Opinion-Perspective Article

The New 'Sputnik Moment': An In-Depth Analysis of the US-China AI Race Amidst a Shifting Geopolitical Landscape

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ABSTRACT

The emergence of DeepSeek, a Chinese AI model, has disrupted global perceptions about technological dominance, marking a pivotal moment in the U.S.-China AI race. Framed through the historical analog of the 1957 Sputnik launch, this paper argues that both events represent technological shocks that reshape global power dynamics and strategy. It first examines the historical context of Sputnik and its geopolitical implications, before drawing parallels to DeepSeek's impact on the AI race. DeepSeek's efficiency-driven advancements challenge U.S. beliefs about the resource-intensive nature of AI innovation, while exposing vulnerabilities in America's strategy centered on export controls, talent restrictions, and efforts to limit China's global influence. The paper analyzes China's state-driven approach to leveraging AI for economic stabilization, domestic confidence, and geopolitical reach, while underscoring its constraints in international trust and data governance. It then examines how the AI race accelerates a transition from unipolarity toward a fragmented, multipolar world order, emphasizing the importance of alliance trust and cooperation —areas strained by U.S. tariffs and semiconductor reshoring. Drawing on precedents such as Apollo–Soyuz, the paper argues that rising costs, domestic pressures, and shared AI risks may push rivals from zero-sum competition toward managed coexistence. The likely equilibrium is an uneasy hybrid: inevitable short-term rivalry alongside guarded, rules-based cooperation on safety, standards, and global public goods to sustain long-term stability. Ultimately, the paper contends that the trajectory of global AI leadership will hinge not only on innovation but also on strategic collaboration, alliance cohesion, and effective governance mechanisms to address shared challenges.

Keywords: U.S.-China AI Race; DeepSeek; Sputnik; AI geopolitics; Artificial intelligence

INTRODUCTION

In January 2025, DeepSeek Artificial Intelligence Co., Ltd., a relatively unknown Chinese AI lab founded less than two years prior, stunned the world with the release of its open-source AI model, DeepSeek-R1. The event mirrors the psychological and strategic shock of the 1957 Sputnik launch on October 4, wherein Soviet technological prowess destabilized U.S. confidence by launching the first artificial satellite into Earth's orbit. Much like the Soviet Union's satellite launched shattered American assumptions of technological supremacy, DeepSeek's achievement—rivaling the performance of leading U.S. models at a fraction of the

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cost (1)—has triggered a parallel crisis of confidence and a strategic reassessment in Washington (2).

This paper argues that the emergence of DeepSeek marks a pivotal moment in the global AI race, challenging the existing power dynamics between the United States and China. This phenomenon, reminiscent of the 1957 Sputnik moment in the space race, reshapes international relations and raises profound implications for geopolitical competition, alliance structures, and global governance. Section 2 establishes the core analogy, detailing the parallels between the Sputnik and DeepSeek shocks and why this comparison is necessary. Section 3 examines the distinct strategic vulnerabilities exposed by DeepSeek and how its emergence challenges the U.S.'s current AI strategy. Section 4 analyzes China's AI ambitions and barriers, emphasizing its distinctive approach to innovation and state-driven investment. Section 5 situates the AI race within the broader geopolitical transition from unipolarity to multipolarity, comparing the Cold War bipolarity to the current technological rivalry. Finally, Section 6 evaluates the critical role of allied cooperation in sustaining U.S. AI dominance, focusing on trust-based partnerships and shared global strategies. Finally, Section 7 addresses the potential for collaboration between powers to harness the capabilities of AI while constraining its perils.

PARALLELS BETWEEN SPUTNIK AND DEEPSEEK

The Psychological and Symbolic Shock

The resonance between the Sputnik launch and DeepSeek emergence reflects a recurring pattern of how technological breakthroughs can destabilize global power hierarchies. Both events functioned as powerful psychological blows that transcended their immediate technical achievements. The launch of Sputnik 1 on October 4, 1957, marked the dawn of the space age and triggered a seismic shift in global geopolitics. As the first artificial satellite, Sputnik demonstrated Soviet technological prowess, challenging the assumed superiority of the United States in science and military capability. The 184-pound sphere, emitting a simple radio signal, symbolized not just a scientific achievement but also a Cold War victory for the USSR (3). The event sent shockwaves through the U.S. and the Western world, fueling fears of Soviet dominance in missile technology and space-based weapons. Media coverage amplified public anxiety, with headlines warning of a 'technological Pearl Harbor' (4). The psychological impact was profound. Americans questioned their education system, military readiness, and scientific competitiveness.

In a parallel manner, DeepSeek, developed by a lab of merely 200 employees and a reported development cost of US$5.5 million (1), became an instant symbol of China's capacity to innovate under constraints. DeepSeek achieved performance rivaling OpenAI's GPT-4 using only a fraction of the computational resources typically deployed by U.S. tech giants (1). DeepSeek's architecture diverges fundamentally from the 'more is better' paradigm championed by U.S. firms. Where OpenAI and Anthropic invest over US$100 million to train their AI models (5), DeepSeek prioritized computational efficiency through expert system modularity and algorithmic optimizations. This approach, dubbed 'revolutionary' by AI researchers (6), enabled high-fidelity outputs on modest hardware, challenging the necessity of hyperscale investments (7). This technological breakthrough, timed during President Trump's inauguration, triggered a US$1 trillion single-day loss in U.S. tech stocks, including almost a US$600 billion collapse in NVIDIA's market value, the largest drop in a single day (8). As President Trump termed it a 'wake-up call,' DeepSeek epitomizes China's capacity to defy assumptions about AI dominance rooted in capital intensity and Western technological hegemony (2).

