



STUDENT SCHOLARSHIP RELEASE FORM

Please convert your product to PDF, complete this form, and insert it as the cover sheet of your product before submitting it for grading.

LAST NAME

FIRST NAME

McGee

Kerin

COLLEGE (check one): College of Information and Cyberspace

Graduation Month & Year
(e.g., June 2017)

College of International Security Affairs

June 2024

Eisenhower School

Joint Forces Staff College

National War College

Choose one statement below concerning access to your document:

Option A: Access Restricted to NDU Users – The product will be archived and discoverable in the Library's digital archives. All current NDU faculty, staff, and students will have access to the product but it will not be open and available to the general public. Access is controlled by NDU IP ranges which restricts access to authorized users on campus, connecting through VPN, or via Blackboard. External dissemination is unauthorized without permission from the appropriate college and DoD security reviews.

Option B: Access by Request Only – The product will be archived and discoverable in the Library's digital archives. However, only select members of the Library staff will have access to the student product. All NDU and external users must contact the Library and formally request access. The Library will vet each request with the academic dean at the appropriate college. Written permission must be obtained before access will be granted. External dissemination is unauthorized without permission from the appropriate college and DoD security reviews.

Option C: Request Exemption – NDU Instruction 5015.02 (Student Scholarship Preservation and Access) includes an addendum to address the possibility that students might produce research products that may be considered sensitive and possibly provoke retribution if released. In these rare cases, students may submit a written request for an exception to releasing their product through their faculty or research director, Dean, and then to the Deputy Provost. Students choosing this option must write a justification and insert it as a separate page after this form before submitting the paper. Justifications must describe perceived harm if the product was released. If the request is approved, the paper will not be released or archived. If the request is disapproved, students must choose Option A or B and resubmit.

Student Signature

Date (mm/dd/yyyy)

03/04/2024

REPORT DOCUMENTATION PAGE

*Form Approved
OMB No. 0704-0188*

The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.

1. REPORT DATE (DD-MM-YYYY) 05-02-2024		2. REPORT TYPE Individual Student Research Project		3. DATES COVERED (From - To) July 2023 - February 2024	
4. TITLE AND SUBTITLE Essential Futures Synergy: Private Actors & Joint Functions				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Ms. Kerin McGee, Civilian Joint Staff, J-7				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Joint Advanced Warfighting School Joint Forces Staff College 7800 Hampton Blvd. Norfolk, VA 23511-1702				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.					
13. SUPPLEMENTARY NOTES This paper is submitted in partial satisfaction of the requirements of the Joint Advanced Warfighting School. The contents of this paper reflect my own personal views and are not necessarily endorsed by the Joint Staff or Department of Defense.					
14. ABSTRACT As major corporations have increased their global reach, several have demonstrated the capability to affect decisions and outcomes like nation-states. Within the Department of Defense, joint concept development is traditionally anchored in a future operating environment assessment that focuses primarily on the ways in which armed adversaries will shape the future joint operating environment. The goal of this paper is to examine the role that these types of significant transnational actors should have in future joint operating environment studies and joint concepts.					
15. SUBJECT TERMS Joint Concepts, Futures, Foresight, Future Operating Environment, Joint Operating Environment, Private Actors, Joint Functions					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES 56	19a. NAME OF RESPONSIBLE PERSON Ms. Kerin McGee
a. REPORT U	b. ABSTRACT U	c. THIS PAGE U			19b. TELEPHONE NUMBER (Include area code) 757-203-6316

NATIONAL DEFENSE UNIVERSITY
JOINT FORCES STAFF COLLEGE
JOINT ADVANCED WARFIGHTING SCHOOL



**Essential Futures Synergy:
Private Actors & Joint Functions in the Joint Operating Environment**

By:

Kerin A. McGee

Civilian, Joint Staff J-7

This work cannot be used for commercial purposes without the express written consent of the
author.

Page Intentionally Left Blank

**Essential Futures Synergy:
Private Actors & Joint Functions in the Joint Operating Environment**

by Kerin A. McGee

Civilian, Joint Staff J-7

A paper submitted to the Faculty of the Joint Advanced Warfighting School in partial satisfaction of the requirements of a Master of Science Degree in Joint Campaign Planning Strategy. The contents of this paper reflect my own views and are not necessarily endorsed by the Joint Forces Staff College or Department of Defense.

This paper is entirely my own work except as documented in footnotes (or appropriate statement per the Academic Integrity Policy).

Student: MCGEE.KERIN.ABEB
Signature: i.1296750294

Digitally signed by
MCGEE.KERIN.ABEBI.1296750294
Date: 2024.02.29 16:48:32 -05'00'

5 February 2024

Thesis Advisor: BELLOCCHI.LUKE.PETER.1
Signature: 409226953

Digitally signed by
BELLOCCHI.LUKE.PETER.1409226953
Date: 2024.03.01 11:06:10 -05'00'

**Luke Bellocchi, JD
Professor**

Signature: FOWLER.ERIC.STE PHEN.1065030663

Digitally signed by
FOWLER.ERIC.STEPHEN.106503066
3
Date: 2024.03.01 12:41:43 -05'00'

**Eric Fowler, COL, US Army
Director, Joint Advanced Warfighting
School**

Page Intentionally Left Blank

Abstract

As major corporations have increased their global reach, several have demonstrated the capability to affect decisions and outcomes like nation-states. Within the Department of Defense, joint concept development is traditionally anchored in a future operating environment assessment that focuses primarily on the ways in which armed adversaries will shape the future joint operating environment. The goal of this paper is to examine the role that these types of significant transnational actors should have in future joint concepts.

To address this question, this research uses a case study approach focused on Huawei, SpaceX, and Wagner PMC. These corporations each have varying degrees of connection to their respective national governments but can also function act as traditional businesses. They also impact the operating environment in ways like states: Huawei has access to massive amounts of data, SpaceX is dominant in commercial space satellite technology, and Wagner PMC is a capable military force.

Using contemporary political theory as a reference, private actors –capable of shaping outcomes and/or controlling resources—are included in the constructivist framework of international relations. For joint concept development, the key implication of this paper’s analysis is that these select types of private actors – those possessing state-like abilities—should be included in the earliest phase of joint concept development (the assessment of the future operating environment). This paper recommends using the seven joint functions as a reference in analyzing a transnational actor’s impact on the joint force’s future ways of warfare.

Though previous joint operating studies discussed other non-adversarial actors, analysis of key private actors will provide a means for follow-on joint concept development to address the range of future operational challenges for the joint force.

Page Intentionally Left Blank

Dedication

For the futurists across the Department of Defense enterprise. In a complex and interconnected world, amid black swans, pink flamingos, and grey rhinos, their knowledge, imagination, and foresight are the foundation for the joint force's long-term success.

Page Intentionally Left Blank

Acknowledgments

This paper would have been impossible without the knowledge and assistance of Mr. Jeffrey Becker, whose experience in futures enabled my understanding of this complex topic. In addition, I am grateful for the many office conversations I had with Mr. Justin Fauntleroy, which ultimately sparked my interest in SpaceX. I would also like to thank Ms. Jennifer Laski and Professor Luke Bellocchi, whose insightful feedback, and recommendations, from the outset of this process, were critical as I refined my topic and developed this paper. I also very much appreciate my children for their patience over many weekends.

Table of Contents

<i>Figures</i>	<i>xi</i>
<i>Chapter 1: Introduction</i>	<i>1</i>
Joint Futures Inform Joint Concepts	2
Transnational Actors Defined	4
Relevance and Risks	5
<i>Chapter 2: The Case Studies</i>	<i>6</i>
SpaceX.....	6
Huawei	8
The Wagner Group (Wagner PMC)	12
<i>Chapter 3: Theory and Strategic Guidance</i>	<i>15</i>
International Relations Theory	15
Strategic Guidance and Instruction	16
<i>Chapter 4: Synthesis</i>	<i>19</i>
The Future Operating Environment: Private Actors and Joint Force Challenges	19
Additional Considerations	22
Beyond JOE 2035: Transnational Actors and Joint Force Challenges	25
<i>Chapter 5: Recommendation: Transnational Actor Analysis in the JOE</i>	<i>27</i>
<i>Chapter 6: Conclusion</i>	<i>31</i>
Alternative Perspectives	32
<i>Bibliography</i>	<i>35</i>

Page Intentionally Left Blank

Figures

Figure 1. Areas of Wagner Group Operations as of August 2023. 14

Figure 2. Notional Assessment of Huawei, SpaceX, and Wagner PMC impacts on joint functions..... 20

Page Intentionally Left Blank

Chapter 1: Introduction

President Biden has referred to the 2020s as the “decisive decade,” stating that this period is critical to the future of climate change, geopolitics, technology, and other areas.¹ His framing of the U.S. contemporary challenges is captured in the 2022 National Defense Strategy (NDS), which singles out the U.S.’s two nearest competitors, China and Russia, as “pacing” and “acute” threats, respectively.² The president is concerned about power wielded by states over the next 10+ years, as well as technological advancements. However, the growth of private transnational actors is also poised to be a hallmark of this decade. As former Chairman of the Joint Chiefs of Staff, GEN Mark Milley stated, the character of warfare is changing.³ Because of the rapid changes to the character of contemporary, and likely future conflict, the joint force must ensure its concepts account for major influential non-state actors in the future battlespace.

Private transnational actors like Huawei, SpaceX, and Wagner PMC wield state-like capabilities, from controlling data, space assets, and projecting and sustaining military force. Because these capabilities shape the joint operating environment—and the joint functions—these transnational actors need to be incorporated in Joint Futures Studies to inform Joint Concept Development. Expanding Joint Futures Studies to incorporate major influential non-state actors will enable subsequent joint concepts to effectively address the operational challenges posed by these transitional actors.

Private companies in the contemporary context can operate nimbly and globally. This paper refers to the largest such enterprises (those with a dominant, global, and/or regional footprint) as transnational actors. Companies such as SpaceX, Huawei, and The Wagner Group, operate far beyond the states in which they are headquartered, and have had a direct impact on the joint operating environment. The key challenge for joint concept development is that these

private actors are neither traditional states nor non-state actors (e.g., violent extremist organizations).

