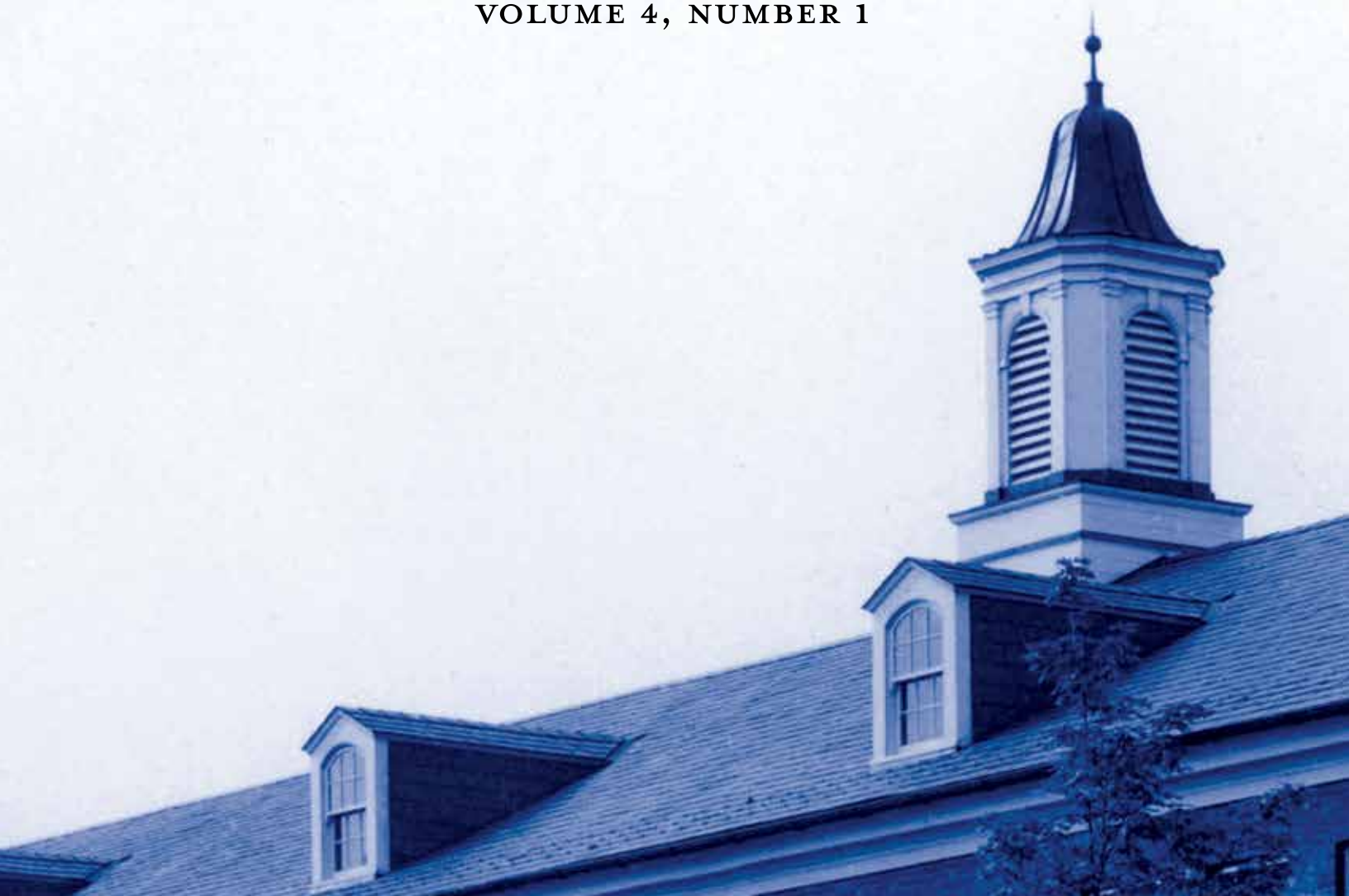
2022

THE BRECKINRIDGE PAPERS

SELECTED STUDIES FROM THE MARINE CORPS UNIVERSITY

VOLUME 4, NUMBER 1



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PRESIDENT'S FOREWORD

It is with pleasure that we bring before you this latest volume of *The Breckinridge Papers: Selected Studies from the Marine Corps University*.

The Breckinridge Papers began six years ago as a way to gain dissemination of studies carried out by students attending the Marine Corps War College (MCWAR), the School of Advanced Warfighting (SAW), the Command and Staff College (CSC), the Expeditionary Warfare School (EWS), and the College of Enlisted Military Education (CEME). Faculty committees of civilian PhD and military officer members conducted a review and either nominated or rewarded each paper in this volume. In addition, many of the authors gained distinguished-graduate status at the end of the academic year.

It is important to note the significance of the university model. Certainly, we look to our universities to serve as dynamic developers and conveyors of knowledge. Universities *educate*, and they do so through a variety of programs, to include teaching and the use of active-learning approaches, a spectrum of outreach efforts, and publication of findings. These various endeavors are obligated to maintain rigorous standards of research and citation of evidence in pursuit of the truth.

The Marine Corps University is guided by those same principles and carries an additional distinguished obligation. Brought into being as an entity devoted to professional military education, it focuses on study of the profession of arms and the U.S. Marine Corps as a particular element of that profession. In so doing, the men and women who make up the Marine Corps hold pride of place. The Marine Corps University is ever watchful of the high-stakes world of warfighting—what it is that the Marine Corps does—and the context in which it occurs. It therefore puts a premium on critical thinking, creativity, and the ability to deal with a host of conflicting variables. If Prussian military theorist Carl von Clausewitz was right to say that the nature of war does not change but that its character changes constantly—because of new weapons, developments in science and technology, advancements in operating concepts, or sudden shifts in world politics or world power-balance—then anticipating and preparing for those changes falls directly on the shoulders of the profession of arms and national security professionals.[1] That is the focus of the Marine Corps University.

To that end, five key areas of focus for the Marine Corps University in this current academic year are as follows: naval warfighting; great power competition; wargaming; women in peace and

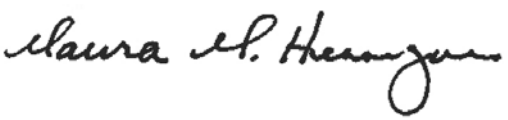
[1] Carl von Clausewitz, *On War*, ed. and trans., Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1984).

security (WPS); and sexual assault prevention and reporting (SAPR).

This current volume takes on such issues, and it sets the pace for the work ahead. In the area of naval warfighting, for example, are U.S. Navy lieutenant commander Andrew M. Imperatore's paper on "Naval Power Plays in the Fight for the South China Sea"; Norwegian Army lieutenant colonel Joern Qviller's "The Fait Accompli and A2/AD Dilemma in Northern Europe: A New NATO Operating Concept to Counter Russia"; and Australian Army major Levon J. Lambert's "The Case for a Fourth Island Chain: A Unifying Concept for Contesting Future Chinese Influence in the Indo-Pacific." In the category of great power competition are U.S. Air Force major Daniel R. Richardson's "Operation Fortitude 2035: The Role of Deception in Future War"; U.S. Marine Corps major Mabel B. Annunziata's "Dynamic Talent Management Model: Establishing the Framework for the Exploitation of Artificial Intelligence in Strategic Human Resourcing"; and U.S. Air Force major Margaret McCord's "The Essential Role of Recycling in Decreasing the United States' Dependence on Foreign Sources of Rare Earth Materials." In the area of WPS, U.S. Marine Corps major Emily L. Barton's "Birthing a Cultural Change: Pregnancy and Marine Corps Policy" became the first paper at the Marine Corps University to win the National Naval Officers Association's Women, Peace, and Security Writing Award. In the area of SAPR, U.S. Marine Corps major Josef H. Weise's "The All-Volunteer Force Contribution to the Civil-Military Gap and the Rise of an American Military Caste" offers relevant background; as does the U.S. Agency for International Development's Erin N. Wroblewski's "A Ready and Resilient Force: Applying Lessons from U.S. Military Resilience Programs to the U.S. Agency for International Development."

These papers are written by security professionals coming face-to-face with a variety of challenges and the impact of change. What will future war be like? In this process of sorting out a world of complex threats, enemies, and arenas, the Marine Corps University offers this annual publication as a forum in which its students can engage in professional dialogue across the U.S. defense community and with friends and allies abroad. It builds on the Marine Corps University's strong commitment to developing creativity and critical thinking, and it serves to advance that process into the decades ahead. The purpose, then, of *The Breckinridge Papers* is to bring the Marine Corps University's students directly into a professional arena whose dialogue is ongoing, fast-paced, vital to understand, and ignored to peril.

Semper Fidelis,



Brigadier General Maura M. Hennigan
President, Marine Corps University

THE BRECKINRIDGE PAPERS

Naval Power Plays in the Fight for the South China Sea

By Lieutenant Commander Andrew M. Imperatore, U.S. Navy[1]

Century of the Rising Dragon

> *Since love and fear can hardly exist together, if we must choose between them, it is far safer to be feared than loved.*
>
> ~ Niccolò Machiavelli[2]

The Problem of China's Rise

The potential for a great power fight is smoldering in the South China Sea and may ignite if the People's Republic of China (PRC) continues on its current course. The 2017 *National Security Strategy of the United States of America* (NSS) implies a broad competitive space between stability and great power conflict, the limits of which need to be explored if the United States desires to maintain its influence and freedom of action in the Pacific.[3] The South China Sea has become the symbol of a changing global system, where the PRC's expanding maritime claims are challenging the rules-based international order that has existed since the end of World War II. If the world allows the PRC to declare exclusive rights in a region that has been a contested but open sea lane, it will imperil freedom of action to all nations that share an interest in global commerce and set a negative legal precedent. Although there have been heated exchanges during the past 70 years, mostly between regional actors such as Vietnam, China, Indonesia, Malaysia, and Brunei, stability and restraint chiefly defined the norm until the mid-1990s, when factions within the Chinese Communist Party (CCP) started driving a more nationalist and revisionist message. Unfortunately, the diverse bureaucratic politics within the CCP make its "nine-dash line" legal positions challenging to define because they do not necessarily represent a unitary position.[4] Nevertheless, the building of airfields and radar sites in the contested Spratly Islands, island reclamation activities, and the brazen seizure of Scarborough Shoal from the Philippines in 2012 make the

[1] LtCdr Imperatore is a graduate of MCU's Command and Staff College. This paper was nominated for the LtGen John A. Lejeune Award for academic year 2018–19.

[2] Niccolò Machiavelli, *The Prince* (Rome, Italy: Antonio Blado d'Asola, 1532; repr., New York: Dover Publications, 1992), 43.

[3] Donald J. Trump, *National Security Strategy of the United States of America, December 2017* (Washington, DC: White House, 2017), 3.

[4] Graham T. Allison, "Conceptual Models and the Cuban Missile Crisis," *American Political Science Review* 63, no. 3 (September 1969): 689–718, https://doi.org/10.2307/1954423.

PRC's actions unjustifiable, a judgment that the Permanent Court of Arbitration (PCA) at the Hague, Netherlands, upheld in a unanimous 2016 decision.[5] Although the PRC has tried to shape world opinion by wrapping overt military capability under a blanket of benign intent, its actions threaten $5.3 trillion in global commerce through the world's busiest sea lanes and contest the regional credibility of the United States.[6]

After the PRC occupied Mischief Reef in late 1994, the United States made its first statements about the emerging crisis during a U.S. Department of State daily briefing in May 1995. This announcement highlighted five key positions that remain the cornerstones of U.S. policy to this day: peaceful resolution of disputes; peace and stability; freedom of navigation; neutrality over questions of sovereignty and competing claims; and respect of maritime norms, especially the 1982 United Nations Convention on the Law of the Sea (UNCLOS).[7] Since its occupation of Mischief Reef, the PRC's territorial expansion and island reclamation has accelerated and become more militarized. In contrast, U.S. policy has only nominally evolved in language while being consistently unpersuasive in execution. Across four presidential administrations, the United States has remained unwilling to raise the stakes high enough to compel a politically acceptable change in behavior. As nineteenth-century British philosopher John S. Mill reminds us, "War is an ugly thing, but not the ugliest of things. The decayed and degraded state of moral and patriotic feeling which thinks nothing worth war is much worse."[8] The United States must change the game by placing more assertive naval power options on the table as part of its whole-of-government approach. To avoid a full-scale conflict, U.S. naval power must demonstrate the ability to control access to the South China Sea, perform combined expeditionary warfare training with allies and partners, and conduct contested freedom of navigation operations (FONOPs) for the benefit of the global community.

Assumptions

Analysis of naval activities in the South China Sea requires an understanding of several key assumptions about the principal military actors. The United States and the PRC are rational actors that want to remain in a state of competition and avoid escalation into a large-scale conflict.[9] The window of competition extends to routine and professional interactions between PRC and U.S. military ships and aircraft with

[5] "Arbitration on the South China Sea: Rulings from the Hague," Asia Maritime Transparency Initiative, accessed 12 October 2018.
[6] "How Much Trade Transits the South China Sea?," China Power Project, Center for Strategic and International Studies, accessed 15 October 2018.
[7] M. Taylor Fravel, *U.S. Policy towards the Disputes in the South China Sea since 1995* (Singapore: S. Rajaratnam School of International Studies, Nanyang Technological University, 2014), 3–4.
[8] Bill Rhodes, *An Introduction to Military Ethics: A Reference Handbook* (Santa Barbara, CA: Praeger Security International, 2009), 12.
[9] In the context of sovereign states, the rational actor model assumes that a government is internally consistent and maintains centralized control over its armed forces with a clear chain of command.

due regard outside of internationally recognized territorial waters and airspace. All exchanges must conform to UNCLOS to sustain multilateral support. Moreover, as part of its national strategy, the PRC will continue to employ deception, economic and political coercion, diplomacy, law, and public opinion in an attempt to diminish U.S. influence and credibility in the region. Despite the Hague's ruling against its maritime claims, the PRC will remain undeterred and unlikely to change its behavior in response to current levels of pressure.[10]

Although the PRC has become a more responsible economic actor since becoming a member of the World Trade Organization in 2001, its actions in the South China Sea represent a departure from expectations. The NSS addresses the position that "these competitions require the United States to rethink the policies of the past two decades—policies based on the assumption that engagement with rivals and their inclusion in international institutions and global commerce would turn them into benign actors and trustworthy partners. For the most part, this premise turned out to be false."[11] As a consequence, the United States must commit to more forceful action to compel a positive change in the strategic balance of power.

Cautiously, any military actions should also provide ways to prevent irreversible escalation. Although the intent of raising tensions is to produce a desirable strategic reaction from the PRC, that reaction should bend toward compliance with international law. U.S. military options should not attempt to trip PRC strategic red lines or drive the United States and its allies into armed conflict without sufficient flexibility to pull back from the brink.

Limitations/Scope

Any efforts to drive lasting change in the South China Sea will require a cohesive national strategy based on a whole-of-government approach. While this research focuses solely on demonstrating credible naval power, all courses of action should amplify the other levers of U.S. influence to reach the desired outcome. Accordingly, the NSS places special emphasis on the importance of multilateral relationships, allies, and partners in securing U.S. national policy objectives. Although the focus of this research is limited to the military scope, it is conducted in coordination with diplomatic, economic, and intelligence efforts to create enduring stability.[12]

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[10] Euan Graham, "The Hague Tribunal's South China Sea Ruling: Empty Provocation or Slow-Burning Influence?," Council of Councils, Council on Foreign Relations, 18 August 2016.

[11] Trump, *The National Security Strategy of the United States of America*, 3.

[12] Trump, *The National Security Strategy of the United States of America*, 4.

The Gathering Storm: China's Revisionist Worldview

We will never allow any person, any organization, or any political party to split any part of the Chinese territory from China at any time or in any form.

~ Xi Jinping, President of the People's Republic of China[13]

Modern Origins of PRC Claims: The Mystery of the Nine-Dash Line

Applying effective U.S. power to challenge the PRC's claims in the South China Sea, requires a firm understanding of how the Chinese view has evolved since the end of World War II. The PRC's increasingly aggressive positions are indicators of larger policy goals and strategies. China's revisionist ideology—its view that the international order has prevented it from taking its rightful place in the world—was born from nationalist sentiment that arose in the nineteenth century due in part to a series of unjust treaties between the West and the Qing dynasty. However, China's leaders have since appropriated and extrapolated that historical memory into a politically advantageous narrative.

The Chinese collective sense of identity is a major factor for its modern claims and helps to explain the PRC's motivations. Thai historian Thongchai Winichakul best describes this phenomenon in his concept of a *geobody*. As he explains, "A nation's territory is not simply a sizable piece of the earth's surface. . . . Geographically speaking, the geo-body of a nation occupies a certain position of the earth's surface which is objectively identifiable. It appears to be concrete to the eyes as if its existence does not depend on any act of imagining. That, of course, is not the case."[14] In the constructivist perspective, shared identity is more important than the lines on a map.[15] In a 2019 *Modern China* article entitled "The Modern Origins of China's South China Sea Claims," Bill Hayton amplifies this theory by arguing that "a collective Chinese belief in a historic claim to the reefs and rocks therein emerged in distinct episodes of the twentieth century, partly in response to perceived threats but mainly as attempts to shore up declining nationalist legitimacy."[16] The Chinese constructed a convincing narrative based on belief and emotion during a time of foreign incursions and internal instability.

Since the end of World War II, the Chinese have been redrawing maps, redefining borders, claiming historic rights, and using every means of coercion to spread their message. China's evolving self-narrative has increased the risk of interna-

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[13] Richard C. Bush, "Order from Chaos: What Xi Jinping Said about Taiwan at the 19th Party Congress," Brookings Institution, 19 October 2017.

[14] Thongchai Winichakul, *Siam Mapped: A History of the Geo-Body of a Nation* (Honolulu: University of Hawai'i Press, 1994), 16–18.

[15] Emanuel E. Adler, "Seizing the Middle Ground: Constructivism in World Politics," *European Journal of International Relations* 3, no. 3 (1997): 319–63, https://doi.org/10.1177/1354066197003003003. Describing constructivism, Adler writes, "Where [people] go, how, when and why, is not entirely determined by physical forces and constraints; but neither does it depend solely on individual preferences and rational choices. It is also a matter of their shared knowledge, the collective meaning they attach to their situation, their authority and legitimacy, the rules, institutions and material resources they use to find their way."

[16] Bill Hayton, "The Modern Origins of China's South China Sea Claims: Maps, Misunderstandings, and the Maritime Geobody," *Modern China* 45, no. 2 (March 2019): 128, https://doi.org/10.1177/0097700418771678.

tional conflict, and the United States must take more assertive action to preserve the current world order. Prior to 1946, the Chinese Nationalist government made no mention of any specific claims over South China Sea waters or islands. On 25 September 1946, the government under Chiang Kai-shek convened a meeting with the Ministries of Foreign Affairs, Interior, National Defense, and the Navy General Headquarters to discuss the South China Sea islands.[17] Following this meeting, the government published the first map of its claims in January 1947, which depicted the original "eleven-dash line."[18] The Nationalist government made these references to the idea of making the islands part of China's sovereign territory even though no such legal status had ever existed; still, there was no discussion of sovereign maritime rights. Quite to the contrary, the existence of this map provides evidence that Chinese claims to the South China Sea are a creation of the twentieth century, which puts its contemporary legal positions into more accurate context. After the CCP under Mao Zedong took power in 1949 and founded the PRC, the new government adopted most of the Nationalist claims. However, as part of negotiations with the Communist government of North Vietnam in 1957, the PRC ceded Bailongwei Island (Bach Long Vy) in the Gulf of Tonkin to North Vietnam and subsequently removed two dashes from the map to create the contemporary nine-dash line.[19]

In 1958, the PRC government under Mao published the *Declaration of the Government of the People's Republic of China on China's Territorial Sea*, which claimed that "the breadth of the territorial sea of the People's Republic of China shall be twelve nautical miles . . . including the Chinese mainland and its coastal islands, as well as Taiwan and its surrounding islands, the Penghu Islands, the Dongsha [Prata] Islands, the Xisha [Paracel] Islands, the Zhongsa Islands [a collective name for partially submerged reefs], the Nansha [Spratly] Islands and all other islands belonging to China which are separated from the mainland and its coastal islands by the high seas."[20] Despite its territorial ambitions, the PRC made a striking admission: it understood that the high seas widely separated its mainland from the majority of the islands in the South China Sea. In this context, even though the term *high seas*—which carries legal significance—was likely meant in a figurative or symbolic sense, China made no mention of exclusive or historic maritime sovereignty over the South China Sea because there was no justifiable precedent for such a claim under international law.

In 1974, regional tempers escalated into direct military conflict between the PRC and South Vietnam over the Paracel Islands. In his research about the origins of the nine-dash line, Chris P. C. Chung cites the PRC's declaration of 12 January 1974,

[17] Bill Hayton, "China's 'Historic Rights' in the South China Sea: Made in America?," *Diplomat*, 21 June 2016.
[18] Hayton, "China's 'Historic Rights' in the South China Sea."
[19] Mohan Malik, "Historical Fiction: China's South China Sea Claims," *World Affairs* 176, no. 1 (May/June 2013): 83–90; and "China: A Historical Revelation and a Warning to Vietnam," Stratfor Worldview, 1 April 2013.
[20] *Declaration of the Government of the People's Republic of China on China's Territorial Sea*, Annex 2 (Beijing: Government of the People's Republic of China, 1958).

which states, "The resources of the [Paracel] islands and their adjacent seas also belong entirely to China."[21] After the PRC compelled the withdrawal of South Vietnamese forces, it reverted to its previous claims of sovereignty over the land but made no additional mention of maritime or historic rights. This position appeared consistent with the understanding of the majority of parties to the South China Sea disputes but still left significant confusion about the meaning of the nine-dash line. For instance, in 1979, Hasjim Djalal, the director of legal and treaty affairs of the Indonesian Department of Foreign Affairs, wrote:

> The nature of the claim of the PRC to the South China Sea is enigmatic. . . . It is not clear whether the lines indicated in the Chinese maps are intended as the limits of the Chinese *territorial* claim towards the whole area . . . or whether the lines simply indicate that only the *islands* contained within the lines which are claimed by the PRC. Careful reading of the Chinese statements on this matter, especially those at the ICAO [International Civil Aviation Organization] meetings, indicates that the Chinese territorial claims are limited towards the islands and all rights related thereto, and not territorial claims over the South China Sea as a whole.[22]

To date, the PRC has not precisely defined the meaning of the nine-dash line. Although the PRC and 17 other coastal nations officially registered objections under the UNCLOS agreement to military and foreign surveillance activities in their exclusive economic zones, the PRC now claims to have territorial sea enforcement rights throughout the entire South China Sea.[23]

The 1982 UNCLOS agreement came into full force in 1996 and was a watershed moment for the international community. For the first time, customary norms were codified into international legal standards, where specific meanings and restrictions were applied to terms such as *baseline*, *low water line*, *territorial sea and airspace*, *exclusive economic zones*, and *high seas freedoms*. For example, UNCLOS Section 2 makes clear that:

> Every State has the right to establish the breadth of its territorial sea up to a limit not exceeding 12 nautical miles, measured from baselines determined in accordance with this Convention. . . . The outer limit of the territorial sea

[21] Chris P. C. Chung, "Drawing the U-Shaped Line: China's Claim in the South China Sea, 1946–1974," *Modern China* 42, no. 1 (January 2016): 38–72, https://doi.org/10.1177/0097700415598538.

[22] Hasjim Djalal, "Conflicting Territorial and Jurisdictional Claims in South China Sea," *Indonesian Quarterly* 7, no. 3 (July 1979): 36–52. Emphasis in original.

[23] Jeff M. Smith and Joshua Eisenman, "China and America Clash on the High Seas: The EEZ Challenge," *National Interest*, 22 May 2014.

> is the line every point of which is at a distance from the nearest point of the baseline equal to the breadth of the territorial sea. . . . Except where otherwise provided in this Convention, the normal baseline for measuring the breadth of the territorial sea is the low-water line along the coast as marked on large-scale charts officially recognized by the coastal State.[24]

UNCLOS leaves almost no legal gray space in its definition, and although the PRC has never explicitly stated that it claims the nine-dash line as territorial waters, its behavior has certainly implied a message that stands in stark contrast to both the letter and spirit of the agreement.

After the collapse of the Soviet Union in 1991, the PRC shifted its message to include historic rights, possibly due in part to coordination between American oil exploration engineer Randall C. Thompson and U.S. Department of State official Daniel J. Dzurek.[25] By offering a potentially advantageous legal interpretation, Thompson and Dzurek may have assisted the Chinese government in obtaining an offshore drilling lease near the Spratly Islands, which the Socialist Republic of Vietnam also claimed. In the context of the lease, Dzurek explained that the U-shaped line "might best be translated as a *'traditional sea boundary line'*."[26] He also encouraged the idea that China had "historic rights" that extended beyond anything discussed in UNCLOS.[27] These interpretations, which had no basis in international law, later appeared in more expansive PRC claims during the mid-1990s.

With a firm understanding of historical fact, U.S. strategy can address the problem of the PRC's ever-expanding claims. In the last decade, the PRC asserted that it had territorial sovereignty over the waters of the South China Sea, exclusive rights to the region's resources, and sovereignty over its islands. However, during the course of more than 70 years, the PRC has never defined the coordinates of the nine-dash line or its meaning. Therefore, the international community is left with interpretations based on Chinese actions. In a 2016 ruling in the case of the Philippines versus the PRC, the PCA unanimously ruled against the PRC's exclusive maritime rights and concluded:

> To the extent China had historic rights to resources in the waters of the [South China Sea], such rights were extinguished to the extent they were incompatible with the exclusive economic zones provided for in the Con-

[24] *United Nations Convention on Law of the Sea* (New York: United Nations, 1982), 27.
[25] Hayton, "China's 'Historic Rights' in the South China Sea."
[26] Daniel J. Dzurek, *The Spratly Islands Dispute: Who's on First?* (Durham, UK: International Boundaries Research Unit, Department of Geography, University of Durham, 1996), 11. Emphasis in original.
[27] Dzurek, *The Spratly Islands Dispute*, 11.

> vention [UNCLOS]. The Tribunal noted that, although Chinese navigators and fishermen, as well as those of other States, had historically made use of the islands in the [South China Sea], there was no evidence that China had historically exercised exclusive control over the water or their resources. The Tribunal concluded that there was no legal basis for China to claim historic rights to resources within the sea areas falling within the "nine-dash line."[28]

This ruling was decisive in its admonishment of the PRC's claims, but the Hague has no enforcement mechanism to compel a change in behavior. Making matters worse, the current president of the Philippines, Rodrigo R. Duterte, has shown no willingness to press the issue forcibly on the international stage. Especially on the economic front, Duterte has driven the Philippines closer to the PRC and Russia. As reported by the Associated Press during the 2016 East Asian Summit, Duterte told Russian prime minister Dmitry A. Medvedev that he was about to "cross the Rubicon" with the United States, playing right into the PRC's strategy of attacking the credibility of the United States to defend its traditional allies in the Pacific.[29] To date, Vietnam is the only country in the Association of Southeast Asian Nations (ASEAN) to endorse the ruling, while the European Union (EU) has not officially backed it as binding.[30]

As Christopher Yung and Wang Dong note, "The U.S. view is that China selectively ignores international law when it refuses to follow several legal precedents set by a range of other countries resolving their maritime territorial disputes through the courts."[31] Richard Burns takes this a step further by arguing that as a consequence of the PCA's inability to enforce compliance, the PRC is likely to double down on its island reclamation activities, militarization, and disregard for the customary law of the sea unless credible actions persuade it to change course.[32] U.S. naval forces are at the tip of the spear in this effort and must accept the challenge of enforcing UNCLOS. Otherwise, military conflict will grow more probable each day as interactions between competing claimants become more frequent in increasingly politicized sea lanes.

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[28] "Hague Announces Decision on South China Sea," *New York Times*, 12 July 2016.
[29] "Philippines' Duterte to Force Closer Ties with China, Russia," *USA Today*, 26 September 2016.
[30] Graham, "The Hague Tribunal's South China Sea Ruling."
[31] Christopher Yung and Wang Dong, *U.S.-China Relations in the Maritime Security Domain*, Special Report 57 (Washington, DC: National Bureau of Asian Research, 2016), 6.
[32] Richard C. Bush, "The South China Sea Ruling and China's Grand Strategy," Brookings Institution, 13 July 2016.