The Reactive Surge in Policy and Investment

Both the Sputnik and DeepSeek shocks triggered a swift, large-scale strategic mobilization of American resources. The Sputnik shock prompted a direct, state-led transformation of the U.S. military, educational, and scientific landscape. Militarily, the perceived 'missile gap' catalyzed a surge in defense spending and the creation of NASA (National Aeronautics and Space Administration) (1958), centralizing civilian space efforts under a single agency to counter the Soviet challenge (9). Concurrently, the National Defense Education Act (1958) pumped billions into science, technology, engineering, and mathematics (STEM) education, aiming to cultivate a new generation of technical talent (10). The government tripled funding for basic research, fueling the growth of institutions like Defense Advanced Research Projects Agency (DARPA) and the National Science Foundation (NSF) (11). This comprehensive public investment laid the groundwork for the Mercury, Gemini, and Apollo

programs, enabling President Kennedy's 1961 pledge to land on the mood by the mid-1960s (12).

In a parallel reaction to the DeepSeek breakthrough, Washington is again orchestrating a massive counter-mobilization, yet its contemporary form is a public-private partnership on an unprecedented scale. The announcement of initiatives like the 'Stargate Project'—a new US$500 billion computing infrastructure plan led by OpenAI, SoftBank, and Oracle (13)—mirrors the scale and urgency of the post-Sputnik investment surge. However, where the U.S. government once acted as the primary funder and executor, its role is now to enable and consolidate private sector efforts, reflecting the centrality of commercial firms in today's AI race. This modern scramble demonstrates that the instinct to respond to a technological challenge with overwhelming financial and strategic commitment remains a core tenet of U.S. statecraft.

The Framing of a Bipolar Technological Race

A critical parallel lies in how both events crystallized a narrative of bipolar technological competition. Sputnik formalized the Cold War as a stark, two-system contest for supremacy. Similarly, DeepSeek has hardened the discourse around a direct U.S.-China tech duel. Leaders in both the U.S. and China recognize AI as the defining technology of the 21st century, a game-changer that will shape economic dominance, military superiority, and global influence. As former White House national security adviser Jake Sullivan warned, '*If it's China and not the United States determining the future of AI on the planet, the stakes are just profound*' (14). This statement implies that the AI race transcends economic rivalry, touching instead on core questions of who will govern the digital future, whose military will hold strategic dominance, and whose values will be embedded in the global technological ecosystem. In both eras, the competition is framed as a zero-sum struggle for the commanding heights of the next era.

However, the nature of this bipolarity has fundamentally transformed, making the current race more complex and high stakes. Where the Cold War bipolarity symbolized military vulnerability, DeepSeek challenges U.S. economic and ideological primacy in AI (15), a domain with unparalleled dual-use potential spanning from civilian applications to Lethal Autonomous Weapons Systems (LAWS) (16). This time, the race isn't just for orbital dominance, but for control of the foundational technology that is shaping the future.

Unlike the Soviet Union, China presents a far more formidable challenge. The Soviet Union's early successes in the space race, while impressive, masked fundamental economic weaknesses that ultimately proved unsustainable. During the 1950s and 1960s, the USSR enjoyed temporary advantages as the world's second-largest economy, benefiting from post-Stalin industrialization under Khrushchev (17). However, its growth was narrowly focused on heavy industry and military production, leaving other sectors underdeveloped. The centrally planned economy became increasingly inefficient, plagued by bureaucratic stagnation and the misallocation of resources (18). By the 1960s, growth slowed dramatically as easy industrialization gains were exhausted, while massive defense spending (reaching 20% of its annual budget) further strained the system (19). Crucially, the Soviet economy remained largely isolated, with trade confined to Eastern Bloc nations and dominated by the export of raw materials such as oil and gas (20). This lack of integration with global markets left the USSR without the economic leverage or technological cross-pollination enjoyed by Western economies, contributing significantly to its eventual collapse.

In contrast, the contemporary bipolarity is comprehensively economic, technological, and military. China enters the AI race with structural advantages that the Soviets never possessed. As the world's second-largest economy by nominal GDP and the largest by purchasing power parity (21), China has achieved deep integration into global supply chains that the USSR could never match. Where Soviet trade accounted for <1% of international commerce (22), China now represents nearly 15% of world trade and dominates high-value manufacturing sectors (23). Chinese companies like Huawei (telecommunications), BYD (electric vehicles), and SMIC (semiconductors) compete globally in cutting-edge industries, while the Belt and Road Initiative (BRI) has created economic dependencies across more than 150 countries through US$1 trillion in infrastructure investments (24). Unlike the USSR's political-military influence, which was confined to the Eastern Bloc, China wields both hard and soft power through technology exports, standards-setting, and control of critical supply chains, ranging from rare earth minerals to pharmaceutical ingredients (25). This comprehensive economic integration, combined with strategic investments in AI, quantum computing, and other foundational technologies, makes China's challenge to U.S. technological leadership far more sustained and multidimensional than the Soviet threat ever was. Where

the space race strained the USSR's fragile economy to breaking point, China's diversified, globally connected economic base positions it to endure—and potentially win—the long-term AI competition. This deep integration makes the AI race a struggle for dominance within an interconnected global economy.

The Imperative of the Historical Analogy

Given the contextual differences, one must question whether the Sputnik-DeepSeek comparison remains analytically useful. Its necessity lies not in predicting an identical outcome, but in its utility as a heuristic framework for understanding the broader implications of technological breakthroughs on global geopolitics.

One crucial advantage of comparing Sputnik and DeepSeek is how both are rhetorically and discursively framed as competitions for global supremacy, particularly within geopolitical circles and the press. This framing shapes public perception, policy priorities, and international relations, making the comparison highly relevant.

Additionally, the historical continuity between the two events strengthens the argument for their comparison. While other historical events could contextualize the AI race, the space race provides a direct linkage, allowing for historical continuity.