Joint Futures Inform Joint Concepts

Aligned with the President’s vision, national, defense, and military strategies, Joint Concepts enable the joint force to prepare for future challenges and exploit opportunities.⁴ Joint Concept development begins with a comprehensive understanding of trends and conditions impacting the future military security environment that pose challenges for the joint force.⁵

The Joint Staff develops in-depth Joint Futures Studies that incorporate material and subject matter expertise from a variety of sources including intelligence, academia, think tanks, and research institutes, to assess the ways in which the future operating environment—composed of technological advancements, adversary capabilities, and other trends— will challenge the future joint force.⁶ These products also identify where future joint force may gain operational advantage; futures studies, most significantly the Joint Operating Environment (JOE) report, provide the foundation for concept development.⁷

In the contemporary context, it is important to note that some of the actors behind the technology and trends studied in joint futures assessments are private actors.⁸ A thorough understanding of the operating environment is critical to joint concept development.⁹ This is particularly the case with future joint concepts that focus on developments in the joint force development (2-7 years) and joint force design (5-15 years) timeframes.¹⁰ Such concepts are grounded in future joint operating environment studies that identify the likely elements, trends and developments that can affect the future joint force.¹¹ Future joint operating environment studies focus on key adversaries, their goals and capability developments, technological advances, and global issues (e.g., climate change impacts). These futures studies prepare the

future joint force to deter/deny adversaries, working with allies and partners, and support joint capability development.¹²

At present, in the present-day key transnational actors have become major factors in global events and have directly affected key U.S. foreign policy interests. If the future operating environment includes a major transnational actor capable of influencing a state's decisions, should they be accounted for in the future OE? Using China as an example, the US joint force will work with allies and partners to deter potential conflict.¹³ If a transnational actor is successful in shaping decisions of a US partner, the expected operational approach—anchored in future OE studies—could be at risk.

This paper provides a critical analysis of the activities, cross-regional and global impact of transnational actors, and identifies implications for the joint force. As their global reach and/or dominance is projected to continue growing, should major private, transnational actors be directly accounted for in the future operating environment for concept development?

If the thesis for this research is accurate, joint futures studies must devote additional analytic rigor to private actors' ability to shape the operating environment in key scenarios. As a result, futures studies would include transnational actors' abilities to affect the operating environment, potentially including allies and partners. State actors are integrated into the international system, which can reduce the prospect of war among them.

By contrast, Huawei, Wagner PMC, and SpaceX companies are private, and therefore less constrained by rules and norms that traditionally limit statecraft. Though these companies are private, Huawei and Wagner PMC are linked to their respective national governments; they can act as an extension of the state's national goals. As the joint force continues working with allies and partners—whose decisionmaking could be coerced by access to key resources (e.g.,

communications and natural resources)—a deeper understanding of transnational actors’ impacts on the joint operating environment would be critical to providing joint concept developers a broad understanding of dynamics shaping the future.

This topic addresses the specific question of whether the future OE portion of concept development processes should include private transnational actors. Accordingly, this paper begins with three case studies on major transnational actors (Huawei, SpaceX, and Wagner PMC), in Chapter 2. Chapter 3 applies these case studies into an international relations framework, to highlight how these actors function among state actors, noting their similarities and differences. This chapter is key in the assessment of the relevance of these private actors to the future operating environment and highlights the operational relevance of futures studies identified by strategic guidance. Chapter 4 synthesizes the impact of these three companies in the operating environment, with their alignment to international relations theory, to refine their relevance to joint concept development. Chapter 5 is a notional joint operating environment analysis of the joint force operational challenges posed by the three actors addressed in the case studies. The paper concludes a discussion of the implications of this thesis for future joint futures studies, identifying a framework for determining the inclusion of influential transnational actors and a means to assess their impact on the operating environment.

Transnational Actors Defined

For this paper, “transnational actors” are private companies with either a global presence and major stake in a particular sector; or an ability to directly engage in external military operations.¹⁴ In the contemporary context, SpaceX, Huawei, and Wagner Group all can act beyond their borders and directly impact security issues of high importance to the U.S. These actors either behave like states due to their power over a key resource (e.g., data), or their wide operating areas, or ability to shape the joint operating environment (like state and violent non-

state actors). Moreover, though two of these transnational actors have links to their home state governments, they concurrently function as private, for-profit enterprises.

Relevance and Risks

Overall, the risks these transnational actors pose to the future joint force are multifaceted; yet these actors can increase the fog and friction in future battlespaces. A capricious CEO may make a business decision, which could hamper US diplomatic or military efforts in an ongoing conflict. Huawei’s “Safe Cities” surveillance systems can extend China’s intelligence collection, in allied and partner nations, unfettered by sanctions. Though Wagner Group’s leader is now deceased, Russia has other PMCs, and the group may ultimately spawn imitators. As a result, the future joint force, along with allies and partners, may find a battlefield complicated by an armed transnational actor. These risks are examined in greater detail, based on historical examples, in the case studies.

Additionally, the future joint force will team with allied and partner nations to deter and/or defeat adversaries. If regional partners could be coerced out of assisting the US—perhaps out of concern they would lose a vital communications or data resource—then the future joint force’s operational effectiveness, shaped by joint warfighting concepts, would be limited. The analysis in this paper provides an opportunity to examine the impact transnationals have on the OE, enabling insights into future joint—and combined—force’s way of warfare.

Chapter 2: The Case Studies

SpaceX

SpaceX has leveraged its reusable rockets and vast satellite network to become the dominant player in the global commercial satellite industry. The power it has amassed in space capabilities has also allowed SpaceX to compete in a critical domain, previously the purview of state actors. This company figures immensely in the operating environment, given its unique technological advances. Since 2019, SpaceX has used its reusable rockets to send thousands of satellites into orbit.¹⁵ SpaceX partners with smaller companies to launch their satellites into low earth orbit (LEO), at a relatively low cost. SpaceX's Starlink network is composed of more than 4,500 satellites used for providing high-speed internet nearly anywhere on Earth.¹⁶

SpaceX's capability is unmatched by any government or competing private business. In 2022, Ukraine sought out Starlink after its key nodes were disabled by Russia; however, in September 2022, SpaceX CEO (Elon Musk) truncated the Starlink capability available to Ukraine over concerns about its use for targeting.¹⁷ Though Musk, is viewed as erratic, this incident highlights the impact of this transnational actor: able to act as a third party in an ongoing war, providing critical support, yet concurrently mindful of business interests.¹⁸

In the wake of SpaceX's successful development of reusable rockets, it was poised to dominate the commercial satellite industry. The space domain may be the most critical domain of future warfare, hence the establishment of US Space Force and USSPACECOM. Concurrently, SpaceX's technological edge, combined with its large, growing footprint in space illustrates the extent to which access to this resource is privately held, and the ability of this company to shape a war.

Starlink's satellites provide a means for anyone to access the internet nearly anywhere on the globe – for a fee. To accomplish this feat, SpaceX launched thousands of satellites into orbit.

From 2019 – 2023, Starlink has launched a total of 4,519 satellites; the United Nations Office for Outer Space Affairs stated that a total of 8,261 satellites were orbiting earth as of December 31, 2022.¹⁹ Starlink’s satellites comprise more than half of the total number of satellites currently in orbit, launches continue, and the company aims place up to 42,000 more in orbit.²⁰ SpaceX’s capability to launch so many satellites at a reasonable cost, and its robust Starlink technology, is unmatched by any commercial competitor or government.²¹

This company became involved in the Russia-Ukraine War two days after the war began and provided Starlink terminals to Ukraine on February 28, 2022. The Armed Forces of Ukraine used the Starlink satellite systems throughout the front lines, including for targeting data.²² Starting in April 2023, the U.S. facilitated delivery of additional Starlink terminals to Ukraine, and the company initially waived its monthly fees. To date, Ukraine has approximately 25,000 Starlink terminals. This arrangement illustrates an example of a private company directly enabling military operations for free to a state engaged in war: Ukraine. This support was vital to Ukraine, as Russian strikes had severely diminished the country’s infrastructure. However, such an arrangement was extremely vulnerable; unlike an allied government, whose enduring support is generally reliable, Ukraine was dependent on a private company led by an unconventional CEO: Musk.

In September 2022, SpaceX—under Musk’s direction—refused Ukraine’s use of Starlink to launch a surprise attack on Russian forces in Crimea.²³ One month later, SpaceX was suspected of disconnecting 1,300 Starlink terminals in Ukraine, again following Musk’s instructions.²⁴ Ultimately, following the Pentagon’s engagement with Musk, and additional funding for some Starlink systems provided by US allies & partners, the CEO opted to continue providing the service to Ukraine for free.²⁵ Nonetheless, in February 2023, SpaceX prevented Ukraine from

using Starlink to control drones.²⁶ The company's president stated that SpaceX intended Starlink to be used for defensive purposes and communications by Ukraine in the war, and not for what it judges to be offensive operations.²⁷

SpaceX's domination in satellites and near-global satellite internet access gave it significant power over Ukraine amid its war for survival. Whether due to Musk's personal philosophy on the use of Starlink for a lethal attack, or perhaps his business acumen and desire to avoid alienating potential customers (e.g., China, Russia), his decision was critical to Ukraine's battlefield success or failure. Though SpaceX has since developed another program—Starshield—for government customers, the fact remains that this company has no peers. Given SpaceX's massive lead in the space industry, it can develop policies and practices in the space domain to which (eventual) competitors and governments would be subjected. This is the essence of SpaceX's "market authority."²⁸ Its dominance in the commercial satellite industry may pave the way for SpaceX's determination of standards that would be recognized by others – including state governments.²⁹

SpaceX's ability to control a system on which countries, and individuals, rely could add vulnerabilities in operations in which the future joint force is partnered or allied with another nation; as SpaceX now has a precedent of becoming a third party, and having a "vote" during a war. Recognizing this circumstance, however, provides U.S. national strategists an opportunity to identify ways in which the US can compete, to reduce the risk of SpaceX's whims jeopardizing US military interests.

Huawei

Huawei's position as a major provider of global 5G networks and telecommunications infrastructure grants it the technological capacity to exploit customer data traffic for strategic

advantage. PRC's laws enable the ruling party to access this massive amount of data held by Huawei, which makes the company an indirect means for the PRC to extend its global influence.

Critical to understanding the risk Huawei poses to the U.S. are both its links to the CCP and its global reach. Huawei claims to be a privately owned enterprise but is widely assessed to be linked to the Chinese Communist Party (CCP).³⁰ The CCP has a division embedded in Huawei's headquarters, and the company itself is subject to China's National Intelligence Law.³¹ ³² Huawei is a long-time manufacturer of phone and internet equipment, dominant in 5G mobile phone networks, and developer of "Safe City" products.³³ ³⁴ Despite U.S. sanctions, Huawei's profits are in the billions, and it operates in more than 170 countries.³⁵ Huawei's Safe City products include facial recognition capabilities, social media monitoring, and other tech-enabled means of surveillance, seemingly to help states and cities reduce crime, aid law enforcement, and quickly manage domestic unrest. Safe Cities are most numerous in African and Asian countries, yet company officials continue to state that the company is not an arm of the PRC.

The areas in which Huawei operates are central to the risk the company poses to the U.S. and allies. A technology company that has access to data of over 3 billion people globally, despite bans and/or sanctions, possesses a massive resource.³⁶ Safe Cities can be used to gather intelligence; some of these cities are in areas in which the US either has an interest or has previously operated. If Huawei is indeed linked to the CCP, then it can do the bidding of Beijing as needed, while functioning in a largely undefined space as a private actor. Huawei claims that it is independent and maintains an annual revenue in the tens of billions.

