
66. Kalic, *US Presidents and the Militarization of Space, 1946–1967*, 5.
67. Kalic, *US Presidents and the Militarization of Space, 1946–1967*, 6.
68. Kalic, *US Presidents and the Militarization of Space, 1946–1967*, 9.
69. Kalic, *US Presidents and the Militarization of Space, 1946–1967*, 10.
70. Kalic, *US Presidents and the Militarization of Space, 1946–1967*, 24.
71. Kalic, *US Presidents and the Militarization of Space, 1946–1967*, 25.
72. Kalic, *US Presidents and the Militarization of Space, 1946–1967*, 57.
73. Kalic, *US Presidents and the Militarization of Space, 1946–1967*, 64.
74. Kalic, *US Presidents and the Militarization of Space, 1946–1967*, 64.
75. Kalic, *US Presidents and the Militarization of Space, 1946–1967*, 64.
76. Kalic, *US Presidents and the Militarization of Space, 1946–1967*, 76.
77. Kalic, *US Presidents and the Militarization of Space, 1946–1967*, 90.

78. Kalic, *US Presidents and the Militarization of Space, 1946–1967*, 90.
79. Kalic, *US Presidents and the Militarization of Space, 1946–1967*, 131.
80. Kalic, *US Presidents and the Militarization of Space, 1946–1967*, 131.
81. Damon Coletta and Frances T. Pilch, eds., *Space and Defense Policy* (New York: Routledge, 2009), 10.
82. Coletta and Pilch, *Space and Defense Policy*, 10.
83. Coletta and Pilch, *Space and Defense Policy*, 10.
84. Coletta and Pilch, *Space and Defense Policy*, 21.
85. Coletta and Pilch, *Space and Defense Policy*, 51.
86. Coletta and Pilch, *Space and Defense Policy*, 55–56.
87. Terri Moon Cronk, “Space-Based Capabilities Critical to U.S. National Security, DOD Officials Say,” DOD News, 24 March 2021.
88. Coletta and Pilch, *Space and Defense Policy*, 273.
89. Coletta and Pilch, *Space and Defense Policy*, 277.
90. Coletta and Pilch, *Space and Defense Policy*, 285.
91. Coletta and Pilch, *Space and Defense Policy*, 286.
92. Coletta and Pilch, *Space and Defense Policy*, 286–87.
93. Coletta and Pilch, *Space and Defense Policy*, 176.
94. Coletta and Pilch, *Space and Defense Policy*, 176.
95. Coletta and Pilch, *Space and Defense Policy*, 177.
96. Coletta and Pilch, *Space and Defense Policy*, 177.
97. Coletta and Pilch, *Space and Defense Policy*, 177.
98. Coletta and Pilch, *Space and Defense Policy*, 177.
99. Coletta and Pilch, *Space and Defense Policy*, 177.
100. Coletta and Pilch, *Space and Defense Policy*, 178. See also Kalic, *US Presidents and the Militarization of Space, 1946–1967*, for an excellent discussion on the topic.
101. Coletta and Pilch, *Space and Defense Policy*, 178.
102. For a discussion of the Thucydides trap involving the United States and China, see Graham Allison, *Destined for War: Can America and China Escape Thucydides Trap?* (New York: Houghton Mifflin Harcourt, 2017); and Graham Allison, “The Thucydides Trap: Are the U.S. and China Headed for War?,” *Atlantic*, 24 September 2015.
103. Amara’s Law was named for Roy Charles Amara, an American researcher, scientist, futurist, and president of the Institute for the Future. Amara’s Law simply states that we tend to overestimate the effect of a technology on the short run and underestimate the effect in the long run. See the Freedom Endeavor’s “Amara’s Law: The Power of Perception and Its Impact on Decision-Making,” accessed 31 January 2024. See also Anusuya Datta, “What Is Amara’s Law and How Is It Relevant to Ecommerce,” *Vendasta* (blog), 9 July 2021.