Furthermore, the geopolitical context of both events reflects a systemic rivalry between two great powers. While the 1990s and 2000s fostered optimism about a multipolar world (26), the U.S.-China rivalry has recentered international politics around a new, technologically driven bipolarity. Today's U.S.-China rivalry mirrors the Cold War bipolarity, with two dominant powers competing across economic, technological, and military domains (27). The Sputnik analogy reveals the underlying power dynamic in this shift toward a new bipolar world order.

Finally, Sputnik and DeepSeek share a symbolic significance as placeholders for larger systemic shocks beyond their immediate technological achievements. The geopolitical resonance of Sputnik reflects how technological advancements can serve as symbols of broader systemic shifts in global geopolitics. Similarly, DeepSeek has become a symbol of China's growing capacity to challenge U.S. dominance in AI.

Thus, the comparison between Sputnik and DeepSeek is not just valid but essential for a nuanced understanding how technological milestones can serve as catalysts for larger geopolitical transformations, even as the nature of that transformation evolves.

RE-EXAMINING U.S. TECHNOLOGICAL DOMINANCE IN AI

The U.S. Approach

As the AI race intensifies, the United States faces a critical question: Can it maintain its technological edge against China as decisively as it outpaced the Soviet Union in the space race? During the Sputnik era, America transformed crisis into victory through bold political leadership, strategic resource allocation, and a national mobilization around STEM education, culminating in NASA's Apollo triumph. Today, the U.S. is deploying similar tactics while adapting to China's more formidable economic integration and technological base.

Firstly, the U.S. has intensified its technology blockade, expanding export controls from high-end AI chips to mid-range semiconductors and even open-source algorithms. Chinese giants like Huawei and Semiconductor Manufacturing International Corporation (SMIC) face severe restrictions, limiting their access to advanced manufacturing equipment and software (28). While these measures cannot completely halt China's progress, they effectively delay the development of a fully independent AI ecosystem, particularly in military applications. Simultaneously, the U.S. is rallying allies to isolate China's tech sector, warning of Beijing's civil-military fusion strategy and pushing for coordinated restrictions on technology transfers (29).

Secondly, the U.S. is tightening control over talent flows. Visa restrictions now target Chinese students and researchers in 'critical fields' such as AI and computer science (30), while partnerships between U.S. universities and Chinese tech firms are facing increased scrutiny. These efforts are complemented by policies aimed at retaining global AI talent, including streamlined immigration pathways for specialists and incentives for top researchers to remain in American institutions (31).

Thirdly, the U.S. is working to limit the global reach of Chinese AI companies. This approach is exemplified by the justification of bans on platforms like TikTok/ByteDance using national security arguments and (32), more significantly, by actively pressuring allies to exclude Chinese technology from their critical infrastructure networks. The U.S. employs a strategy of 'convincing, coercing, and inciting' partner nations to create a coordinated front in preventing the adoption of Chinese technologies (33). These measures aim to

weaken Chinese firms' international competitiveness and profitability by denying access to key Western markets and partners. The strategy compounds existing export controls and investment restrictions, creating multiple layers of barriers that collectively hinder Chinese companies' ability to compete on equal footing in international markets while simultaneously reinforcing U.S. hegemony over the development and governance of global technological standards (34).

Economically, the U.S. appears to be reviving Reagan-era tactics, using financial pressure to strain China's resources. This is exemplified by the 145% tariff hike on Chinese imports in April 2025, which aimed to weaken China's export-driven growth model (35). As Treasury Secretary Scott Bessent noted, this strategy mirrors the 1980s approach of forcing the Soviet Union into unsustainable military spending (36). But with China's deeply integrated economy presenting a far more resilient adversary than the USSR, the success of these measures will depend on whether the U.S. can balance containment with domestic innovation and ensure that restrictions on China do not come at the expense of worsening its own inflation rate. In this new great power competition, maintaining leadership requires not just slowing China's progress but accelerating America's own, through sustained investment in research, education, and global partnerships that reinforce technological superiority.

Vulnerabilities Exposed by DeepSeek

Despite the U.S.'s measures and strategy, which echo its Cold War playbook, the disruptive emergence of China's DeepSeek challenges and exposes vulnerabilities in this containment approach. A central pillar of the U.S. strategy, the aggressive export control regime targeting advanced AI semiconductors, has proven porous and potentially counterproductive. DeepSeek's development leveraged access to advanced chips *years before* the full implementation of the Biden administration's tightened restrictions (37). According to the MIT Technology Review, DeepSeek had acquired a stockpile of Nvidia A100 chips, with estimates ranging from 10,000 to 50,000, which were used in combination with lower-power chips to develop its models (37). More critically, its subsequent performance, achieving frontier capabilities despite constraints, suggests that scarcity can act as a catalyst for innovation rather than an absolute barrier. Chinese developers, facing restricted access, were forced to prioritize algorithmic efficiency, novel training techniques, and resource-pooling strategies. This stands in stark contrast to the 'more is better' philosophy championed by U.S. tech giants, where scale in data, models, and computing power has been the primary driver for advancements like ChatGPT (38). DeepSeek's success suggests that export controls, although imposing delays and costs, may inadvertently foster a more resilient and resource-efficient AI ecosystem in China, one that is less dependent on continuous access to the latest Western hardware.

Furthermore, DeepSeek's model development represents a significant strategic pivot away from pure scale. While the U.S. committed to unprecedented infrastructure expansion, exemplified by the Trump administration's US$500 billion 'The Stargate Project' plan (13), DeepSeek focused on maximizing output from constrained inputs. This emphasis on efficiency and collaborative resource utilization allowed Chinese researchers to achieve competitive performance without matching the absolute scale of U.S. investments. The profound market response, a trillion-dollar single-day loss in U.S. tech market capitalization following DeepSeek's unveiling (8), was not merely a financial shock but also a reaction to the unmasking of the assumed invincibility derived from scale and hardware control. It signaled a recognition that China's AI capabilities are significantly closer to the U.S. than previously acknowledged.