Policy and Strategy

Interpreting how the South China Sea situation has unfolded during the last 70 years, Robert D. Blackwill and Ashley J. Tellis argue that strategy and policy formulations from the CCP appear to have three underlying themes. First, the PRC widely views the period from the mid-nineteenth to the mid-twentieth century as its "century of national humiliation."[33] Second, the PRC believes that consolidating power is the only sure way to return China to its former status. Lastly, the PRC must become a world power to achieve the "total rejuvenation of the Chinese nation."[34] Based on these three concepts, the PRC has four principle strategic objectives: maintain internal order and stability; sustain high economic growth; pacify threats inside the first island chain (which extends from Japan through the Philippines south to Borneo); and enhance China's role as a central actor in the international system.[35]

The PRC's chief concern throughout its modern history has been maintaining order in its massive country. According to a 2001 analysis by Rand, "The combination of extreme geographic vulnerability to attacks from the periphery, state-society volatility, and a deeply rooted great power mentality have produced two fundamental sets of security perceptions among most Chinese: On the one hand, an intense fear of social chaos and political fragmentation or collapse . . . on the other hand, a belief that such chaos can be avoided only through the establishment and maintenance of a strong, united, and 'just' . . . government."[36] The report further surmises that the PRC is not confident that its institutions will serve as effective checks and balances to social change. As a result, the PRC tends to consolidate power in individual leaders rather than bureaucratic processes. Blackwell and Tellis refer to this phenomenon as the "parabellum paradigm." They write that "superior power alone creates order. China's success as a state requires its leaders to possess greater capabilities than any other entity inside or outside its borders."[37] While other cultural elements may admittedly shape the context of Chinese policy, it is difficult to reject the premise that power and order significantly influence it. PRC leaders do not believe that they can achieve great power status without absolute order and control in the domestic sphere.

On the economic front, the PRC believes that the vast energy resources of the South China Sea are essential to its future economic prosperity and subsequent return to great power status. The PRC's ability to rapidly grow its economy is argu-

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[33] Robert D. Blackwill and Ashley J. Tellis, *Revising U.S. Grand Strategy toward China*, Council Special Report No. 72 (New York: Council on Foreign Relations, 2015), 7–8. A series of nineteenth-century treaties between the Qing dynasty and the Western powers that China perceived as unequal helped set the conditions for nationalist—and later Communist—sentiment in the twentieth century. For more on the "century of humiliation," see Zheng Wang, *Never Forget National Humiliation: Historical Memory in Chinese Politics and Foreign Relations* (New York: Columbia University Press, 2012).

[34] Charlie Campbell, "Xi Jinping's Party Congress Speech Leaves No Doubt over His Leadership Role," *Time*, 18 October 2017.

[35] Blackwill and Tellis, *Revising U.S. Grand Strategy toward China*, 8–17.

[36] Michael D. Swaine and Ashley J. Tellis, *Interpreting China's Grand Strategy: Past, Present, and Future* (Santa Monica, CA: Rand, 2000), 16, https://doi.org/10.7249/MR1121.

[37] Blackwell and Tellis, *Revising U.S. Grand Strategy toward China*, 8.

ably the most important condition for achieving these objectives.[38] Robert Kaplan makes the case that the South China Sea shipping lanes and their estimated 7 billion barrels of oil and natural gas represent China's future resource base and source of funding for military modernization.[39] The Center for Strategic and International Studies (CSIS) reported that in 2016, 39.5 percent of all the PRC's trade, valued at nearly $1.5 trillion, passed through the South China Sea, compared to only 5.7 percent of U.S. trade. The PRC's trade volume represents nearly 15 percent of the total world gross domestic product (GDP). Consequently, the PRC may perceive competing claims in the South China Sea as direct threats to its energy security. In 2015, Chinese oil imports hit 328 million tons, or 60.6 percent of its total consumption. Most of the shipping passes close to the Spratly Islands.[40]

The PRC's economic prosperity is tied to its ability to extract those resources and control the sea lanes, just like many of its regional neighbors. Vietnam currently holds the majority of land features in the Spratly Islands, and the PRC considers the status quo to be a threat to its own prosperity.[41] Although a negotiated deal between competing claimants that maintains stability and openness would be preferable, the imbalance of relative strength across the spectrum of power between the PRC and its neighbors makes a deal less likely. Since the PRC currently controls the Paracel Islands and Scarborough Shoal, if it can solidify exclusive control of the Spratly Islands, it will functionally control access to the South China Sea and dominate the majority of Southeast Asia's energy markets.

Closely tied to its need for internal security and economic expansion, the PRC believes that it must curtail external threats to the first island chain. This is largely part of the PRC's antiaccess/area-denial (A2/AD) military strategy to secure its southeastern borders, reinforce territorial and exclusive economic claims, and limit U.S. influence in the western Pacific. As a result, the PRC would become the top power of Asia. Chinese military interactions with the U.S. Navy have increased steadily in recent years, and tensions do not appear to be easing. As part of its known island reclamation activities, in 2016 the PRC completed construction of a 10,000-foot airfield on Fiery Cross Reef in the Spratly Islands, which is now more than 11 times its natural size.[42] These reclamation projects, dubbed the "Great Wall of Sand," serve the purposes of expanding the PRC's strategic space, dominating the maritime domain within the first island chain, and pushing the PRC's reach all the way to the

[38] Ye Zicheng, *Inside China's Grand Strategy: The Perspective from the People's Republic*, ed. and trans. Steven I. Levine and Guoli Liu (Lexington: University Press of Kentucky, 2011), 40, https://doi.org/10.5810/kentucky/9780813126456.001.0001.
[39] Robert D. Kaplan, *Asia's Cauldron: The South China Sea and the End of a Stable Pacific* (New York: Random House, 2014), 225.
[40] "How Much Trade Transits the South China Sea?"
[41] Alexander L. Vuving, "South China Sea: Who Occupies What in the Spratlys?," *Diplomat*, 6 May 2016.
[42] "Build It and They Will Come," Asia Maritime Transparency Initiative, Center for Strategic and International Studies, 1 August 2016.

second island chain, which encompasses the U.S. territory of Guam.[43] If the United States does not accept the risks of challenging the A2/AD umbrella now, it will effectively be ceding its status in the Pacific to the PRC.

The fourth and final component of the PRC's strategy is to force a fundamental shift in the international order, establishing the PRC as a preeminent actor on the world stage and the superpower in the western Pacific. In 2013, the PRC unveiled the "One Belt, One Road" initiative, which promises to build a new "21st Century Maritime Silk Road" through Europe, Central Asia, the Mediterranean Sea, the Indian Ocean, the Arabian Sea, and Africa.[44] Michael Swaine assesses that the initiative is an attempt to "leverage China's growing economic power and influence [along its periphery] in order to strengthen and expand cooperative interactions, create an integrated web of mutually beneficial economic, social and political ties, and ultimately lower distrust and enhance sense of common security."[45] Evan A. Feigenbaum describes the initiative as an example of "active leverage," which promises shared prosperity but accomplishes it through political and economic coercion that gives the PRC the ability to shape markets, control foreign investments, and secure advantageous leases on overseas ports from Djibouti to Australia.[46] One Belt, One Road appears to be a "Trojan horse," moving toward greater control over the international system.

In support of its expanding role, the PRC has simultaneously enhanced its military reach. In 2017, President Xi asserted, "By midcentury, China's military will be first class in every way. . . . A military is built to fight. Our military must regard combat capability as the criterion to meet in all its work and focus on how to win when it is called on. . . . We will never allow anyone, any organization, or any political party, at any time or in any form, to separate any part of Chinese territory from China."[47] During his speech, Xi also indicated that the PRC would go to any lengths necessary to prevent provinces such as Hong Kong, Tibet, and Taiwan from achieving any form of independence. The totality of his statements foreshadow a more aggressive foreign policy and allude to the PRC's vision of itself as a dominant power.

The CCP increasingly views its strategic objectives as existential mandates. Graham Allison makes the striking link that "when Xi Jinping has nightmares, the apparition he sees is [Soviet Union president] Mikhail Gorbachev."[48] In a culture and system that often speaks in terms of symbolism and stories, Xi's words indicate

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[43] Marie-Alice McLean-Dreyfus, "China's 'Great Wall of Sand' in the South China Sea: History Repeating Itself?," *National Interest*, 14 April 2016.

[44] Sumie Yoshikawa, "China's Maritime Silk Road Initiative and Local Government," *Journal of Contemporary East Asia Studies* 5, no. 2 (2016): 79, https://doi.org/10.1080/24761028.2016.11869098.

[45] Michael D. Swaine, "Chinese Views and Commentary on the 'One Belt, One Road' Initiative," *China Leadership Monitor*, no. 47 (2015): 1.

[46] Evan A. Feigenbaum, "Is Coercion the New Normal in China's Economic Statecraft?," MacroPolo, 25 July 2017.

[47] Chris Buckley and Keith Bradsher, "Xi Jinping's Marathon Speech: Five Takeaways," *New York Times*, 18 October 2017.

[48] Graham Allison, *Destined for War: Can America and China Escape Thucydides's Trap?* (Boston, MA: Houghton Mifflin Harcourt, 2017), 119.

that he views the collapse of the Soviet Empire as an allegory with stark lessons for China. In a 2012 speech, Xi alluded to three fatal errors that led to the downfall of the Soviet Union. First, the Soviets relaxed political control of society, leading to a breakdown in the Communist system. Then, they allowed the Communist Party of the Soviet Union to become corrupt and hollow. Finally, they nationalized their military, requiring allegiance to the nation rather than to the party.[49] Xi's conception of the Communist struggles of the past combined with his vision for China's preeminent future project a path from which he is unlikely to stray without significant pressure.

Motivation

The PRC's strategic objectives illuminate two competing views of its motivations. The first view is that the PRC seeks to project power on a more expansionist scale beyond the Indian Ocean. This opinion sees the PRC's coercive behavior across the military, political, and economic spheres as evidence of an offensive strategic outlook. In contrast, the alternative view sees the desire for complete control of the South China Sea as defensive in nature based on China's traditional culture and fear of repeating the Communist failures of the twentieth century. Although the latter explanation provides more historical examples from which to infer intent, making the case proves difficult due to differing perspectives over the meaning of *defensive*.

Andrew Scobell describes the confusion about offensive versus defensive intent as the "Chinese Cult of Defense" and concludes, "This conviction will continue to move these [Chinese] leaders to rationalize virtually any military operation as a defensive action."[50] A 2019 report by the U.S. Defense Intelligence Agency further supports this assertion, explaining that the PRC describes its military strategy as "active defense"—defensive at the strategic level but offensive at the operational and tactical levels.[51] The PRC seems unwilling to acknowledge that this strategy can easily be construed as threatening to other nations, and its actions are sending an unambiguous signal to its regional neighbors and strategic competitors that there is a strong cause for concern.

The PRC's fears, real or imagined, provide solid context for understanding the Chinese view of defense. In the *realpolitik* (balance of power) tradition of international relations theory, Donald K. Emmerson describes the PRC's three fears: the fear of rehumiliation, the fear of containment, and the fear of disaffection.[52] The fear of rehumiliation is based in large part on the PRC's continued need to inspire a heightened sense of nationalism since the end of World War II. The second fear,

[49] Allison, *Destined for War*, 119.
[50] Andrew Scobell, *China's Use of Military Force: Beyond the Great Wall and the Long March* (Cambridge, UK: Cambridge University Press, 2003), 198, https://doi.org/10.1017/CBO9780511510502.
[51] *China Military Power: Modernizing a Force to Fight and Win* (Washington, DC: Defense Intelligence Agency, 2019), 23.
[52] Donald K. Emmerson, "Why Does China Want to Control the South China Sea?," *Diplomat*, 24 May 2016.

containment, comes from the PRC's desire to expand its economy in order to become a modern superpower by the centennial of the Communist revolution in 2049.[53] The PRC views its ability to control the resources of the South China Sea as well as its ability to reach new Western markets as the strongest motivators against being contained by external influencers.[54] Lastly, the fear of disaffection is fundamentally focused on maintaining absolute order and control over domestic affairs. The most recent manifestation of dealing with this fear is the PRC's new "social credit laboratory."[55] According to the PRC's State Council, the social credit system should "allow the trustworthy to roam everywhere under heaven while making it hard for the discredited to take a single step."[56] Fundamentally, President Xi's interpretation of the collapse of the Soviet system combined with the CCP's fear of a similar fate highlight the PRC's desperation for internal control as a principle policy driver.

As a result of its most significant fears, the PRC has a multifaceted, complicated, and broad interpretation of strategic defense. Ultimately, this complex interpretation is the prime source of confusion in the South China Sea. As evidenced by the 2010 *China's Ocean Development Report*, the PRC considers the South China Sea to be part of its "blue soil," its sovereign historic maritime territory.[57] Consequently, from the perspective of other nations that share an interest in the South China Sea, the PRC's cultural views of defense combined with its fears have translated into a toxic policy of domination. Some might argue that the PRC's strategies show offensive intent, but the PRC sees them as protecting what it interprets to be rightfully and historically its own. As a result, the United States finds itself as the only superpower who has the capability to help the PRC reshape its vision before tensions become untenable.

America's Strategic Choices

> *Each one hopes that if he feeds the crocodile enough, the crocodile will eat him last. All of them hope that the storm will pass before their turn comes to be devoured.*
>
> ~ Winston S. Churchill, 1940[58]

State of Strategy

Reading between the lines, it is hard to miss the subtle message to the PRC in the 2017 NSS: there will be a price to pay for noncompliance with international norms. Across all diplomatic, intelligence, military, and economic (DIME) levers of national

[53] Emmerson, "Why Does China Want to Control the South China Sea?"
[54] Swaine, "Chinese Views and Commentary on the 'One Belt, One Road' Initiative," 2.
[55] Simina Mistreanu, "Life Inside China's Social Credit Laboratory," *Foreign Policy*, 3 April 2018.
[56] Mistreanu, "Life Inside China's Social Credit Laboratory."
[57] *China's Ocean Development Report* (Beijing: State Council of the People's Republic of China, 2010), 469; and Dean Cheng, "Sea Power and the Chinese State: China's Maritime Ambitions," *Backgrounder*, no. 2576 (July 2011): 9.
[58] Martin Gilbert, ed., *Winston Churchill and Emery Reves: Correspondence, 1937–1964* (Austin: University of Texas Press, 1997), 230.

power, the four pillars of the *National Security Strategy of the United States*—protecting the American people, homeland, and way of life; promoting American prosperity; preserving peace through strength; and advancing American influence—lay the competitive framework for a clear cost imposition strategy. They also provide coherent messaging aimed at shaping expectations and engaging the bureaucratic machinery of government and the defense enterprise.[59]

To be credible, any strategy must achieve five key measures of effectiveness: provoke a desirable change or reaction, act in accordance with international law, solidify support of allies and partners, amplify influence across all levers of power, and accept the risk of a response while also providing manageable de-escalation measures. As the focus of this research is on military options, these measures of effectiveness will serve as the lenses through which military actions will be evaluated for their potential impact on the PRC's strategic calculus.

Making Cost Imposition Work: Lessons from the Past and Present

Although there are important differences between past and contemporary competitions, there are also lessons that provide a firm foundation for analysis. The United States has a historical model to judge the effectiveness of its cost imposition strategy: the Cold War. In 2014, U.S. Air Force colonel Kenneth P. Ekman wrote a detailed policy paper that used both a qualitative and quantitative analysis to outline an effective cost imposition strategy against the PRC. Ekman writes, "The inherent offensive or defensive nature of a rival's response can work to a competitor's advantage. . . . As a competitive strategy, a competitor can make offensively oriented choices eliciting defensive program, posture, or operating concept reactions from an opponent. . . . By committing to and investing in a particular response, a competitor bears the opportunity costs inherent to foregone choices."[60] Eckman's objective was to place the burden of expansionist policies in Asia squarely on the shoulders of the PRC's developing economy, which is, in part, how the United States pressured the Soviet Union during the Cold War.

The key differences between past and present are that the PRC's economy is larger, more stable, and more closely tied to the economies of the United States and the world than was the Soviet economy of the 1980s, and that the ultimate goals of the PRC are vastly different than those of the Soviet Union. Additionally, the Cold War was principally about which ideology would dominate the world order—capitalism versus Communism and individual freedom against the supremacy of the state.[61] In contrast, the great power competition between the United States and China is less about existential beliefs and more about economic growth, influence, and competitive advantage in an increasingly interconnected and globalized

[59] Trump, *The National Security Strategy of the United States of America*, 8.
[60] Col Kenneth P. Ekman, USAF, *Winning the Peace Through Cost Imposition* (Washington, DC: Brookings Institution, 2014), 30.
[61] George F. Kennan, *American Diplomacy*, 2d ed. (Chicago, IL: University of Chicago Press, 1984), 117–25.

world. Unlike the Cold War, this competition is not a zero-sum game but rather a maneuver for influence over the system. In reality, both superpowers can prosper under the current liberal order, but the PRC wants more influence on the global system. As a result, U.S. military actions in support of DIME efforts must impose costs on the PRC, especially in the maritime domain.

Present economic policy toward the PRC is indicative that cost imposition can produce desirable outcomes. A 2018 CSIS report details five key parameters necessary for countering "gray zone coercion," the area between competition and conflict that exists between the United States and China: "transparency;" "preparation and preemption;" "integrated action;" "early, bold action;" and "clear, specific, and consistent messaging."[62] As a fitting result of economic pressure implemented by the administration of U.S. president Donald J. Trump via tariffs to correct the PRC's unfair trade practices, U.S.-China bilateral negotiations during the G20 summit in 2018 produced a temporary halt to the current trade war.[63] The Trump administration's actions followed the path outlined by CSIS, and Chinese state media described the negotiations as "constructive and very positive."[64] The Trump administration's cost imposition gamble produced positive results; a similar approach to military policies could have a complimentary effect.

Combined with the pressure of rapidly expanding technology, persistent presence, and the expansion of relationships with regional allies and partners, naval power in the Pacific has the ability to increase costs on the expensive systems that comprise the bulk of the PRC's A2/AD capacity. As the U.S. military competes there, it also may force the PRC to absorb more economic pain for its behavior. Consequently, cost imposition could potentially sow the seeds of internal dissatisfaction and instability within the PRC, which could thereby trigger significant burdens on the CCP and challenge its government mechanisms for control.[65]

Despite the historical effectiveness that this approach has shown, future implementation will require more deliberate attention. Thomas G. Mahnken wrote a detailed analysis about the factors that may contribute to the overall effectiveness of cost imposition on a competitor such as the PRC. In general, peacetime strategies focus on a combination of economic, military, and political tools imposed over a long period of time—in some cases, decades—and which occurs much more slowly than during wartime.[66] While Mahnken takes a comprehensive look at the

[62] John Schaus et al., *What Works: Countering Gray Zone Coercion* (Washington, DC: Center for Strategic and International Studies, 2018).
[63] "The U.S. and China's Trade Truce Statements, Compared," Bloomberg, 2 December 2018.
[64] "State Councilor and Minister of Foreign Affairs Wang Yi Briefed the Chinese and Foreign Media on the Meeting between the Chinese and US Heads of State," People's Republic of China Ministry of Foreign Affairs, 2 December 2018.
[65] Ekman, *Winning the Peace Through Cost Imposition*, 47.
[66] Thomas G. Mahnken, *Cost-Imposing Strategies: A Brief Primer* (Washington, DC: Center for a New American Security, 2014), 9–11. Mahnken is currently the president and chief executive officer of the Center for Strategic and Budgetary Assessments in Washington, DC.

many complexities of cost imposition, he makes a particularly compelling case for the importance of *initiative*. He writes, "The side that is implementing a successful strategy should possess the initiative in the competition, controlling its pace and scope while forcing its competitor to react to it."[67] In the context of the relationship between the United States and China, the implication of Mahnken's argument seems clear: the United States has been on the wrong side of the initiative gap with the PRC for quite some time.

If current capabilities represent the first-order calculation to relative military advantage, then the pace of research, acquisition, and tactical development may be the second-order predictor of future advantage. Although U.S. military capabilities presently exceed those of the PRC, the United States is reacting to the PRC's A2/AD strategy rather than driving it. Harkening back to the Cold War, Ekman's analysis provides the insight that the acquisition and rapid development of strategic bombers between 1960 and 1985 forced the Soviet Union to develop tens of thousands of air defense artillery systems and spend billions of dollars on surface-to-air missile systems that became significantly less effective once the United States introduced stealth technology coupled with precision-guided munitions as part of its "second offset strategy."[68] When combined with the "first offset strategy" of nuclear deterrence, U.S. industrial output, research, and development exceeded the capability of the Soviet Union to match and made the costs prohibitive for it to compete.[69]

The NSS gives a just nod to the reality that the PRC has turned the tables on cost imposition due to, among many reasons, the extensive time periods and massive costs involved in development of new military capabilities. One such example is the Lockheed Martin F-35 Lightning II stealth multirole fighter aircraft, which has been in development for more than 20 years from concept to initial operational capability. One of the themes throughout the *National Security Strategy of the United States* is that the United States must modernize and streamline the acquisition process to deliver more capability with less cost overruns at a pace that exceeds the development rate of the evolving threat.[70] During the same 20-year period that the F-35 was in development, the PRC developed advanced weapons systems and modernized its force structure to take advantage of newer technologies in cyber and space warfare as well as low frequency radar systems designed to track low-observable platforms and weapons, which has challenged the force multiplier that stealth was

[67] Mahnken, *Cost-Imposing Strategies*, 12.

[68] Ekman, *Winning the Peace Through Cost Imposition*, 6; and Zachary Keck, "A Tale of Two Offset Strategies," *Diplomat*, 18 November 2014. The first offset strategy developed the nuclear triad under U.S. president Dwight D. Eisenhower's "New Look" initiative, which gave rise to the principle of mutually assured destruction (MAD). The second offset strategy began in the 1970s and included long-range precision-guided munitions as well as stealth technology. The combination made its combat debut in the skies over Baghdad, Iraq, on 17 January 1991—the first night of Operation Desert Storm.

[69] Keck, "A Tale of Two Offset Strategies."

[70] Trump, *The National Security Strategy of the United States of America*, 27.

supposed to provide.[71] More than any other underlying cause, the inefficiency inherent in the acquisition process is a significant hindrance to the United States in seizing the initiative.

While modernization will hopefully accelerate during the next two decades, the United States cannot wait for its bureaucratic processes to improve before taking actions to retake the lead. Quite to the contrary, the United States must use its current capability and capacity advantages to produce a desirable response from the PRC. Modernization will take time, but the PRC certainly will not wait. The military actions described in the following section are designed to provide additional leverage to U.S. decision makers in the competition for the South China Sea.

Sending the Message: Naval Options in the South China Sea

> *The secret of steel has always carried with it a mystery. You must learn its riddle. . . .You must learn its discipline. For no one—no one in this world can you trust. Not men, not women, not beasts. [The sword] you can trust.*
>
> ~ Father of Conan the Barbarian[72]

Sea Control of Key Maritime Terrain

In a future conflict in the South China Sea, naval forces will have the lead in demonstrating firm sea control of key maritime terrain, especially the Malacca, Sunda, and Lombok Straits. To credibly communicate its ability to control access, the U.S. Pacific Fleet should conduct a fleet-level exercise near these chokepoints that culminates in sailing three separate task forces simultaneously through each of the three straits. In essence, the message to the PRC is simple: the United States has the capability to contain the PRC's maritime ambitions if it should become necessary.

This type of naval activity is fully supportable by the U.S. Pacific Fleet, as observed in recent naval operations. Since 2006, the U.S. Seventh Fleet—subordinate to the U.S. Pacific Fleet and headquartered at Yokosuka, Japan—has sponsored Exercise Valiant Shield, a biennial exercise conducted in the Mariana Islands training ranges. The U.S. Navy conducts Valiant Shield as a United States-only follow-on to the multinational Exercise RIMPAC (Rim of the Pacific).[73] Typically, these operations involve up to three carrier strike groups and expeditionary strike groups executing a Pacific contingency campaign over a one-month period.

Accordingly, the U.S. Navy should plan an operation on the same scale of Valiant Shield but in the vicinity of the key maritime terrain of the South China Sea. To achieve the desired response, the exercise should take place in three distinct phases.

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[71] *China Military Power*, 11.

[72] *Conan the Barbarian*, directed by John F. Milius (Universal City, CA: Universal Pictures, 1982).

[73] Megan Eckstein, "High-End Exercise Valiant Shield 2018 Features Joint Strike Fighters, 15,000 Personnel," *U.S. Naval Institute News*, 18 September 2018.

Phase 1 will integrate sea, air, and undersea operations southwest of the Lombok Strait, west of the Sunda Strait, and near the Spratly Islands. Phase 2 will involve a simultaneous but separate passage of three strike groups through the Malacca Strait, the Lombok Strait, and the South China Sea. Phase 3 will comprise coordinated operations with all three task forces throughout the South China Sea.

The effectiveness of this three-task-force plan shows strong performance across the measures of effectiveness. First, it limits the PRC's realistic response to the political and information arenas rather than the direct military sphere, due to the People's Liberation Army Navy's (PLAN) insufficient blue-water capability and lack of a coherent fleet-level operating concept, according to retired Vice Admiral Yoji Koda of the Japanese Maritime Self-Defense Force.[74] However, Koda does acknowledge that the PLAN's current blue-water capabilities are evolving at a rapid pace and are not expected to be nearly as limited by 2030. He makes a strong case that the most effective way to contain the PLAN is to control key maritime chokepoints, which is the exact intent of the three-task-force plan.[75]

Based on the PRC's historical reactions, there is strength in numbers for U.S. warships, and American naval power must capitalize on its relative advantage. Today, the PRC does not have the ability to react with an equivalent military response. For example, the PLAN has only one operational aircraft carrier, *Liaoning* (16), which has limited power projection capability and a minimally developed concept of operations. Based on recent military interactions with deployed U.S. forces, the PRC has two practical military responses: increasing combat patrols throughout the South China Sea with additional overflights of U.S. warships using the Xian H-6 strategic bomber, or challenging U.S. vessels with diesel attack submarines and/or surface combatants.

The most likely military reaction is increased patrols by Chinese aircraft in the South China Sea, including possible overflights of U.S. task forces. This has become a common occurrence and is consistent with international law. As reported by Reuters, the PRC flew an H-6 along the path of the nine-dash line and into the recently finished Fiery Cross Reef airfield in the Spratly Islands for the first time in January 2017.[76] Following an earlier combat air patrol in July that originated from Woody Island, a spokesman for the People's Liberation Army Air Force (PLAAF) announced to Chinese state media, "Based on the need of the Air Force for fulfilling its missions and tasks, the combat readiness patrol to the South China Sea by the Air Force servicemen will continue on [a] regularized basis."[77] Rather than the tactical risk to naval vessels, the biggest implications of these flights come from the strategic reality

[74] VAdm Yoji Koda, JMSDF (Ret), *China's Blue Water Navy Strategy and Its Implications*, China's Bluewater Navy Series (Washington, DC: Center for a New American Security, 2017), 9–10.
[75] Koda, *China's Blue Water Navy Strategy and Its Implications*, 7–8.
[76] "Chinese Bomber Flies around Contested Spratlys in Show of Force: U.S. Official," Reuters, 10 January 2017.
[77] Zhang Yunbi, "China's Air Force Flags Regular Patrols in South China Sea," *China Daily*, 18 July 2016.

that the H-6 is now operating from the Spratly Islands, which drastically extends its combat reach and indicates the PRC's progress toward solidifying more control of the South China Sea. U.S. fighter aircraft have repeatedly executed professional intercept-and-escort procedures with no escalation. Although these overflights represent relatively low-risk encounters, they send a much larger strategic message.

Alternately, a more dangerous response could come from the PRC's *Kilo*-class submarines and capital surface warships such as the Type 052D destroyer, a Chinese copy of the United States' *Arleigh Burke*-class guided-missile destroyer. Surveillance is the key component of the PRC's A2/AD construct, a concept of operations that is still more of a political talking point than a fully developed capability.[78] Nevertheless, the problem with surface and subsurface threats in a peacetime scenario is the potential disruption to task force maneuvers in confined waters coupled with the increased risk of a collision at sea. One glaring incident occurred in 2015 when a PLAN fast-attack submarine surfaced in the vicinity of the USS *Ronald Reagan* (CVN 76) carrier strike group off the coast of Japan. Although this type of threat usually goes unacknowledged, this instance was a notable exception. In an unusual maneuver, the submarine revealed itself only after tracking the strike group for at least half a day, as the Pentagon reported.[79] As the U.S. Navy has the tactics, techniques, and procedures to reasonably manage the submarine threat, this incident was a public affairs and political victory for the PRC rather than any type of military success. In anticipation of similar reactions, the United States must be prepared to counter the PRC narrative to any future interactions.