Huawei is another company with global reach – in telecommunications. Unlike SpaceX, Huawei is not fully private, and is widely believed to have a direct link with the Chinese Communist Party.³⁷ As Huawei aims to continue its growth, and China seeks to further its global

presence, the interests of both the company and state are intertwined. Huawei's business gives it access to wide swaths of data, particularly its "Safe City" packages and 5G; in the contemporary context data is a major resource, which authoritarian governments use to their advantage.

Huawei's use of this data is not constrained in the way many liberal governments do, thereby providing its home government—Beijing—a significant resource if/when needed.³⁸

Huawei's "Safe Cities." Huawei's 5G and Safe City packages illustrate the power the company has amassed. Safe City packages typically include a combination of multiple technical means of surveillance (including facial recognition, and license plate scanning), and enhanced digital surveillance (including social media scanning), through monitoring cameras, social media, and other mobile phone data.³⁹ The company promotes these packages as a means for states to improve their domestic security, to decrease crime, and manage domestic unrest.⁴⁰

While sold to governments, Huawei still retains the ability to access this data; should the US or allied nations operate in an area with Safe City technology, Huawei – or the PRC—would have the ability to collect intelligence on personnel in the area. Were Safe City technology in a coastal city, Huawei would also be able to capture data on coastal activity—including ships and sailors

Huawei's Global Reach. Examining Huawei's reach across the African continent provides insights into the impact of this dominant information communications technology on the operating environment and the risks it poses. Beijing used diplomatic means to help Huawei expand into the Middle East, Southeast Asia, Latin America, and Africa during the 1990s.⁴¹ Africa's natural resources make it an ideal customer for Huawei; if a potential customer needs a loan, Chinese banks are available to the host country, and these nations have vital collateral: natural resources, or an airport (Uganda).^{42 43}

Across Africa, Huawei has partnered with ZTE (another Chinese-based company) to build approximately 70% of Africa's information technology infrastructure.⁴⁴ This includes more than 40 telecommunications networks, in more than 30 African countries. Huawei's Safe Cities are in nine African countries: Botswana, Cote D'Ivoire, Ghana, Kenya, Mauritius, Morocco, South Africa, Uganda, and Zambia.⁴⁵ In Zambia, Huawei's technicians helped the government access the social media accounts and telephones of members of an opposition party.^{46 47} The information captured by Huawei's team led to the arrest of the opposition bloggers. In Kenya, Huawei created an "integrated control and communications center," which supports approximately 9,000 police officers; however, there has not been a decline in the overall crime rate.⁴⁸

Huawei's State-like Actions. In the sense that state power is link to a nation's control of a resource over a given area, Huawei can mimic some state-like behavior. As data and information are key resources, Huawei's telecommunications business, its 5G technologies and "Safe Cities," provide the company access to massive amounts of information: communications between and among individuals, and access to web, and social media, activity. Moreover, as states conduct operations including intelligence gathering and surveillance, Huawei's "Safe City" infrastructure—with its network of urban cameras, managed by Huawei's technicians—provides this company information on individuals in each area.

Risks Posed by Huawei. Huawei's growing presence in USAFRICOM's area of operations risks the secrecy of U.S. exercises, human intelligence collection, and work with partners on the continent. USAFRICOM exercises engage both US and partner nation militaries, bringing forces directly into Safe Cities and within Huawei's 5G umbrella.⁴⁹ Safe Cities have the equipment to observe US personnel in the capital city of one of these countries. Huawei access a Safe City's

data, and provides it to the PRC if Beijing desires, thereby enabling the company to collect on US activities.⁵⁰ Additionally, Huawei's digital and technical surveillance capabilities can enable anti-democratic leadership. In Africa, Huawei has enabled corrupt democracies and authoritarian governments to politically entrench themselves.

The Wagner Group (Wagner PMC)

Wagner Group is a private military company largely sponsored by the Russian government.⁵¹ It leverages contacts, diplomatic agreements, and intelligence information provided by Moscow to engage in its primary business activity: performing state-like security functions in multiple countries.⁵² Wagner PMC can generate profit in these endeavors, as they work with multiple weak and/or authoritarian governments in exchange for revenue from that country's natural resources.

Since 2014, acting at the direction of Russian President Vladimir Putin, the Wagner Group has operated in Syria, Mali, the Central African Republic, Sudan, Libya, and Ukraine.^{53 54} The company's activities have included combat advising and assistance, base security, and intelligence gathering; Wagner PMC engages in these missions in areas were beneficial to Russian policies. As an example, in 2014, Wagner was involved in Russia's illegal annexation of Crimea. This incident highlighted Wagner's utility as a non-state, and private actor, to Russia; Moscow denied that they had conventional combatants in Crimea, while concurrently using force—Wagner—to take control of the area.

Wagner's opaque ties to Moscow provide it the means to enrich itself while skirting humanitarian laws and rules of warfare, as a private entity.⁵⁵ Unlike a state's conventional force, this private company is not subject to the same international rules of warfare and has operated in locations in which autocratic leaders have invited it.⁵⁶ Due to its link with the Kremlin, Wagner Group can advance Russia's interests and goals, while enabling Moscow to minimize its own

risk. The Wagner Group has evaded sanctions imposed by multiple countries (including the US, UK, and EU).⁵⁷ Additionally, as illustrated in Figure 1, the Wagner PMC is not a conventional military, and multiple reports of Wagner soldiers' brutality have been documented (particularly from the group's operations in Sudan).⁵⁸

Because of the blurring of its ties to the government, some experts have characterized Wagner Group as a “mechanism...for recruiting and training Russian and pro-Russian veterans...”⁵⁹ Similar to Huawei, the Wagner Group has operated in areas in which the potential for financial gain is high: through looting or setting up deals for extracting resources.⁶⁰ Because countries that have arranged for Wagner to aid with security and stability offer payment in the form of natural resource deals, the company provides a means for Russia to evade sanctions and gain additional revenue.⁶¹

As illustrated in Figure 1, Wagner Group operates where the U.S. has interests, which increases the possibility that US forces and Wagner Group will encounter each other.⁶² ⁶³As an example, in 2018, Wagner PMC forces protecting oil & gas fields on behalf of Syrian President Bashar Al Assad engaged in a short firefight with US and Syrian Defense Forces (backed by the US) on a counter-ISIS mission.⁶⁴ In Mali and Sudan, Wagner is an established presence, which enables it to counter US political and military efforts.⁶⁵

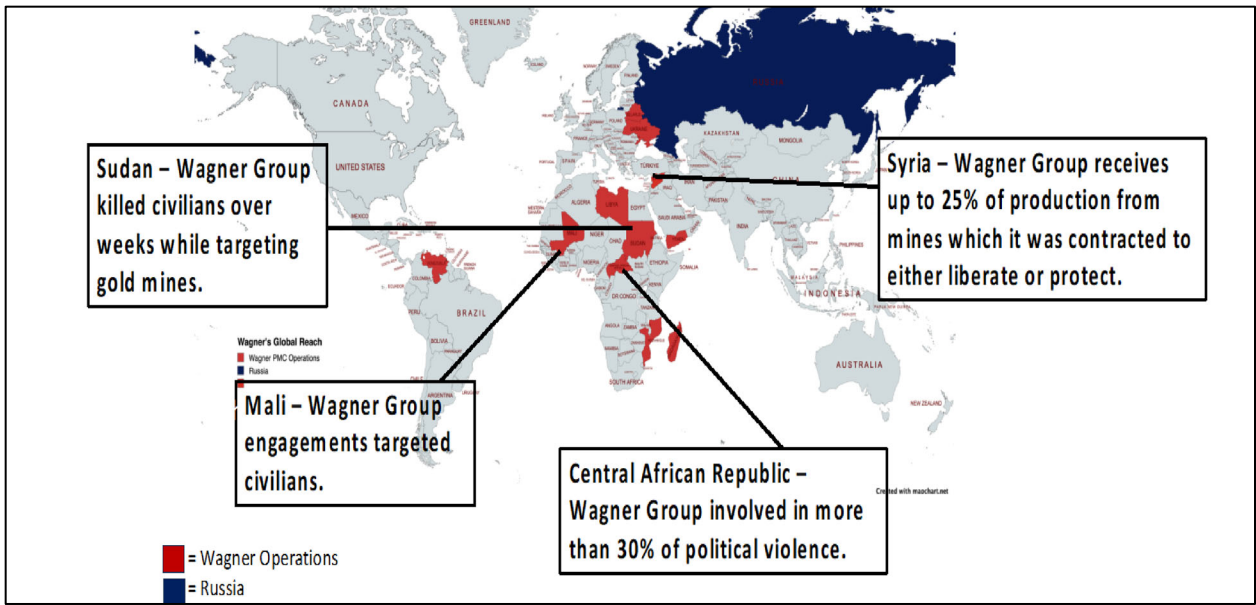


Figure 1. Areas of Wagner Group Operations as of August 2023.⁶⁶

Wagner’s ability to operate in the grey zone, as an unofficial Russian proxy that is also a private company provides an enduring means to continue intervention in authoritarian / weaker states. Additionally, as Wagner Group’s activities are primarily military and security in nature, this private actor can pose strategic and operational challenges to key joint force functions: logistics, movement and maneuver, fires, and intelligence.

Wagner’s use of force in other countries illustrates its state-like capabilities; traditionally nation states control force and tools of warfare within their borders, as it is essential in maintaining its authority. Moscow’s ties to Wagner enable its potential use as a proxy, while Wagner can simultaneously to function as a private actor.⁶⁷

Chapter 3: Theory and Strategic Guidance

International relations theory framework can aid in clarifying the central question in this paper: whether and how these transnational private actors should be included in studies of the joint future operating environment. Similarly, a study of strategic guidance on what should be covered in futures studies can clarify this question. However, neither theory nor guidance are fully directive; previous JOE studies that included transnational actors, and those that do not, are consistent with a broad interpretation of guidance and theoretical considerations.

International Relations Theory

Huawei and Wagner Group can serve as a further means for global influence—competing with the US—for their respective governments, yet are also private corporations. SpaceX dominates access to space, a domain that was previously largely accessible only by nation states. Similarly, Wagner Group’s activities have also expanded into an area typically dominated by a state, military operations.