DeepSeek's meticulously timed release, the very day President Trump was inaugurated, served as a powerful geopolitical statement, challenging the narrative of unchallenged U.S. dominance. While massive infrastructure investments remain crucial, DeepSeek underscores that they are not *sufficient alone* for guaranteed dominance. The effectiveness of U.S. strategies that rely solely on outpacing China in resource accumulation and denying access to technology is now in question. Sustaining leadership may require the U.S. to complement its scale advantage with a renewed focus on fundamental algorithmic innovation, talent cultivation beyond restrictive barriers, and international cooperation frameworks that acknowledge the rise of efficient, adaptable competitors. The era where scale alone guaranteed supremacy is demonstrably over.

CHINA'S ASCENDANCY AND AI AMBITIONS

China's AI Strategy

As the limitations of America's resource-centric approach come under scrutiny, China is mobilizing its

resources and agility to challenge the AI hierarchy in pursuit of its strategic goals. China's formal ambition to achieve global AI leadership by 2030, articulated in the *New Generation Artificial Intelligence Development Plan*, transcends technological aspiration and represents a core component of President Xi's vision for national rejuvenation (39). It aims to advance AI theory, technology, and applications across various sectors, including industry, governance, and defense. This plan crystallized after the 2017 AlphaGo defeat, in which an artificial intelligence program backed by Google defeated a Chinese prodigy at the complex board game Go (40). Since then, the Communist Party has mobilized state resources on an unprecedented scale: direct funding mechanisms such as the Bank of China's CNY 1 trillion (US$140 billion) AI infrastructure commitment (January 2025) target computing hubs, semiconductor self-sufficiency, and talent pipelines under rigid Five-Year Plan alignments (41). Unlike the U.S.'s market-driven approach, China's strategy leverages centralized resource allocation to overcome American export controls and tariff threats, turning technological isolation into an incentive for innovation.

China's AI surge is a strategic solution to addressing domestic challenges: a collapsing real estate property sector accounting for 25%-30% of the country's GDP (42); youth unemployment, which officially stands at 14.9% but is estimated to be as high as 21.3% by the IMF (43); an unsustainably high local government debt level which rose to more than 60% of the GDP (44); and demographic collapse due to declining birth rates and aging trends, where it is estimated that over 200 million citizens will be over 65 years old by 2035 (45). State media explicitly frames AI as an 'employment multiplier' (46). Massive investment in AI infrastructure, including data centers and computing power, along with other AI-related sectors such as robotics, automated vehicles, healthcare, and smart infrastructure, aims to boost economic growth and generate high-value jobs (46). As Chinese Premier Li Qiang asserted during the annual World Artificial Intelligence Conference in Shanghai, with DeepSeek's founder amongst a group of industry leaders and policymakers, AI is 'the new engine for economic growth' (47).

The psychological dimension of China's AI campaign as propaganda to boost domestic confidence in the government is equally critical. DeepSeek's breakthrough ignited a digital patriotism tsunami after its release in January 2025: 46 million views on the Chinese social media platform RedNote within hours (48), 'DeepSeek overturns the US stocks overnight' and 'DeepSeek makes Meta panic' as some of many top-trending hashtags on microblogging website Weibo (49), and orchestrated coverage in major media outlets *China Daily* and *Xinhua* highlighting Nvidia's market collapse in China's AI rise. Such national pride and enthusiasm soon spread into China's domestic stock market. Chinese technology stocks rose more than 20% since DeepSeek's breakthrough (50), revealing how a positive wealth effect can help boost its weak domestic consumption (51). This fervor of national pride stems from deeply institutionalized narratives. The 'Century of Humiliation' (1839–1949), a period in Chinese history marked by foreign imperialism, including the Opium Wars, unequal treaties, and territorial losses, culminating in the founding of the People's Republic of China, is a key part of the Chinese Communist Party's narrative and is frequently used in Chinese education and political discourse to promote patriotism and national unity (52). It frames technological lag as existential vulnerability, as embodied in the famous mantra adopted in China, 'Backwardness brings on beatings by others' ('落后就要挨打'), where 'backwardness' refers to economic, military, and technological weakness (53). Educational curricula and state media continually reinforce the era's past humiliations, fostering collective resilience against external pressure and serving as a call to action to prevent future subjugation (52). This is exemplified in an instance that took place on the social media platform X (formerly Twitter) when China retaliated back after the U.S. imposed a dramatic hike in tariffs on Chinese imports in April 2025, where a spokesperson for the Chinese Foreign Affairs Ministry, Mao Ning, shared archival footage of Mao Zedong's Korean War declaration from 1953, along with the text statement 'We are Chinese. We are not afraid of provocations. We don't back down' (54). Such rhetoric weaponizes historical memory to sustain public tolerance for AI-driven austerity.

Globally, China sees AI as a tool to strengthen relationships with international allies, particularly in the Global South. Tang Xiaoyang, chair of the Department of International Relations at Tsinghua University, highlights that China has deliberately prioritized partnerships with developing nations across Africa, Latin America, and Southeast Asia, recognizing these regions as vital to its long-term global strategy (55). The cost-efficient design and open-source architecture

of DeepSeek-R1, which can operate on commodity hardware, provide these nations with an accessible alternative to more expensive, U.S.-licensed systems. Countries such as Brazil, Kenya, and Pakistan have begun integrating Chinese AI solutions into key public services, including crop-yield optimization, healthcare, and smart city infrastructure (56). This approach not only positions China as a leader in providing affordable AI solutions but also fosters technological dependencies akin to those created by the BRI infrastructure development strategy. By offering cost-effective, AI-driven development tools, China gains a strategic foothold in markets with lower purchasing power. Nevertheless, adoption remains bifurcated: while some resource-constrained economies embrace Chinese AI, democracies such as India and Australia have taken a cautious stance, banning its use on government devices due to security and data privacy concerns (57).