In the most egregious example of harassment, an incident between the PLAN and the U.S. intelligence collection vessel, USNS *Impeccable* (T-AGOS 23), marks the extreme limits of the competitive space. In March 2009, the PRC violated all acceptable standards of professional maritime conduct when it deliberately impeded safe navigation in international waters 75 miles from Hainan Island. Five Chinese vessels intentionally placed obstacles and other hazards in *Impeccable*'s path, forcing it to take extreme measures to avoid a collision, and a Chinese-flag trawler attempted to cut its towed sonar array cable.[80] Although *Impeccable* survived the incident with no permanent damage or loss of life, the incident demonstrated the PRC's increasing aggression toward U.S. naval and intelligence activities, particularly when it can isolate an individual ship. On the international stage, the incident highlighted the PRC's blatant disregard for UNCLOS. The PRC has repeatedly attempted to prohibit foreign military or intelligence activity in the South China Sea without prior permission. However, the majority of UNCLOS signatories refuse to acknowledge the

[78] Michael McDevitt, "The PLA Navy's Antiaccess Role in a Taiwan Contingency," in *The Chinese Navy: Expanding Capabilities, Evolving Roles*, ed. Phillip C. Saunders et al. (Washington, DC: National Defense University Press, 2011), 209–10.
[79] Kyle Mizokami, "A Chinese Submarine Stalked an American Aircraft Carrier," *Popular Mechanics*, 6 November 2015.
[80] Eric A. McVadon, "The PLA Navy as an Instrument of Statecraft," in *The Chinese Navy: Expanding Capabilities, Evolving Roles*, 215–40.

PRC's unreasonable demands, and accordingly, the United States must continue to vigorously challenge the PRC's position in order to set the correct legal precedent. In spite of the PLAN's actions against *Impeccable,* the PRC cannot credibly commit such a violation against a fleet of warships.

Despite possible Chinese reactions, the three-task-force operation outlined above will reassure allies and partners that the United States has the ability to deter and counter regional aggression in a crisis situation. Concurrently, it will prod the PRC's deepest fears of containment and denial of freedom of action in the maritime domain. According to Christopher Yung, "The [United States] could choke off the economic growth of China by using its navy to block and strangulate China's access to petroleum and raw materials—the so-called 'Malacca Dilemma'."[81] The operation shows a strong determination to exercise maritime rights in international waters and airspace in support of UNCLOS, which should be of the utmost importance to all maritime nations.

In the event of a military interaction with one or more of the U.S. task forces, however limited, the PRC will look to shift the blame away from its aggressive behavior and onto the United States. With a desire to undermine U.S. credibility, the PRC will attempt to capitalize on an unrelated string of high-profile U.S. Navy mishaps in recent years. As reported in *Navy Times*, the U.S. Navy relieved the commander of the U.S. Seventh Fleet in August 2017 following two separate collisions during a two-month period that resulted in the deaths of 17 American servicemembers. In June, the guided-missile destroyer USS *Fitzgerald* (DDG 62) collided with a merchant vessel off the coast of Japan, and in August, the guided-missile destroyer USS *John S. McCain* (DDG 56) collided with a civilian tanker ship near Singapore.[82] Although there may be little similarity between these past mishaps and any future interactions between U.S. Navy and PLAN combatant vessels in the South China Sea, U.S. forces must be prepared to counter PRC propaganda with video and audio evidence, which is already part of its routine procedures. Otherwise, the PRC may shape a politically advantageous narrative in the international community.

Lastly, because this operation is a short-term event, it provides de-escalation dynamics in two respects: duration and intensity. While the action sends an unambiguous message, it is also similar in scale and scope to other naval exercises conducted farther east in the Pacific. The location may be provocative, but the actions are consistent with routine maritime operations in international waters. The relatively short duration—less than 30 days—will provide the opportunity to reset the relationship between the United States and the PRC and assess options for future negotiations. Along similar lines, the operation is sufficient in size to intimidate the PLAN from attempting overt military action against the U.S. fleet. In its present

[81] Yung and Dong, *U.S.-China Relations in the Maritime Security Domain*, 12.

[82] Geoff Ziezulewicz, "Fired 7th Fleet Admiral Speaks Out on What Caused the Fitzgerald and McCain Collisions," *Navy Times*, 27 April 2018.

condition, the PLAN simply cannot match the size, combat power, or defense-in-depth capabilities of a large naval presence. Therefore, based on the measures of effectiveness analysis, U.S. naval forces should conduct large-scale operations on a regular basis near the South China Sea and its key chokepoints until the PRC comprehends the message and adjusts its current course.

Combined Expeditionary Warfare Training

In conjunction with controlling key maritime terrain, any potential South China Sea contingency operation will require expansive expeditionary power with allies and partners. If international pressure cannot convince the PRC to stop its militarization in the Spratly Islands, then force may eventually be required to dislodge Chinese positions. Expanded defense cooperation with the Socialist Republic of Vietnam may be the key to this line of effort.

An important partner for maintaining stability and legitimacy in the South China Sea, Vietnam knows that in order to sustain its regional economic interests, it must carefully balance a tumultuous relationship with the PRC against a burgeoning one with the United States. Warming to the benefits of closer relations, Vietnam has participated in several bilateral meetings with U.S. officials since 2012. These discussions have borne fruit in finding common ground on the important issues of open access, freedom of navigation, unimpeded commerce, full implementation of a South China Sea code of conduct, and compliance with UNCLOS.[83] Although there are many facets of security cooperation, a significant aspect of any negotiations should include combined training opportunities with the United States and Vietnam. In 2012, the Heritage Foundation developed several recommendations that laid the cornerstone for cooperation between the United States and Vietnam, arguing that "the [United States] should focus on improving the value proposition of U.S.-Vietnamese defense ties through enhanced training and education, and as much operational contact as the relationship will bear."[84] Based on Vietnam's relative capabilities, combined training and doctrine development is vital to its reliability as a balance against the PRC.

One effective medium for improving interoperability is through regularly scheduled exercises such as Exercise RIMPAC. The Vietnamese Ministry of National Defense reported that Vietnam only sent observers to RIMPAC in 2012 and 2016. However, that participation has recently expanded. In 2018, eight Vietnamese People's Navy (VPN) officers actively participated in RIMPAC events, which indicates some degree of evolution in Vietnamese willingness.[85] Now that Vietnam has

[83] Alexander L. Vuving, "Vietnam, the US, and Japan in the South China Sea," *Diplomat*, 26 November 2014; and *Stirring Up the South China Sea (II): Regional Responses*, Asia Report no. 229 (Brussels, Belgium: International Crisis Group, 2012).
[84] William Jordan, Lewis M. Stern, and Walter Lohman, "U.S.-Vietnam Defense Relations: Investing in Strategic Alignment," *Backgrounder*, no. 2707 (July 2012): 1.
[85] "Vietnam to Participate in US-Hosted RIMPAC Exercise for the First Time," *Nhân Dân* (Vietnam), 26 June 2018.

shown an increased appetite for combined operations, further opportunities exist to send larger VPN contingents to gain experience.

Along this line of effort, the U.S. Pacific Fleet should consider enhancing future RIMPAC exercises by conducting them in the South China Sea rather than in the Hawaiian operating area. Think tanks and defense circles have hinted at this type of action since 2012, arguing that it could cause a shift in the PRC's strategic calculus. In a 2018 article in *The National Interest*, Tuan Pham and Grant Newsham write that:

> The bold trifecta in strategic effects—pushing back against China's unilateral expansionism in the strategic waterway [the South China Sea], reinforcing the legal standing of the 2016 International Arbitral Tribunal ruling that invalidated Beijing's Nine-Dash Line claims, and underscoring the universal importance of rule of law and compliance with global norms—will demonstrate that the United States and like-minded nations are willing to stand up for their national interests and shared values.[86]

In essence, multinational action on the scale of RIMPAC would signal a strong international desire to protect the South China Sea as part of the global commons, not as the PRC's exclusive maritime dominion.

Similar to the positive strategic impacts of decisive sea control, combined expeditionary training also performs well across most measures of effectiveness but also carries higher risks for Chinese backlash against regional allies and partners. The PRC prefers to negotiate in bilateral rather than multilateral forums such as ASEAN because it can use overwhelming political and economic leverage as well as the threat of its rising combat power to achieve its foreign policy objectives. To counter this proclivity, expanded training events would have to progress with a large degree of international cooperation to mitigate those risks and maintain broad support.

In gauging potential responses, some analysts may attempt to make the case that moving the United States closer to Vietnam will cause the PRC to accelerate an arms race, increase military spending, and enhance its A2/AD capabilities. While these issues are certainly concerning, a failure to counter the PRC's aggressive militarization of the South China Sea with military pressure will absolutely embolden its positions, which have proceeded with almost no indications of slowing since the mid-1990s. There is no evidence to suggest that the PRC would proceed differently if the United States avoided a closer relationship with Vietnam.

[86] Tuan Pham and Grant Newsham, "China's Worst Nightmare: RIMPAC 2020 in the South China Sea?," *National Interest*, 29 September 2018.

Rather than the threat of an arms race, a more realistic response by the PRC may take the form of a military skirmish in the Spratly Islands against Vietnamese units. Disputes between China and Vietnam have occurred regularly since World War II. For instance, in 2014, the vice commander of the Vietnam Coast Guard (VCG), backed by clear video evidence, reported to the international press that a Chinese vessel repeatedly collided with a VCG ship after the latter attempted to prevent the deployment of a Chinese oil rig in Vietnam's exclusive economic zone. Providing no additional justification for its actions, the PRC's Ministry of Foreign Affairs simply implied that it was conducting business as usual.[87]

Despite the risk of clashes, it is equally important to note that these interactions have been a regular part of Vietnam's uneasy relationship with the PRC over the years. Mark E. Manyin explains that Vietnam has followed the same path since the 1980s: market reforms, improved relations with neighbors, a deeper relationship with China, and better relations with the United States.[88] Vietnam can achieve its goals by carefully "threading the needle" between expanding its military capabilities through training with the United States and deepening its economic relationship with the PRC, an extremely delicate, but necessary, balance. It has been made possible because the United States and Vietnam share similar long-term interests in the openness of the South China Sea.

Most dangerously, the PRC could exploit concerns about the future commitment of the United States to the Pacific and encourage other nations to bandwagon with it as a viable alternative to U.S. leadership. As with the Philippines, the PRC also attempted to strong-arm Vietnam in 2010, warning it to avoid growing its relationship with the United States. James Bellacqua writes that PLAN rear admiral Yang Yi "opined that Vietnam would 'regret' its decision to hold a seven-day exercise with the U.S. Navy and urged Vietnam to learn from the experience of Pakistan, which he claimed felt 'hurt' once Washington 'no longer had any use for it' after the Cold War."[89] Although Yang takes the comparison out of historical context, his statements provide solid propaganda to shape attitudes among the PRC's competitors. If the United States and Vietnam do not advance their security relationship, Vietnam could similarly find itself moving toward the Chinese sphere of influence, which would be far more damaging to U.S. interests than China's expanding military capability.

While the PRC would absolutely see any U.S.-led exercise near the South China Sea as a provocation, in the long run, the international community would be sending the correct message. Combined expeditionary training is also completely

[87] "Vietnam, China Naval Vessels Clash over Oil Rig," *Wall Street Journal*, 7 May 2014. This altercation later resulted in the deaths of eight Chinese nationals during riots in Vietnam.
[88] Mark E. Manyin, *U.S.-Vietnam Relations in 2014: Current Issues and Implications for U.S. Policy* (Washington, DC: Congressional Research Service, 2014), 4.
[89] James Bellacqua, *The China Factor in U.S.-Vietnam Relations* (Arlington, VA: Center for Naval Analysis, 2012), 24.

defendable under UNCLOS in both exclusive economic zones and on the high seas. As a result, it should garner wide support of all nations that have an interest in preventing unilateral maritime power-grabs. In addition, conducting operations in the PRC's backyard could magnify the effectiveness of all other levers of DIME by forcing the PRC into a multilateral forum that will reduce its coercive influence over other participating states. In weighing de-escalation options, the benefit of regularly scheduled exercises is that participation and duration can vary in response to the PRC's reaction. Positive dialogue with the PRC could produce rewards as well as invitations to participate in future training exercises.[90] In contrast, continued aggression and violations of international law have the potential to threaten the PRC's growing economy and status as a great power. De-escalation, therefore, is inherent in the PRC's cost-basis, as great power status requires presence, recognition, and participation. As a result, the PRC has a strategic incentive to avoid a larger conflict that could embarrass its aspiring fleet and damage the prestige that it seeks.

Ultimately, failure to demonstrate commitment will only help the PRC drive U.S. influence from the Pacific. As described above, the PRC successfully courted Philippines president Duterte, signaling the shift of a stalwart U.S. ally toward the PRC and Russia, a move that played right into the PRC's larger strategy of attacking U.S. credibility with its traditional Pacific allies.[91] It also offers striking evidence that the United States must act decisively to reassure the region that it will be there to defend it. Failure to do so could drive long-time and future friends into the welcoming arms of the PRC.

Contested Freedom of Navigation Operations

The third and perhaps most controversial line of effort is to accelerate contested FONOPs throughout the South China Sea, particularly within the Spratly Island chain. Prior to 2016, airborne missions specifically avoided operations within 24 nautical miles of the Spratly Islands because the U.S. government declared them to be politically sensitive areas.[92] By enabling these restrictions, however, the United States was inadvertently strengthening the legal standing of the PRC's illegitimate maritime claims under UNCLOS Article 17.[93] According to *The American Journal of International Law*, "The conventional view is that formation of CIL [customary international law] requires two distinct elements to be established: state practice and *opinio juris*," which is an opinion of law or necessity.[94] The PRC is attempting to settle the matter of state practice through its island reclamation activities, air defense identification zones, and demands for prior permission to conduct military

[90] McVadon, "The PLA Navy as an Instrument of Statecraft," 229–30.
[91] "Philippines' Duterte to Force Closer Ties with China, Russia."
[92] Steven Stashwick, "South China Sea Militarization: Fighters in the Paracels and Combat Logistics," *Diplomat*, 6 December 2017.
[93] Truong-Minh Vu and Jeremy Lagelee, "U.S. Navy Sets the Record Straight on FONOPS," *National Interest*, 24 February 2016.
[94] Pierre-Hugues Verdier and Erik Voeten, "Precedent, Compliance, and Change in Customary International Law: An Explanatory Theory," *American Journal of International Law* 108, no. 3 (July 2014): 413.

operations outside of its territorial waters. The purpose of contested FONOPs is to deny the PRC a status of consent. Accordingly, the United States must eliminate the politically sensitive area construct and replace it with robust air operations in the skies over the Spratly Islands.

The new model of contested FONOPs must assume that the PRC will progressively challenge each overflight with an increasing level of hostility. In 2015, the commander of U.S. Pacific Command, U.S. Navy admiral Harry B. Harris Jr., boldly asserted that "the United States will continue to fly, sail, and operate wherever international law allows, and [will] support the right of all nations to do the same."[95] In response to increased operations, the PRC will undoubtedly attempt to call the United States' bluff. Therefore, future missions must conduct FONOPs with two key enhancements: employing strike packages of tactical jet aircraft flying through the Spratly Islands, and providing defensive combat air assets for expanded special reconnaissance operations (SROs) with no prior notification to the PRC.

For the U.S. Navy, a sustained or surged carrier presence coupled with the evolution of naval air power capability during the past several years provides an unprecedented window of opportunity to challenge the PRC's maritime claims. Naval aviation must seize the initiative by executing FONOPS throughout the Spratly Islands, employing integrated strike packages led by the Navy's most advanced asset, the Boeing EA-18G Growler electronic warfare aircraft—a platform specifically built to take the high-end fight to the PRC's doorstep. In September 2018, the airborne electronic attack community released its final environmental impact statement for a substantial expansion of its fleet. When complete in 2021, the expansion will include nine carrier-based squadrons with seven jets per squadron (an increase of two jets per squadron) and two new expeditionary squadrons with six jets per squadron (for a total of five theater-level expeditionary squadrons).[96] The airborne electronic attack community, its flyers, and its EA-18Gs are poised to lead this revolutionary air power contest.

From a maritime law standpoint, the United States can no longer accept a 24-mile precautionary standoff distance. Led by the EA-18G, the U.S. Navy should conduct routine high- and medium-altitude flyovers of the entire Spratly Island chain with a complete defense-in-depth strike package of up to 18 aircraft. This is well within the organic capacity of the carrier air wing, which can normally support up to 24 aircraft transitions—the total number of launches and recoveries in a given carrier deck cycle. When supported by additional expeditionary assets, these packages will send two unambiguous messages to Chinese forces in the Spratly Islands as well as the centralized PRC leadership in Beijing: the Spratly Islands belong to the global commons and the U.S. Navy is ready for a high-end airpower fight.

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[95] Shen Dingli et al., "China's Maritime Disputes: a CFR InfoGuide Presentation," Council on Foreign Relations, January 2017.

[96] *Environmental Impact Statement for EA-18G "Growler" Airfield Operations at Naval Air Station Whidbey Island Complex, WA*, vol. 1, *Main Body of the ES* (Washington, DC: U.S. Department of the Navy, 2018), 2.4–2.6.

Supporting these more assertive FONOPs, the United States must also expand its routine SRO sorties to challenge the PRC's demands for prior permission in its claimed waters, which includes the entire nine-dash line. Right now, the surge capacity exists to conduct these missions using the 16 to 20 Boeing P-8 Poseidon maritime patrol aircraft and Lockheed EP-3 ARIES signals intelligence aircraft assigned to the U.S. Seventh Fleet's area of operations.[97] As a defensive measure against any potential reactions, carrier-based and expeditionary aircraft must conduct armed defensive combat air patrols in conjunction with SRO flight to support these missions. While defensive combat air missions are routine for carrier strike group defense, they have largely been absent from SRO missions, which have seen more escalatory and provocative interactions with Chinese aircraft since 2001. These SRO missions are completely consistent with UNCLOS and vital to U.S. intelligence capability. However, they must include measures to guard against further aggression from Chinese aircraft, which are now operating from Fiery Cross. More airpower providing sanctuary for SRO aircraft will preempt escalation and serve as a deterrent for Chinese pilots that have repeatedly violated the principle of *due regard* in international airspace.[98]

FONOPs are arguably the most successful method of U.S. enforcement of international norms. In the South China Sea, they unequivocally support all measures of effectiveness, and yet they also generate the most danger for a misunderstanding between U.S. and Chinese forces. First, the PRC will certainly condemn any expansion of FONOPs as a threat to its precarious territorial and maritime claims, which is the entire point of the operation. Historically, the PRC has been the most aggressive against SRO flights, which is exactly why naval forces must defend them. Although there have been several high-visibility incidents, the most notorious was the forced landing of a U.S. Navy EP-3 after suffering a midair collision with a PLAN J-8 Shenyang J-8 "Finback" interceptor fighter aircraft in April 2001. After recklessly attempting to veer the EP-3 off course, the J-8 pilot collided with the aircraft and died as a result.[99] The incident caused so much damage to the EP-3 that it was unable to return to Kadena Air Base on Okinawa and instead diverted to Hainan Island.[100] The PRC then detained the crew and plane, causing an international standoff for more than 10 days. Neither side admitted fault, and the PRC disassembled and exploited the plane's sensitive components.

Although this was the most severe of the many interactions, the PRC has routinely intercepted other aircraft, such as the P-8, by employing its advanced fighter aircraft. As the United States progresses toward contested FONOPs in the skies over

[97] "The United States Seventh Fleet," Commander, U.S. 7th Fleet, accessed 15 December 2018.

[98] *Operation of State Aircraft Symposium* (Montreal, Canada: International Civil Aviation Organization, 2015), 1–2. The International Civil Aviation Organization defines *due regard* as "a phase of flight wherein an aircraft commander of State-operated aircraft assumes responsibility to separate his/her aircraft from all other aircraft."

[99] Bill Gertz, "The Last Flight of Wang Wei," *Air Force Magazine*, 1 July 2001.

[100] Elizabeth Rosenthal and David E. Sanger, "U.S. Plane in China after it Collides with Chinese Jet," *New York Times*, 2 April 2001.

the Spratly Islands, these are exactly the type of dangerous interactions that American aircrew should expect, which is why it is necessary to provide defensive combat air. To date, the Chinese have not attempted to conduct similar intercepts against fighters, which is why the United States must employ them. A single-aircraft SRO flight in the Spratly Islands could give PLAN and PLAAF the opportunity to react with incompetence on the scale of the Hainan Island EP-3 incident. As a result, the United States should no longer allow Chinese aircraft the freedom to conduct intercepts since they have proven that they do not respect the principles of due regard under the ICAO and UNCLOS treaties. As a consequence, FONOPs must test the PRC's resolve and skill in the air.

Just like past FONOPs, these new overflights are consistent with the legal responsibilities of safe flight conduct in international airspace. Despite the PRC's inevitable protest, these flights are likely to maintain international support, as the United States is one of the few nations capable of power projection and mutual support on the scale required to conduct South China Sea operations. While overflights of the Spratly Islands have the highest potential for miscalculation, either by intent or error, they are necessary to give the PRC strategic pause. In the best-case scenario, they could push the PRC to the negotiating table. Alternatively, the PRC could respond by conducting professional intercepts, but with fighters supporting SRO aircraft, it will become far riskier. In the worst-case response, the PRC could threaten to target U.S. aircraft using surface-to-air missile systems that are now functional throughout the Spratly Islands or by employing the robust air defenses of PLAN ships. If the PRC attempts to actually employ a weapon system, that scenario would exceed the competition threshold and drive the situation into potential armed conflict.

During contested missions, as long as the parties remain reasonable and rational, FONOPs provide relatively manageable de-escalation opportunities. If the Chinese change course in the South China Sea, the United States has the ability to respond in kind by discontinuing direct overflights and returning to less sensitive locations. Conversely, if the PRC continues on its present course, the United States should increase the frequency of both protected SROs and strike packages. Additionally, contested FONOPs requires extensive risk mitigation through supplementary theater rules of engagement and mission rehearsal. The intent is to provide operational commanders and pilots with broad-spectrum guidance and training across the scope of interactions with Chinese aircraft with increasing complexity. These controls will help U.S. forces practice deescalating scenarios before the risks exceed acceptable thresholds. Regardless of the inherent risks, contested FONOPs are an essential player in U.S. power to influence events, and PRC behaviors are ultimately responsible for the future flavor of these missions.

Conclusions and Recommendations

> *According to the Law of nature one rules whatever one can. We did not make this law. We found it when we came to power, and we shall leave it to those who come after us.*
>
> ~ Thucydides[101]

If the world desires the tide of history to bring fair winds to the South China Sea, the United States must drive a just peace by demonstrating its ability to control access to the South China Sea, strike as a combined expeditionary force with allies and partners, and sustain freedom of navigation in contested environments. The PRC understands only one language—power. It will interpret anything less as capitulation.

Naval forces sit on the precipice of a great power fight that will test the full faith and credit of the United States to provide open access to the global commons, defend allies and partners, and maintain freedom on the seas. The United States must prove its commitment to its friends by challenging the PRC's illegitimate claims of "historic rights" and "sovereignty." Other nations do not have the military capability or national will to solve the crisis without American leadership. This is the international challenge of the twenty-first century, and failure to address it will almost certainly shift the needle from competition to conflict.

In the spring of 1940, 22-year-old Harvard University senior John F. Kennedy completed a thesis titled "Appeasement at Munich." Published as a book, *Why England Slept*, in 1940, Kennedy's work provided an unpopular and critical analysis of the 1938 Munich Accords, after which British prime minister A. Neville Chamberlain had triumphantly returned from a meeting in Nazi Germany waving a paper that delivered "peace for our time," ultimately signing the death warrant of Czechoslovakia and preceding the advent of World War II. At the time, Joseph P. Kennedy, the U.S. ambassador to the United Kingdom and John F. Kennedy's father, adamantly opposed American involvement in this European affair and told President Franklin D. Roosevelt as much. In contrast to his father's isolationist sentiments, the younger Kennedy wrote in his book,

> [This] was the feeling on confidence and hope that the appeasement policy brought to England. The effect of this was to give the people a feeling of security, which was contagious and spread through all groups. The result was that people felt sacrifices were not necessary—"there isn't going to be a war anyway."[102]

[101] Thucydides, *The History of the Peloponnesian War*, trans. Martin Hammond (Oxford, UK: Oxford University Press, 2009).
[102] John F. Kennedy, *Why England Slept*, 2d ed. (New York: Wilfred Funk, 1961), 162–63.

Although Kennedy did not have the ethos to speak in such a way about England's future fate when on the cusp of the United States entering the conflict, he had the premonition to judge appeasement as the worst form of statecraft and the surest way to encourage an aggressor. Although organizations such as ASEAN and the United Nations are certainly taking a more proactive approach towards the PRC than Chamberlain took towards Germany, more assertive military actions need to be on the table to compel a change in behavior.

This chapter has focused extensively on the role of naval power in combatting the challenge of China's rise. Obviously, other researchers must look deeply at ways in which other levers of power can maneuver to take a more forceful role in shaping a just outcome. There has been a great deal of effort dedicated by the academic community toward conflict avoidance with the PRC while the U.S. Department of Defense has conducted extensive analysis on the character of a future war in the Pacific. However, there has been little courage from either side to face the reality that the United States cannot allow the PRC to solidify its positions or take any more ground in the South China Sea. If the PRC achieves full control of the region, it is likely that peace and stability will no longer be an option. Perhaps accepting a small rise in tensions now may avoid a disastrous fight later, so that the present-day South China Sea affair does not resemble what happened in Europe in 1939. By then, it will be too late.

Operation Fortitude 2035

The Role of Deception in Future War

By Major Daniel R. Richardson, U.S. Air Force[1]

The historical record is unequivocal in its support for deception as an effective weapon of war. A landmark study conducted by Barton Whaley, who investigated 138 military engagements between 1914 and 1967, showed that when deception achieved surprise, the attacker caused 14.5 enemy casualties for every 1 of their own, whereas without surprise the casualty ratio fell to parity.[2] The quantitative evidence is clear: in warfighting, surprise offers a marked advantage, and deception is its most valuable agent.[3]

This truth is especially important for the United States to consider in future conflict because the nation has recently exited a prolonged period of preeminence as the world's sole superpower following the collapse of the Soviet Union in 1991. During the years that followed, technological superiority and a focus on violent extremism changed the organization, training, and equipment of the U.S. military, including an atrophy of large-scale deception skills tailored to the unique challenges of great power competition. However, two changes in the global security environment have combined to threaten U.S. national interests in a way that has not been seen for more than 25 years, and operational deception offers a proven path toward mitigating this risk.

The first change is an imposing, assertive China and a revisionist Russia, identified as long-term strategic competitors in the *2018 National Defense Strategy of the United States of America*, causing the United States to return to an era of great power competition among nation states.[4] The threat posed by great power competition's reemergence is exacerbated by the second change: the erosion of the U.S. military's

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[2] Barton Whaley, *Stratagem: Deception and Surprise in War* (Norwood, MA: Artech House, 2007), 102–3.

[3] *Warfighting*, Marine Corps Doctrinal Publication 1 (Washington, DC: Headquarters Marine Corps, 1997), 42–44.

[4] *Summary of the 2018 National Defense Strategy of the United States of America* (Washington, DC: Department of Defense, 2018), 4.

technological superiority.[5] Factors contributing to this erosion include a declining manufacturing base, instability in the defense industrial base due to budgeting uncertainty, theft of intellectual property by foreign nations, and the decline of military research powering commercial innovation.[6]

While this combination of peer competitors and the loss of technological superiority should compel a renewed interest in the use of deception, forecasts of the future operating environment envision advances in technology that significantly change the character of war and bring into question whether the U.S. military could still successfully conduct a large-scale deception. Forecast technologies involve an increased ability to collect intelligence, a corresponding decrease in the ability to conceal the signatures of people and equipment, and revolutionary advances in computer-aided decision making. However, despite the implications these developments suggest, it is argued that deception at the operational level of war will still be possible in 2035.

A two-step analysis will support this thesis. First, three historical operational deceptions from the twentieth century will be examined using a framework developed by the Central Intelligence Agency (CIA) to illuminate each example's deception characteristics. The CIA framework was the product of a deception research program effort in 1981 that reviewed historical deception case studies, including the work of Whaley, and synthesized 10 maxims that underpin the creation of successful deceptions.[7] Second, deception characteristics common to all three historical examples will be evaluated against the 2035 future operating environment to discern whether they will still be feasible. Only then will recommendations for enhancing the U.S. military's ability to employ large-scale deception be offered.