International relations theory typically focuses on states as the center of power.⁶⁸ In particular, IR theory considers the power (e.g., economic, military) that states wield and use to achieve foreign policy goals, and international politics governing how states interact globally.⁶⁹ Additionally, the provision of security –using militaries, diplomacy, and other means—is another key role of states.⁷⁰

For these case studies, the nation state boundaries are not significant. SpaceX, Huawei, and Wagner Group exert influence and shape environments far beyond their headquartered borders. SpaceX is in the position to begin determining technical satellite requirements that any customer follows.⁷¹ Huawei is gathering massive swaths of data within states, enabling it to collect a growing resource on activities and personnel within a given state, and potentially

provide it to China.⁷² Wagner Group is also collecting information inside other countries and performs a variety of military activities in multiple states.⁷³

This analysis of the applicability of IR theory on private actors illustrates two key points. First, new ideas in IR that account for non-state actors regionally and globally, are supported by these three case studies.⁷⁴ Second, the actions of these three actors match are sufficiently duplicative of certain traditional state actors, and should be considered as legitimate forces with regional and global impact.⁷⁵

Concerning the first point, contemporary discussions on international relations note that constructivist theories, which can address transnational activities and discourse, are relevant to understanding how these types of non-state actors function in the global operating environment.⁷⁶ Additionally, constructivism provides a framework for clarity on international law, as it adjusts to older sovereignty and questions concerning employment of state power.⁷⁷ Critically, as the field of international relations has adjusted to consider private actors and their ability to leverage state-like power, the question of whether joint concepts should follow suit remains one in need of answers.⁷⁸ It is worth noting that the Chinese concept of tianxia takes a holistic view of the state, aiming for a means to exert positive influence throughout the political system, along hierarchical lines; this is a fundamentally different view from western international relations theory models, but does not offer full clarity on how a fully private actor—SpaceX, for example—should be considered in the global space.^{79 80}

Strategic Guidance and Instruction

The requirement for joint concepts is identified in U.S. statute, and National Defense Strategy, but the broad guidance leaves wide room for interpretation. 10 U.S. Code § 153 states that joint concept development will address gaps in capabilities.⁸¹ In addition, it notes that these

concepts need to be long-term, to ultimately shape force employment.⁸² The first step in concept development requires understanding the future operating environment—in which the joint force will be employed—years in the future.

The 2022 National Defense Strategy (NDS) outlines the contemporary value and applicability of futures assessment in joint concepts, noting its relevance to joint force operations. Joint concepts must ensure “...future military advantage...” for the joint force.⁸³⁸⁴ The NDS further directs the development of new operational concepts that prepare and strengthen future joint force warfighting capabilities against the PRC.⁸⁵⁸⁶

A comprehensive depiction of the future operating environment is essential in developing follow-on joint concepts that are operationally focused. Joint future OE studies must enable joint concepts that provide new or refined approaches to overcoming operational challenges. A broad, generalized futures assessment would not provide sufficient detail to achieve this goal. As the NDS notes, “[DOD] will continue to develop operational concepts that realistically expand U.S. options and constrain those of potential adversaries.”⁸⁷ Based on the NDS, joint concepts need to be based on continuously updated assessments of security issues within the operating environment.⁸⁸

The National Military Strategy (NMS) further refines the intent behind operationally focused joint concepts, as the key to enduring success lies in “strategic discipline.”⁸⁹ Specifically, military advantage is directly linked to a “...robust understanding of the strategic environment, including a deep awareness of our adversaries and ourselves, ally and partner equities, and the future character of warfare.” Accordingly, joint futures studies must describe the future operational environment and character of warfare, the impact of technological advances, and synthesize these assessments into a clear depiction of the impact on future joint

force and U.S. allies. Though this NMS theory of victory excerpt is the clearest expression of what is needed in future OE studies, it is not prescriptive and allows for a flexible interpretation.

The Chairman of the Joint Chief of Staff Instruction, “Implementing Jointing Joint Force Development and Design,” applies the Chairman’s Title 10 responsibilities in the strategic framework, but does not specify the precise content of future operating environment studies.⁹⁰ Rather, CJCSI 3030.01A explains what the joint operating environment (JOE) studies accomplish: “[establishing] a baseline understanding of the future operating environment to set conditions for effective joint concept-driven, threat-informed capability development for the Department of Defense.”⁹¹ The instruction also focuses on providing the JOE, and assessments of future trends and challenges, specifically for joint force commanders –many of whom will be at the operational level.

The implication of the lack of specificity in strategic, statutory, and implementation guidance is that the joint future operating environment studies have not only a wide subject area to cover but also considerable flexibility in what they will address. Nonetheless, there is an emphasis on providing a product that has direct relevance to how the joint force will operate in the future.

Chapter 4: Synthesis

The Joint Staff Joint Operating Environment (JOE) study is the foundation for concept development. The JOE is essential in this process as it “. . . establishes a baseline understanding of the future operating environment. . . it informs the [Joint Warfighting Concept], the [National Military Strategy], and Service concepts, providing a perspective on future trends, contexts and implications for future joint force commanders. . .”⁹² Based on this summary, though the JOE does not identify solutions for technology trends, and challenges likely posed by adversaries in the future, it does clarify the environment in which the future joint force will operate.

As the JOE examines time horizons that fall within the Force Design timeframe (approximately 5-15 years), it could focus on the nascent effects of private actors on the operating environment.⁹³ However, if technology trends and global dynamics continue to progress as they exist in the present day, these private actors—such as SpaceX, Huawei, and Wagner Group—will have a growing impact on the future joint operating environment. Though the future joint force may not directly fight SpaceX and Huawei, their dominance in space and communications could impact joint operations; the effects these companies will have on the environment could be significant, and therefore necessitate deeper analysis as future JOE studies are created.

The Future Operating Environment: Private Actors and Joint Force Challenges

Synthesizing the key takeaways from Chapter One with a joint futures approach to understanding the operating environment clarifies the challenges these actors may pose to the joint force. As the activities of SpaceX, Huawei, and Wagner PMC each affect joint operations, the following provides examples of how the joint force may be challenged by these actors. Moreover, this section illustrates how the collective actions of these three private actors in the

joint operating environment—in the context of ongoing adversarial actions by China and Russia—can challenge future joint force operations. Figure 2 illustrates a way for future JOE reports and other joint futures studies to evaluate whether a particular private and/or transnational actor should be addressed. An analysis of how each actor impacts the joint functions (C2, information, intelligence, protection, movement and maneuver, sustainment, and fires), can highlight the extent to which it will shape the future joint operating environment.⁹⁴

<u>Joint Functions</u>	<u>Huawei</u>	<u>Wagner PMC</u>	<u>SpaceX</u>
Command and Control			
Information			
Intelligence			
Fires			
Movement & Maneuver			
Protection			
Sustainment			

Figure 2. Notional Assessment of Huawei, SpaceX, and Wagner PMC impacts on joint functions. Blue denotes a direct impact to the US joint force, green indicates an impact to a potential combined force (i.e., the US and allied or partner nations), depending on the region or states involved.

SpaceX and the Space Domain. The space domain is critical in illustrating how SpaceX could become part of a future joint operating environment, particularly as the future joint force prepares to counter China (PRC). As context, it is important to note that the PRC is intent on leveraging space for military purposes, to project power, and to expand its ability to target US space assets.⁹⁵ As an example, the PRC’s anti-satellite weapons (ASAT) could ultimately pose a range of direct threats to U.S. (and allied) space assets.⁹⁶ These threats include not only non-destructive jamming attacks but also direct-ascent missiles.⁹⁷ The PRC has tested direct-ascent missiles and is working to refine its ability to execute a range of effects and attacks on U.S. or

allied space assets.⁹⁸ For the future joint force, China's ability to threaten key space assets, particularly via missiles, will be a significant challenge in future timeframes.

US, allied, and partner use of SpaceX satellites further complicates the challenges posed by China's weaponization of space. As a potential war over Taiwan remains a possibility, the PRC can target SpaceX satellites used by an allied or partner nation working as part of a combined force to prevent China's annexation of the island. SpaceX's numerous satellites provide multiple targets for the PRC.

Additionally, SpaceX's Starlink and Starshield enterprises have global high speed internet customers. In a future timeframe, it is feasible that PRC could seek to pressure SpaceX's provision of high-speed internet to a US-allied or partner nation that is reliant on the service, to hinder the combined force's operations to stop an annexation of Taiwan. (Of note, in September 2023, SpaceX CEO Elon Musk described Taiwan as essentially part of China.)

At the operational level, the key takeaway is that the joint force may be challenged by smaller allied and partner nations' reliance on SpaceX; such reliance may affect partner nation fulfillment of ABO, and/or participation as part of a combined joint force against PRC, due to the PRC's ability to risk their high-speed internet connectivity. This challenge is similar at the operational-strategic level, as illustrated by Ukraine's experience using Starlink against Russia. An allied nation's ability to fight a mutual adversary was curtailed by the whims of a private actor, SpaceX.

Huawei and Data Collection. As Huawei's global reach spreads, its 5G networks and Safe City packages may become more present in areas where the U.S. joint force operates. Safe City infrastructure enables continuous physical surveillance in each area, which is complemented by the cellular and digital data collected by Huawei's 5G networks.

Wagner PMC and Joint Operations. The U.S. joint force has already encountered Wagner PMC and exchanged fire, as noted earlier. This incident occurred in 2016 and illustrates the challenge posed by a private military company operating around US or allied forces; whereas traditional state-to-state communications may have reduced the risk of a firefight, a private actor—even one backed by Russia—may not have access to prompt communications to a higher echelon. Wagner PMC operates in the USAFRICOM area of responsibility, including states in which the US has security partner engagement programs.

Additional Considerations

Areas for further research. This paper is an initial analysis how the future joint operations can be affected by transnational private actors. However, research on private actors is complicated by the fact that gathering details on corporations is challenging, as is gaining exact insights into their links with government actors. The following is a summary of areas for additional research on each company, and its relevance to the future joint force.

Huawei. As noted at the outset of this paper, Huawei is subject to influence from Beijing, and must provide requested information as needed by the state. This information has been culled from the communication networks set up by Huawei in multiple countries, enabling the company to have a backdoor to collect cellular, internet, and physical surveillance information. Clearly this is a challenge in the present day, and if Beijing's diplomacy is successful in opening more doors to for the company, Huawei's influence will grow.

The risk Huawei poses to joint operations falls mostly at the strategic level, but also touches the operational level. As the joint force works with partners and allies, Huawei's global infrastructure enables the company to collect data on combined operations—ostensibly spying on US and partner activity. Additionally, Huawei could be used by the PRC as leverage against partnering with the joint force, as illustrated earlier in this paper.

To avoid this outcome, it is worth researching how alternatives to Huawei can be promoted and adopted. Domestically, private think tanks, research institutes, and academics worked with government representatives to prevent Huawei from gaining a 5G foothold in the United States.⁹⁹ Similar efforts were successful in other countries, as illustrated by Australia and India. Vital in ensuring the future joint force's ability to partner with other nations, and reduce PRC's intelligence collection through Huawei's Safe Cities and 5G.