Barriers Facing China

Despite momentum, China's AI ascent faces skepticism. However, significant constraints impede its ascent, particularly concerning international trust and data governance. The global reception of DeepSeek exemplifies the inherent challenges in proliferating such advanced AI technologies across diverse political and regulatory landscapes. While nations strive to balance innovation with sovereignty protection, recurring controversies surrounding Chinese technology firms' data handling practices create substantial headwinds for China's AI ambitions abroad. These incidents collectively fuel skepticism and influence restrictive international policies.

ByteDance, parent company of TikTok, has faced intense scrutiny, exemplified by privacy complaints filed by advocacy group Noyb in January 2025. These complaints alleged unlawful transfers of European user data to China, intensifying longstanding debates about potential access by Chinese authorities and raising questions about the security of personal information processed by these firms (58). Domestically, the regulatory environment itself presents profound complexities, as seen in the case of DiDi. Shortly after its U.S. IPO in 2021, Chinese regulators removed DiDi's app from domestic app stores and imposed a fine of US$1.2 billion in 2022 for cybersecurity law violations (59). This incident highlights the dual pressures faced by Chinese tech firms: navigating domestic oversight while simultaneously attempting to operate internationally, a balancing act that often erodes foreign trust if not handled correctly. Furthermore, incidents like the 2020 Zhenhua Data leak exposed the collection of personal information on millions globally, including high-profile political and military figures, by the Chinese big-data harvesting company called *Shenzhen Zhenhua Data Information Technology* (60). Such activities underscore extensive data harvesting capabilities and amplify alarms regarding the potential exploitation of this data for intelligence purposes or hybrid warfare tactics (61).

These cases are not isolated anomalies but rather form a pattern that illustrates growing international apprehension about the data security frameworks governing Chinese technology enterprises. Consequently, this pattern directly shapes foreign regulatory responses and public perception, creating a significant barrier to the global adoption and trust essential for China's AI technologies, such as DeepSeek. China's AI strategy signals its determination to reshape the digital order. Yet whether it transcends its current 'sprint runner' status into sustained leadership hinges on overcoming these constraints through robust internal data governance reforms demonstrable to international partners and active engagement in establishing transparent, collaborative frameworks for cross-border data flows and AI ethics.

THE AI RACE AS A CATALYST FOR GLOBAL GEOPOLITICAL TRANSFORMATION

The Space Race Analogy in the Current AI Context

As the AI race unfolds, their competition is no longer simply bilateral. It is actively reshaping the foundations of global power with significant implications for the international order. Unlike the Space Race, the current AI rivalry permeates the foundations of economic power, military capability, and societal governance. Where the Soviet launch of Sputnik triggered existential anxiety yet permitted most nations the luxury of non-alignment, today's AI competition fractures the global landscape and accelerates the volatile transition toward multipolarity.

The Space Race unfolded within a strategically compartmentalized Cold War. The competition unfolded as a series of high-stakes, symbolic firsts. It began with the Soviet Union's launch of Sputnik 1 in 1957, the first artificial satellite to orbit Earth, which shocked the world and led to fears of Soviet dominance in space and missile technology (3). This was quickly followed by Sputnik 2, which carried the first living organism, a dog named Laika, into orbit. The U.S. responded with the

creation of NASA in 1958 and the launch of Explorer 1, its first satellite (62). The competition escalated with the Soviet Union's Yuri Gagarin becoming the first human in space in 1961, a feat that spurred President John F. Kennedy to declare the ambitious goal of landing a man on the Moon (63). This marked the beginning of the Apollo program, which culminated in the triumph of Apollo 11 in 1969, when Neil Armstrong and Buzz Aldrin became the first humans to step on the Moon (64). The race then shifted to more sustained orbital operations, a phase inaugurated by the Soviet Salyut (1971) and American Skylab (1973) space stations (65). However, despite its global psychological impact, the Space Race was largely a bilateral contest for prestige between two superpowers operating in a separate domain, rather than directly restructuring the everyday economic or political systems of nations worldwide.

Hence, the Space Race analogy remains instructive yet ultimately limited in its applicability. While both episodes reflect superpower competition through technological achievement and political supremacy, the space rivalry remained strategically compartmentalized. Nations across Africa, Asia, and Latin America, forming the Non-Aligned Movement, largely sought to remain neutral during the Space Race by avoiding alliance with either the U.S. or the USSR (66). Instead, these countries prioritized their domestic development goals, addressing economic, social, and political challenges to ensure resilient futures (67). In the end, the competition eventually culminated in a moment of cooperation with the 1975 Apollo-Soyuz Test Project, a demonstration that rivals could cooperate in circumscribed domains despite enduring ideological conflict. This mission saw an American Apollo command and service module dock with a Soviet Soyuz spacecraft. The project involved joint experiments, a period of docked operations, and concluded with a historic handshake between American astronaut Thomas Stafford and Soviet cosmonaut Alexei Leonov (68). This historical event laid the groundwork for future international partnerships in space exploration, most notably the development of the International Space Station (ISS). The Apollo-Soyuz mission demonstrated the potential for global cooperation in areas where technological advancement could be decoupled from ideological conflict, offering a model for collaboration even amidst broader geopolitical tensions.

The AI Race, by contrast, eliminates the same possibility of neutrality. As a foundational technology, AI permeates economic, military, and societal systems. It is not confined to laboratories or launch pads, but controls financial systems, healthcare diagnostics, weapons targeting, and social governance. This pervasiveness creates the 'sovereignty paradox', where nations want to assert authority over AI within their borders, yet the technology relies on global data flows, talent, and infrastructure, making true isolation impossible (69).