What follows are the 10 deception maxims developed by the CIA's exploratory Deception Research Program in an effort to "aid intelligence analysts in thinking about the problem of deception and in detecting, analyzing and evaluating foreign deception schemes relevant to current intelligence problems."[8]

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[5] Now three years old, the *National Defense Strategy of the United States of America*'s assessment of the return of great power competition and the erosion of the U.S. military's technological superiority has been supported by subsequent strategic documents and a plethora of books. President Joseph R. Biden Jr.'s *Interim National Security Strategic Guidance*, published in March 2021, outlines an approach that is specifically designed to strengthen the United States' enduring advantages "to prevail in strategic competition with China." See Joseph R. Biden Jr., *Interim National Security Strategic Guidance* (Washington, DC: White House, 2021), 19. This is complemented by books such as Christian Brose's *The Kill Chain*, in which the former staff director of the U.S. Senate Committee on Armed Service argues that China represents the greatest long-term strategic threat that the United States has ever faced. See Christian Brose, *The Kill Chain: Defending America in the Future of High-Tech Warfare* (New York: Hachette Books, 2020). The growing chorus behind these assessments strengthens the natural extension of this paper's argument. Since deception will still be possible in 2035 despite forecast technological change and the loss of the United States' technological superiority, deception will represent a tool of increased importance for the U.S. military to maintain an enduring strategic advantage against China.

[6] *Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States* (Washington, DC: Department of Defense, 2018), 19–20.

[7] "Deception Maxims: Fact and Folklore" (research paper, Office of Research and Development, Central Intelligence Agency, Washington, DC, 1981).

[8] "Deception Maxims."

1. *Magruder's Principle: The Exploitation of Preconceptions*. It is generally easier to induce an opponent to maintain a preexisting belief than to present notional evidence to change that belief. Thus, it may be more fruitful to examine how an opponent's existing beliefs can be turned to advantage than to attempt to alter these views.[9]
2. *Limitations to Human Information Processing*. There are several limitations to human information processing that are exploitable in the design of deception schemes—among these, the law of small numbers and susceptibility to conditioning.[10]
3. *The Multiple Forms of Surprise*. Surprise can be achieved in many forms. In military engagements, these forms include location, strength, intention, style, and timing. Should it not prove attractive or feasible to achieve surprise in all dimensions, it may still be possible to achieve surprise in at least one of these. Thus, for example, if intentions cannot be concealed, it may still be possible to conceal timing (cry-wolf syndrome), place, strength, or style.[11]
4. *Jones' Lemma*. Deception becomes more difficult as the number of channels of information available to the victim increases. However, within limits, the greater the number of controlled channels the greater the likelihood of the deception being believed.[12]
5. *A Choice among Types of Deception*. Where possible, the objective of the deception planner should be to reduce the ambiguity in the mind of the victim, to force them to seize on a notional world view as being correct—not making them less certain of the truth, but more certain of a particular falsehood. However, increasing the range of alternatives and/or the evidence to support any of many incorrect alternatives—in the jargon "increasing the noise"—may have particular use when the victim already has several elements of truth in their possession.[13]
6. *Axelrod's Contribution*: Managing Assets. There are circumstances where deception assets should be managed despite the costs of maintenance and risk of waste, awaiting a more fruitful use. Such decisions are often susceptible to rational analysis.[14]
7. *A Sequencing Rule*. Deception activities should be sequenced so as to maximize the persistence of the incorrect hypothesis(es) for as long as possible. In other words, "red-handed" activities should be deferred to the last possible instant.[15]

[9] "Deception Maxims," 5.
[10] "Deception Maxims," 10.
[11] "Deception Maxims," 15–16.
[12] "Deception Maxims," 21.
[13] "Deception Maxims," 22.
[14] "Deception Maxims," 27.
[15] "Deception Maxims," 32.

8. *The Importance of Feedback*. A scheme to ensure accurate feedback increases the chance of success in deception.[16]
9. *"The Monkey's Paw."* Deception efforts may produce subtle and unwanted side effects. Planners should be sensitive to such possibilities and, where prudent, take steps to minimize these counterproductive aspects.[17]
10. *Care in the Design of Planned Placement of Deceptive Material*. Great care must be exercised in the design of schemes to leak notional plans. Apparent "windfalls" are subject to close scrutiny and often disbelieved. Genuine leaks often occur under circumstances thought improbable.[18]

Historical Examples

World War II: Operation Fortitude

The first historical deception example is Operation Fortitude (1944), the combined U.S.-British deception plan supporting the Allied invasion of northern France during World War II. Deception was essential to the Allied landings to prevent the Germans from deploying forces in sufficient strength to repulse the seizing of a lodgment. The Germans considered the French coastline near the port of Calais as the most likely site for an Allied landing in Western Europe and had stationed the formidable *Fifteenth Army* nearby to repel any attempted invasion.

Aware of this German preconception thanks to Ultra, the code-breaking program that allowed the Allies to decrypt German message traffic, the Allied deception plan aimed to reinforce this belief. Plans were drawn up for a fake amphibious assault at Calais with the goal of fixing the German *Fifteenth Army* to a position 170 miles from the actual landing beaches.[19] Additionally, the U.S.-British forces created a fake army group with decoy infrastructure and rubberized versions of equipment near the Strait of Dover in England. Allied double agents, false radio traffic, and the select passage of German surveillance aircraft became conduits for passing false intelligence.[20] Furthermore, the Allied bombing campaign preceding the invasion explicitly required that for every bomb dropped on defenses in the real landing area, two had to be dropped in the deception landing area at Calais.[21]

The deception was a complete success. When the invasion at Normandy began on 6 June 1944, the Germans believed it was a diversion and the *Fifteenth Army* was not moved in time to oppose the Allied landing.[22]

Using the CIA deception framework, Operation Fortitude relied on at least five maxims:

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[16] "Deception Maxims," 34.
[17] "Deception Maxims," 36.
[18] "Deception Maxims," 41.
[19] William B. Breuer, *Hoodwinking Hitler: The Normandy Deception* (Westport, CT: Praeger, 1993), 101.
[20] Roger Hesketh, *Fortitude: The D-Day Deception Campaign* (New York: Overlook Press, 2000), 351, 388.
[21] "Deception Maxims," 41.
[22] "Deception Maxims," 227–40.

Maxim 1: *Magruder's Principle*, which states, "It is generally easier to induce an opponent to maintain a preexisting belief than to present notional evidence to change that belief."[23] The Allied deception plan was meant to reinforce the German preconception that the most likely location for an invasion would be near the port of Calais.

Maxim 2: *Limitations to Human Information Processing*, which states, "There are several limitations to human information processing . . . [including] susceptibility to conditioning."[24] By creating a fake invasion plan with supporting infrastructure, the Allies conditioned German intelligence with signals that reinforced the Germans' belief that the landing would occur near Calais.

Maxim 5: *A Choice among Types of Deception*, which states, "Where possible the objective of the deception planner should be to *reduce* the ambiguity in the mind of the victim . . . not making him less certain of the truth, but more certain of a particular falsehood."[25] Operation Fortitude was primarily an ambiguity-decreasing deception meant to convince Germany that a landing would occur at Calais in the late summer of 1944.

Maxim 6: *Axelrod's Contribution*, which states, "There are circumstances where deception assets should be husbanded despite the costs . . . awaiting a more fruitful use."[26] This maxim was employed in the judicious use of Ultra intercepts to support other operations, which was done to ensure that Ultra was not compromised before the larger payoff of Operation Fortitude.

Maxim 8: *The Importance of Feedback*, which states, "A scheme to ensure accurate feedback increases the chance of success in deception."[27] The CIA framework uses Ultra to illustrate this point, citing it as one of the best examples of the role of feedback in modern warfare.

Egypt and the 1973 Yom Kippur War

The second historical deception is the Egyptian offensive that began the 1973 Yom Kippur War, the fourth Arab-Israeli war that was rooted in "competing claims to religious and cultural homelands between Jews and Muslims."[28] During the previous Arab-Israeli war, the 1967 Six-Day War, Israel had seized Egyptian territory

[23] "Deception Maxims," 5.
[24] "Deception Maxims," 10.
[25] "Deception Maxims," 22. Emphasis in original.
[26] "Deception Maxims," 27.
[27] "Deception Maxims," 34.
[28] James W. Bean and Craig S. Girard, "Anwar Al-Sadat's Grand Strategy in the Yom Kippur War" (research paper, National War College, National Defense University, 2001), 2.

including the Sinai Peninsula to the east bank of the Suez Canal, and Egyptian plans to retake its lost territory were hatched shortly thereafter.[29]

After the Six-Day War, Israel assumed that its ability to project air power and its nearly 100-mile earthen defensive barrier along the Suez Canal would deter Egypt from going to war. This preconception colored Israeli interpretations of intelligence suggesting an impending Egyptian invasion in October 1973, causing multiple warning signals to be dismissed.[30]

Though it is unclear whether Egyptian president Anwar Sadat knew of this Israeli preconception, he nonetheless embarked on a comprehensive political and military deception scheme to reinforce the belief that Egypt's military was weak. Politically, Sadat's deception relied on two efforts: providing misleading leaks to news outlets suggesting that the Egyptian Army was ill-equipped and ill-trained, and changing his own rhetoric in public speeches.[31] Militarily, Sadat secretly acquired modern Soviet surface-to-air missiles (SAMs) and antitank weapons that the Israel Defense Forces had not yet encountered.[32] Moreover, Sadat conducted three large-scale troop mobilizations in 1973 to condition Israeli leaders to the presence of troop concentrations near the Suez Canal. The first two of these movements resulted in Israeli countermobilizations at significant cost.[33] Egyptian forces used these mobilizations to position equipment that would rapidly penetrate the earthen defensive wall.

When the war began on 6 October 1973, Egyptian forces achieved complete surprise. They established bridgeheads far earlier than Israel thought possible, and their use of advanced SAMs and antitank missiles defeated initial Israeli counterattacks.

Analyzing the Yom Kippur War using the CIA framework, there are at least four maxims unpinning the Egyptian deception and one that Israeli self-deception capitalized on:

Maxim 1: *Magruder's Principle*. Senior Israeli leaders were deceived by their own preconceptions about which conditions were required before Egypt would attack. At the strategic level, Egyptian deception plans reinforced this preconception by projecting an image of military weakness. At the tactical level, the innovative use of high-pressure water hoses to blast through the Israeli defensive wall in three hours exploited the Israeli as-

[29] Bruce Riedel, "Enigma: The Anatomy of Israel's Intelligence Failure almost 45 Years Ago," Brookings Institution, 25 September 2017.
[30] Riedel, "Enigma."
[31] Tal Tovy, "From Maneuvers to War: The Egyptian Deception Plan on the Eve of the 1973 War," in *Weaving the Tangled Web: Military Deception in Large-Scale Combat Operations*, ed. Christopher M. Rein, U.S. Army Large-Scale Combat Operations Series (Fort Leavenworth, KS: Army University Press, 2018), 181.
[32] Bean and Girard, "Anwar Al-Sadat's Grand Strategy in the Yom Kippur War," 11, 14.
[33] Bean and Girard, "Anwar Al-Sadat's Grand Strategy in the Yom Kippur War," 17.

sumption that its defenses afforded at least 12 hours of protection while it mobilized reinforcements, creating an operational level opportunity.

Maxim 2: *Limitations to Human Information Processing*. The three Egyptian Army mobilizations conducted prior to the war conditioned Israeli leaders to the presence of Egyptian forces along the Suez Canal. This is supported by the fact that Israel countermobilized for the first two mobilizations but not for the third.

Maxim 5: *A Choice among Types of Deception*. Egypt's deception efforts were solely aimed at convincing the Israelis that another war would not occur. Many of Sadat's actions—including information operations, multiple mobilizations, and secretly acquiring new weapons—reinforced the idea that Egypt was not an immediate threat.

Maxim 6: *Axelrod's Contribution*. In today's vernacular, the terms *reveal* and *conceal* illuminate this maxim. Egypt secretly acquired new SAMs and antitank missiles, which enabled Egyptian forces to defeat the first air and ground counterattacks launched by Israel and reach their planned military objectives.

China's Entrance into the Korean War

The final historical deception is China's entrance into the Korean War, which effectively surprised United Nations (UN) forces approaching the Yalu River. In October 1950, U.S. Army general Douglas MacArthur had just achieved a stunning reversal against the North Korean People's Army following an amphibious end run at Incheon, and he was pursuing its remnants toward the Yalu despite a warning from China not to cross north of the 38th parallel dividing North and South Korea.[34] MacArthur, aware that the Chinese Communist Party had just finished a brutal civil war and that China's military forces were technologically inferior to those of the UN, concluded that this was an idle threat.

In reality, after UN forces crossed the 38th parallel, Marshal Peng Dehuai, the commander of the Chinese People's Volunteer Army (PVA), was ordered to enter Korea and fight. Knowing that he faced an adversary with air superiority and a tremendous firepower advantage, Peng moved 300,000 soldiers in secret across hundreds of miles to conceal the true size of his force. MacArthur and his staff, convinced that the Chinese would not fight in strength this late in the war against a far superior adversary, minimized the emerging intelligence picture of PVA forces.

After conducting probing attacks designed to arrest the UN advance without revealing the true size of his force, Peng broke contact and began a feigned withdrawal back to the Yalu, further reinforcing MacArthur's preconception. In Peng's

[34] Maj James G. Pangelinan, USA, "From Red Cliffs to Chosin: The Chinese Way of War" (unpublished monograph, School of Advanced Military Studies, U.S. Army Command and General Staff College, 2010), 66.

own words, "we employed the tactic of purposely showing ourselves to be weak, increasing the arrogance of the enemy . . . and luring him deep into our areas."[35] MacArthur bought this ruse, and when Peng's full-strength counteroffensive began, it caught the UN forces completely by surprise. The subsequent fighting forced a UN withdrawal south of the 38th parallel, and Peng's deception was key to the eventual outcome of the war.

Using the CIA framework to analyze Peng's offensives, there are three maxims that the Chinese deception capitalized on:

Maxim 1: *Magruder's Principle*. MacArthur was convinced that the Chinese would not attack the UN forces in strength. The PVA's secret movement and limited initial probing attacks reinforced this preconception by masking the true size of Peng's forces.

Maxim 2: *Limitations to Human Information Processing*. In addition to the tendency to become conditioned to a pattern of behavior, this maxim includes the tendency "to dismiss unlikely events as impossible events."[36] Having deemed an army-level PVA attack as highly unlikely, MacArthur and the UN staffs minimized the emerging intelligence picture of the size of PVA forces, even after probing attacks caused significant casualties to a South Korean army division.

Maxim 5: *A Choice among Types of Deception*. Peng's deception efforts were designed to decrease ambiguity in MacArthur's mind regarding the likelihood of a PVA attack in force. Peng's covert movement of forces and seemingly abrupt withdrawal northward further convinced MacArthur that the PVA would not fight.

The Key to Understanding Deception in Future War

Having identified deception maxims unique to each historical example, three emerge as common to all: maxim 1: *Magruder's Principle*; maxim 2: *Limitations to Human Information Processing*; and maxim 5: *A Choice among Types of Deception*. Note that all three of these maxims seek to exploit human cognition biases. In the case of maxim 1, it preys on the primacy of existing beliefs in decision making. Maxim 2 encompasses a host of cognition issues but targets the innate human tendency to simplify complex phenomena. Finally, maxim 5 complements the previous two, as ambiguity-increasing and ambiguity-decreasing deception often plays off preconceptions and the limited ability of the human mind to process large amounts of information. Since the exploitation of human cognition biases is not true of all 10 maxims, this linkage provides a useful key for focusing the analysis of the future

[35] Peng Dehuai, *Memoirs of a Chinese Marshal: The Autobiographical Notes of Peng Dehuai (1898–1974)*, trans. Zheng Longpu (Beijing, China: Foreign Languages Press, 1984), 476.
[36] "Deception Maxims," 15.

operating environment. Instead of examining all projected future operating environment changes, this analysis will focus on only those changes that directly affect human cognition and decision making.

With that in mind, the U.S. Joint Chiefs of Staff's *Joint Operating Environment 2035* (JOE 2035) offers a useful framework for categorizing projected changes to the future operating environment into three main areas: world order; human geography; and science, technology, and engineering.[37] The first two areas, world order and human geography, focus on projected changes to the distribution of power across states and international organizations and trends like asymmetric population growth, migration, urbanization, and resource scarcity.[38] Using the previously identified key of exploiting human cognition, this analysis posits that while these changes may evolve the selection of military deception targets or the means used to signal a deception, it will not make human decision makers impervious to targeting or change human cognition and decision making. As such, these alterations will not impact the viability of successfully employing deception in future war.

Even in the last area of science, technology, and engineering, several projected changes can be eliminated from the analysis because they do not directly affect human cognition and decision making. Advances in areas such as energy production and storage, additive manufacturing, improved precision fires, and robotics promise changes to the character of deception without bringing into question the validity of exploiting human cognition.[39]

Advances in genomic science can also be eliminated despite the field's potential for enhancing human cognition. This exclusion is because scientists have made extremely little progress in determining what genes influence human intelligence.[40] The largest study of its kind in 2014 revealed three genetic variants related to intelligence, but their total contribution was "maddeningly small."[41] Unlike genomic science targeting physical health, the science of human intelligence is unlikely to make significant strides by 2035 because of the enormous complexity associated with understanding human reasoning.[42]

However, there are two projected changes in science, technology, and engineering that will directly affect human cognition and decision making, and both are related to information. Broadly speaking, two interrelated modifications—the proliferation of connected sensors and the advancement of artificial intelligence (AI)—will change the volume and velocity of data used to derive intelligence es-

[37] *Joint Operating Environment 2035: The Joint Force in a Contested and Disordered World* (Washington, DC: Joint Chiefs of Staff, 2016), 4.
[38] *Joint Operating Environment 2035*, 5–13.
[39] *Joint Operating Environment 2035*, 15–19.
[40] "Is Intelligence Determined by Genetics?," U.S. National Library of Medicine, 18 December 2018.
[41] Ewen Callaway, "'Smart Genes' Prove Elusive," *Nature*, 8 September 2014, https://doi.org/10.1038/nature.2014.15858.
[42] "Human Genome Project FAQ," National Human Genome Research Institute, 30 October 2010; and John Albert, "A New Model Army: The Impact of Human Genome Editing on U.S. Army Manning" (working paper, School of Advanced Warfighting, Marine Corps University, 2019), 11–12.

timates as well as the level of predictive analysis supporting decision makers by 2035. This is supported by two independent projections of the future operating environment, one by the U.S. Army and the other by the British Ministry of Defence, as well as by the 2016 *Marine Corps Operating Concept*, all of which stress the centrality of information as it relates to future war.[43]

Technologies such as micro satellites; persistent intelligence, surveillance, and reconnaissance platforms; new electromagnetic spectrum sensors; nanosensors; and the embedding of sensors into more existing technologies will exponentially increase the types and quantity of data collected, making it increasingly difficult to hide human and equipment signatures.[44] When combined with the projected improvements in AI, these advances will offer a more complete understanding of the battlespace, allowing commanders to make more informed—and therefore arguably better—decisions about warfighting.

These advancements will radically enhance the capability and effectiveness of two technologies that are already robust. Regarding networked sensors, one source estimates that there will be more than 75 billion Internet-of-things-connected devices—virtually all of which will possess sensors—by 2025, an increase from 23 billion in 2018.[45] This likely increase will be staggering. Regarding AI, consider that in April 2018, Chinese police, augmented by AI-powered glasses conducting real-time facial recognition, accurately identified a wanted criminal in a crowd of 60,000 at a concert.[46]

Potential breakthroughs in quantum computing would radically enhance these two capabilities, providing revolutionary advances in sensor capabilities and AI processing power.[47] For example, quantum computing would allow AI to break existing encryption algorithms, potentially offering Ultra-like insights into adversary decision making and feedback regarding how well a deception operation is working.[48] However, it is also important to note that any increased reliance on sensors and AI brings with it a corresponding vulnerability, a point that will be revisited later.

Though the forecasts for how advanced these technologies will become varies by source, even the most conservative estimates raise two issues regarding the usefulness of deception in future war: the inability to hide forces and equipment, and the ability of AI to offset or overcome human cognition biases. With respect to the former, additional and more capable sensors will increase transparency. Yet, when

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[43] *The Operational Environment, 2035–2050: The Emerging Character of Warfare* (Fort Eustis, VA: U.S. Army Training and Doctrine Command, 2018), 10–11; *Global Strategic Trends: The Future Starts Today*, 6th ed. (London: United Kingdom Ministry of Defence, 2018), 11; and *Marine Corps Operating Concept: How an Expeditionary Force Operates in the 21st Century* (Washington, DC: Headquarters Marine Corps, 2016), 6.

[44] *Joint Operating Environment 2035*, 17–19.

[45] Louis Columbus, "2017 Roundup of Internet of Things Forecasts," *Forbes*, 10 December 2017.

[46] Amy B. Wang, "A Suspect Tried to Blend in with 60,000 Concertgoers. China's Facial-Recognition Cameras Caught Him," *Washington Post*, 13 April 2018.

[47] *Joint Operating Environment 2035*, 18–19.

[48] *Joint Operating Environment 2035*, 18–19.

considering the historical deception examples provided earlier, concealment was only a meaningful consideration for China's deception against the UN in Korea and, to a lesser extent, Egypt's deception against Israel, and arguably both deception operations would have been successful without it.

For Marshal Peng, moving 300,000 PVA troops to Korea in secret prevented General MacArthur from accurately understanding the size of the force opposing the UN forces. In that regard, Peng was successful, as four days prior to PVA forces crossing the Yalu River, MacArthur briefed U.S. president Harry S. Truman that the strength of PVA forces along the river was estimated at 100,000 troops.[49] Convinced of China's unwillingness to fight and bolstered by a belief in the superiority of the UN forces, even the presence of 100,000 troops did nothing to change MacArthur's decision making. It is questionable whether MacArthur would have acted differently even if his intelligence had been accurate; he was self-deceived.

Turning to the Yom Kippur War, the Egyptians secretly obtained advanced weaponry prior to the start of hostilities. Egyptian troops also successfully moved bridging equipment to the Suez Canal under the cover of troop mobilizations. While actions like these would be more difficult to achieve in secret in a future war, it is unlikely that they will be impossible. As the web of sensors grows, so too will investment in countermeasures, including the ability to corrupt, spoof, or misdirect sensors. Furthermore, despite ample additional intelligence indicating an impending Egyptian attack, Israeli leaders failed to properly analyze Egyptian intentions. Taken together, having tools that construct a more accurate picture of adversary dispositions does not eliminate the possibility of deception.

Regarding the ability of AI to offset or overcome human cognition biases, this analysis reaches a similar conclusion. First, it is unlikely that humans will ever remove themselves completely from decision making at the operational level of war. Though AI can make faster and arguably more rational decisions than a human, it will remain vulnerable to physical and informational attacks. This threat, and the potential consequences of compromised AI, creates a trust issue that cannot easily be resolved. While significant portions of decision making may be relinquished to AI, humans will remain in the decision loop and therefore vulnerable to the exploitation of their cognition biases.

Second, although AI could reduce the probability of successfully exploiting human cognition by predicting the likelihood of such exploitation at the individual decision-maker level and offering warnings or even preventing certain types of decisions from being made, both AI algorithms and the data they use remain vulnerable to manipulation from cyberspace. Counter-AI could conduct sophisticated alterations of sensor data to produce misleading AI outputs, or it could create malware that slightly alters AI algorithms to provide inaccurate predictions to human

[49] Joseph G. D. Babb, "Chinese Deception and the 1950 Intervention in the Korean War," in *Weaving the Tangled Web*, 162.

decision makers or cause AI to make faulty decisions. In this way, data or algorithms could be altered to suggest an adversary would attack at a location slightly dislocated from the actual attack location (such as the landings at Normandy during World War II), that an adversary is unlikely to attack (such as the Yom Kippur War), or that an adversary's forces are smaller than they actually are (such as the first and second Chinese offensives during the Korean War). Interestingly, this vulnerability exists even if humans are removed from decision making. In either case, deception will still be possible in future war.

Recommendations

This conclusion—that the nature of deception exploits human cognition biases and future operating environment technologies poised to reduce or eliminate those biases are themselves vulnerable to manipulation—should inform U.S. military thinking going forward, as it demonstrates the utility of deception during both conflict and great power competition. This conclusion's importance is magnified by the sheer number of cognition biases available to deception planners—more than 50 by most experts' count.[50] Commanders at all levels should pause to consider how nearly 25 years as the world's sole superpower has affected the intellectual rigor that the U.S. military has devoted to deception as well as its prioritization in campaign planning. Based on that sobering assessment, it becomes worthwhile to consider how the art of deception can be reinvigorated at the operational level of war. This reinvigoration must focus on deterrence and inducement during competition while also recognizing that the ability to achieve surprise will be increasingly critical to achieving military objectives and minimizing casualties in times of conflict. To that end, five recommendations follow.

First, there must be a recognition of the impact that American culture has on deception. There is significant evidence supporting the claim that individualistic cultures such as the United States view deception as more disreputable and immoral than collectivist cultures such as China.[51] This has been complemented by research showing that more interdependent cultures are more likely to engage in deception and less likely to perceive it as deceptive.[52] In short, Chinese culture is predisposed to view deception as acceptable and necessary, whereas American culture is not.

The roots of this cultural predisposition come from American *exceptionalism*, a controversial term defined by Robert G. Patman as an "informal ideology that endows Americans with a pervasive faith in the uniqueness, immutability and supe-

[50] Iain King, "What Do Cognitive Biases Mean for Deterrence?," *Strategy Bridge*, 12 February 2019.
[51] Min-Sun Kim et al., " 'Deception: Moral Transgression or Social Necessity?': Cultural-Relativity of Deception Motivations and Perceptions of Deceptive Communication," *Journal of International and Intercultural Communication* 1, no. 1 (February 2008): 25, https://doi.org/10.1080/17513050701621228. This insight comes from the article's literature review and relies heavily on behavioral research found in Takie Sugiyama Lebra, *Japanese Patterns of Behavior* (Honolulu: University Press of Hawaii, 1976).
[52] Kim et al., "Deception," 23–50.

riority of the country's founding liberal principles."[53] The resulting U.S. system of government relies on truth and morality as a primary means of maintaining the trust and confidence of the American people as well as an instrument for advancing U.S. public and foreign policy.

This reflection is not meant to suggest that American culture is wrong or should be changed; rather, it illustrates the advantages China has in creating effective deceptions as a collectivist culture with a more centralized political system. In a globally connected world, successful deception planning often requires consistency of signaling across numerous sources of information that adversaries can access and assess, creating a challenge for military commanders seeking to integrate deception into a broader whole-of-government strategy that advances and protects U.S. national interests. This idea does not mean that the U.S. military is incapable of efficient deception planning. It does suggest, however, that American culture makes it inherently harder to do well. Arguably, that social concept should inform the level of U.S. commander engagement in the deception planning process and the resources applied to it, which serves as a foundation for subsequent recommendations.

Second, the current U.S. Joint Staff organizational construct lacks adequate capability and capacity to conduct valuable large-scale deception on behalf of Joint force commanders. *Joint Operations*, Joint Publication (JP) 3-0, states that today's "military environment and the threats it presents are increasingly transregional, multidomain, and multifunctional (TMM) in nature."[54] Planning staffs should therefore be organized to create similarly complex TMM deception efforts. This arrangement implies a staff that is robust enough to coordinate planning with the Joint Staff, combatant commands, and other appropriate organizations; that possesses dedicated expertise representative of all warfighting domains and functions; and that is able to integrate deception operations across great power competition and conflict, with an ability to do both simultaneously.

Yet according to *Military Deception*, JP 3-13.4, military deception is normally planned by an element of the Joint operations staff organized within the information operations cell.[55] This configuration is not a robust model and impedes a Joint force commander's ability to successfully craft and integrate operational level deceptions during great power competition that might deter or induce adversaries in place of the U.S. military's eroding technological edge. Should competition fail, this planning element is even more insufficient based on the need to simultaneously conduct deception planning for conflict with a specific adversary and for competition based on a security environment with enduring TMM threats. As the necessity for operational deception increases, so too must the capability and capacity of Joint force com-

[53] Robert G. Patman, "Globalisation, the New US Exceptionalism and the War on Terror," *Third World Quarterly* 27, no. 6 (2006): 964, https://doi.org/10.1080/01436590600869046.
[54] *Joint Operations*, Joint Publication (JP) 3-0, Incorporating Change 1 (Washington, DC: Joint Chiefs of Staff, 2018), I-2.
[55] *Military Deception*, JP 3-13.4 (Washington, DC: Joint Chiefs of Staff, 2017), III-1–III-6.

manders' deception planning staffs. The U.S. Air Force's recent establishment of an information operations career field and technical training school are helpful steps toward meeting this need, but more efforts across the Joint force are necessary.[56]

Third, it is important to highlight how critical intelligence support is to deception planning. Creating an effective deception begins with understanding an adversary's goals and objectives and then mapping their decision-making process, which includes understanding its structure and how a specific decision maker receives and uses information as well as assessing biases and preconceptions. Only then can planners begin to grasp an adversary's vulnerability to deception. For example, intelligence might reveal that a rival receives information primarily from a small group of trusted advisors. If intelligence further reveals that the adversary's decision-making structure makes it exceptionally difficult to target them directly, deception planners might instead focus on exploiting an advisor. Obtaining this level of insight requires appropriate resourcing and warrants consideration of whether the Joint force has adequately funded appropriate intelligence collection assets and created robust enough connections to existing intelligence resources within the U.S. government, allies, and partners.