SpaceX. SpaceX's lead over its competitors is very large, but it does have nascent competitors. SpaceX's competitive edge is cost; as noted earlier in this paper, SpaceX can launch satellites into orbit (LEO) at a very low cost. SpaceX's Starlink provides global high speed internet access nearly anywhere in the world. As illustrated in the Russia-Ukraine war, Starlink can make the critical difference between tactical success or failure on the battlefield, depending on whether the company opts to disable it during decisive points. Clearly, SpaceX as a global private actor capable of shaping space and the battlefield should be studied because of the risk it can pose to U.S. and/or allied and partner nation operations, the impact of global internet access on violent extremist organizations, and the implications of government reliance on a dominant firm.

As noted in an earlier section, for any actor engaged in a conflict in which SpaceX's Starlink is used, the company itself jeopardizes military operations. SpaceX has demonstrated that it will temporarily disable Starlink services if the internet it provides is enabling lethal operations.¹⁰⁰ Though SpaceX's contracts with the US, UK, and other major allies likely eliminate the possibility of the company directly hampering US operations, the Ukraine example highlights that smaller countries may remain at the whims of the company. Gaining a better understanding of how SpaceX's CEO make decisions to halt internet access when used by a

state's instruments of national power (e.g., the military) would elucidate the extent to which, or whether, a smaller allied nation's military operations could be affected by its reliance on Starlink.

Research into SpaceX's competitors would also be of value to understanding the challenges this dominant player in commercial space poses to the U.S. There are smaller competitors to SpaceX now (e.g., Blue Origin, One Web, United Launch Alliance), but SpaceX retains a substantial lead in equipment and experience.¹⁰¹ This dominance will enable SpaceX to be the main commercial leader in low-earth orbit, but competitors will begin to catch up in the years ahead. For futures analysis relevant to both the Department of Defense and the wider US government, additional research into how competition will affect SpaceX will be of value. In addition, insights into the impact of additional options for space-based high-speed global internet would be of value. These insights would inform the joint force implications of an operating environment in which smaller states and violent non-state actors have continuously operating global high-speed internet access, which may or may not be free from interruption by the unpredictable decisions of a CEO.

Wagner. In the wake of the 2023 death of Wagner's leader Yevgeny Prigozhin, there is an information gap on the company's fate. Some analysts believe that it may be subsumed or permanently supervised by the Russian military.¹⁰² Though the Wagner fighters deployed to Ukraine and Belarus were viewed as complicit in the attempted coup, contemporary discussions on the fate of Wagner note it may continue operating in Africa and the Middle East. Beyond Ukraine, Moscow may view Wagner as a viable means for Russia to exert influence and gain economic benefits (exploiting natural resources).¹⁰³

Nonetheless, an area for additional consideration and research is the global outlook for private military companies. Wagner PMC is not the only such entity, but it is notable due to its connections with Moscow, and ability to exploit the gap between nation state and private actor activities. Wagner PMC operated for nearly ten years, and despite being accused of committing war crimes and humanitarian violations, its operations were curtailed due to internal dynamics. As this mercenary-style company successfully operated for years –with the backing of a nation-state--it is plausible that another such enterprise could emerge and shape the future joint operating environment.

Beyond JOE 2035: Transnational Actors and Joint Force Challenges

Based on the NDS, NMS, and CJCS instructions, the operating environment must account for adversary ways of warfare, technological changes, and other future trends and dynamics; these were accounted for in previous joint operating environment studies, as were private entities. The 2035 JOE—written in 2016—identifies trends shaping the future OE: actions, activities, and strategies of U.S. adversaries, and private actors. However, it contained limited analysis of associated joint force challenges.

The 2035 JOE, consistent with trends evident in the present day, expands the characterization of non-state actors to include private corporations, major celebrities, and wealthy individuals.¹⁰⁴ It identifies transnational actors’ abilities to erode traditional state powers, and challenge states’ traditional monopolies on the use of force.¹⁰⁵ This is certainly the case with entities such as Wagner PMC in the contemporary context. The 2035 JOE also highlights how an adversary—presumably state or non-state—could “...leverage commercially available cell phone and networking capabilities to issue real-time propaganda through social media [to] portray the joint force in a negative manner...”¹⁰⁶

However, recent strategic documents identify a need to clarify the impact of the future operating environment on the joint force; for a CJCS futures product, such a product would focus on impacts to joint force operation. This is a unique niche to be filled, and challenging, as it requires not only an understanding of the future operating environment, but also reasonable, specific challenges the joint force will face in future operations.

Alternatives. The role of future operating environment products within the joint concept development process—studies that identify operating challenges for the future joint force—cannot be filled by other futures studies. As an example, The DNI’s Global Trends futures study from 2021 covers companies in less detail than the 2035 JOE, but identifies private actors as part of a group who can influence global events.¹⁰⁷ JOE studies further refine this broad observation into specific implications for the future joint force.

The United Kingdom’s Ministry of Defence also publishes a wide ranging, and in-depth futures study, the Global Strategic Trends report. The sixth edition identifies ways in which private corporations can exert influence over populations;¹⁰⁸ however, direct military implications and clarity on how transnational actors will impact the military’s ways of warfare at the operational level are missing from this product. Therefore, the JOE itself is positioned to account for breadth of major threats in the future operating environment, and the implications for joint force operations, to inform joint concept developers.

Chapter 5: Recommendation: Transnational Actor Analysis in the JOE

The JOE studies produced after the 2035 version neither specifically addressed transnational actors nor the implications they would have on the future joint force. As illustrated by Huawei, Wagner PMC, and SpaceX, these types of actors continue to grow in influence and global reach. Moreover, as current strategic and instructional guidance emphasizes the utility of joint concepts and futures documents for joint force operations, future JOEs that link these actors with operational implications would be of value. As this paper recommends inclusion of major transnational actors in joint operating environment studies, this section is an unclassified example of how these three companies could be addressed in a futures study.

The future operating environment for the Joint force will be complicated by advancements in technologies, adversary actions across all domains that affect US interests, and private actors expanded activities in the global operating environment. Private actors pose a key challenge to future joint operations, as they are unbound by traditional norms that curtail state behavior, and can affect multiple joint functions.

Protection, Information. Huawei, the global telecommunications company based in China, illustrates a private-state-like actor's ability to impact multiple joint functions. Huawei is in over 80 countries and has a major stake in global 5G technology, mobile phones and computers, and networked surveillance systems. As a result, Huawei has access to massive swaths of data; this resource—data—is inexhaustible, and the company aims to continue its global expansion. Moreover, as Chinese law requires that Huawei provide Beijing access to data, Huawei further enables China's overall power. As a result of Huawei's dominance in telecommunications and surveillance capabilities, even in countries with whom the US partners,

the joint force will be challenged to mitigate the risk of a private actor's collection of personnel, and operational data during future exercises and operations.

Huawei's 5G technologies, and its reach enable it to control the information environment in locations in which the joint force may be operating. When coupled with Huawei's "safe city" packages, the company can also leverage a robust surveillance network. This means the Joint Force will be challenged, particularly in urban environment particularly relevant to the information and protection joint functions.

Protection. C2 systems and personnel are vulnerable where Huawei is active. Any joint force personnel in or around a "safe city" is at risk of being under video and digital surveillance. Moreover, using Huawei's 5G networks provides the PRC a means to collect additional data and information on joint force personnel.

Information. The joint force would be challenged to operate in an area in which Huawei is present, as a company with extensive reach like Huawei can leverage its 5G capabilities and manipulation of surveillance data to shape local perceptions. If an actor, such as Huawei, is linked to a state, it provides a means for a state to further cloud and disseminate relevant messaging. In addition, the joint force would be challenged in counter-messaging within such an environment, particularly if the target population used Huawei for its internet and mobile access – given Huawei's ability to censor network content.

Fires, Movement and Maneuver. The joint force will be challenged in the movement and maneuver, and fires joint functions by private actors like Wagner PMC. As a private military company, Wagner was contracted by state governments in a variety of defensive and security missions. Though the company has been linked to Moscow, it has been able to function as a private entity globally, in areas where the US has also operated.

Fires. The joint force execution of fires will be challenged by private military companies. Unlike traditional state actors, private companies such as Wagner group, do not have established emergency lines of communication to deconflict and/or clarify miscommunications. As a result, joint force operations may occur near those of a private military company; this can lead to challenges in the joint force achieving its desired effects through fires, due to lack of communications with the private actor. Alternatively, the joint force itself may be mistakenly targeted by a private military company. Moreover, the indirect state backing of a private actor such as Wagner group, increases the risk of conflict between the US and a PMC's home country.

Movement and Maneuver. The joint force's ability to execute movement and maneuver will be challenged by private military companies. PMCs operating in the same joint operating area as the joint force could easily complicate joint targeting and maneuvering. Concerning joint sustainment and logistics, depending on the specific mission for which a state or company has engaged a PMC, a group such as Wagner could potentially impede joint sustainment functions as forces deploy to key transit nodes (e.g., ports, railways). Additionally, PMCs may complicate considerations for both joint fires and movement and maneuver if an enemy were to contract it to extend its capabilities when engaging with the U.S. joint force.

US and Multinational Partners: "Collaboration with Allies and partners will cement joint capability with the aid of multilateral exercises, codevelopment [sic] of technologies, greater intelligence and information sharing, and combined planning for shared deterrence challenges."¹⁰⁹

Considerations for Allied & Partner Warfare. The joint force's support to partner nation warfare would be challenged through reliance on one dominant satellite provider. Using SpaceX as an example, Ukraine's experience in relying on Starlink to enable communications, and

targeting illustrates the vulnerabilities a partner nation can experience in relying on a private entity like Starlink. As the joint force will work as part of a team with allies and partners, those relying on a private company are at risk of the whims of that private entity. A partner nation's C2, fires, movement, and maneuver, which rely on private satellites for communications—while also being supported by the joint force—risks failing. The implication is that the Joint Force may be brought further into a partner nation's conflict if a partner nation's reliance on satellite-enabled communications proves unreliable.

Chapter 6: Conclusion

To conclude, each of these actors have a demonstrated capability to shape present and future joint operations. Accordingly, this paper recommends that joint future operating environment studies should include major transnational actors that impact the joint functions. Incorporating transnational actors that fit with a joint functions-based assessment criteria will ensure futures analysis accounts for operating challenges posed by major private entities.

SpaceX can potentially dominate space for years, until another (likely private, not a government) competitor arises. By that point, SpaceX could easily have set standards for commercial satellites that are aligned to its corporate goals. This circumstance could be accompanied by a high degree of risk for any government that rely on SpaceX, as it has already demonstrated it can prioritize business interests over state policy goals.

Huawei, a state-linked telecom giant, maintains access to massive swaths of data on people and governments around the world. This includes information on U.S. and allied forces, including at the individual level of participants in U.S.-led exercises. Data is power in the contemporary environment, and the PRC's national intelligence laws enable it to use Huawei to obtain influence and information.