Consequently, the world is not simply witnessing a return to the clear-cut bipolarity of the Sputnik era, but a more complex and coercive dynamic. The emergence of DeepSeek, as a potent symbol of Chinese technological parity, has forced a global reckoning, provoking polarized reactions and compelling secondary states to make strategic choices. This reality underscores the statement made by Microsoft President Brad Smith at a U.S. Senate hearing that, 'The number one factor that will define whether the U.S. or China wins this race is whose technology is most broadly adopted in the rest of the world' (70). This framing of a binary, zero-sum contest for global adoption inherently pressures nations to choose a side. Consequently, while the broader international system may be multipolar, the AI domain is crystallizing into a new, forced bipolarity. Nations face an unavoidable choice between U.S.-led technological ecosystems and China's expanding 'digital silk road' (71). This forced alignment will accelerate a stark digital bifurcation with separate systems of AI infrastructures, research, and talent pools, which will also inevitably impact global trade through heightened tariffs, export controls, and AI-specific trade barriers. The resulting fragmentation transforms worldwide commerce and innovation, while presenting geopolitical risks that may threaten national and global security. Crucially, no state can risk existential exclusion from AI-driven economic and military capabilities. Thus, participation is mandatory, yet alignment carries profound strategic costs.

The Material Foundations of Digital Bifurcation

This digital schism has a tangible foundation in the fragmentation of the semiconductor industry. Microchips, the essential substrate of AI systems, have undergone a dramatic transformation from a globalized commodity to a geopolitical weapon. Before 2022, chip manufacturing exemplified seamless international integration. In 2021 alone, the global semiconductor industry saw a record output of 1.15 trillion individual chips with sales reaching US$555.9 billion, according to the Semiconductor Industry Association (72). This

ecosystem thrived on the cross-border flow of talent, capital, and innovation—until strategic imperatives overrode efficiency. The U.S. CHIPS and Science Act of August 2022, allocating US$52.7 billion to reshore production through research, development, manufacturing, and workforce development (73), marked a pivotal shift toward 'techno-nationalism' (74). This legislation weaponized interdependence, compelling companies like Taiwan Semiconductor Manufacturing Company (TSMC) and South Korea's Samsung to set up operations within U.S. borders (75), while October 2022 export controls severed China from advanced chipmaking tools (28). The act not only affected chip manufacturers but also semiconductor equipment manufacturers like ASML Holding (a Dutch company that produces deep ultraviolet (DUV) lithography machines) and Tokyo Electron (a Japanese manufacturer of chip-making equipment), as well as the supply of raw material for semiconductor manufacturing (including silicon, rare earth metals, and specialty chemicals) (76). The semiconductor sector thus faces severe collateral damage due to deep dependence on China's market, with leading firms exhibiting critical revenue exposure: ASML projects US$2 billion annual losses from potential DUV sales bans to China (77), while Qualcomm, Qorvo, Texas Instruments, and Broadcom each derive approximately 50% of their revenues from China (78). Consequently, this decoupling represents more than supply chain reorganization—it constitutes the physical foundation of an emerging global schism where national security takes precedence over economic rationality, forcing every semiconductor firm into a binary choice with profound revenue implications.

The New Digital Divide

This bifurcation has since catalyzed a more consequential 'digital divide' in AI ecosystems. DeepSeek's explosive emergence demonstrated how technological divergence extends beyond hardware to foundational standards, governance, and ideological frameworks. China's approach, formalized in its 2017 white paper issuance, shows its clear intention to increase its influence on international standardization. The *New Generation Artificial Intelligence Development Plan* states that 'China should have established initial AI technology standards, service systems, and industrial ecological system chains' (39), illustrating its view of standardization as a crucial element in seizing technology dominance. Conversely, the U.S. promotes market-driven standards emphasizing ethical guidelines and innovation to take the lead in development (79), yet these are complicated by corporate secrecy demands. Both nations' pursuit of their own technological and regulatory frameworks makes the two systems inherently incompatible. The resulting global landscape thus reveals a new 'digital divide', where other nations must take their stand based on geopolitical considerations. This is exemplified by the widely varying initial responses from different countries towards the emergence of DeepSeek: Australia, Canada, South Korea, and Taiwan have banned DeepSeek from government-issued devices, citing surveillance risks; the EU and Japan have issued warnings and launched investigations into DeepSeek's data handling practices; while Brazil has embraced it for cost-efficient public services (80). Hence, it is apparent how this fragmentation now compels secondary states to engage in strategic choices.

This technological rupture unfolds amid history's most significant power transition since the end of the Cold War in 1991, shaping a new techno-polar order rather than a simple return to multipolarity. The post-Cold War unipolar order, underwritten by liberal institutionalism and diplomatic cooperation, has given way to a fluid and contested landscape. America's relative economic decline in 2024, from 34% of the global GDP in 1985 to 26% (81), coincides with strategic retrenchment and disrupted traditional alliances under the Trump Administration's 'America First' approach: withdrawal from multilateral bodies like the United States Agency for International Development (USAID), aid reductions, and other changing foreign policies (82). This fluid environment gives rise to widespread alliance anxiety, reflecting former British Prime Minister and statesman Lord Palmerston's dictum that nations have "no eternal allies (or) perpetual enemies", only "eternal and perpetual interests" (83).

The central challenge of this new order is managing the unavoidable interdependence created by AI's pervasive nature. Unlike the Space Race's détente, AI's embeddedness in critical infrastructure makes a clean separation impossible, yet total integration across competing blocs is also unviable. The critical unknown is whether this new, technology-driven bipolarity can be managed. The success of intermediary powers in forging third-way frameworks, and the ability of the U.S. and China to establish guardrails for competition, will be the decisive factor in determining whether this techno-polar transition results in a stable,

managed competition or devolves into unconstrained fragmentation and whether Lord Palmerston's realism ultimately finds grim validation.