Fourth, professional military education across all the U.S. military Services at the intermediate and senior levels should be directed to better incorporate the study of deception, especially at the operational level of war. Rather than start a contentious debate about what to subtract from existing curricula to incorporate a greater focus on deception, the Services should look to integrate deception as a thread that weaves throughout the major components of the curriculum. This educational undercurrent should strive to include Western as well as non-Western examples, emphasizing Chinese and Russian deception practices. One practical step would be to revise professional reading lists to focus on human cognition biases, cultural dispositions toward deception, and past examples of successful deception by U.S. and non-U.S. forces.[57] Another move would be to encourage writing about deception, especially for professional journals and essay contests. These changes would encourage greater insight into human cognition biases and influences on cultural decision making, key enablers for successful deception and counterdeception operations.

Fifth, considering how drastically the proliferation of sensors and AI will impact the creation of information and disinformation used by decision makers at all levels across all types of organizations, the Joint Staff should advocate for the reestablishment of the U.S. Information Agency or encourage organizational change within the U.S. National Security Council to coordinate a whole-of-government approach to the employment of and protection against networked sensors and AI. While the

[56] "AF Officials Announce Creation of Info Ops Tech School," Secretary of the Air Force Public Affairs, 5 March 2018.

[57] For further study on the role of cognitive and cultural biases during the Yom Kippur War of 1973, see Leonard Mlodinow, *Elastic: Flexible Thinking in a Time of Change* (New York: Pantheon Books, 2018), 161–66.

former approach would require congressional support, the latter requires only executive branch support. A construct proposed by Richard B. Davenport called the Joint Influence Warfare Element (JIWE), though designed for coordinating strategic influence campaigns, could be adapted to focus on the role of information in creating deception.[58] When necessary, this organization would help coordinate strategic deception or crucial inputs to support a military deception operation. Global interconnectedness demands a more coordinated and synchronized approach to constructing successful deceptions at either the operational or strategic level, and an organization like JIWE would facilitate this.

Conclusion

In closing, this chapter has presented an argument supporting the need for and feasibility of conducting large-scale deceptions in future war. By comparing three historical examples of operational deception using a CIA deception framework, three commonalities emerged, and it was shown that the exploitation of human cognitive biases is the key linkage between all three. Next, forecast changes to the future operating environment affecting human cognition and decision making were evaluated to understand how they will affect the creation of an effective deception. It was argued that while hiding forces and equipment from an adversary will become harder, it will not become impossible, nor is it a prerequisite for creating a successful deception. Furthermore, it was claimed that because humans will never remove themselves completely from decision making, human cognition biases will still be targetable. Additionally, it was shown that AI itself or the humans it supports can be successfully misled. Finally, having established the viability of conducting deception in future war, five recommendations were made for reinvigorating the U.S. military's consideration of deception.

It has been argued that the most important sentence in the *2018 National Defense Strategy of the United States of America* is "America's military has no preordained right to victory on the battlefield."[59] This sentence has injected humility into conversations about U.S. national defense and highlighted a cognitive bias toward self-deception based on a tendency to promote optimistic projections.[60] Reinvigorating the U.S. military's consideration of operational deception starts from a place of humility. History has proven the value of deception time and again, and this paper has demonstrated its enduring relevance to future war. Deception offers a proven and strong mitigation to the U.S. military's diminishing technological superiority during great power competition.

[58] Richard B. Davenport, "The Need for an Innovative Joint Psychological Warfare Force Structure," *Joint Forces Quarterly*, no. 88 (1st Quarter 2018): 64–69.
[59] David Barno and Nora Bensahel, "Jim Mattis Fires a Clear Warning Shot," *War on the Rocks*, 20 March 2018.
[60] Charles Vandepeer, "Self-Deception and the 'Conspiracy of Optimism'," *War on the Rocks*, 31 January 2019.

The Case for a Fourth Island Chain

A Unifying Concept for Contesting Future Chinese Influence in the Indo-Pacific

By Major Levon J. Lambert, Australian Army[1]

Foreign intentions provide us cues for our defense efforts only when they are clear-cut and either conspicuously friendly or plainly warlike.

~ Bernard Brodie[2]

A strategy based on power sharing and a spheres-of-influence order may be destined for popularity, but that does not make it wise or prudent.

~ Thomas J. Wright[3]

Chinese influence within small Pacific nations illustrates a degree of creeping expansion beyond the South China Sea. Concurrently, the Belt and Road Initiative (BRI) increases China's presence in countries bordering the Indian Ocean. Most recently observed in the Indian Ocean region, a Chinese encroachment strategy fosters the capacity for coercion at the strategic level through an undeclared sequence of foreign direct investment (FDI), aid donations, purchasing national debt, long-term strategic facility contracts, fleet visitation, and forward-basing. Globally, Chinese strategic objectives are twofold: ensuring economic development through consistent access to new markets and retaining territorial integrity via political and military means. Amidst the present climate of great power competition, a common observation is that China's grand strategy has evolved from keeping a low profile to demonstrating greater willingness to influence and shape the external environment. Irreversible shaping occurred in the South China Sea leading to the

[1] Maj Lambert is a distinguished graduate of MCU's Command and Staff College and School of Advanced Warfighting. This paper received the American, British, Canadian, Australian, and New Zealand (ABCAZ) Staff College Award for academic year 2018–19.
[2] Bernard Brodie, *Strategy in the Missile Age* (Princeton, NJ: Princeton University Press, 1959), 378. This quote is also cited in Colin S. Gray, *Fighting Talk: Forty Maxims on War, Peace, and Strategy* (Westport, CT: Praeger, 2007), 138. Gray offers that defense costs are certain but security benefits are uncertain and arguable. He interprets Brodie by simply saying that only when threats are unmistakably present or absent can one develop defense policy and strategy with high confidence. The subject of this chapter is to identify a way to unify different national strategic agendas by using geography as a cohesive starting point for countering influence operations and then implementing an allied competitive strategy to outspend and out-influence.
[3] Thomas J. Wright, *All Measures Short of War: The Contest for the 21st Century and the Future of American Power* (New Haven, CT: Yale University Press, 2017), 183.

2016 rejection of the Hague's Permanent Court of Arbitration ruling on *Philippines v. China*.[4] Furthermore, economic influence is heavy in specific geostrategic portions of the Indian Ocean, such as Kenya, Seychelles, Sri Lanka, Maldives, and Djibouti. Following this trend, Pacific island nations in the region defined as Oceania are increasingly subject to Chinese influence and are without a unified approach to contest it.[5] Designating a fourth island chain to counter Chinese influence creates an opportunity to unify strategic resources. Through continuation of the Indian Ocean model of a deliberate sequence of investment linked to military visitation, China's encroachment strategy will expand unchecked into Oceania. Strategic competition will therefore continue unfettered through a lack of multilateral arrangements to combat predatory economics, engender long-term security, build regional resilience, and maintain local strategic trust.

National aims among the significant coaligned strategic stakeholders in Oceania are isolated and disjointed, which provides opportunities for bilateral exploitation by China seeking to irreversibly alter the balance of power in the Indo-Pacific. In an era of renewed great power competition, in which bilateral engagement yields comparatively narrow results, a coalition of stakeholder nations comprising the United States, Australia, New Zealand, and France should generate a common geographic focal point to contest future Chinese influence. In considering Chinese strategy and the ability to contest influence in depth, it is vital to look beyond the island chains historically conceptualized by former U.S. secretary of state John Foster Dulles.[6] Analyzing Chinese behavior in the Indian Ocean may highlight opportunities to contest Chinese influence through more intensive combined efforts in a mutually agreeable area. Geographically, the islands extending eastward from the Cocos (Keeling) Islands to French Polynesia constitute a focal area with specific leverage points to be conceptually designated the fourth island chain. Comprising economic support and multilateral military engagement, this geography-based concept is intended to unify multilateral efforts to contest Chinese influence in the future.

[4] *Philippines v. China*, PCA Case No. 2013-19 (2016).

[5] Oceania essentially comprises the island groupings of Micronesia, Melanesia, and Polynesia in the southern Pacific Ocean. More relevant to the modern notions of the Westphalian system, and in alphabetical order, the 14 nation-states of Oceania are Australia, Fiji, Kiribati, the Marshall Islands, the Federated States of Micronesia, Nauru, New Zealand, Palau, Papua New Guinea, Samoa, the Solomon Islands, Tonga, Tuvalu, and Vanuatu. Geography stipulates that the French colonies of New Caledonia and French Polynesia are also considered to be among the Oceanic islands. These nations will be the subject of any discussion on "Oceania" unless mentioned specifically otherwise.

[6] Andrew S. Erickson and Joel Wuthnow, "Barriers, Springboards and Benchmarks: China Conceptualises the Pacific 'Island Chains'," *China Quarterly* 225 (March 2016): 1–22, https://doi.org/10.1017/S0305741016000011. Reference to *island chains* in the strategic lexicon of the United States dates as far back as 1948, but credit should remain with the initial three chains suggested by future U.S. secretary of state John Foster Dulles in 1952. The conceptual idea originally related to the containment of Communism, enhanced defense expenditure, and an increased nuclear arsenal. Dulles detailed this idea in a May 1952 *Life* magazine article. See John Foster Dulles, "A Policy of Boldness," *Life* 32 (19 May 1952), 146–60.

Interpreting Chinese Grand Strategy

Interpretations of China's grand strategy, when applied to the Indo-Pacific, share a disconcerting commonality of dominance, influence, and the capacity for coercion. Martin Jacques describes China as being characterized by the "Middle Kingdom mentality"—that is, Chinese hegemony centered on a superior view of Chinese culture and becoming the dominant power in its immediate region.[7] Jacques' view is echoed by Ye Zicheng as "cultural centralism" focused on East Asia and "a continental geostrategy focused on stabilizing the periphery . . . and multipolarization to smash the [United States'] intention to dominate the world."[8] This approach could manifest as a renewed version of historic economic interaction containing small traces of the ancient tributary system, not necessarily driven by domination but enabled by it. A more moderate approach is offered by Yongjin Zhang, who argues that China's behavior is a constructive strategy to operate within a liberal world order, generating stability through different authority arrangements.[9] Zhang's assessment reflects China's legalist view on crafting an interactive framework for a more open international system, but one that still favors Chinese interests.[10] The recent militarization of islands in the South China Sea and the unilateral declaration of an air defense identification zone (ADIZ) are at odds with the international legalist interpretation, though they certainly highlight military actions supporting strategic interest. Yun Sun offers a confronting view: "Essentially, China's desired endgame begins with a China-dominated security arrangement in Asia in the short term and a China-led global power structure in the long term. China is willing to reward cooperative countries with economic prosperity . . . but in return it demands respect, cooperation, or at the very least acquiescence on issues China deems important."[11] From these interpretations, China's desire to reduce U.S. influence in the East Asian region and beyond becomes quite apparent.

Viewing China's strategy at odds with the liberal order, Thomas J. Wright describes China's strategy as a "contest for the Asia Pacific [and] a gradual struggle for preeminence. . . . China's maritime assertiveness is a crucial component of its strategy to build a sphere of influence in Southeast Asia and to increase its influence in

[7] Martin Jacques, *When China Rules the World: The End of the Western World and the Birth of a New Global Order* (New York: Penguin Books, 2012), 344.

[8] Ye Zicheng, *Inside China's Grand Strategy: The Perspective from the People's Republic*, ed. and trans. Steven I. Levine and Guoli Liu (Lexington: University Press of Kentucky, 2011), 119, 204–5. Of note here, Australia and New Zealand are not directly referred to but are placed in Southeast Asia as periphery nations.

[9] Yongjin Zhang, "China and Liberal Hierarchies in Global International Society: Power and Negotiation for Normative Change," *International Affairs* 92, no. 4 (July 2016): 797, https://doi.org/10.1111/1468-2346.12652.

[10] The term *legalist* represents the modern interpretation of the definition in the context of a "rules-based order," absent the realist connotations normally applied to a realist point of view, which is typically associated with the ancient Chinese legalists who believed in a "rich state and a powerful army." For a useful description, see "Legalism in Chinese Philosophy," *Stanford Encyclopedia of Philosophy*, 10 December 2014.

[11] Yun Sun, "China's Preferred World Order: What Does China Want?," *PacNet* 62, Center for Strategic and International Studies (21 September 2015): 2.

the region."[12] Wright further describes Chinese strategy as requiring the absence of war in East Asia to build its sphere of influence, maintain the illusion that it may inadvertently end up in a conflict with the United States should the United States not accept Chinese core interests, and sow doubt in the region among smaller nations about the U.S. military's staying power.[13] This approach leaves Oceanic countries at a distinct disadvantage in two ways. First, the relative size of island economies ensures dependence on China. Second, the potential lack of a credible security guarantee enhances Chinese coercive potential. Wright posits that "Beijing also hopes that its economic leverage . . . will sugarcoat the pill of revisionism and help socialize its neighbors to its new role as co-manager of the East Asian order."[14] In 2016, Papua New Guinea and Vanuatu recognized Chinese claims in the South China Sea while China remains their main creditor. In 2018, Australia passed legislation to eliminate foreign political donations due to concerns about harmful Chinese influence and penetration of its political institutions.[15] The aggregation of such reporting in tandem with Wright's assessment of Chinese grand strategy demonstrates that the contest for influence is already well under way beyond the original island chains and that the need for countering future influence deep in the South Pacific is apparent. To predict future objectives in the context of Chinese grand strategy—to secure new markets and retain territorial integrity—it is important to identify how China pursued a similar approach in the Indian Ocean region.

China's Indian Ocean Model

Chinese interest in the Indian Ocean region predates the 2013 BRI, but it is ultimately defined by President Xi Jinping's 2017 doctrine of "Xi Jinping Thought," which exhorts his regime to take a holistic view of Chinese strategy in economic, cultural, and military terms in support of the maturation of the BRI by 2049. Energy security remains of paramount concern to China, which imports 8.4 million barrels of crude oil daily (as of 2017), the majority of which transits the Strait of Hormuz.[16] The Western-publicized version expounding the importance of the Indian Ocean region to China originally manifests in a 2005 description by consultants at Booz Allen Hamilton as "The String of Pearls," characterized by advanced bases in the context of Chinese energy security, but the reality of that proposition was challenged by 2015 as lacking in substantial permanent military connection to the region.[17] Given China's accelerated influence campaign, the String of Pearls proposition is likely to be challenged out to

[12] Wright, *All Measures Short of War*, 82.
[13] Wright, *All Measures Short of War*, 87.
[14] Wright, *All Measures Short of War*, 86.
[15] Clive Hamilton, "Australia's Fight against Chinese Political Interference: What Its New Laws Will Do," *Foreign Affairs*, 26 July 2018.
[16] "China Surpasses U.S. as Largest Crude Oil Importer," *Maritime Executive*, 3 February 2018. This article describes a falling domestic production of 2 percent annually but having the greatest annual increase in consumption on Earth.
[17] Benjamin David Baker, "Where Is the 'String of Pearls' in 2015?," *Diplomat*, 5 October 2015.

2035 through something akin to the "Lean Colonial" model posited by Christopher D. Yung in 2014. This model originally involved specialized bases scattered throughout the world to support colonies. Nations following it in the nineteenth and twentieth centuries—specifically Germany prior to 1914 — did so to support broader economic and foreign policy objectives ahead of military power projection. The Lean Colonial model can advance national commercial interests but is unlikely to support a naval presence strong enough to preserve sovereignty when challenged.[18] Great power influence is the primary output of the model. The military aspect of the String of Pearls proposition was certainly not as forthcoming as originally predicted, but a greater time lapse suggests that military visits following a period of FDI, purchasing national debt, and ownership of strategic facilities supports the Lean Colonial model in the Indian Ocean region. The decisive step in this sequence is for the targeted nation to abrogate sovereign control to China's strategic advantage due to overwhelming influence, thereby changing the regional balance of power. Extrapolating the growth of Chinese influence in the future offers not the inevitability of conflict but rather the unfettered continuation of strategic competition by generating superior influence and the capacity to coerce when China deems it necessary to shift the balance of power against U.S.-aligned nations in the Indo-Pacific.

Chinese military connection with the coastal African and independent island nations of the Indian Ocean region was preceded by long-term FDI, aid donations in key geographic locations astride the sea lanes to the Straits of Hormuz and Malacca, and facility contracts that generated arrangements for subsequent visits by the People's Liberation Army Navy (PLAN). This sequence demonstrates the generation of influence that supports a military footprint in support of Chinese interests, a derivative of Yung's model which reflects post-2014 developments in the Indian Ocean region. For example, by 2017, Chinese FDI in Seychelles had more than doubled during a 12-year period, from $196 million to $287 million USD annually, and the PLAN had established "dual-use" naval facilities, including submarine deployments, to combat piracy in the Gulf of Aden from 2012 at the behest of the Seychelles government.[19] On the African continent, Chinese FDI in Kenya increased from $138 million to $825 million USD annually.[20] As of July 2018, China remained responsible

[18] Christopher D. Yung et al., *"Not an Idea We Have to Shun": Chinese Overseas Basing Requirements for the 21st Century*, China Strategic Perspectives no. 7 (Washington, DC: National Defense University Press, 2014), 13. According to Yung, "Germany's Pacific colonies, which at one time stretched from mainland China to just north of Australia and New Zealand, illustrate the Lean Colonial Model." With the exception of the Qingdao port in China, German colonial possessions were initially established by trading companies acting without government support. Germany buoyed these colonies financially, but viewed them primarily as a source of imperial prestige to generate international influence. German colonies developed ports to maintain commercial operations but did not invest in defensive fortifications or infrastructure to sustain naval operations. The German Navy's operations from Qingdao were infrequent and poorly supplied. Its logistics network was based on contracts with private companies, which greatly limited its operational capacity and range in the event of a conflict. The German Navy planned to harass British and American ships in the Pacific and to prevent a shifting of assets to the Atlantic rather than to defend German colonies.

[19] "Does China Dominate Global Investment?," *China Power*, Center for Strategic and International Studies, accessed 25 October 2018; and Maseeh Rahman, "Chinese Plans in Seychelles Revive Indian Fears of Encirclement," *Guardian*, 22 March 2012.

[20] "Does China Dominate Global Investment?"

for 72 percent of Kenyan national debt, triggering fears of Kenya losing controlling interest over the port at Mombasa to Chinese firms.[21] Visits by the PLAN to Mombasa followed the uptick in investment to Kenya commencing in 2010 and again in 2014. Finally, Maldives is another case in which Chinese economic influence is well established and economic interest has generated a subsequent military presence. China established its embassy in Maldives in 2012, followed by state visits by Xi Jinping in 2014, and by August 2017 Chinese warships docked in the capital city of Malé. All of these actions preceded a December 2017 Free Trade Agreement between Maldives and China.[22] The critical change for Maldives was a stark increase in national debt from 27.32 percent to 67.84 percent, with China owning approximately 70 percent of the increased figure incurred as part of the BRI.[23] The inherent fragility of Maldives compounded by high levels of Chinese-sponsored national debt ensures that it will remain subject to influence in the future and a likely permanent basing location similar to Djibouti, or more controversially, the potentialities of ports in both Gwadar, Pakistan, and Hambantota, Sri Lanka.

Djibouti remains China's successful test case for basing in strategic locations supporting the BRI. Though it did not receive the long-term FDI similar to Kenya or Seychelles, Djibouti maintains a debt to China of $1.2 billion USD, which equates to one-half the nation's annual economic output. In Djibouti's case, funding was characterized by infrastructure investment commencing in 2013 with significant port construction and rail and water pipeline construction linking Ethiopia and Djibouti.[24] An assessment of this instance indicates that the geographic significance of a Chinese military presence in Djibouti necessitated an accelerated investment program that culminated in permanent People's Liberation Army (PLA) and PLAN bases within a four-year period and was lubricated by Djibouti's high level of debt.

Pakistan's port at Gwadar is one manifestation of the China-Pakistan Economic Corridor agreement within the BRI. The projected capacity of the port itself is a key indicator of the potential to support PLAN capabilities.[25] The model of investment (aid and infrastructure) preceding naval visitation on a longer timeline linked to maritime power projection provides a useful basis for predicting Chinese objectives in the Oceanic region beyond the second island chain.

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[21] Eyder Peralta, "A New Chinese-Funded Railway in Kenya Sparks Debt-Trap Fears," National Public Radio (NPR), 8 October 2018.
[22] Sudha Ramachandran, "The China-Maldives Connection," *Diplomat*, 25 January 2018.
[23] Tim Fernholz, "Eight Countries in Danger of Falling into China's 'Debt Trap'," *Quartz*, 7 March 2018.
[24] Monica Wang, "China's Strategy in Djibouti: Mixing Commercial and Military Interests," *Asia Unbound* (blog), Council on Foreign Relations, 13 April 2018; and Katrina Manson, "Jostling for Djibouti," *Financial Times*, 1 April 2016.
[25] Gurmeet Kanwal, "Pakistan's Gwadar Port: A New Naval Base in China's String of Pearls in the Indo-Pacific," in *China's Maritime Silk Road: Strategic and Economic Implications for the Indo-Pacific Region*, ed. Nicholas Szechenyi (Washington, DC: Center for Strategic and International Studies, 2018), 13. When completed, the Gwadar port will have three 200-meter-long berths and one roll-on-roll-off (RORO) facility. At present, the port has the capacity to handle 50,000 deadweight tonnage bulk carriers drawing up to 12.5 meters. The only PLAN ship presently exceeding the deadweight tonnage capacity is the aircraft carrier *Liaoning*. Possibilities for the projection of other PLAN capabilities are implicit.

The Indian Ocean Model Applied to the Fourth Island Chain

Geographically, the islands extending eastward from the Cocos Islands to French Polynesia constitute a focal area with specific leverage points to be conceptually designated the "fourth island chain." The immediate utility of the fourth island chain to China should be viewed relative to Wright's assessment of China's intended regional superpower status, and it should also be based on Terrence Wesley-Smith and Edgar A. Porter's appreciation of China's patient and long-term contest over recognition of Taiwan in tandem with a desire to access Oceanic resources.[26] In the context of a more global comprehensive outlook, influence in the fourth island chain represents three enduring opportunities for China. First, an economic connection between China and South America could be fostered by guaranteed access to new markets, alternative energy sources, and the ability to disperse excess labor forces as part of a future "BRI 2.0." Already working toward these long-term objectives, Chinese firms have purchased Chilean and Peruvian copper mines and obtained major stakes in Venezuelan oil fields.[27] Second, China could gain access to Antarctica for strategic satellite communication nodes and mineral resource exploration beyond the 2048 expiration of the 1959 Antarctic Treaty. Third, an absolute utility of advanced bases would support China's maritime power projection in the Western Hemisphere in pursuit of natural resources like fisheries, undersea mining, and energy security. China's resource flow from South America and Oceania are second and third, respectively, behind the Indian Ocean region. The maintenance of this resource flow, linked to China's core strategy end of economic development, illustrates the future value of both the Indian Ocean region and Oceania, as well as the mechanisms that China is likely to employ in order to secure it.

Coercion is defined by Thomas C. Schelling as the threat of damage and the propensity of one entity to weigh up the use of force relative to the possibility of gains through the threat of damage to another.[28] Coercive effects would manifest in Oceanic nations through economic loss equating to population hardship with the associated ability of China, as future conditions allow, to retain the enhanced threat of economic damage as a coercive mechanism in pursuit of strategic bases. The method for attaining China's strategic objectives in the future will likely be more coercive in nature if the traditional Chinese strategic fait accompli, as played out in the South China Sea, appears unattainable.

Generating economic damage as part of strategic compellence is a longer-term Chinese capability within the Indian Ocean model that is yet to manifest, but the use of influence or a lesser degree of coercion looms large. Charles Edel states, "Chi-

[26] Terence Wesley-Smith and Edgar A. Porter, "Oceania Matters," in *China in Oceania: Reshaping the Pacific?*, ed. Wesley-Smith and Porter (New York: Berghan Books, 2010), 2.

[27] Seth Crospey, "China Sets Its Sights on South America," *American Interest*, 9 April 2018.

[28] Thomas C. Schelling, *Arms and Influence* (New Haven, CT: Yale University Press, 1966), 4. In the context of nation-states, coercion requires one polity finding a bargain, arranging for another polity to be better off by doing what the first requires when the threatened penalty is considered.

nese investment is troublingly opaque, undermines national sovereignty, and privileges resource extraction over benefit to local communities. . . . Chinese investment has often brought environmental degradation, corruption and crime, and increased strain on natural resources, including fisheries."[29] Evan A. Feigenbaum describes a derivative of Schelling's definition using variations on leverage as a result of economic influence, which may be equated with Rod Lyon's description of *strategic gravity* based on China's size and proximity.[30] Comparatively, *passive leverage* is essentially the gravity of China's size and market power. China does not need to threaten or cajole to try to pursue its ends; instead, it relies on foreign economic interests such as companies with a stake in the local economy to pressure home governments for stable, predictable, and nonconfrontational relations.[31] An example of passive potential can be seen in Australia: while Australia is China's sixth largest trading partner, China remains Australia's largest and single main export market for manufactured goods.[32] Australia passed legislation in June 2018 banning donations by corporate entities to political parties as a result of two instances in which Chinese firms had funded interactions with prominent politicians.[33] This action drew strong rebuke from China but little else.

Active leverage, by contrast, means that China will try to take a direct hand in shaping rules and norms in other countries, not solely punitive in nature. China's goal was to use the potential of its economic power to shape political and economic preferences. Admiration for New Zealand's foreign policy stance, as well as its status as the first developed country to recognize China's market economy and conclude talks on entry into the World Trade Organization, engendered the first free trade agreement of a developed nation with China in April 2008.[34] This case offers a clearly positive example of active leverage. Passive and active forms of leverage appear to be the norm for China, but the possibilities of exclusionary, coercive, and latent leverage illustrate its future ability to influence key nations within the fourth island chain.

The inherent fragility of nations in the fourth island chain provide the context for Chinese leverage in an exclusionary, coercive, and latent sense. China's use of exclusionary leverage is a function of sheer size, similar to Lyon's description of strategic gravity. Rather than attempting to shape rules and choices in other countries, *exclusionary leverage* means granting or denying access to China's own domes-

[29] Charles Edel, "How to Counter China's Influence in the South Pacific," *Foreign Affairs*, 13 November 2018.
[30] Rod Lyon, *Strategic Contours: The Rise of Asia and Australian Strategic Policy* (Canberra: Australian Strategic Policy Institute, 2012), 17.
[31] Evan A. Feigenbaum, "Is Coercion the New Normal in China's Economic Statecraft?," *Macro Polo*, Carnegie Endowment for International Peace, 25 July 2017.
[32] Anne Holmes, "Australia's Economic Relationships with China," Parliament of Australia, accessed 25 October 2018.
[33] Nick O'Malley, " 'This Is Just the Start': China-Australia Tensions Brought to the Surface," *Sydney (Australia) Morning Herald*, 25 May 2018.
[34] Jian Yang, *The Pacific Islands in China's Grand Strategy: Small States, Big Games* (New York: Palgrave Macmillan, 2011), 103.

tic market in an effort to generate pressure.[35] A variation of exclusion occurred in 2018 when the Chinese hospital ship *Daishan Dao* (a.k.a. *Peace Ark*) visited ports in the fourth island chain to deliver medical aid but ignored fragile nations like Nauru and the Solomon Islands, which recognize the Republic of China on Taiwan. Exclusionary leverage was recently applied via major international airlines. In April 2018, China's civil aviation authority sent letters to 36 foreign airlines demanding that any language that implied that Taiwan was an independent nation-state be changed to indicate that the island is part of China. In July, Australia's major airline, Qantas, decided to comply with these instructions, joining at least seven other airlines that have all publicly changed the way they refer to Taiwan.[36] Such a change is significantly more than a semantic anomaly—it is a deeper political distinction of sovereignty aiming to shape global perception of Taiwan's future without resorting to direct coercive methods.