Wagner PMC, the private actor with the tightest link to a government among these case studies, has already clashed with U.S. forces in an area of important interest. During the Syrian civil war, Wagner Group was operating in Syria to protect oil and gas fields on behalf of the Assad regime, while also taking a share of the profits. Concurrently the US was in Syria to support the Syrian Democratic Forces, and fight ISIS. In 2018, US forces briefly fought Wagner Group mercenaries, illustrating the potential for a third actor to nearly bring great powers into conflict.¹¹⁰

Alternative Perspectives

Returning to the question of whether joint futures studies should address major transnational actors that are shaping the operating environment, there is a relevant alternate perspective. Overall, the joint operating environment study examines how trends and adversary developments (e.g., changes to their capabilities, expected ways of warfare) will challenge the joint force. The concepts that follow on to this understanding of the future operating environment solve these joint force challenges. However, they do not pose solutions for the forces causing changes to the future operating environment.

Accordingly, though this paper argues that major transnational actors shaping the joint operating environment should be accounted for in joint futures studies, other futurists believe that these studies should only focus on the effects of these actors – not the actors themselves. This perspective is rooted in the fact that there is nothing the Joint force can do to stop private actors' ability to shape the OE, and the most pressing concern is to prepare for their impact.

Using this line of reasoning, transnational actors that are private entities can also be viewed as an outgrowth of great power competition. This characterization of such actors enables them to be considered in joint futures studies, linked to their home states. This approach would work for Huawei and Wagner PMC, both companies with ties to their national capitals; however, it would sufficiently address SpaceX.¹

This paper articulates that the ability of these three major transnational private actors to behave similarly to nation- states and shape the operating environment (to varying degrees) necessitates their inclusion in joint futures studies. Joint futures studies examine the expected

¹ SpaceX's challenge relevant to the joint force is that it dominates low earth orbit space. SpaceX launches from US government platforms, which provides a degree of leverage over the companies. However, SpaceX would not fit into a larger characterization of "transnational actor-as great power extension."

capabilities and plans of US adversaries in the future timeframe. These companies, and their abilities to shape the future operating environment, also bear consideration. Huawei, SpaceX, and Wagner Group are unique among transnational companies because of their impact on joint operations and joint functions. If not addressed in Joint Futures studies, concept developers may have an incomplete understanding of this additional factor—private transnational corporations—on the future operating environment.

Outlook. As noted earlier in this chapter, this paper is a relatively brief analysis into a topic that can benefit from deeper dives into each company and joint force implications. Looking toward the future, key questions remain: Will governments regain their traditional position, and resume control over areas in which these companies are operating? Also, what aspects of private transnational actors are essential for joint concept writers? Lastly, additional research could address the high-level strategic challenges an actor like SpaceX may pose to US vital interests.

Regarding the first question, SpaceX and Huawei each have a large head-start, and it is difficult to imagine a state government devoting sufficient resources to out-compete these companies. Mercenary-style groups, however, are not new, and the plausible deniability they can provide likely will remain appealing to authoritarian governments. However, their activity risks bringing great powers into conflict.

Future joint operating environment studies that have focused typically on the effects of third-party actors, but not the actors themselves.¹¹¹ Depending on the private entity and where the future joint force may operate, additional consideration is warranted. For SpaceX, their satellites (and the services they provide) are customized to company specifications. Any entity contracting with them will be subject to these details. As a result, SpaceX is positioned to

determine industry standards, applicable to both state and private customers. SpaceX specifications could have ripple effects in the space industry for decades.

A near-term consideration is the impact of SpaceX's business interests on the China-Taiwan issue. As a private company, SpaceX can contract with anyone they choose. However, as noted earlier, SpaceX may be vulnerable to manipulation by China. China manufactures many Tesla parts and has already sought SpaceX CEO Elon Musk's pledge to refuse Starlink to Taiwan (if Taipei submits a request in the future).¹¹² In September 2023, Musk generated headlines after describing Taiwan as essentially part of China.¹¹³ It is unclear if this was in response to Beijing's request, but it can easily be viewed as Musk taking a direct role in a potential China-Taiwan conflict.

Bibliography

- 10 USC Ch. 5: JOINT CHIEFS OF STAFF, 10 U.S. Code § 153 §. Accessed November 3, 2023. <https://uscode.house.gov/view.xhtml?path=/prelim@title10/subtitleA/part1/chapter5&edition=prelim>.
- “AFRICOM Cleared FY24 SASC Posture Hearing 16 Mar 2023.Pdf.” Washington, DC, March 19, 2023. <https://www.armed-services.senate.gov/imo/media/doc/AFRICOM%20cleared%20FY24%20SASC%20Posture%20Hearing%2016%20Mar%202023.pdf>.
- Alex Marquardt and Sean Lyngaas. “Ukraine Suffered a Comms Outage When 1,300 SpaceX Satellite Units Went Offline over Funding Issues | CNN Politics.” News. [cnn.com](https://www.cnn.com/2022/11/04/politics/spacex-ukraine-elon-musk-starlink-internet-outage/index.html), November 7, 2022. <https://www.cnn.com/2022/11/04/politics/spacex-ukraine-elon-musk-starlink-internet-outage/index.html>.
- Arieff, Alexis, Christopher M Blanchard, Lauren Ploch Blanchard, and Andrew S Bowen. “Russia’s Wagner Group in Africa: Issues for Congress,” n.d.
- Associated Press. “Chinese Tech Giant Huawei Reports Sales, Profit up despite US Sanctions | AP News.” News. AP, August 11, 2023. <https://apnews.com/article/china-huawei-united-states-revenue-sanctions-technology-91b084f8fc42b12079411535755c99e5>.
- BBC News. “What Is Russia’s Wagner Group, and What Has Happened to Its Leader?” *BBC News*, September 23, 2022, sec. World. <https://www.bbc.com/news/world-60947877>.
- Brian Katz, et al. “Moscow’s Mercenary Wars: The Expansion of Russian Private Military Companies.” *Center for Strategic and International Studies Transnational Threats Project*, September 2020. <https://russianpmcs.csis.org>.
- Centre for Eastern Studies (OSW). “The Calm After the Storm: Russia Following Prigozhin’s Mutiny.” Report. Warsaw, POL: Centre for Eastern Studies, October 30, 2023. <https://www.osw.waw.pl/en/publikacje/osw-report/2023-10-30/calm-after-storm>.
- “CJCSI 3030.01A.Pdf.” Accessed November 21, 2023. <https://www.jcs.mil/Portals/36/Documents/Library/Instructions/CJCSI%203030.01A.pdf>.
- Committee on Foreign Affairs. “China Regional Snapshot: Sub-Saharan Africa.” Accessed August 28, 2023. <https://foreignaffairs.house.gov/china-regional-snapshot-sub-saharan-africa/>.
- Council on Foreign Relations. “Is China’s Huawei a Threat to U.S. National Security?” Accessed October 10, 2023. <https://www.cfr.org/backgrounders/chinas-huawei-threat-us-national-security>.
- Economy, Elizabeth. *The World According to China*. Cambridge ; Medford: Polity Press, 2022.
- Fauntleroy, Justin. “The Space Race May Already Be Won.” *Space News*, June 2023, 25–28.
- General Mark A. Milley, USA (ret.). “Strategic Inflection Point: The Most Historically Significant and Fundamental Change in the Character of War Is Happening Now—While the Future Is Clouded in Mist and Uncertainty.” *Joint Force Quarterly*, no. 110 (July 2023). <https://ndupress.ndu.edu/JFQ/Joint-Force-Quarterly-110/Article/article/3447159/strategic-inflection-point-the-most-historically-significant-and-fundamental-ch/https%3A%2F%2Fndupress.ndu.edu%2FMedia%2FNews%2FNews-Article-View%2FArticle%2F3447159%2Fstrategic-inflection-point-the-most-historically-significant-and-fundamental-ch%2F>.

- Hägel, Peter. *Billionaires in World Politics*. First edition. Oxford, United Kingdom: Oxford University Press, 2020.
- Hall, Rodney Bruce, and Thomas J. Biersteker, eds. *The Emergence of Private Authority in Global Governance*. Cambridge Studies in International Relations 85. Cambridge, UK ; New York: Cambridge University Press, 2002.
- Hillman, Jonathan E., and Maesea McCalpin. "Watching Huawei's 'Safe Cities,'" November 4, 2019. <https://www.csis.org/analysis/watching-huaweis-safe-cities>.
- Joint Staff. Implementing Joint Force Development and Design, CJCSI 3030.01A.pdf, CJCSI 3030.01A § (2022).
<https://www.jcs.mil/Portals/36/Documents/Library/Instructions/CJCSI%203030.01A.pdf>.
- . JP 3-0: Joint Campaigns and Operations (2022).
- Joint Staff, J-7. Guidance for Developing and Implementing Joint Concepts, CJCSI 3010.02E, CJCSI 3010.02E § (2016).
https://www.jcs.mil/Portals/36/Documents/Doctrine/concepts/cjcsi_3010_02e.pdf?ver=2018-08-01-134826-593.
- Joint Staff J-7. "Joint Operating Environment 2035: The Joint Force in a Contested and Disordered World." Joint Operating Environment. Washington, DC: Joint Staff, July 14, 2016. https://www.jcs.mil/Portals/36/Documents/Doctrine/concepts/joe_2035_july16.pdf.
- Kay, Grace. "Everything We Know about Elon Musk's Starlink Satellites and Future Internet Plans." Business Insider. Accessed August 29, 2023.
<https://www.businessinsider.com/elon-musk-starlink-satellites-internet>.
- Marketplace. "How Musk's Starlink Became a Security Liability for the U.S." Accessed October 2, 2023. <https://www.marketplace.org/shows/marketplace-tech/how-musks-starlink-became-a-security-liability-for-the-u-s/>.
- Massocco, Ilaria. "Can Chinese Firms Be Truly Private?" Big Data China, February 7, 2023.
<https://bigdatachina.csis.org/can-chinese-firms-be-truly-private/>.
- Milhaupt, Curtis J, and Wentong Zheng. "Beyond Ownership: State Capitalism and the Chinese Firm." *THE GEORGETOWN LAW JOURNAL* 103 (n.d.).
- Ministry of Defence, United Kingdom. "Global Strategic Trends: The Future Starts Today." Global Strategic Trends. United Kingdom: Ministry of Defence, 2018.
https://assets.publishing.service.gov.uk/media/62828be5e90e071f69f22596/GST_the_future_starts_today.pdf.
- Mussa, Marco, and Matvej Dubianskij. "'BLACK CAT IN A DARK ROOM': EXAMINING THE IMPACT OF RUSSIA'S WAGNER GROUP IN THE CENTRAL AFRICAN REPUBLIC AND MALI." *Journal of International Affairs* 75, no. 2 (March 1, 2023): 209–31.
- NIC, ODNI. "Office of the Director of National Intelligence - Global Trends." *Dni.gov*, 2021. www.dni.gov/index.php/gt2040-home/gt2040-media-and-downloads. Accessed 22 Aug 2023.
- "NMS 2022 _ Signed.Pdf." Accessed February 3, 2024.
https://www.jcs.mil/Portals/36/NMS%202022%20_%20Signed.pdf.
- Reuters Libya Newsroom. "What Happens to the Wagner Group after Yevgeny Prigozhin Plane Crash?" *Reuters*, August 25, 2023, sec. Europe.
<https://www.reuters.com/world/europe/what-happens-wagner-mercenary-group-after-prigozhin-plane-crash-2023-08-24/>.
- Rose, Frank A. "Managing China's Rise in Outer Space." *GLOBAL CHINA*, n.d.