SECURING ALLIED COOPERATION: THE MAKE-OR-BREAK FACTOR IN U.S. AI DOMINANCE

The fracturing geopolitical landscape examined in Section 5 necessitates a strategic recalibration centered on allied cooperation. For the U.S. to prevail in the artificial intelligence race, it must recognize that technological supremacy in the 21st century is a collective endeavor, not a unilateral pursuit. Unlike the Space Race, where America could marshal domestic resources, AI supremacy depends on a globally distributed supply chain and governance framework that no single nation controls. The DeepSeek disruption demonstrated that America's innovation ecosystem depends critically on international partnerships controlling indispensable chokepoints in semiconductors, talent, and standards-setting. Recent transactional policies have eroded the trust required to secure these assets, threatening to isolate the U.S. precisely when collective technological resilience is paramount.

The Alliance Trust Deficit

Strategic trust is the foundation of effective technological cooperation, yet it has been strained by policies that allies perceive as unilateral. This trust deficit directly undermines two pillars of U.S. AI strategy: secure supply chains and multilateral governance.

The imposition of tariffs on key technological partners—including 24% on Japan, 32% on Taiwan, and 20% on the EU— triggered immediate diplomatic backlash and retaliatory measures (84). Japanese Prime Minister Shigeru Ishiba condemned the tariffs as 'deeply disappointing,' particularly given Japan's direct urge for exemption and its status as the largest foreign investor in the U.S. (85). Similarly, former Canadian Prime Minister Justin Trudeau imposed countermeasures on US$30 billion of U.S. imports, a significant escalation against a nation that is Canada's top trading partner (86). These responses exemplify how the tariffs actively damaged relationships with core strategic partners during a period of heightened geopolitical fragility. Such actions create a critical vulnerability: allies like Japan (Tokyo Electron), Taiwan (TSMC), and the Netherlands (ASML) control irreplaceable nodes in the semiconductor supply chain. When the U.S. employs punitive trade measures against these partners, it risks their non-compliance with the export controls and supply chain alignment crucial for containing China's technological advancement.

Furthermore, broader geopolitical uncertainties—such as expressed doubts about NATO commitments—compound this deficit (87-89). This erosion of trust jeopardizes the multilateral AI governance frameworks and standardization efforts essential for creating a cohesive techno-democratic bloc. Without synchronized restrictions and shared standards, U.S. efforts to build a united front against China's state-directed model become inherently porous.

The TSMC Case

The U.S. approach to TSMC exemplifies the tension between the goal of supply chain resilience and a counterproductive methodology. While reshoring advanced semiconductor production is a legitimate security objective, a coercive strategy carries significant costs for both the partner and the broader alliance structure.

Threatening TSMC —a company constituting 15% of Taiwan's GDP and central to its 'silicon shield' deterrent (90)—with 100% tariffs to force relocation to the U.S. disregards the partner's existential vulnerabilities (77). This tactic weakens Taiwan's economic sovereignty and paradoxically fuels Beijing's reunification rhetoric, a perilous trade-off. Moreover, penalizing TSMC for a chip that ended up in a Huawei processor (91), despite its massive investments (worth an additional US$100 billion) in U.S. fabs (92), signals a partnership based on punitive compliance rather than mutual benefit.

While the U.S. promotes semiconductor reshoring to bolster domestic supply chain resilience and AI sovereignty, this policy undermines the interests of ostensibly aligned partners, exposing fundamental contradictions in its 'friendshoring' framework. First articulated by Treasury Secretary Janet Yellen, friendshoring aims to deepen economic integration with 'trusted' nations to prevent geopolitical coercion and build resilient supply chains (93). A punitive approach forces partners like TSMC to navigate irreconcilable pressures: serving U.S. technological demands while bearing the costs of its protectionism. This dynamic jeopardizes the long-term, reliable access to advanced chips that U.S. AI dominance requires.

The Collective Advantage Imperative

Rectifying this strategic misstep demands a shift from transactional coercion to predictable partnership. The U.S. possesses undeniable advantages, from Silicon Valley's innovation ecosystem to premier academic institutions, but these are insufficient without the willing cooperation of allies on export controls, talent retention, and technical standardization.

A trust-based architecture would reimagine reshoring as mutual capability-building. Instead of forcing relocation through tariffs, the U.S. could co-invest in secure, diversified semiconductor production across allied nations, strengthening the entire bloc's resilience. Similarly, establishing multilateral AI governance frameworks and standards with allies would create a cohesive alternative to China's state-directed model.

The collective advantage of a techno-alliance is America's most powerful asset. Only by rebuilding trust can the U.S. mobilize the full spectrum of allied resources and collective power required to out-innovate China while avoiding self-inflicted isolation in the defining technological competition of the century.

CONCLUSION

Summary of Key Findings

This paper has argued that the emergence of DeepSeek constitutes a contemporary 'Sputnik moment,' catalyzing a geopolitical recalibration whose stakes surpass those of the Space Race. Both technological breakthroughs shattered assumptions of American superiority, serving as potent symbols of a rival's innovative capacity and catalyzing an immediate and massive surge in strategic investment and policy focus. The analysis reveals several critical findings:

First, the U.S. technological strategy exhibits vulnerabilities. The American paradigm of achieving dominance through massive capital expenditure and computational scale has been challenged by China's demonstration of algorithmic efficiency and modular innovation. DeepSeek exposed the fallacy that AI leadership is solely a function of resource intensity, revealing strategic over-reliance on a 'more is better' approach that may be economically and technologically unsustainable. While the U.S. strives to maintain its technological edge against China through economic control, talent restrictions, and limiting China's global influence, DeepSeek has revealed strategic vulnerabilities that challenge America's perceived supremacy.