Feigenbaum's *coercive leverage* remains the most direct approach. China does not simply wield access to its market as a means to generate leverage but attempts to inflict discrete punishments tied to discrete offenses.[37] In the case of Palau, China declared the island country an illegal tourist destination due to its status as one of 17 declared allies with Taiwan, thereby bankrupting Palau's major airline and compromising the tourism-based economy.[38] Palau was the first instance of coercive leverage applied in the second island chain surrounding recognition of Taiwan, establishing the possibility for future tension with Oceanic stakeholders about the same issue. Lastly, China retains latent *economic leverage*, which could be viewed as the final power play over contentious issues that might appear diplomatically unresolvable or as a way to attain strategic advantage.[39] Latency manifesting as China's ownership of national debt is a key measurement for judging potential to wield influence in the fourth island chain. Chinese loans account for more than 60 percent of Tonga's total external debt, equating to more than one-third of its gross domestic product, and almost one-half the external debt of Vanuatu. In dollar figures, Papua New Guinea has the biggest debt to China—$590 million USD—which represents about one-quarter of its total external debt.[40] Consequently, both Vanuatu and Papua New Guinea recognize Chinese territorial claims in the South China Sea. Chinese enmeshment in fragile Oceanic nations is the initial way to view the Indian Ocean model establishing the potential for generating influence and applying leverage.

[35] Feigenbaum, "Is Coercion the New Normal in China's Economic Statecraft?"
[36] Grant Wyeth, "The Qantas Quandary: Is Taiwan in China?" *Diplomat*, 8 June 2018.
[37] Feigenbaum, "Is Coercion the New Normal in China's Economic Statecraft?"
[38] Farah Master, "Empty Hotels, Idle Boats: What Happens When a Pacific Island Upsets China," Reuters, 19 August 2018.
[39] Feigenbaum, "Is Coercion the New Normal in China's Economic Statecraft?"
[40] Charlotte Greenfield and Jonathan Barrett, "Payment Due: Pacific Islands in the Red as Debts to China Mount," Reuters, 30 July 2018.

China's inroads to gaining influence in Papua New Guinea, Fiji, and Samoa share the common characteristic of high levels of national debt and strategically viable facilities for future Chinese use. Port visits by PLAN warships in Samoa or Timor-Leste by 2022, or increased medical aid from *Peace Ark*, would represent one indication of escalation along the same trajectory out to 2026. Similarly, an increase in debt by either Vanuatu or Tonga would demonstrate Chinese intent to use latent leverage with further visits from 2025 on a possibly accelerating two-year cyclical basis. Finally, the most troubling escalation in the model would be for either Papua New Guinea or Vanuatu to establish a Chinese basing footprint similar to the Lean Colonial model described by Yung between 2025 and 2030. Such a footprint would signal an irreversible escalation of China's influence in the fourth island chain and an absolute alteration of the Indo-Pacific balance of power.

Contesting the Fourth Island Chain

Designating a fourth island chain is intended to unify future operations in Oceania that employ economic support and security cooperation to degrade Chinese influence as part of an allied competitive strategy—aiming to outspend and outinfluence. In his seminal work on net assessment, Andrew Marshall posited that during the course of long-term competition, adversaries would logically seek to gain significant strategic advantages to determine the outcome of conflict. Further, they would also find ways during periods of peace to translate those strategic advantages into geopolitical capital, thereby enhancing security and prosperity, while undermining or destroying the position of their opponents. Over time, the competitive strategy approach would lessen the military options available to an adversary and also presumably encourage a change in political behavior, as their leadership would lose confidence that things were moving in their favor.[41] Travis Reese argues toward beating the Chinese at their own game, incorporating competitive economic tools into a broader framework for managing China's regional military incursions. He states, "Economic and trade engagement can deny opportunities for Chinese investors to conduct the economically exploitative tactics, which presage military overtures. . . . China made loan arrangements it knew would result in debt traps, which it then exploited to introduce military presence as a condition of loan renegotiation."[42] To disrupt Chinese influence efforts to gain basing rights beyond 2025, outspending China via combined aid delivery in the fourth island chain should be the first tranche in an enduring competitive strategy.

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[41] Andrew Krepinevich and Barry Watts, *The Last Warrior: Andrew Marshall and the Shaping of Modern American Defense Strategy* (New York: Basic Books, 2015), 73–94. Marshall was influenced by the strategy of highly successful businesses, particularly the notion of exploiting a firm's particular strengths to capture markets and drive rivals out of specific business areas. Marshall assumed that it was possible in strategic competition for one side to gain such advantages that would force the other side to make fundamental concessions in their relationship, including abandonment of the strategic competition.

[42] Travis Reese, "Beating Them at Their Own Game: The Economic Dimension of Competing with China," *War on the Rocks*, 9 August 2018.

Lowy Institute figures for aid spending in Oceania between 2011 and 2016 demonstrate that China is not in the lead when it comes to actual funds committed. Australia and New Zealand committed 55 percent of all aid to Oceania during that period, with Australia alone providing 42 percent in 2016. This does not mean that the traditional aid providers will maintain the initiative, as overall aid to the region shrank by 20 percent in five years. New Zealand recently announced a "Pacific Reset" with the accompanying pledge to spend $498 million in the region. Australia also committed $2 billion USD in regional infrastructure projects and support to Australian businesses operating in the region.[43] Australia and New Zealand spent .23 and .25 percent, respectively, of their gross national income on aid to the fourth island chain in 2017.[44] A nominal increase of .2 percent per year until 2025 will likely maintain the status quo, but just barely. Combining these projections with nominal increases in France's .91 percent ($120 million USD) and the United States' 7.75 percent ($1.03 billion USD) contributions to overall aid in 2017 will likely outspend China's present $3.5 billion USD commitment projected to 2021. Even doubling aid from the United States and France would equate to an aggregate increase of only $2.5 billion USD annually to outspend China. Jonathan Pryke suggests that France should focus on reversing the trend of declining aid and focus on continuing to crack out of its territorial shell in the Pacific.[45] Of critical importance to U.S. engagement in the fourth island chain is the 2023 expiration of the Compact of Free Association, which is aimed principally at Pacific nations such as the Federated States of Micronesia who have unreliable disclosure of national debt.[46] The renewal of this compact would help ensure the financial viability of the Federated States of Micronesia and strategic trust for the United States, and it would also serve to deny Chinese naval visits through the United States' own active leverage.

Complementary to collectively outspending China is the proposed saturation of the fourth island chain through a multilateral security cooperation that creates enduring strategic facilities and cooperative relationships to 2035. The key outcome of the Indian Ocean model when applied to Oceania is establishing the means to project maritime power preceded by a period of investment to foster leverage. Reese's recommendation could be applied across all allied stakeholders:

> The United States should support manageable and responsible investment, but it cannot simply buy its way into military partnerships as an explicit condition of economic support. Rather, it should introduce security arrangements in a way that takes into account the host nation's perspective, while still eliminating China's op-

[43] Edel, "How to Counter China's Influence in the South Pacific."
[44] Alexandre Dayant and Jonathan Pryke, "Pivoting to the Pacific," *Strategist*, Australian Strategic Policy Institute, 9 August 2018.
[45] Dayant and Pryke, "Pivoting to the Pacific."
[46] Compact of Free Association, Pub. L. No. 108-188, 117 Stat. 2795 (2003).

> portunity to commence an economic approach that results in a military outcome.[47]

The focal areas of Fiji, Papua New Guinea, Tonga, and Vanuatu could become the future contested points in degrading Chinese influence to 2025 and denying a presence to 2035 and beyond. While the United States retains primacy in the Asia-Pacific region as a whole, it looks to Australia to take the lead on regional security for the Southwest Pacific while it retains direct responsibility in the North Pacific. New Zealand provides for the security of the Cook Islands, Niue, and Tokelau, and France guarantees the security of the French Pacific with defense forces based in New Caledonia and French Polynesia.[48] Australia recently announced an increased military presence in the region, a joint naval base on Manus Island, new diplomatic posts, and annual meetings between defense, police, and border forces.[49] A requisite presence increase by New Zealand and France complemented by the United States would serve to enhance this commitment into the future. The 2017 Joint Statement of Enhanced Strategic Partnership between Australia and France offers a military partnership blueprint only bilaterally deepening the 1992 FRANZ agreement between France, Australia, and New Zealand.[50] The FRANZ agreement is a civilian-led arrangement supported by defense forces. Widening the FRANZ agreement to include interoperability outlined in the joint statement between Australia and France, including U.S. and New Zealand military capabilities as part of an enhanced Australian-led Defence Cooperation Program (DCP), and creating an organization to coordinate responsible multilateral economic aid and investment is a useful starting point for enhancing the current strategic arrangement for supporting the fragile nations in the fourth island chain.

Pursuing strategic objectives in Oceania will count for nothing without strategic buy-in from the Pacific Islands Forum. R. A. Herr argues that a fundamental divergence in perspectives on security objectives between those outside the region and those inside has become a source of tension in proposals for remodeling the overall architecture. Given the dependence on extraregional support for the Pacific Islands regional system and the present influence of competing great powers, it is unlikely that future changes will engender independent security arrangements for regional states.[51] Evolving Australia's DCP with support from multilateral sources such as

[47] Reese, "Beating Them at Their Own Game."

[48] Jenny Hayward-Jones, "Australia and Security in the Pacific Islands Region," in *Regionalism, Security and Cooperation in Oceania*, ed. Reuben Azizian and Carleton Cramer (Honolulu, HI: Asia-Pacific Centre for Security Studies, 2015), 67–78.

[49] Edel, "How to Counter China's Influence in the South Pacific." Key diplomatic outposts identified are in the Cook Islands, French Polynesia, the Marshall Islands, Niue, and Palau.

[50] Joint Statement of Strategic Partnership between Australia and France, 19 January 2012; and FRANZ Agreement, 22 December 1992. Under the FRANZ agreement, the three partners agree to coordinate disaster reconnaissance and relief assistance in the Pacific when requested by partner countries.

[51] R. A. Herr, "Regional Security Architecture in the Pacific Islands Region: Rummaging through the Blueprints," in *Regionalism, Security and Cooperation in Oceania*, 17–31.

France and New Zealand in the future will likely foster a sense of superior regional strategic interoperability. Edel suggests that the United States also needs to realize that its concern about Chinese attempts to extend its influence in the region is not necessarily a primary concern for Pacific Islanders. It is true that a growing number of Pacific states resent China's coercive activities, but this could easily become true for the activities of *any* external power in the region. The key is to approach the strategic challenge by earning trust.[52] Seeking a permanent presence that complements the long-term goals of the nations within the fourth island chain—specifically within Fiji, Papua New Guinea, Tonga, and Vanuatu—will be the key to maintaining strategic trust.

Through the continuation of the Indian Ocean model of a deliberate sequence of investment linked to military visitation based on the geographic importance of infrastructure needed for maritime power projection, China's encroachment strategy will expand unchecked into Oceania. This approach leaves fragile nations vulnerable to coercion or, at the very least, enables China to wield undue leverage to accomplish its own goals and change the balance of power in the region. China will likely employ the Lean Colonial model approach out to 2025, with the ability to accelerate port visitation annually where opportunities permit the possibility of forward basing. As conditions favor, China will likely develop a lasting maritime power projection footprint in support of enhanced economic inroads to South America toward 2030 and beyond. In March 2018, New Zealand foreign minister Winston R. Peters stated, "We need to better pool our energies and resources to maintain our relative influence."[53] Designating a fourth island chain is intended to unify future operations in Oceania around common goals of security cooperation, supported by economic engagement to degrade Chinese influence as part of an allied competitive strategy. Increasing aid expenditures by Australia and New Zealand through nominal increases as percentages of gross national income over the next decade, in tandem with doubled spending by the United States and France, will counter Chinese attempts to buy influence in the economic dimension. Multilaterally deepening present security arrangements such as Australia's DCP to include contributions by the United States, France, and New Zealand beyond 2022, in support of contingencies such as the possibility of New Caledonian independence, will support local security cooperation. Widening the FRANZ agreement to include U.S. capabilities and incorporating responsible aid dispersal will engender greater strategic trust. Finally, by establishing permanent basing arrangements in the focal areas of Fiji, Papua New Guinea, Tonga, and Vanuatu, U.S.-aligned strategic stakeholders will serve to counter Chinese influence efforts beyond the current island chains and maintain a unified strategic advantage into the future.

[52] Edel, "How to Counter China's Influence in the South Pacific."
[53] "Winston Peters on New Zealand in the Pacific," Lowy Institute, 2 March 2018.

Dynamic Talent Management Model

Establishing the Framework for the Exploitation of Artificial Intelligence in Strategic Human Resourcing

By Major Mabel B. Annunziata, U.S. Marine Corps[1]

Since the mid-twentieth century, the United States has solidified its global military dominance while maintaining its strategic objectives and preserving international order. Meanwhile, rising peer competitors, especially China and Russia, have been investing in the means to surpass U.S. military capabilities and force employment options. Through the proliferation of emerging technologies, these power brokers are rapidly advancing their strategic interests and pose a growing threat to U.S. national security and overall global stability.[2] In a future in which the adversaries of the United States may share comparable capabilities and technologies, military overmatch will be achieved through the accession, quality, and training of its servicemembers.[3] Numerous historical examples demonstrate how the combination of the right individuals, with the right skills, at the right time has changed the course of a war and ultimately history. Some anecdotes may attribute these successes to chance. However, relying on chance is clearly unacceptable given the potential war scenarios that the United States and its allies may face in the future.

The U.S. Congress emphasized these concerns in the National Defense Authorization Act of 2018, stating that "the current Joint Force must change to meet the threat of renewed great power competition."[4] Further, it called for a "broad revision of talent management principles among the services to increase the lethality and adaptability of the force."[5] This "broad revision" requires qualitative change, not merely growing the force. It means maximizing the military's human capital by

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[2] James N. Mattis, *Summary of the 2018 National Defense Strategy of the United States of America: Sharpening the American Military's Competitive Edge* (Washington, DC: Department of Defense, 2018), 1–2.

[3] The concepts of military overmatch and close combat overmatch are a current focus of the U.S. Secretary of Defense's Close Combat Lethality Task Force, established in 2018.

[4] National Defense Authorization Act for Fiscal Year 2018, Pub. L. 115-91, 131 Stat. 1332 (2017).

[5] *John S. McCain National Defense Authorization Act for Fiscal Year 2019: Conference Report to Accompany H.R. 5515*, H.R. Rep. No. 115-874, 115th Cong. (2018).

optimizing the recruitment, development, employment, and retention of the most talented and capable servicemembers.[6] This challenge must be viewed holistically. Future solutions must focus on applying limited resources at the inflection points where they will have the greatest effects.[7]

One such point is information, which former U.S. secretary of defense James N. Mattis momentously designated as the seventh Joint function.[8] The availability of extensive information that is stored on antiquated government information technology (IT) networks offers a trove of data that the military Services could use to potentially optimize human capital. Yet, that data remains dormant and unsourced due to obsolete IT systems. Indeed, systems that just years ago served as the hallmark of bureaucratic efficiency now hinder data processing, disrupt information sharing, and impede analysis and decision making throughout the Joint Force.[9] Meanwhile, an ever-increasing abundance of raw data continues to consume valuable personnel time, cloud judgment, and disrupt momentum. This expanding data problem is not a result of human limitations; it is a consequence of bad design and requires reevaluation and reconfiguration.[10] As General Joseph F. Dunford Jr. stressed while serving as Chairman of the Joint Chiefs of Staff, "military decision-making must exceed the speed of war," and the U.S. Department of Defense (DOD) must create "innovations and changes that speed the military's ability to respond to rapidly changing situations."[11] Expanding the initial investment by the DOD in data readiness will create the necessary framework to exploit the capabilities of artificial intelligence (AI), heighten military leaders' ability to maximize talent management, and increase the speed of strategic human resource decision making.

Problem Framing

Talent management as a process or a method has multiple meanings depending on the organizational level in which it is applied. It is therefore often misunderstood, misused, or mistaken to mean something not intended. At the enterprise level of human resourcing, talent management refers to the anticipation of required human capital for an organization and the associated planning to meet those needs.[12] It is an art and science that uses strategic human resource planning to improve the value of a particular business and/or military force to achieve its enduring purpose.[13] In the military, talent management is an integral component of the recruiting, ac-

[6] *Campaign Plan* (Washington, DC: Close Combat Lethality Task Force, 2018), 4–10.
[7] *Warfighting*, Marine Corps Doctrinal Publication (MCDP) 1 (Washington, DC: Headquarters Marine Corps, 1997), 45–47.
[8] James N. Mattis, "Information as a Joint Function," Department of Defense Directive-Type Memorandum, 15 September 2017.
[9] *The Mission Command Network Modernization Implementation Plan: Executive Summary* (Fort Leavenworth, KS: U.S. Army Mission Command Network Integration, 2018), 1–3.
[10] Brian McKenna, "Data Overload Is Not about Human Limitations; It's about Design Failure," UX Collective, 22 October 2018.
[11] Jim Garamone, "Dunford: Speed of Military Decision-Making Must Exceed Speed of War," Joint Chiefs of Staff, 1 February 2017.
[12] Talya Bauer and Berrin Erdogan, *Organizational Behavior 2.0* (Boston, MA: FlatWorld Knowledge, 2015), 401.
[13] Lance Haun, "Billy Beane and the Science of Talent Management, the Moneyball Way," TLNT, 28 February 2012.

cessions, manpower management, and retention processes. This is an important distinction because how the individual military Services conduct institutional talent management directly affects the readiness and lethality of the Joint Force.[14] Consequently, the operational and administrative processes within each Service are meant to interconnect and mutually support one another to ultimately provide the best manned, trained, and equipped "combat-credible military force" attainable.[15] When talent management is a fragmented process, practiced independently from force development and employment planning considerations, the Joint Force is unable to leverage the full potential of its combat power, and as a result military readiness may inevitably suffer against pacing threats.

Having a comprehensive understanding of the problem is vital to developing an enduring solution. In the past, improvements to force development, recruitment, management, and retention were developed with a narrow focus and in isolation from their effects on one another. Processes were intentionally stovepiped for a variety of reasons. The IT systems that support these processes have perpetuated the complex manpower management enterprise. The sheer volume and depth of information required to sustain each individual activity have created stovepipes that lose their intended connection to service lethality and operational readiness.[16] Accordingly, the DOD has recognized that manpower data and disparate systems used by each Service are flawed, inefficient, and plagued with redundancy.[17] Though these systems were developed to improve processes and support strategic decision-making, they have instead become counterproductive. Perhaps of even greater concern, as highlighted by a recent Marine Requirements Oversight Council decision, these same systems can produce misleading assessments of capabilities and readiness all the way up to the highest level of DOD crisis and contingency planning, thereby creating avoidable risk.[18]

There are several root causes to the data problem. Foremost, many of the IT systems used today are not interoperable or efficient, requiring multiple data entry points for the same type of information, which increases inaccuracy and workload requirements.[19] Additionally, these systems were designed with divergent purposes and based on a variance of data attributes, metrics, and definitions that can cause bias or inefficiencies in their algorithms. For example, multiple data systems may capture the same information and yet portray contradictory values, creating incon-

[14] Since U.S. military Services are confined to an end strength by federal law, talent management may also govern decisions on separations, in which the Service separates those members who are not competitive or not in compliance with regulations to make room for the recruitment of new servicemembers.

[15] *Summary of the 2018 National Defense Strategy of the United States of America*, 1.

[16] "Applications and Systems View (UNCLASS)," Manpower and Reserve Affairs, Headquarters Marine Corps, 5 April 2019.

[17] *Campaign Plan*, 15.

[18] "Data Readiness and a Ready Data Environment: From Concept to Reality," Marine Requirements Oversight Council Decision Memorandum 05-2016, 20 April 2016.

[19] *Department of Defense Joint Enterprise Defense Infrastructure (JEDI) Cloud Program Cyber Security Plan,* v. 1.0 (Washington, DC: Cloud Computing Program Office, 2018).

sistencies and friction among stakeholders (Service leadership) on whether or not to commit resources to an action.[20] Further, the massive amount of data available is not collected, aggregated, and presented in a meaningful way that leads to a synthesis of crucial information or improved human resource decision making. Lastly, many of these systems are sanctioned by gatekeepers whose positions of influence and authority drive stakeholders to make ill-informed decisions without appropriate checks and balances.[21]

The exact information that supports decision making is also the solution to overcoming the bureaucratic barriers and flaws in system design. As emphasized by the British military theorist John F. C. Fuller, "the more accurate the information from an observation, the better the reflection and more grounded is the decision."[22] U.S. Marine Corps command and control doctrine further explains that there are multiple forms of information that can feed the decision-making cycle: raw data, processed data, knowledge, and understanding.[23] This framework underscores the essential function of accurate and available manpower data in supporting talent management decision making. The current manpower problem begins at the base of the information hierarchy, where data is an abstraction, has not been contextualized, and is without meaning. For example, the same raw data that is required to analyze and determine the personnel rating to assess force readiness also feeds manpower management assessments to staff an infantry battalion. As the information is processed and different meanings are applied, stakeholders can reach understanding and are better prepared to make resource-informed decisions that appropriately balance a finite manpower population. On the other hand, when the core information is inaccurate, fractured, and/or inconsistent, the base for decision making is flawed and stakeholders do not achieve a common operational picture. With an understanding of the problem and the right application of emerging technologies, the Services can lighten the cognitive load and increase the speed of analysis, decision, and adaptation in improving the military's ability to maximize the power of human capital.

Emerging Technologies

With a strategic-level focus on resolving the problem, there are multiple DOD and Service-specific initiatives working on possible courses of action to improve how the military resources and manages human capital.[24] The most prevalent recommendation offered by government and industry is to jumpstart and leverage AI and

[20] Maj Mabel B. Annunziata, "Does the Corps have a 'Ready Bench': An Analysis of the Disparity between Supply and Operational Demand" (thesis, Command and Staff College, Marine Corps University, 2018), 4–8.
[21] Graham Allison and Philip Zelikow, *Essence of Decision: Explaining the Cuban Missile Crisis*, 2d ed. (New York: Longman, 1999).
[22] J. F. C. Fuller, *The Foundations of the Science of War* (London: Hutchison, 1926; repr., Fort Leavenworth, KS: U.S. Army Command and General Staff College Press, 1993), 40.
[23] *Command and Control*, MCDP 6 (Washington, DC: Headquarters Marine Corps, 1997), 63–104.
[24] Margaret Tomaszczuk, "Human-Centered A.I. Is the Future of Talent Management," Medium, 14 June 2018.

machine learning (ML) to improve and build efficiencies in the decision-making cycle.[25] According to industry experts, these trending technologies provide "the means to train algorithms and construct deep neural networks that improve the ability of machines to sense, decide, and act independently of human instructions or commands." They assume that "intelligent machines are the only way that human beings can process, let alone make sense of, the vast amounts of data being generated by ubiquitous [systems]."[26] Although these emerging technologies are promising, they are only tools and have limitations.

The methods of analysis that drive many algorithms in AI/ML are inherently antitheoretical in the sense that they keep iterating on correlations between data sets and refining these relationships. For most data sets, AI cannot begin to address the questions of "why" that are far more important than the questions of "what." This problem will only get worse as more sophisticated AI/ML increasingly finds correlations that humans cannot easily perceive.[27] Correlation is not causation; military cultures should not "prize information as an end in itself, and confuse the outputs of automated processes as certainty."[28] These tools cannot eliminate the decision-making cycle in war and most certainly cannot determine human will. Technology must be partnered with human intelligence and intuition when developing the mathematically based algorithms behind these systems.[29] Human responsibility must remain in the decision loop to embrace their full potential. As stressed in Marine Corps warfighting doctrine, "war is a human enterprise and no amount of technology can reduce the human dimension."[30] The application of science and technology is meant to enhance a leader's ability to apply the art of war through harnessing the individual's "intuitive ability to grasp the essence of a unique military situation and the creative ability to devise a practical solution."[31] Although the recommendations provided in this analysis are data- and technology-driven, they are not the end state. The intent is not to replace individuals. The desired outcome is to maximize the potential and longevity of each servicemember, which will result in the most lethal fighting force. The following recommendations therefore focus on the enhancement of systems, processes, and data management to lay the foundation for the exploitation of AI and ML.

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[25] *The Mission Command Network Modernization Implementation Plan*, 3; and Leonard Wong and Stephen Gerras, "Army Talent Management Reform: The Culture Problem," *War on the Rocks*, 22 February 2019.

[26] Chris Brose, "The Moneyball Moment (Or: How I Learned to Stop Worrying and Love Autonomous Military Forces)" (working paper, Aspen Strategy Group, Washington, DC, 2018), 2–3.

[27] Peter Hays, email message to author, 23 April 2019.

[28] Scott J. Kinner, *Science and Technology Environmental Scan* (Twentynine Palms, CA: Marine Corps Tactics and Operations Group, 2018), 13.

[29] George F. Hurlburt, "Thinking Critically about Algorithmic Thinking," *IT Professional* 20, no. 2 (2018): 5–10, https://doi.org/10.1109/mitp.2018.021921644.

[30] *Warfighting*, 78.

[31] *Warfighting*, 18.

There are three fundamental elements that determine an organization's readiness to fully leverage AI and ML: strategy, "compute," and data.[32] The first requirement is establishing a clear and shared understanding of the goals for employing AI/ML. While this seems obvious, if there is not consensus on what insight AI modeling will drive, the resulting investment will almost certainly fail. However, understanding the technology is secondary to reaching a deep appreciation of an organization and its objectives.[33] A digital transformation in the military Services will require a paradigm shift; stakeholders and decision makers must evolve.[34] They cannot continue to outsource "the processes and decisions to machines with little understanding of how the complex layers of code and algorithms are interrelating to each other and the environment."[35] Rather, they must assess and understand the original purpose of each human resourcing milestone and its intended connection to the others, without the limitations of current technology platforms. Then, stakeholders, decision makers, and data analysts should jointly map the current workflows through the multiple IT systems to gain an understanding of where common systematic flaws or potential opportunities exist. The following questions have been developed to facilitate analysis:

1. Who are the stakeholders and what are their relationships to each other?
2. Who is going to own the process and who will own the information?
3. Who are the decision makers at every level within a respective process?
4. Who assigns tasks and who completes them?
5. Who must be informed regarding decisions and actions throughout the process?
6. What critical information facilitates each process? Are there data collection gaps?
7. Where does data collection overlap? How can redundancy and inaccuracy be reduced?
8. Where is the unexploitable data stored? How will it be converted to usable information?
9. Is there missing information needed for decision making or analysis?
10. How will the data be collected? Where will it be stored?
11. How will the data be secured and protected?
12. Who will require access to the information? Who can input information?
13. What are the ethical and legal risks associated with automating and sharing this information?

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[32] Shane Shaneman, phone conversation with author, 1 May 2019, hereafter Shaneman conversation.

[33] Alan Dennis, Barbara Haley Wixom, and David Tegarden, *Systems Analysis and Design: An Object-Oriented Approach with UML* (New York: Wiley, 2002), 42.

[34] Daniel Newman, "2018 Digital Transformation Trends: Where Are We Now?" *Forbes*, 20 August 2018.

[35] Andrew Smith, "Franken-Algorithms: The Deadly Consequences of Unpredictable Code," *Guardian*, 30 August 2018.

14. What other systems or processes require the same information? Do those systems or processes already interface with the primary collection platform?
15. Are the definitions and metrics between the information that must interface clear and consistent?
16. How must the information be filtered or displayed to maximize understanding and increase the speed of decision making?
17. How can information be merged from multiple systems or processes to quickly recognize and mitigate military risk?
18. How will the improved transparency across systems and senior staffs change power paradigms?

The answers to these questions can be used to develop a strategy of how the military Services will leverage AI and other emerging technologies to better inform strategic human resourcing decisions and improve institutional talent management.[36]

The second element for effective AI is data accessibility, which requires a dedicated investment to break down existing data silos and stovepiped data repositories. Data accessibility is driven by the power to compute and enabled by data architecture and network infrastructure. According to Shane Shaneman, director of strategic government research at the DOD, cloud computing has made AI/ML accessible to millions and has become cost effective for the U.S. military.[37] Specifically, a cloud-based platform will enable persistent storage, retrieval, and sharing of massive data sets across multiple Service functions.[38] When combined with AI, these platforms provide increased security, adaptability, and functionality. Currently, there are multiple DOD technology-based initiatives, such as JEDI Cloud and Global Force Management Data Initiative, that are dedicated to digitally integrating the Joint Force.[39] Although the DOD is making a large investment to increase interoperability across authoritative data systems, there are many ad hoc Service applications that must still be accounted for. It is imperative that the military Services capture and prioritize the information provided by these applications and systems to maximize the DOD's investment.