- Roulette, Joey. "SpaceX Curbed Ukraine's Use of Starlink Internet for Drones -Company President." *Reuters*, February 9, 2023, sec. Aerospace & Defense. <https://www.reuters.com/business/aerospace-defense/spacex-curbed-ukraines-use-starlink-internet-drones-company-president-2023-02-09/>.
- "Russia's Use of the Wagner Group: Definitions, Strategic Objectives, and Accountability," September 15, 2022.
- Singer, P.W. "Corporate Warriors: The Rise of the Privatized Military Industry and Its Ramifications for International Security." *International Security* 26, no. 3 (2001): 186–220.
- "Starlink Stories | Starlink." Accessed October 11, 2023. <https://stories.starlink.com/>.
- Stephen Walt. "International Relations: One World, Many Theories." *Foreign Policy* Spring 1988 (1988): 29–44.
- United Nations Office for Outer Space Affairs. "United Nations Office for Outer Space Affairs 2022 Annual Report." Annual Report. United Nations, June 2023. https://www.unoosa.org/documents/pdf/annualreport/UNOOSA_Annual_Report_2022.pdf.
- "US National Defense Strategy, 2022." Accessed November 20, 2023. <https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF>.
- Vanda Felbab-Brown. "What's Ahead for the Wagner Group in Africa and the Middle East?" Research Institute. Brookings, July 18, 2023. <https://www.brookings.edu/articles/whats-ahead-for-the-wagner-group-in-africa-and-the-middle-east/>.
- Vera Bergengruen. "Despite Rift With Putin, the Wagner Group's Reach Is Growing." *TIME*, August 2, 2023. <https://time.com/6300145/wagner-group-niger-future/>.
- Wall, Mike. "What's Going on with Elon Musk, SpaceX's Starlink and Ukraine? Here's What We Know." News. Space.com, October 19, 2022. <https://www.space.com/spacex-starlink-elon-musk-ukraine-explainer>.
- Wang, Joyu. "Taiwan Rebukes Elon Musk for Describing Island Democracy as China's Hawaii." *WSJ*. Accessed October 1, 2023. <https://www.wsj.com/world/asia/taiwan-rebukes-elon-musk-for-describing-island-democracy-is-chinas-hawaii-ee2749b8>.
- Wen, Yun. *The Huawei Model: The Rise of China's Technology Giant*. The Geopolitics of Information Series. Urbana, Ill: University of Illinois Press, [2020], n.d.

Vita

Ms. Kerin McGee is the government lead for Futures within the Joint Staff J-7's Futures and Concepts Division. In this position she leads the futures team on the development of products that provide essential insights into the challenges for the future joint force.

Her time in the Futures and Concepts Division was preceded by two positions in the J-7: red cell lead for wargame development, and intelligence research analyst for the Joint Coalition Operational Analysis (JCOA) division.

Ms. McGee's career in the Department of Defense career started at the Defense Intelligence Agency (DIA) as an intelligence analyst. Her DIA career included an assignment at U.S. Africa Command in Stuttgart, Germany during which she was the senior intelligence watch officer.

A native of Los Angeles, California, Ms. McGee graduated from the University of California at Los Angeles (UCLA) in 2000 with a Bachelor of Arts degree in political science. Ms. McGee began her professional career working for the U.S. House of Representatives as a congressional aide immediately upon graduation from UCLA.

Endnotes

¹ "US National Defense Strategy, 2022," III, accessed November 20, 2023, <https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF>.

² "US National Defense Strategy, 2022."

³ General Mark A. Milley, USA (ret.), "Strategic Inflection Point: The Most Historically Significant and Fundamental Change in the Character of War Is Happening Now—While the Future Is Clouded in Mist and Uncertainty," *Joint Force Quarterly*, no. 110 (July 2023), <https://ndupress.ndu.edu/JFQ/Joint-Force-Quarterly-110/Article/article/3447159/strategic-inflection-point-the-most-historically-significant-and-fundamental-ch/https%3A%2F%2Fndupress.ndu.edu%2FMedia%2FNews%2FNews-Article-View%2FArticle%2F3447159%2Fstrategic-inflection-point-the-most-historically-significant-and-fundamental-ch%2F>.

⁴ Joint Staff, "Implementing Joint Force Development and Design, CJCSI 3030.01A.Pdf," CJCSI 3030.01A § (2022), <https://www.jcs.mil/Portals/36/Documents/Library/Instructions/CJCSI%203030.01A.pdf>.

-
- ⁵ Joint Staff, J-7, “Guidance for Developing and Implementing Joint Concepts, CJCSI 3010.02E,” CJCSI 3010.02E § (2016), A-5, https://www.jcs.mil/Portals/36/Documents/Doctrine/concepts/cjcsi_3010_02e.pdf?ver=2018-08-01-134826-593.
- ⁶ Joint Staff, Implementing Joint Force Development and Design, CJCSI 3030.01A.pdf, 68.
- ⁷ Joint Staff, J-7, Guidance for Developing and Implementing Joint Concepts, CJCSI 3010.02E, A-5.
- ⁸ Joint Staff J-7, “Joint Operating Environment 2035: The Joint Force in a Contested and Disordered World,” Joint Operating Environment (Washington, DC: Joint Staff, July 14, 2016), https://www.jcs.mil/Portals/36/Documents/Doctrine/concepts/joe_2035_july16.pdf.
- ⁹ Joint Staff, Implementing Joint Force Development and Design, CJCSI 3030.01A.pdf.
- ¹⁰ Joint Staff, J-7, Guidance for Developing and Implementing Joint Concepts, CJCSI 3010.02E, A-5.
- ¹¹ Joint Staff, J-7, A-5.
- ¹² Joint Staff, J-7, A-5.
- ¹³ “US National Defense Strategy, 2022.”
- ¹⁴ Reus-Smit, Christian, ed. *The Oxford Handbook of International Relations*. 1. publ. in paperback. The Oxford Handbooks of Political Science 5. Oxford: Oxford University Press, 2010., page 48
- ¹⁵ Satariano, Adam, Scott Reinhard, Cade Metz, Sheera Frenkel, and Malika Khurana. “Elon Musk’s Unmatched Power in the Stars.” *The New York Times*, July 28, 2023, sec. Business. <https://www.nytimes.com/interactive/2023/07/28/business/starlink.html>.
- ¹⁶ “Starlink Stories | Starlink,” accessed October 11, 2023, <https://stories.starlink.com/>.
- ¹⁷ Joey Roulette, “SpaceX Curbed Ukraine’s Use of Starlink Internet for Drones -Company President,” *Reuters*, February 9, 2023, sec. Aerospace & Defense, <https://www.reuters.com/business/aerospace-defense/spacex-curbed-ukraines-use-starlink-internet-drones-company-president-2023-02-09/>; Justin Fauntleroy, “The Space Race May Already Be Won,” *Space News*, June 2023, 25–28.
- ¹⁸ “How Musk’s Starlink Became a Security Liability for the U.S.,” *Marketplace* (blog), accessed October 2, 2023, <https://www.marketplace.org/shows/marketplace-tech/how-musks-starlink-became-a-security-liability-for-the-u-s/>.
- ¹⁹ United Nations Office for Outer Space Affairs, “United Nations Office for Outer Space Affairs 2022 Annual Report,” Annual Report (United Nations, June 2023), https://www.unoosa.org/documents/pdf/annualreport/UNOOSA_Annual_Report_2022.pdf.
- ²⁰ Grace Kay, “Everything We Know about Elon Musk’s Starlink Satellites and Future Internet Plans,” *Business Insider*, accessed August 29, 2023, <https://www.businessinsider.com/elon-musk-starlink-satellites-internet>.
- ²¹ Starlink may have competitors in the future, but SpaceX has a massive lead. Amazon is planning its own satellite-based high-speed internet access packages but has not yet launched any satellites. Further illustrative of SpaceX’s dominance, Starlink’s nearest competitor (OneWeb) used SpaceX to launch its satellites. [Fauntleroy]
- ²² Wall, Mike, “What’s Going on with Elon Musk, SpaceX’s Starlink and Ukraine? Here’s What We Know.,” *News, Space.com*, October 19, 2022, <https://www.space.com/spacex-starlink-elon-musk-ukraine-explainer>.
- ²³ Wall, Mike.
- ²⁴ Alex Marquardt and Sean Lyngaas, “Ukraine Suffered a Comms Outage When 1,300 SpaceX Satellite Units Went Offline over Funding Issues | CNN Politics,” *News, cnn.com*, November 7, 2022, <https://www.cnn.com/2022/11/04/politics/spacex-ukraine-elon-musk-starlink-internet-outage/index.html>.
- ²⁵ Alex Marquardt and Sean Lyngaas.
- ²⁶ Roulette, “SpaceX Curbed Ukraine’s Use of Starlink Internet for Drones -Company President.” <https://www.reuters.com/business/aerospace-defense/spacex-curbed-ukraines-use-starlink-internet-drones-company-president-2023-02-09/Roulette>.
- ²⁷ Roulette, “SpaceX Curbed Ukraine’s Use of Starlink Internet for Drones -Company President.” <https://www.reuters.com/business/aerospace-defense/spacex-curbed-ukraines-use-starlink-internet-drones-company-president-2023-02-09/>
- ²⁸ Rodney Bruce Hall and Thomas J. Biersteker, eds., *The Emergence of Private Authority in Global Governance*, Cambridge Studies in International Relations 85 (Cambridge, UK ; New York: Cambridge University Press, 2002). p 18
- ²⁹ Hall and Biersteker. p 18
- ³⁰ Elizabeth Economy, *The World According to China* (Cambridge ; Medford: Polity Press, 2022), 132, 156.
- ³¹ This law requires Huawei to provide information to Beijing when necessary for state goals and will be discussed in the Huawei case study section.