Second, China enters this competition with structural advantages the Soviet Union never possessed, yet it remains constrained by internal and external challenges. Unlike the USSR's brittle, isolated economy, China is fully integrated into global supply chains, dominates high-value manufacturing sectors, and wields substantial economic influence, its challenge more multidimensional and sustainable than the Soviet threat. However, its ambition to leverage AI for domestic stability, government confidence, and enhanced geopolitical influence is hindered by a deficit of international trust and data governance issues. While positioned to endure a long-term technological competition, these constraints complicate its path to unambiguous global AI leadership.

Third, the AI race is fundamentally restructuring the international system. Unlike the strategically compartmentalized Space Race, AI's pervasive nature as a foundational technology eliminates the possibility of neutrality, forcing a digital bifurcation. While the broader international system remains multipolar, the AI domain is coalescing around a binary choice between competing technological ecosystems. This dynamic pressures secondary states into strategic alignment, making the management of alliance networks and technological spheres of influence the central geopolitical challenge of the AI era.

Finally, this new landscape makes alliance trust the make-or-break factor in U.S. AI strategy. While recent transactional policies—including punitive tariffs on technological partners and coercive approaches to semiconductor reshoring—have eroded the strategic trust necessary to maintain cohesive export controls, supply chain security, and technical standardization, the U.S. retains a powerful advantage in its network of allies. Rebuilding these partnerships is essential to mobilizing the collective strength needed to sustain AI leadership.

Limitations and Analytical Boundaries

While the Sputnik-DeepSeek analogy provides a powerful framework, several limitations warrant acknowledgment. Most significantly, the context of global economic integration differs fundamentally. The Space Race occurred between two largely separate economic spheres, whereas today's AI competition unfolds within deeply interconnected global markets where U.S. and Chinese technologies often remain interdependent despite strategic decoupling efforts.

Additionally, the nature of technological development

has transformed. The Space Race was predominantly state directed, while contemporary AI innovation is significantly driven by private corporations operating in a globalized research ecosystem. This diffusion of technological agency complicates state-level competition and creates cross-cutting interests that did not characterize the bipolar Cold War rivalry.

Furthermore, while Sputnik was primarily a symbolic achievement demonstrating military-technological parity, DeepSeek carries both symbolic weight and immediate economic consequences. The $1 trillion single-day market reaction to DeepSeek's release illustrates how AI breakthroughs directly impact economic security and global capital flows in ways space achievements did not.

Despite these limitations, the analogy retains its analytical utility. DeepSeek was immediately framed in geopolitical terms as a 'Chinese' achievement rather than merely a corporate one, and the international response consistently reflected assessments of national technological capability rather than private sector innovation. The psychological impact on policymakers and the structural dynamics of technological competition remains sufficiently parallel to make the comparison instructive, provided these contextual differences are explicitly acknowledged.

Directions for Future Research and Concluding Thoughts

This analysis suggests several promising avenues for future research. First, comparative AI governance models warrant deeper examination—how different nations are balancing innovation with regulation, and what hybrid approaches might emerge. Second, the dynamics of multipolar negotiation frameworks in technology standards-setting deserve attention, particularly how middle powers like the EU, India, and Japan navigate U.S.-China technological competition. Finally, the economic statecraft of AI competition requires systematic study, including the effectiveness of various instruments from export controls to talent policies.

The path forward demands recognizing that AI supremacy cannot be achieved unilaterally. Historical parallels offer instructive lessons for transcending rivalry. The Apollo-Soyuz mission of 1975 emerged from mutual exhaustion with the arms race: both nations strained under the financial burden of the arms race, domestic economic pressures, and a global push for détente. Similarly, today, both the U.S. and China face mounting internal challenges: the U.S. grapples with unsustainable debt, inflation, and political polarization, while China contends with a demographic crisis, a real estate collapse, and soaring local government debt. The enormous costs of AI development, from semiconductor self-sufficiency to large-scale model training, could force a recalibration from zero-sum competition toward managed coexistence.

By drawing historical lessons from the Apollo-Soyuz détente, this creates space for what might be termed 'competitive collaboration' or 'co-opetition.' The international community, particularly regulatory powers like the EU, can play a pivotal role in fostering this transition by creating neutral platforms for dialogue and establishing global standards (94). AI's potential to address transnational challenges, such as climate modeling, pandemic prediction, and food security, offers compelling incentives for cooperation. Just as the International Space Station became a symbol of post-Cold War scientific collaboration, joint AI initiatives on shared global challenges could mitigate tensions while advancing innovation. Moreover, the inherently borderless nature of AI risks, from algorithmic bias to autonomous weapons, demands coordinated governance. Initiatives investigating 'co-opetition' frameworks, where competitors collaborate on safety protocols while competing commercially, provide models for managed rivalry (95). This approach could foster a more cooperative future for AI development, enabling the technology to deliver the wide-ranging benefits it promises.

The future of AI in international relations is unlikely to resemble either a full Cold War rivalry or unbridled collaboration; rather, it is poised to be an uneasy hybrid. Short-term competition is inevitable, as both nations vie for economic advantage and military superiority. However, long-term stability will demand guarded cooperation on norms, safety, and global challenges. The alternative—a fragmented world where AI systems reflect incompatible values, escalate conflicts, or operate beyond any governance—benefits no one.

The greatest lesson from Sputnik may not be about competition itself, but about the unexpected cooperation that can emerge when adversaries recognize their shared stakes. Just as the space race ultimately expanded humanity's horizons through collaborative projects, the AI race must be steered toward outcomes that harness its potential while mitigating its perils. The future of AI—and, by extension, global stability—will be determined not merely by technological breakthroughs but by

the wisdom to govern them through a combination of competitive vigor and diplomatic foresight. The choice is not merely between 'winning' and 'losing,' but between a divided future and one where rivals, however reluctantly, agree on the rules of engagement for this transformative technology.

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CONFLICT OF INTERESTS

The author declares that there is no conflict of interests related to this work.

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