In addition to the investment in interoperability, there must also be a comprehensive investment in manpower data readiness to fully exploit AI. *Data readiness* is the "ability to access accurate and timely data in order to perform analysis in support of executive decision making."[40] Effective use of AI/ML is dependent on

[36] Michael Schrage, "How the Big Data Explosion Has Changed Decision Making," *Harvard Business Review*, 25 August 2016.
[37] Shaneman conversation.
[38] Jason Kulpa, "Why Is Customer Relationship Management So Important?," *Forbes*, 24 October 2017.
[39] *Department of Defense Instruction no. 8260.03, The Global Force Management Data Initiative (GFM DI)* (Washington, DC: Office of the Under Secretary of Defense for Personnel and Readiness, 19 February 2014.)
[40] "Data Readiness and a Ready Data Environment (RDE): From Concept to Reality," Marine Requirements Oversight Council Decision Brief, 1 December 2015.

sufficient, unbiased, and accurate data.[41] If the data that flows between IT systems is flawed, the analysis that follows will also be flawed, and true synthesis cannot be achieved. A recent CrowdFlower survey of data scientists found that 79 percent of their time is dedicated to preparing and managing data for analysis.[42] Because the military Services do not have dedicated data scientists to maintain their systems, the initial process design should target data at the source and build feedback loops that facilitate assessments for future refinements. With the symbiotic benefits of interoperability and data readiness, the U.S. military will be in a more advantageous position to exploit the full capabilities of AI/ML with a manpower AI strategy, a cloud-based platform, and data readiness.[43]

Short-Term Wins

Successful military talent management is not solely about identifying and elevating the high performers. Unlike the civilian sector's focus on maximizing profit, the institutional investment in individual servicemembers is not transactional. The initial investment in the training and education of a new servicemember is realized in the span of a contract or career. By virtue of accepting the contract, the Service has made a commitment to the individual in the same vein as the individual has committed to the Service. Ultimately, the return on investment for the DOD is the combat power created by well-trained and prepared units across the force. Optimizing how the military captures and interprets a servicemember's information will improve its understanding of and decision-making ability for those individuals as they move through key career milestones. Equally important is capturing and analyzing trends across time to improve force development, management, and employment of the force.

In the short term, the process of data mapping will reveal opportunities within one process that can be analyzed and exploited for other valuable purposes. For example, during the U.S. Marine Corps recruitment process, the selection of the best qualified individuals for military service requires the collection of personal information on each prospective candidate to build a comprehensive picture of their overall fitness to be a Marine. This in-depth personal profile is captured in the Marine Corps Recruiting Information Support System (MCRISS) and includes citizenship and cultural background, mental aptitude, psychological and physical traits, and legal and medical history. The value of this nascent information does not end with accessions, but is also immensely supportive of other subsequent manpower decisions that influence a Marine's career progression (e.g., occupation selection, unit assignments, retention, etc.) or operational employment. However, due to fragmented interfaces between IT systems, much of this coveted information

[41] "A DARPA Perspective on Artificial Intelligence," YouTube video, 15 February 2017, 16:11 min.
[42] Maria Korolov, "AI's Biggest Risk Factor: Data Gone Wrong," *Insider Pro*, 13 February 2018.
[43] "Data Readiness and a Ready Data Environment (RDE)."

within MCRISS is unavailable to military occupational specialty (MOS)-producing schools.[44]

Likewise, information composed about student performance and behavior at MOS schools is captured in the Marine Corps Training Information Management System (MCTIMS). Similar to recruitment data, the relevant information in student records does not transition after graduation to a Marine's first duty station. The net result is a newly accessed and trained Marine, with a fractured profile of performance and academic history spread across multiple systems and unavailable to the gaining command. As such, the advantages of human resourcing in the accessions pipeline are limited to the basic available data points of rank, a given MOS, and time-in-grade/service. On a broader scale, the Service is simply placing "a face to a space" instead of sourcing the right candidate to the right job.[45]

Of greater significance is that the disconnection between manpower information systems is a critical gap with consequences that negatively affect individual and unit readiness. The information lost in transition is necessary to guide and sustain the personal transformation that occurs between the training environment and the operating forces.[46] Capturing the critical information across the accession pipeline and making it available to the gaining commands in a meaningful way will facilitate important decisions on the best qualified personnel to fill leadership billets, provide insight into training deficiencies, highlight personnel risk, focus mutually supporting command programs, and enable the development of training plans that will improve overall readiness. Ultimately, the unexploited data that exists across multiple platforms and records is a missed opportunity to further improve Service-wide talent management, inform force development, and properly resource the force.[47]

Conversely, if there were a deliberate and comprehensive investment in interoperability and cohesiveness between manpower data systems, major process improvements would be possible to recruiting, accessions, force employment, and retention that would enhance talent management and increase unit readiness and cohesion. One example can be found in the average deployment timeline of a Marine Corps infantry battalion. Generally, 35–45 percent of the battalion's enlisted population lacks sufficient contract length to meet their next deployment, causing drastic personnel turnover during a critical time in the predeployment cycle.[48] Marine Corps authoritative data systems currently collect all the required information about servicemember qualifications for reenlistment. Yet, each Marine must initi-

[44] MCRISS was developed for a limited purpose, without the functionality and interfaces necessary to support manpower decision-making outside of recruiting.

[45] Rachel A. Gonzales, "Artificial Intelligence: Applications to USMC Manpower Plans and Policy" (PowerPoint presentation, Marine Corps University, Quantico, VA, 16 October 2018), 19.

[46] *Sustaining the Transformation*, Marine Corps Reference Publication 6-11D (Washington, DC: Headquarters Marine Corps, 1999).

[47] "Data Readiness and a Ready Data Environment (RDE)."

[48] "Deploying Unit Staffing Process" (PowerPoint presentation, Marine Corps University, Quantico, VA, 28 March 2016).

ate the process and gather all the information/correspondence necessary to submit a reenlistment package through the chain of command, making this process redundant and inefficient.

However, by leveraging servicemember data that is already available in authoritative data systems and AI, the Marine Corps can improve data synthesis and more efficiently identify and select those members of the force who are best qualified for retention. The retention process can be reversed to a push system instead of a pull system, in the same manner that credit card companies and banks target individuals with good credit by offering them preapproved loans or lines of credit. Instead of waiting for all submissions to come through once a year—which creates an administrative bottleneck of reenlistment packages moving up the chain of command—the Marine Corps can proactively preapprove the most qualified Marines for reenlistment or extension, pending the immediate commander's endorsement. Furthermore, the process can provide an in-stride assessment to those less-qualified servicemembers so that they can work to improve their competitiveness for retention. For commanders, the process improvements made available through data synthesis will provide some administrative relief and increase their capacity to mentor and develop Marines competing for reenlistment. In addition, preapproved extensions can provide qualified and experienced Marines the option to stay on for the next deployment and still meet transition requirements. For those who choose to exit the Service, they can be preapproved for reserve contracts, providing the Marine Corps' Manpower and Reserve Affairs Department with a higher quality pool of candidates. Further, individuals unqualified for future service would be informed earlier, better enabling individual preparation for transition out of the Service. Finally, the Marine Corps' Manpower Management Division would have a clearer assessment of what billets must be resourced further in advance. Overall, the Service would have better projections of personnel available for deployment, and even more important, unit deployment cycles would be more stable, increasing unit readiness and cohesion.

Achieving data readiness across the recruitment, manpower management, employment, and retention processes will produce multifaceted effects at all levels of command and decision making. At the lower echelons, the demand for information needed to support human resourcing decisions represents a tremendous administrative burden that can seem all-consuming. For example, all Marine units are required to comply with the Inspector General of the Marine Corps Inspection Program (CGIP). On average, a Marine infantry battalion is required to manage 42 CGIP functional areas while meeting its operational deployment requirements, with approximately 20 of these areas linked to personnel management (e.g., reten-

tion, promotions, records management, etc.).[49] Further, approximately 40 collateral duties and 18 authoritative data systems are required to support these programs. How does a commander manage this demand and best apportion their personnel to meet all their requirements and their mission? Does a commander really understand the varying military and individual skills resident in their unit's population? Are they retaining the right individuals? The burden levied on the command, the inefficiency of the associated data systems, and the absence of the necessary information to ideally employ the personnel optimally within the unit are all interconnected. Improving the processing and quality of information across those systems at the enterprise level will lighten some of the burden on operating force units and return valuable time back to those commands to reinvest in personnel, materiel, and training readiness.

Long-Term Impacts

Dynamic Talent Management at the Individual Level

A dynamic talent management model that is enhanced by the application of AI and ML can be designed to reveal the essence of a servicemember's talent or natural aptitude, rather than just a generic military profile. With this knowledge, military leaders can cultivate strengths and balance weaknesses with the strength of others. The power to understand the true capability of the force in real-time can bring a decisive advantage in the battlefield. For example, at the beginning of World War II, the U.S. armed forces were "not well organized for large scale combat against a great power enemy" and were unprepared to mobilize the population.[50] The Victory Plan of 1941 was the fundamental planning document that propagated the American Strategy to prepare the country for war. Notably, the principal author of the Victory Plan was a military servicemember, U.S. Army major Albert C. Wedemeyer. Wedemeyer was imminently qualified to author this strategic plan based on his unique personal, educational, and military experience. The circumstances that placed him in the right position at the right time to strategically influence the capacity of the United States to mobilize for war was the product of chance.[51] Nonetheless, human resourcing and talent management must not rely on mere fortuity to achieve a desired end state. Responsible military leadership must sufficiently invest in data readiness and emerging technologies now to provide the U.S. military the ability to find and properly employ eminently qualified individuals at the right time to prepare for the next crisis.

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[49] This is the average number of programs found within the infantry battalions of the 1st Marine Division and is comparable to those within the infantry battalions of the 2d and 3d Marine Divisions. The number of programs that are not inspected but still required is even larger. See "CGI Functional Areas (FA) Inspected" (PowerPoint presentation, 1st Marine Division, Camp Pendleton, CA, 12 November 2018).

[50] Charles E. Kirkpatrick, *An Unknown Future and a Doubtful Present: Writing the Victory Plan of 1941* (Washington, DC: U.S. Army Center of Military History, 1992), 5–14, 120–21.

[51] Kirkpatrick, *An Unknown Future and a Doubtful Present*.

When the military Services have created the conditions to fully exploit AI/ML, the convergence of people, processes, and technologies within human resourcing should reduce the element of chance and enable the deliberate recognition and sourcing of human talent where and when most needed to meet the competing demands for skilled, capable, and intelligent military and civilian expertise. The DefenseReady customer relationship management (CRM) cloud-based software, used by Marine Corps Forces Special Operations Command (MARSOC), is linked to Marine Corps and DOD data systems to provide tailored individual career path and future opportunities by grade data that streamline the time-consuming and inefficient research process for vectoring personnel.[52] DefenseReady demonstrates that although the same data feeds decision loops across various chains of command, how the information is filtered and displayed can be tailored to the problem set it is meant to solve at each level without a tremendous investment in time and research.

A comparable alternative or enhancement to the DefenseReady platform is the 360 Personnel Profile prototype. The U.S. secretary of defense's Close Combat Lethality Task Force, the Marine Corps Warfighting Laboratory, and StackForce are developing more sophisticated software that is designed to provide a 360-degree personnel profile of each servicemember by comprehensively capturing military and individual skills as well as physical and psychological competencies.[53] In addition to interfacing with current DOD systems and applications, this platform has the core capability of capturing the unexploited data that the Services generate, as well as converting static information, such as Service doctrine and publications, into dynamic metrics within an interactive application. When combined with accurate workflows based on previous data mapping, information can be aggregated and evaluated to provide a comprehensive profile of individual performance, career history, and potential future employment.[54] This application will allow commanders to evaluate and improve individual- and unit-level readiness based on assessments of their proficiencies against a set of established standards and real-world examples of successful performance. Essentially, the data that is ready, available, and leveraged uncovers and reveals the manpower solution to the talent-sourcing problem to place qualified individuals where and when that are needed most.

Concurrently, the Marine Corps Manpower and Reserve Affairs Department is working with the Johns Hopkins University Applied Physics Laboratory to use psychological testing and psychometrics to develop models that predict recruit training success.[55] While numerous comparable initiatives across the DOD could independently fix its target objective, none addresses the core problem. However,

[52] Chris Lowe, "CRM 2015–2016 with Talent Management" (PowerPoint presentation, Camp Lejeune, NC, 12 December 2015), 1–4.
[53] James N. Mattis, "Establishment of the Close Combat Lethality Task Force (CCLTF)," Department of Defense Directive-Type Memorandum 18-001, 16 March 2018, 8.
[54] Simran Bagga, *Text Analytics: Unlocking the Value of Unstructured Data* (Portland, OR: International Institute for Analytics, 2016), 22–23.
[55] Gonzales, "Artificial Intelligence," 4, 19.

if the DOD demanded unity of effort of these disparate projects, there would be a greater probability of success, and the military Services would be placed in an advantageous position.

Dynamic Talent Management at the Enterprise/Operational Level

Investment in a dynamic talent management model is not meant to concentrate strategic human resourcing on only the high performers and uniquely skilled individuals. Instead, it builds combat power by increasing the strength and readiness of teams, from the staff level to small unit and higher-echelon teams. As stated by British Army field marshal William J. Slim, "Armies do not win wars by means of a few bodies of super-soldiers but by the average quality of their standard units."[56] The employment of these platforms will uncover the vulnerabilities, deficiencies, and risks across recruitment, accessions, manpower management, and retention that must be mitigated and resolved. In addition, the comprehensive manpower information that is collected, when paired with the computing power of AI/ML, can be used to generate trend and gap analysis, projections for budget resourcing, force development plans, and force employment models in real time and space. At the operational level, these applications can be integrated to provide interactive task organization options, optimal training, exercise, and employment plan configurations, and global force management alternatives. With a heightened common operational picture and understanding of force availability and readiness, planners can test the information in large-scale exercises and wargames, increasing their organization's ability to adapt and integrate across the Joint Force. Ultimately, the foundation provided by manpower data readiness will have strategic effects across the DOD by improving the "four pillars of global integration": planning, decision-making, force management, and force design.[57] Finally, the framework provided in this analysis should be considered beyond its application to today's military challenges. At present, there are approximately 1.4 million active duty and more than 800,000 reserve personnel serving in the U.S. military.[58] During World War II, the U.S. armed forces grew to about 16.1 million servicemembers. Approximately 405,000 of these servicemembers died and 670,846 more were wounded.[59]

How would today's military Services process and sustain the exponential proliferation of data created by the mobilization of the American population and the mass number of casualties that result from large-scale combat operations? The Services are not prepared for this scale of war in their current form. An investment in

[56] Steven Cummings et al., "Ten Ways to Fix the U.S. Military's Close Combat Lethality," *War on the Rocks*, 8 March 2018.
[57] Jim Garamone, "Global Integration Seeks to Buy Leaders Decision Time, Increase 'Speed of Relevance'," Joint Chiefs of Staff, 2 July 2018.
[58] James Jay Carafano, "America's Joint Force and the Domains of Warfare," in *2018 Index of U.S. Military Strength*, ed. Dakota L. Wood (Washington, DC: Heritage Foundation, 2018), 23.
[59] Anne Leland and Mari-Jana Oboroceanu, *American War and Military Operations Casualties: Lists and Statistics* (Washington, DC: Congressional Research Service, 2009), 2.

data readiness now should build the capability of the armed forces to contend with this challenge in the future. The dynamic talent management framework can be used to support comparable major combat operations. In general, this framework has the potential to "speed senior leaders' decision-making, integrate operations worldwide and deliver forces capable of competing and winning against any possible adversary."[60] In the event of future major combat operations against a peer competitor, data readiness will be a critical difference that enables and helps sustain the strategic advantage throughout an enduring conflict.

Conclusion

The proliferation of emerging technologies is leveling the field of global power and providing opportunities that embolden rising competitors to advance their interests from positions of greater strength and parity with the United States. Within this new normal global operating environment, no longer is there the relative security that had once been based solely on the capabilities and technologies of an industrial military machine to provide a strategic advantage over near-peer or inspiring adversaries across all operating dimensions. Within this normalizing environment of comparable relative combat power between competitors, the ability of the United States to harness and develop the human potential of its military is what will achieve strategic offset. The future lethality and resiliency of the U.S. military is directly and inextricably linked to human capital and how effectively the military Services can recruit, develop, employ, and retain the force.

However, the effectiveness of these processes at present is insufficient and must be modernized and transformed to maintain stride with pacing threats.[61] The first step is to resolve the data proliferation problem by streamlining each process, mapping their connections, and improving data readiness to provide a means to create solutions that were previously not possible. Expanding the investment in data readiness and accessibility is a multifaceted approach that will lead to improved understanding and increased speed of decision making across recruiting, manpower management, force employment, and retention. When fused with the benefits of a cloud-based service and emerging technologies such as AI and ML, a dynamic talent management model will create the conditions to regain military overmatch over rising competitors and preserve the strategic advantages of the United States on the global stage. In contrast, failing to make an aggressive investment to resolve the insufficient and fractured human resourcing processes could be the difference between winning and losing in future warfare.

[60] Garamone, "Global Integration Seeks to Buy Leaders Decision Time, Increase 'Speed of Relevance'."
[61] Donald J. Trump, *National Security Strategy of the United States of America, December 2017* (Washington, DC: White House, 2017).

The Essential Role of Recycling in Decreasing the United States' Dependence on Foreign Sources of Rare Earth Materials

By Major Margaret McCord, U.S. Air Force[1]

The term *rare earth elements* (REEs) refers to the 15 lanthanide elements (lanthanum, cerium, praseodymium, neodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, and lutetium), as well as yttrium and scandium, which possess similar chemical characteristics. These 17 elements are further broken down into *light REEs* (LREEs) and *heavy REEs* (HREEs) based on their atomic number.[2] REEs have become increasingly significant to a wide range of commercial and military technologies because of their high magnetic strength and unique luminescent and electrochemical properties.[3] Although originally thought to be rare, REEs are fairly abundant in the Earth's crust and have been found in 19 states in the United States, though typically in low concentrations.[4]

Because of the challenges in separating out individual REEs, there was little demand for them prior to World War II. Scientists discovered and developed an efficient process of separation in 1947 at Ames Laboratory, a U.S. government laboratory in Ames, Iowa, which was initially considered the hub of all rare earth developments. The first U.S. REE mine opened two years later in 1949.[5] REE processing is still complex when compared to the processing of other minerals. While the separation step varies slightly depending on the type of rock (bastnaesite, monazite, or

[1] Maj McCord is a graduate of the Command and Staff College at Marine Corps University. This paper was nominated for the LtGen John A. Lejeune Award for academic year 2020–21.

[2] *Critical Materials Rare Earths Supply Chain: A Situational White Paper* (Washington, DC: Office of Energy Efficiency and Renewable Energy, Department of Energy, 2020), 10.

[3] Raeanna L. Carrell, "Putting the 'Us' Back in the U.S. Defense Industrial Base: The Case of Rare Earths," *Journal of Public and Environmental Affairs* 1, no. 1 (April 2020): 2, https://doi.org/10.14434/jpea.v1i1.30323.

[4] *Critical Materials Rare Earths Supply Chain*, 11.

[5] Joanne Abel Goldman, "The U.S. Rare Earth Industry: Its Growth and Decline," *Journal of Policy History* 26, no. 2 (April 2014): 144, https://doi.org/10.1017/S0898030614000013.

xenotime), it generally takes 10 days after the ore is out of the ground for REE oxides to be produced.[6]

Since 1947, REEs have been critical in solving technological challenges and enhancing existing industries, such as ceramics, lighting, atomic energy, and petroleum refinement.[7] REEs have enabled technology to become smaller, lighter, more efficient, more environmentally friendly, and more thermally durable. The greatest demand has been for their use as stabilizers in fluid-cracking catalysts (roughly 60 percent domestically) and in the field of permanent magnets (roughly 31 percent of the global consumption in 2016).[8] The green energy sector is particularly reliant on REEs due to their heavy use in semiconductors and the high-performance permanent magnets required for hybrid and electric vehicle motors, as well as the direct-drive generators used to store wind energy.[9] Semiconductors, the flat material that make up the base for microchips are foundational to nearly all electronic devices, since they host the integrated set of circuits required for operation.[10] These microchips can be designed for a variety of functions, such as memory chips, graphic processing units, or program logic microprocessors. By exposing semiconductors to substances such as REEs, the conductivity of the material can be manipulated in various ways to enhance their performance, increase efficiency, and reduce operating costs.[11]

The administration of U.S. president Joseph R. Biden Jr. has set ambitious goals to increase both the demand and relevancy of sustainable REE procurement. These ambitions include developing a carbon pollution-free power sector by 2035, establishing a net-zero economy by 2050, and creating jobs in manufacturing and engineering that will simultaneously accelerate federal projects in an environmentally friendly, sustainable manner.[12]

REEs are not only critical to commercial industry. Current defense applications rely on them for equipment such as jet engines, satellites, communication systems, missile guidance systems, antimissile defense systems, laser systems, night vision goggles, and optical lenses.[13] Specifically, weapons systems such as the United

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[6] Cindy Hurst, *China's Rare Earth Elements Industry: What Can the West Learn?* (Washington, DC: Institute for the Analysis of Global Security, 2010), 5.

[7] Goldman, "The U.S. Rare Earth Industry," 145.

[8] Brandon S. Tracy, *An Overview of Rare Earth Elements and Related Issues for Congress* (Washington, DC: Congressional Research Service, 2020), 1; and Carrell, "Putting the 'Us' Back in the U.S. Defense Industrial Base," 2.

[9] Goldman, "The U.S. Rare Earth Industry," 145; and D. D. Imholte et al., "An Assessment of U.S. Rare Earth Availability for Supporting U.S. Wind Energy Growth Targets," *Energy Policy* 113 (February 2018): 295, https://doi.org/10.1016/j.enpol.2017.11.001.

[10] "The Main Types of Chips Produced by Semiconductor Companies," Investopedia, May 2020.

[11] F. Scholz et al., "Movpe of Rare Earth Doped III–V Semiconductors," in *Rare Earth Doped Semiconductors: Symposium Held April 13–15, 1993, San Francisco, California, U.S.A.*, ed. Gernot S. Pomrencke, Paul B. Klein, and Dietrich W. Langer (Pittsburgh, PA: Materials Research Society, 1993), 3; and Olivia Smith, "Why Semiconductors Are Necessary for Clean Energy Practices," Medium, January 2020.

[12] "FACT SHEET: President Biden Takes Executive Actions to Tackle the Climate Crisis at Home and Abroad, Create Jobs, and Restore Scientific Integrity across Federal Government," White House, 27 January 2021.

[13] *Rare Earth Materials: Developing a Comprehensive Approach Could Help DOD Better Manage National Security Risks in the Supply Chain* (Washington, DC: Government Accountability Office, 2016), 6, 16–161.

States' *Virginia*-class fast attack submarines, *Arleigh Burke*-class guided missile destroyers, and Lockheed Martin F-35 Lightning II Joint Strike Fighters rely on REEs to function.[14] Potentially even more relevant to national security is the significance of REEs in developing technologies such as directed-energy weapons, miniaturization, nanotechnology, and operations in space.[15]

In spite of their importance to the economy and national defense, global market forces have reduced U.S. domestic production to one active REE mine, which has no ability to separate and process REEs from the mined concentrates at a commercial scale.[16] While there have been numerous attempts to bolster REE production in the United States, the enduring supply/demand imbalance can only truly be rectified by a strategy that involves REE recycling.[17] As the global demand for REEs grows exponentially, recycling affords long-term REE access and stability that will continue to be vital to U.S. national security, especially in this period of great power competition.

The United States' Dangerous Dependence on China for Rare Earth Elements

Between 2015 and 2018, 80 percent of all REEs imported to the United States came from China, and much of the remaining 20 percent were derived from Chinese raw materials. In the last decade, the U.S. government has become increasingly aware of the nation's deficiencies surrounding REEs.

For example, the U.S. Department of Defense (DOD) produces the *Annual Industrial Capabilities Report to Congress* and the biennial *Strategic and Critical Materials Report on Stockpile Requirements* to communicate the status of critical materials with REEs appearing in both reports.[18] In 2017, President Donald J. Trump signed Executive Order 13817, directing the U.S. Department of the Interior (DOI)—in conjunction with other federal agencies—to create and maintain a list of mineral commodities that are vital to the U.S. economy and national security.[19] Rare earths were included in the DOI's most recent *Critical Mineral Resources.*[20] In 2016, the U.S. Government Accountability Office (GAO) conducted an assessment of all DOD reports and pertinent legislation on the subject between 2011 and 2015. It concluded that U.S. national security depends on REEs, that the United States' process for priori-

[14] Bert Chapman, "The Geopolitics of Rare Earth Elements: Emerging Challenge for U.S. National Security and Economics," *Journal of Self-Governance and Management Economics* 6, no. 2 (2018): 50, https://doi.org/10.22381/JSGME6220182.
[15] James Kennedy, "China Solidifies Dominance in Rare Earth Processing," *National Defense*, 21 March 2019; and Sarah Kramer and Dave Mosher, "Here's How Much Money It Actually Costs to Launch Stuff into Space," *Business Insider*, 20 July 2016.
[16] *Critical Materials Rare Earths Supply Chain*, 7.
[17] Chapman, "The Geopolitics of Rare Earth Elements," 81.
[18] *Rare Earth Materials*, 7.
[19] SecInt Ryan K. Zinke, "Forward" in *Critical Mineral Resources of the United States: Economic and Environmental Geology and Prospects for Future Supply*, ed. Klaus J. Schulz et al. (Reston, VA: U.S. Geological Survey, 2017), iii, https://doi.org/10.3133/pp1802.
[20] Tracy, *An Overview of Rare Earth Elements and Related Issues for Congress*, 1.

tizing and ensuring access is flawed, and that the United States is nearly completely reliant on its peer competitor, China, for its supply of REEs.[21]

The REE industry in the United States started out with heavy government investment through direct research and development, grants, public-private partnerships, tax incentives, and supportive public policies. By the late 1960s, however, the industry had transitioned almost completely to the private sector, with much of the government's involvement replaced by more restrictive environmental policies as understanding of radioactive hazards developed. This procurement shift from the federal government to domestic private industry to the global market was followed shortly by China's emergence in the REE sphere. Once fully up and running, China's producers were less constrained by safety and environmental regulations, and by the 1980s, they were able to undersell the rest of the international REE market. To withstand the depressed market and stabilize prices domestically, China nationalized most of its REE industries.[22] By following a hands-off approach and turning a blind eye to China's manipulation of market forces, the United States let domestic rare earth mining and processing atrophy and "dropped the rare earth ball."[23] When China gained a monopoly of the REE market, the United States lost access to its own domestic REE reserves as well as the technical experts, specialized equipment, and intellectual patents needed to successfully rejoin the industry.[24] The 2007–9 global recession and subsequent 2011–15 U.S. defense drawdown further diminished the resiliency of the United States' industrial base concerning REE and other critical materials.[25] China's heavy government support for its own REE industries is a long-term commitment that will likely keep it in a dominant position for the foreseeable future.[26]

China's punitive actions toward Japan in 2010 exemplifies the dangers of being reliant on it. During a dispute over fishing territories, Japanese authorities arrested a Chinese fisherman who had violated Japanese territorial waters. In retaliation, China cut off all REE exports until Japan released the Chinese ship captain without prosecution.[27] Had Japan held fast to its claims, the impact on its technology-heavy industries would have been disastrous.[28] The increasing tensions between the United States and China has also influenced the REE market. In 2017, President Trump ordered an investigation into Chinese trade policies, leading to a spike in Chinese REE export prices. During another period of increased tensions two years later, export prices soared following People's Republic of China president Xi Jinping's visit

[21] *Critical Materials Rare Earths Supply Chain*, 7.
[22] Goldman, "The U.S. Rare Earth Industry," 145, 151.
[23] Goldman, "The U.S. Rare Earth Industry," 140.
[24] Goldman, "The U.S. Rare Earth Industry," 139.
[25] Jeffrey A. Green, "Industrial Base Gears up for Great Power Conflict," *National Defense*, 24 January 2019.
[26] Marc Humphries, *Critical Minerals and U.S. Public Policy* (Washington, DC: Congressional Research Service, 2019), 44.
[27] Goldman, "The U.S. Rare Earth Industry," 140.
[28] Green, "Industrial Base Gears up for Great Power Conflict."

to a Chinese REE processing firm, with the price of neodymium up 25 percent.[29] More recently, the COVID-19 pandemic's disruption of Chinese REE refinery output has highlighted the vulnerable position of the United States. As China prioritizes the now-limited supply of Chinese REEs for its own consumption, U.S. automakers are having to halt production for weeks.[30]

Beyond price volatility, analysts are concerned that if the United States and China move from competition to conflict, the United States could only sustain a fight for a limited amount of time before the lack of REE access crippled its ability to manufacture replacement parts or reserves of expendable resources. This constraint would be acutely felt in air-to-air fighting, where the number of air-to-air missiles needed to defeat China's large aircraft inventory is likely greater than current stockpiles.[31]

In spite of a robust understanding of the significance of REEs and the factors that led to U.S. international dependence, the problem persists. The *Fiscal Year 2019 Industrial Capabilities Report to Congress* highlighted some of the most recent steps that have been taken to mitigate the risk to critical REE supply chains, such as President Trump's use of the Defense Production Act to initiate, maintain, expand, and restore domestic capabilities related to REE production, separation, and processing.[32] While this is certainly a step in the right direction, it is nevertheless insufficient and fails to solve the enduring dilemma of REE demand exceeding available resources because it lacks sufficient consideration of REE recycling.