-
- ³² Ilaria Massocco, “Can Chinese Firms Be Truly Private?,” *Big Data China*, February 7, 2023, <https://bigdatachina.csis.org/can-chinese-firms-be-truly-private/>.
- ³³ Yun Wen, *The Huawei Model: The Rise of China’s Technology Giant*, The Geopolitics of Information Series (Urbana, Ill: University of Illinois Press, [2020], n.d.).
- ³⁴ Associated Press, “Chinese Tech Giant Huawei Reports Sales, Profit up despite US Sanctions | AP News,” News, AP, August 11, 2023, <https://apnews.com/article/china-huawei-united-states-revenue-sanctions-technology-91b084f8fc42b12079411535755c99e5>.
- ³⁵ Wen, *The Huawei Model*.
- ³⁶ Huawei Facts, <https://www.huawei.com>facts>
- ³⁷ Wen, *The Huawei Model*.
- ³⁸ Economy, *The World According to China*, 156–57.
- ³⁹ Jonathan E. Hillman and Maesea McCalpin, “Watching Huawei’s ‘Safe Cities,’” November 4, 2019, <https://www.csis.org/analysis/watching-huaweis-safe-cities>.
- ⁴⁰ Hillman and McCalpin.
- ⁴¹ Wen, *The Huawei Model*.
- ⁴² Curtis J Milhaupt and Wentong Zheng, “Beyond Ownership: State Capitalism and the Chinese Firm,” *THE GEORGETOWN LAW JOURNAL* 103 (n.d.).
- ⁴³ Economy, *The World According to China*, 114–15, 157.
- ⁴⁴ “Is China’s Huawei a Threat to U.S. National Security?,” Council on Foreign Relations, accessed October 10, 2023, <https://www.cfr.org/backgrounder/chinas-huawei-threat-us-national-security>.
- ⁴⁵ Wen, *The Huawei Model*.
- ⁴⁶ “China Regional Snapshot: Sub-Saharan Africa,” *Committee on Foreign Affairs* (blog), accessed August 28, 2023, <https://foreignaffairs.house.gov/china-regional-snapshot-sub-saharan-africa/>.
- ⁴⁷ Economy, *The World According to China*. 157
- ⁴⁸ “China Regional Snapshot.”
- ⁴⁹ “China Regional Snapshot.”
- ⁵⁰ “AFRICOM Cleared FY24 SASC Posture Hearing 16 Mar 2023.Pdf” (Washington, DC, March 19, 2023), <https://www.armed-services.senate.gov/imo/media/doc/AFRICOM%20cleared%20FY24%20SASC%20Posture%20Hearing%2016%20Mar%202023.pdf>.
- ⁵¹ “Russia’s Use of the Wagner Group: Definitions, Strategic Objectives, and Accountability,” September 15, 2022.
- ⁵² “Band of Brothers: The Wagner Group and the Russian State | The Post-Soviet Post | CSIS.” Accessed October 1, 2023. <https://www.csis.org/blogs/post-soviet-post/band-brothers-wagner-group-and-russian-state>.
- ⁵³ BBC News, “What Is Russia’s Wagner Group, and What Has Happened to Its Leader?,” *BBC News*, September 23, 2022, sec. World, <https://www.bbc.com/news/world-60947877>.
- ⁵⁴ Marco Mussa and Matvej Dubianskij, “‘BLACK CAT IN A DARK ROOM’: EXAMINING THE IMPACT OF RUSSIA’S WAGNER GROUP IN THE CENTRAL AFRICAN REPUBLIC AND MALI.,” *Journal of International Affairs* 75, no. 2 (March 1, 2023): 209–31.
- ⁵⁵ “Russia’s Use of the Wagner Group: Definitions, Strategic Objectives, and Accountability.”
- ⁵⁶ Alexis Arieff et al., “Russia’s Wagner Group in Africa: Issues for Congress,” n.d.
- ⁵⁷ “Russia’s Use of the Wagner Group: Definitions, Strategic Objectives, and Accountability.”
- ⁵⁸ Arieff et al., “Russia’s Wagner Group in Africa: Issues for Congress.”
- ⁵⁹ “Russia’s Use of the Wagner Group: Definitions, Strategic Objectives, and Accountability.”
- ⁶⁰ “Russia’s Use of the Wagner Group: Definitions, Strategic Objectives, and Accountability.”
- ⁶¹ Mussa and Dubianskij, “‘BLACK CAT IN A DARK ROOM.’”
- ⁶² P.W. Singer, “Corporate Warriors: The Rise of the Privatized Military Industry and Its Ramifications for International Security,” *International Security* 26, no. 3 (2001): 186–220.
- ⁶³ Vera Bergengruen, “Despite Rift With Putin, the Wagner Group’s Reach Is Growing,” *TIME*, August 2, 2023, <https://time.com/6300145/wagner-group-niger-future/>.
- ⁶⁴ Brian Katz, et al, “Moscow’s Mercenary Wars: The Expansion of Russian Private Military Companies,” *Center for Strategic and International Studies Transnational Threats Project*, September 2020, <https://russianpmcs.csis.org>.

-
- ⁶⁵ Vanda Felbab-Brown, “What’s Ahead for the Wagner Group in Africa and the Middle East?,” Research Institute (Brookings, July 18, 2023), <https://www.brookings.edu/articles/whats-ahead-for-the-wagner-group-in-africa-and-the-middle-east/>.
- ⁶⁶ Vera Bergengruen, “Despite Rift With Putin, the Wagner Group’s Reach Is Growing.”
- ⁶⁷ Vanda Felbab-Brown, “What’s Ahead for the Wagner Group in Africa and the Middle East?”
- ⁶⁸ Hall and Biersteker, *The Emergence of Private Authority in Global Governance.*, 7-9
- ⁶⁹ Hall and Biersteker., 7-9
- ⁷⁰ Hall and Biersteker., 7-9
- ⁷¹ Fauntleroy, “The Space Race May Already Be Won.”
- ⁷² Wen, *The Huawei Model*.
- ⁷³ Mussa and Dubianskij, ““BLACK CAT IN A DARK ROOM.””
- ⁷⁴ Stephen Walt, “International Relations: One World, Many Theories,” *International Relations*, Spring 1988, pp 29-44. (15)
- ⁷⁵ Peter Hägel, *Billionaires in World Politics*, First edition (Oxford, United Kingdom: Oxford University Press, 2020).
- ⁷⁶ Walt, 41
- ⁷⁷ Walt, 41
- ⁷⁸ 17 August 2023 lecture at the Joint Advanced Warfighting School, paraphrased comments by guest speaker Dr. Robert Braithwaite, PhD.
- ⁷⁹ 17 August 2023 lecture at the Joint Advanced Warfighting School, paraphrased comments by guest speaker Dr. Robert Braithwaite, PhD.
- ⁸⁰ Milhaupt and Zheng, “Beyond Ownership: State Capitalism and the Chinese Firm.”
- ⁸¹ “10 USC Ch. 5: JOINT CHIEFS OF STAFF,” 10 U.S. Code § 153 §, accessed November 3, 2023, <https://uscode.house.gov/view.xhtml?path=/prelim@title10/subtitleA/part1/chapter5&edition=prelim>.
- ⁸² 10 USC Ch. 5: JOINT CHIEFS OF STAFF, (6).
- ⁸³ “US National Defense Strategy, 2022.”
- ⁸⁴ “US National Defense Strategy, 2022,” 10.
- ⁸⁵ “US National Defense Strategy, 2022.”
- ⁸⁶ “US National Defense Strategy, 2022,” 10.
- ⁸⁷ “US National Defense Strategy, 2022,” 17.
- ⁸⁸ “US National Defense Strategy, 2022,” 22.
- ⁸⁹ “NMS 2022 _ Signed.Pdf,” 5, accessed November 3, 2023, https://www.jcs.mil/Portals/36/NMS%202022%20_%20Signed.pdf.
- ⁹⁰ Joint Staff, Implementing Joint Force Development and Design, CJCSI 3030.01A.pdf, 1.
- ⁹¹ Joint Staff, GL-7.
- ⁹² “CJCSI 3030.01A.Pdf,” accessed November 21, 2023, <https://www.jcs.mil/Portals/36/Documents/Library/Instructions/CJCSI%203030.01A.pdf>.
- ⁹³ “CJCSI 3030.01A.Pdf.”
- ⁹⁴ Joint Staff, “JP 3-0: Joint Campaigns and Operations” (2022), III–1.
- ⁹⁵ Frank A Rose, “Managing China’s Rise in Outer Space,” *GLOBAL CHINA*, n.d.
- ⁹⁶ Rose.
- ⁹⁷ Rose.
- ⁹⁸ Rose.
- ⁹⁹ Reuters Libya Newsroom, “What Happens to the Wagner Group after Yevgeny Prigozhin Plane Crash?,” *Reuters*, August 25, 2023, sec. Europe, <https://www.reuters.com/world/europe/what-happens-wagner-mercenary-group-after-prigozhin-plane-crash-2023-08-24/>.
- ¹⁰⁰ “How Musk’s Starlink Became a Security Liability for the U.S.”; Roulette, “SpaceX Curbed Ukraine’s Use of Starlink Internet for Drones -Company President.”
- ¹⁰¹ Fauntleroy, “The Space Race May Already Be Won.”
- ¹⁰² Reuters Libya Newsroom, “What Happens to the Wagner Group after Yevgeny Prigozhin Plane Crash?”
- ¹⁰³ Centre for Eastern Studies (OSW), “The Calm After the Storm: Russia Following Prigozhin’s Mutiny,” Report (Warsaw, POL: Centre for Eastern Studies, October 30, 2023), <https://www.osw.waw.pl/en/publikacje/osw->

report/2023-10-30/calm-after-storm; Brian Katz, et al, “Moscow’s Mercenary Wars”; Reuters Libya Newsroom, “What Happens to the Wagner Group after Yevgeny Prigozhin Plane Crash?”

¹⁰⁴ Joint Staff J-7, “JOE 2035,” 13.

¹⁰⁵ Joint Staff J-7, 30.

¹⁰⁶ Joint Staff J-7, “JOE 2035,” 13-30.

¹⁰⁷ Joint Staff J-7, 14.; NIC, ODNI, “Office of the Director of National Intelligence – Global Trends,” *Dni.gov*, 2021

¹⁰⁸ Ministry of Defence, United Kingdom, 127.

¹⁰⁹ “US National Defense Strategy, 2022,” 10.

¹¹⁰ BBC News, “What Is Russia’s Wagner Group, and What Has Happened to Its Leader?”

¹¹¹ Hall and Biersteker, *The Emergence of Private Authority in Global Governance*. p 218

¹¹² Joyu Wang, “Taiwan Rebukes Elon Musk for Describing Island Democracy as China’s Hawaii,” WSJ, accessed October 1, 2023, <https://www.wsj.com/world/asia/taiwan-rebukes-elon-musk-for-describing-island-democracy-is-chinas-hawaii-ee2749b8>.

¹¹³ Wang.