Regaining domestic REE availability is not as simple as opening up old mines and processing facilities. The GAO's 2016 report estimated that it would take 15 years to rebuild the REE supply chain in the United States, assuming the necessary infrastructure and patents could be acquired.[33] The Mountain Pass mine in California was the world's primary source of REEs between 1965 and 1985 and is the only remaining producer of REEs in the United States.[34] Even after the mine reopened in 2018 and began producing 8.8 percent of the global REEs, the United States was still required to import 100 percent of the REEs it consumed because of a gap in domestic processing facilities.[35] Analysts speculate that even if the Mountain Pass mine can continue contributing 5 percent of the global REE market, it will struggle without government intervention.[36] With China filing more rare earth patents than all other countries combined, it appears that China's dominance in the REE mining and processing realm, as reflected through its commitment to research and devel-

[29] "Explainer: China's Rare Earth Supplies Could Be Vital Bargaining Chip in U.S. Trade War," Reuters, 22 May 2019.
[30] Gavin Bade, "Biden Orders Supply Chain Review for 4 Industries," *Politico*, 24 February 2021.
[31] Chapman, "The Geopolitics of Rare Earth Elements," 61.
[32] *Fiscal Year 2019 Industrial Capabilities Report to Congress* (Washington, DC: Department of Defense, 2020), 95.
[33] *Rare Earth Materials*, 13.
[34] Carrell, "Putting the 'Us' Back in the U.S. Defense Industrial Base," 4.
[35] Tracy, *An Overview of Rare Earth Elements and Related Issues for Congress*, 1.
[36] Carrell, "Putting the 'Us' Back in the U.S. Defense Industrial Base," 4.

opment, will be long lasting.[37] Finally, the quality of remaining REE ore deposits is declining, creating larger water and energy requirements for mining operations.[38]

The REE mining and processing industry present clear environmental and health risks that drive strict U.S. environmental and occupational safety standards that impede further domestic production of REEs.[39] Both bastnaesite and monazite, the two main types of rock in which REEs are found, naturally contain the radioactive compounds thorium and uranium.[40] Years of minimal environmental regulation and enforcement have resulted in more than 10 million tons of radioactive wastewater being dumped into a now-toxic lake surrounding the REE mine in Baotou, China. Roughly 60,000 cubic meters of sulfuric and hydrofluoric acid are released for every ton of rare earth produced, leading to ruined water supplies, damaged agriculture, and medical issues.[41] In spite of plans to open an REE processing facility in Texas, the REE mining and processing industries of the United States will always struggle to compete with Chinese REE producers and prices as long as the latter continue to have such lax environmental and safety standards.[42]

In 2014, concern about the United States' reliance on strategic competitors spurred congressional action and the acquisition of REEs as part of the U.S. National Defense Stockpile.[43] The DOD is increasing domestic stockpiles of critical materials through its *2021 Annual Materials Plan*, which is set to acquire various quantities of seven REEs while also working with allies to create a shared National Technology and Industrial Base to leverage the collective capabilities of several nations.[44] While essential for guaranteeing a certain level of immediate resource security, stockpiling and renewed domestic mining will not be enough to address the growing global imbalance between supply and demand of these finite resources, especially considering that 38 percent of all global REE reserves are found in China.[45]

Improved Recycling Is Necessary to Help Provide the United States with Long-Term Access to Strategic Minerals

The global demand for minerals continues to reach new record highs as increasing average standards of living merge with rising concentrations of REEs required

[37] Humphries, *Critical Minerals and U.S. Public Policy*, 44.
[38] Pieter van Exter et al., *Metal Demand for Renewable Electricity Generation in the Netherlands* (Amsterdam, Netherlands: Metabolic, 2018), 4.
[39] Kyung Taek Rim, Kwon Ho Koo, and Jung Sun Park, "Toxicological Evaluations of Rare Earths and Their Health Impacts to Workers: A Literature Review," *Journal of Safety and Health at Work* 4, no. 1 (March 2013): 21, https://doi.org/10.5491/SHAW.2013.4.1.12.
[40] *Critical Materials Rare Earths Supply Chain*, 9.
[41] David L. An, "Critical Rare Earths, National Security, and U.S.-China Interactions: A Portfolio Approach to Dysprosium Policy Design" (PhD diss., Frederick S. Pardee Rand Graduate School, 2014), 27.
[42] "Explainer: China's Rare Earth Supplies Could Be Vital Bargaining Chip in U.S. Trade War."
[43] Humphries, *Critical Minerals and U.S. Public Policy*, 2.
[44] "Annual Materials Plan for FY 2021," Defense Logistics Agency, 1 October 2020; and Carrell, "Putting the 'Us' Back in the U.S. Defense Industrial Base," 5–6.
[45] "Explainer: China's Rare Earth Supplies Could Be Vital Bargaining Chip in U.S. Trade War."

for each new piece of technology.[46] Global demand for certain REEs is projected to grow more than 700 percent during the next 25 years, well exceeding the natural abundance found in ores.[47] By 2025, even the availability of raw Chinese REEs is expected to dwindle as China becomes the world's leading *importer* of REEs, which will come as a part of its shift to manufacturing finished products and the expansion of its green energy sector.[48] Only two strategies address this ultimate REE balance concern: innovation in REE recycling and REE replacement technology.[49]

Unfortunately, REE substitutions are not always available without a loss in performance, if at all.[50] For example, substituting either neodymium or dysprosium in neodymium magnets (a.k.a. neo magnets) would render such a loss in performance that the battery would no longer be suitable for use in motors or certain military radar systems.[51] Additionally, when considering certain defense applications specifically, substitutions have not sufficiently demonstrated the required high heat tolerances afforded by REEs.[52] Consequently, while substitution must continue to be considered, the best chance at obtaining a sufficient quantity of REEs for the U.S. military and economy in the long run requires a strategy inclusive of REE recycling. In fact, REE recycling would directly contribute to the resilient, diverse, and secure supply chain that President Biden has declared as necessary to U.S. economic prosperity and national security.[53] Growing the nation's REE recycling industry requires two simultaneous efforts: increasing the scope and effectiveness of U.S. recycling operations and improving availability and access to aboveground REE sources. For the United States to be successful, both efforts will require more support from the federal government and close coordination with allied countries.

An assessment of the sales from a single hybrid electric vehicle company indicates that during the next 10 years, enough end-of-life waste will be made available to supply the DOD's Neo magnet demand for 50 years.[54] The European Union (EU)-funded QUMEC project estimates that in Europe, current reserves of all above-ground REEs (in waste products) could meet half of the annual demand with efficient recovery and recycling processes, resulting in roughly an 80-percent reduction in energy and greenhouse gas emissions when compared to traditional

[46] Klaus J. Schulz et al., "An Introduction," in *Critical Mineral Resources of the United States,* 7–8.
[47] Renaud Gueroult, Jean-Marcel Rax, and Nathaniel J. Fisch, "Opportunities for Plasma Separation Techniques in Rare Earth Elements Recycling," *Journal of Cleaner Production* 182 (May 2018): 1060–69, https://doi.org/10.1016/j.jclepro.2018.02.066.
[48] "Urban Mining Company: How a U.S. Company Uses Unconventional Resources to Meet a Strategic Defense Need," Defense Logistics Agency, May 2018, 2.
[49] Gueroult, Rax, and Fisch, "Opportunities for Plasma Separation Techniques in Rare Earth Elements Recycling," 1.
[50] *Rare Earth Materials*, 22, 24, 27.
[51] H. M. Dhammika Bandara et al., "Rare Earth Recycling: Forecast of Recoverable Nd from Shredder Scrap and Influence of Recycling Rates on Price Volatility," *Journal of Sustainable Metallurgy*, no. 1 (May 2015): 179, https://doi.org/10.1007/s40831-015-0019-3.
[52] Carrell, "Putting the 'Us' Back in the U.S. Defense Industrial Base," 6.
[53] Joseph R. Biden Jr., "Executive Order on America's Supply Chains," White House, 24 February 2021.
[54] "Urban Mining Company."

mining and ore processing.[55] As these aboveground alternative sources continue to grow, the Earth's REE deposits are being transformed from underground ores of monazite or bastnaesite to waste electrical and electronic equipment (WEEE) in landfills and scrap yards, making the ability to efficiently and effectively "mine" these alternative sources critical to future REE access.

Currently, approximately 80 percent of the end-of-life products in the EU that contain neodymium are already being recycled for general purposes, but the existing sorting and separation processes are not designed to recover REE materials, which are ultimately discarded. If an REE separation process was developed, it is estimated that existing waste streams could meet approximately 60 percent of the current European demand for neodymium.[56] Additional estimates indicate that with the proliferation of hybrid vehicles and wind turbines, there will be as much as 460 tons of dysprosium available for recycling by 2030, highlighting the fact that investment into these recovery pathways needs to begin now to facilitate access to those future reserves.[57] But some aboveground sources of REE could already be meeting demand. The EU estimates that if recycling facilities and processes were currently in place, it could meet 100 percent of its demand for europium through recycling.[58] The EU is not alone in this struggle. Recycling programs in the United States are anemic, with most states limiting collection to a narrow section of electronics.[59]

One 2015 study forecasts that by 2034, 42 percent of the total projected demand for neodymium will be recovered from ferrous scrap, such as electric vehicle motors. But to have a stabilizing impact on REE availability, the recycling rate would need to exceed 50 percent, requiring recovery from additional waste streams.[60] The U.S. military, accounting for 9 percent of the global REE demand, must be an active participant in the REE recycling of end-use products. Furthermore, one of the central challenges to REE recycling is that each individual element needs to be available in sufficient quantities and at relatively frequent intervals to supply demand and support constant recycling operations.[61] Including military waste in the recycling process would bolster the quantity of available REEs and ensure that the REEs used almost exclusively by the U.S. military are retained and reclaimed. In 2012, the DOD identified five applications that hold the greatest REE recycling potential.[62] Unfor-

[55] "Rare Metals Have Huge Potential for Recycling in Europe," European Union, 20 January 2020. *QUMEC* stands for "quantifying urban mines in Europe and related implications for the metal-energy-climate change nexus."
[56] "Rare Metals Have Huge Potential for Recycling in Europe."
[57] An, "Critical Rare Earths, National Security, and U.S.-China Interactions," 141.
[58] "Rare Metals Have Huge Potential for Recycling in Europe."
[59] An, "Critical Rare Earths, National Security, and U.S.-China Interactions," 145.
[60] Bandara et al., "Rare Earth Recycling: Forecast of Recoverable Nd from Shredder Scrap and Influence of Recycling Rates on Price Volatility," 186–87.
[61] "Explainer: China's Rare Earth Supplies Could Be Vital Bargaining Chip in U.S. Trade War"; and An, "Critical Rare Earths, National Security, and U.S.-China Interactions," 138.
[62] *Diversification of Supply Chain and Reclamation Activities Related to Rare Earths* (Washington, DC: Department of Defense, 2014), 10.

tunately, no DOD-wide program to recover REEs from these applications exist, nor has this list been updated to reflect advances in REE recovery technology.

The DOD is not new to the recapture of critical materials from waste. As part of the Defense Logistics Agency's (DLA) Strategic Material Recovery and Reuse Program (SMRRP), military bases send old aircraft engine parts to the DLA so that super alloys can be stripped, saving the DOD money and reinforcing the domestic supply.[63] The DLA's Precious Metals Recovery Program (PMRP) ensures that any unusable DOD property containing gold, silver, platinum, palladium, rhodium, iridium, osmium, or ruthenium is processed in a way that recovers those materials. The program begins early in the life cycle of most components with a precious metals indicator code assigned to the national stock number of any component that contains precious metal. DLA then offers these recovered precious metals at a stable and competitive price for future projects.[64] Both SMRRP and PMRP provide excellent templates for how the DOD can improve its ability to reclaim REEs from its waste streams, with REE identification being a logical first step. To facilitate that effort, devices such as portable X-ray fluorescence analyzers, traditionally used in assessing geological samples, are proving to be useful at detecting the presence of some REEs in electronic devices.[65]

Europe provides another example of how to stop throwing away valuable amounts of REEs. In recognition of the changing nature of global REE reserves and to reduce reliance on China, the EU has developed an effective method of recovering neodymium from WEEE. It has developed a three-step process of oxidation, selective extraction, and precipitation that allows for a cost-effective recovery of more than 90 percent of the neodymium.[66] Other efforts have found that neodymium and dysprosium can be effectively recovered from old Neo magnets by using hydrogen to extract the REEs from waste hard disk drives in the form of a powder, which can then be reformed into new magnets for a fraction of the energy required in primary magnet production.[67] There are also now methods of recycling europium, terbium, and yttrium from flat screens as well as europium and yttrium from cathode ray tube equipment and fluorescent lamps.[68]

In addition to chemical and high-temperature processes for separating REEs from waste streams, there have been breakthroughs in the use of plasma mass fil-

[63] Dianne Ryder, "DLA Strategic Materials Partners with Research and Development," Defense Logistics Agency, 26 October 2018.
[64] "Department of Defense (DoD) Precious Metal Recovery Program (PMRP)," Defense Logistics Agency, accessed 1 March 2021.
[65] Chris Calam, "Rare Earth Element Metals Recycling: Is There Hope after All? (Part 1)," ThermoFisher Scientific, 13 September 2016.
[66] Sebastiaan Peelman, Jilt Sietsma and Yongziang Yang, "Recovery of Neodymium as (Na, Nd)(SO4)2 from the Ferrous Fraction of a General WEEE Shredder Stream," *Journal of Sustainable Metallurgy* 4, no. 8 (2018): 276, https://doi.org/10.1007/s40831-018-0165-5.
[67] Allan Walton et al., "The Use of hydrogen to Separate and Recycle Neodymium-Iron-Boron-Type Magnets from Electronic Waste," *Journal of Cleaner Production*, 104 (2015): 236, https://doi.org/10.1016/j.jclepro.2015.05.033.
[68] Xin Song, Moon-Hwan Chang, and Michael Pecht, "Rare-Earth Elements in Lighting and Optical Applications and Their Recycling," *Journal of the Minerals, Metals and Materials Society* 65, no. 10 (2013): 1280–81, https://doi.org/10.1007/s11837-013-0737-6.

ters, which can efficiently separate REEs from metals and contaminants, which could result in higher-quality results across the REE recycling spectrum.[69] Due to the large quantities of REEs being used today, recovery of lanthanum and cerium from spent fluid-cracking catalysts and fluid-cracking slag provides a great opportunity for reuse. Recycling strategies have been developed to enable the user to adjust purity levels based on current economic viability and recycling objectives, with recovery rates as high as 84 percent.[70] A user can choose to produce high-quality lanthanum and cerium distinctly for any number of applications or a large amount of lanthanum-cerium mischmetal that is easier to produce and still has direct use in the petrochemical industry.

When it comes to moving out of the realm of research and development and into the area of operations, forward-thinking members of private industry have led the charge. For example, the Japan-based companies Hitachi, Mitsui, and Kosaka Smelting and Refining have developed the process and equipment necessary to effectively extract REEs from hard drives, motors, air conditioners, nickel metal hydride batteries, and more.[71] Companies in Nebraska and Belgium have set up facilities to recover the REEs that make up 20 percent of fluorescent light bulbs.[72] In the United States, Apple's Material Recovery Lab has used machine learning to improve REE recovery from old iPhones, enabling the iPhone 12's battery and camera to be made of 100 percent recycled REEs.[73] These efforts have not only benefited REE consumption. Liam, the iPhone disassembly robot, can take a phone apart in six seconds to recover REEs as well as gold, silver, copper, tin, tungsten, and cobalt. The recovered gold alone has been valued at just under $40 million.[74] While significant progress has been made in the realm of REE recovery and recycling, further research and development are needed to ensure access to the full spectrum of REEs, as well as to enable recovery from a wide range of source material, since REEs are used in an increasing number of applications.

As advances in REE recycling take place internationally and across commercial industries, they create an opportunity for the U.S. government to persuade its foreign allies and domestic industrial partners to form a robust, diverse, and stable supply chain across the REE spectrum while sharing the initial investment costs. DLA has begun to successfully seize these opportunities through Small Business Innovation Research (SBIR) programs that aim to increase domestic REE recycling

[69] Gueroult, Rax, and Fisch, "Opportunities for Plasma Separation Techniques in Rare Earth Elements Recycling," 8.
[70] Seyedeh Maryam Sadeghi, João M. O. M. Jesus, and Helena M. V. M. Soares, "Recycling Spent Fluid Cracking Catalysts for Rare Earth Metal Recovery: A Review," *Journal of Recycling and Sustainable Development* 11, no. 1 (2018): 50, https://doi.org/10.5937/ror1801043M.
[71] An, "Critical Rare Earths, National Security, and U.S.-China Interactions," 141–42.
[72] "Explainer: China's Rare Earth Supplies Could Be Vital Bargaining Chip in U.S. Trade War"; and An, "Critical Rare Earths, National Security, and U.S.-China Interactions," 142.
[73] Dimitris Mavrokefalidis, "Apple Launches New iPhone Model Made Using 'Recycled Rare Earth Materials'," Energy Live News, 14 October 2020.
[74] Calam, "Rare Earth Element Metals Recycling."

capability.[75] Between 2016 and 2017, DLA awarded about $1 million to the emerging Urban Mining Company in Texas, enabling it to develop, optimize, and upscale a highly effective method of recovering REE alloy from domestic end-of-life devices and reprocess them into superior Neo magnets. These new magnets possess higher magnetic flux, higher coercivity, increased resistivity, and better thermal stability, and since 100 percent of waste materials are utilized, there is zero output to landfills. Tapping into the current 600,000 tons of available Neo magnet material, the Urban Mining Company claims to offer a closed-loop solution where a customer's waste stream can support their future consumption.[76]

Because of the high quantities of REEs in demand today, a circular economy based on recycling is viewed as key to the success of the renewable energy industry.[77] As much as 4,600 metric tons of Neo magnets will be required to meet the United States' targets for wind energy alone, a goal that the country's REE production capacity cannot meet with domestic mining alone.[78]

In 2020, the DOD granted the Urban Mining Company $28.8 million in Defense Production Act Title III funds to safeguard essential domestic industrial resources during the COVID-19 pandemic.[79] While most government-subsidized research in the United States to this point has been focused on REE substitution rather than recycling, programs such as the SBIR offer hope of developing and expanding a domestic REE recycling industry.[80] However, if the REE recycling industry is to succeed, it will need sufficient access to WEEE streams. Leaving WEEE management to state governments has resulted in 15 states having no WEEE legislation and the United States trailing behind the EU in terms of WEEE recycling rates. Without support in the forms of policy and economic incentives, the majority of WEEE will continue to end up in the trash.[81]

Another reason for strong government engagement and support in WEEE management is to ensure long-term access to the full range of REEs for technological development as well as research and development, regardless of current marketability. There are distinct variations in significance and use of REEs between various industrial sectors, between the United States and the rest of the world, and between commercial and military sectors.[82]

Current REE prices range widely and do not necessarily reflect their significance to national security. For example, in 2018, the per-kilogram cost of terbium was

[75] Ryder, "DLA Strategic Materials Partners with Research and Development," 4.
[76] "Urban Mining Company."
[77] Exter et al., *Metal Demand for Renewable Electricity Generation in the Netherlands*, 4.
[78] The DOE's goal is wind power supplying 10 percent of national end-use electricity demand by 2020 and 20 percent by 2030. See Imholte et al., *An Assessment of U.S. Rare Earth Availability for Supporting U.S. Wind Energy Growth Targets*, 2.
[79] Colin Staub, "Rare Earth Recycler Draws $28 Million in Federal Funding," Resource Recycling, 15 September 2020.
[80] An, "Critical Rare Earths, National Security, and U.S.-China Interactions," 113.
[81] Brook Larmer, "E-Waste Offers an Economic Opportunity as Well as Toxicity," *New York Times Magazine*, 5 July 2018.
[82] Tracy, *An Overview of Rare Earth Elements and Related Issues for Congress*, 8.

valued at $455 while that of lanthanum was only $2; yet, the defense sector relies much more on lanthanum, so much so that it was afforded the highest acquisition ceiling out of all REEs in the *2021 Annual Materials Plan*.[83] Therefore, in addition to successfully passing some of the recently proposed legislation that promotes REE research and development, technical training, and strategic forecasting, the United States will also need to ensure that economic incentives sufficiently support REE recycling during market variability to prevent market forces from targeting only highly lucrative minerals or undervaluing minerals disproportionately needed for military technology.[84]

Conclusion

In 2014, the DOD provided an assessment on current REE risk mitigation efforts and rejected a strategy of REE recycling due to technological and economic hurdles.[85] Since that assessment was made, the United States has entered into an era of great power competition and increased global tension, naming China as its primary strategic competitor.[86] With China serving as the primary source for REEs in the United States, U.S. policy makers must take actions to reduce hurdles to recycling and support this key component of long-term REE security. Enduring REE access hinges on the United States' ability to recycle the existing and untapped above-ground stores of REEs found in various waste streams. Cultivating domestic REE recycling capability will require support from the U.S. government through supportive policies, incentives, and investment in research and development. The United States will also have to coordinate with global allies to strengthen access to diverse REE sources and recycling technology. REEs are vital to U.S. national security due to their role as a force multiplier in current and emerging technology within both the commercial and governmental sectors.

Fortunately, this vulnerability is receiving more government attention and support due to President Biden's recent Executive Order on America's Supply Chains, in which he charges the secretary of commerce to identify risks and solutions in semiconductor manufacturing, the secretary of energy to identify risks and solutions for the high-capacity battery industry, and the secretary of defense to identify risks and solutions for the supply chains of critical and strategic materials such as REEs. As part of strengthening U.S. supply chains for these three REE-intensive industries, the executive order also focuses on close cooperation with allies and partners to withstand potential international emergencies and form a robust international supply chain capacity.[87] This executive order is a good first step, but it

[83] Tracy, *An Overview of Rare Earth Elements and Related Issues for Congress*, 1; and "Annual Materials Plan for FY 2021."
[84] Humphries, *Critical Minerals and U.S. Public Policy*, 51.
[85] *Diversification of Supply Chain and Reclamation Activities Related to Rare Earths*, 3.
[86] *Summary of the 2018 National Defense Strategy of the United States of America: Sharpening the American Military's Competitive Edge* (Washington, DC: Department of Defense, 2018), 3.
[87] "Executive Order on America's Supply Chains."

Table 1. Summary of recommendations

	Improve access and exploitation of aboveground REE stores and waste streams.	Increase efficiency and efficacy of REE recovery and recycling processes.
Diplomatic	Collaborate with allies and industry to exploit advances in artificial intelligence technology to develop a robust global waste sorting and processing capacity to increase access to the strategic materials, especially REEs, in most common waste streams.	Coordinate with allies to maximize research and development efforts across the spectrum of REE recovery and recycling in a timely manner. Offer allies an alternative source of REEs from U.S. recycling to decrease dependency on China.
Information	Conduct a patriotic appeal to consumers and municipalities to bring awareness to the value that REE-containing waste products have to national defense to encourage recycling of these products.	Increase federal funding for research and development to continue to improve the quality and efficiency of REEs recovered from waste material. Share relevant patents with the United States and allied industry partners.
Military	Identify DOD equipment containing REEs and contract commercial sorting and processing to ensure that military-essential REEs are recovered at the end of the life cycle.	Ensure REE are recovered from the DOD's waste materials and made available to follow on recycling by U.S. commercial or defense industry.
Economic	Provide economic incentives to encourage the recycling of REE-rich equipment and divert critical materials from landfills.	Provide economic incentives for using U.S.-recycled REEs in commercial and government products.

needs to be backed up swiftly by a comprehensive domestic and international REE strategy supported by enduring bipartisan legislation and funding. Every day the REE balance problem gets worse, and the Biden administration's goals of making the United States a world leader in green energy and electric vehicle production will only accelerate this REE timeline, so REE security must be prioritized to ensure the success of these objectives and the security of the American people.

Brexit and the End of the United Kingdom's Nuclear Deterrence

By Major Angel E. Figueroa, U.S. Army[1]

In 2015, Prime Minister of the United Kingdom David Cameron decided to hold a referendum to determine if the United Kingdom should depart the European Union (EU). The results showed that 51.9 percent of British citizens voted to leave the EU, while 48.1 percent voted to remain. This 3.8-percent margin surprised many British politicians, including Cameron.[2]

The European Economic Community (EEC), first established in 1958, evolved into the current day EU in 1993. It was not until 1973 that the United Kingdom finally joined the EEC.[3] Since then, British politicians have debated if the United Kingdom should remain a member of the EU or return to its autonomous roots.[4] Now that the 2015 referendum has pushed the United Kingdom to officially part ways with the EU, British politicians are debating how they will approach what is commonly known as "Brexit" (short for British exit). Many experts and politicians believe that there is a strong likelihood that Brexit will have a negative impact on the citizens of both the United Kingdom and the EU, dealing with potential effects ranging from economical to burdening travel and work. The areas in which the most significant implications are anticipated are defense cooperation and military spending. Although defense and security cooperation within the EU is less integrated than other areas, such an impact is inevitable. Despite the overlapping affiliations that most European countries have with the EU, the North Atlantic Treaty Organization (NATO), and other multilateral treaties and organizations, there are many opportunities to overlook potential defense and security gaps as a result of Brexit.[5]

So far, a majority of the focus on Brexit has been on its economic implications. The United Kingdom and the EU have already seen economic effects related specifically to trade and investments, and the defense and security realm will no doubt

[1] Maj Figueroa is a graduate of MCU's Command and Staff College. This paper received the Foreign Area Officers Association (FAOA) Award, second place, for academic year 2019–20.

[2] Toufiq Ali, "ABC of the Economics of Brexit," Financial Express, 23 March 2019.

[3] Claudia Major and Christian Mölling, "Brexit, Security and Defence: A Political Problem, Not a Military One," *UIbrief*, no. 3 (2017), 3.

[4] Ali, "ABC of the Economics of Brexit."

[5] Major and Mölling, "Brexit, Security and Defence," 3.

be impacted as well. As a 2017 brief from the Swedish Institute for International Affairs states, "If the Brexit process affects the economy, the [United Kingdom's] ability to achieve its [level of ambition] and maintain its capabilities—as set out in the 2015 Strategic Defense and Security Review—will suffer."[6] Even if the United Kingdom continues to support its defense and security with 2 percent of its GDP, a shrinking economy and smaller GDP will result in less funding for defense.

In addition to all these defense-related issues stemming from Brexit, Cameron pushed through Parliament a vote in 2016 that approved the renewal of the Trident nuclear program.[7] The United Kingdom now finds itself in a sea of unknowns as Brexit has officially arrived. As British politicians continue to kick the can down the road, the United Kingdom has withstood multiple changes in leadership and granted multiple extensions of determining the method of its exit from the EU. Economic uncertainty and the eroding British pound are expected to influence defense spending.[8] Decreases in defense spending, along with increased cost associated with Trident, will strain the nation's overall defense budget. Additionally, the United Kingdom's decision to leave the EU is fueling increased support for Scotland to leave the United Kingdom. The suspension of Trident could be one of the most overlooked repercussions of Brexit if it ultimately leads to Scottish independence. Overall, the suspension of Trident and decrease in the nation's defense budget will impact the United Kingdom's ability to support NATO and European security with the same capacity and capability that it has possessed in recent memory. This paper examines why Brexit will prevent the United Kingdom from executing the 2016 policy for an updated Trident nuclear deterrence plan due to a limited defense budget and the risk of Scottish secession. This impact of Brexit will not only diminish the defense and security of the United Kingdom but will also degrade the United Kingdom's ability to support NATO and European security, leaving the region vulnerable to Russian aggression.

Framing the Current State of British Defense

The British armed forces are consistently ranked within the top 10 of militaries worldwide across various global military strength rankings. The United Kingdom has been ranked by Grinberg News as the sixth most powerful military in the world, based on an analysis of personnel, active platforms and systems, logistics, budget, and global reach. According to this analysis, the British force total stands at an estimated 146,980 active duty personnel.[9] Records for trained and active duty members of the Royal Navy and Royal Marines, the Royal Air Force, and the British Army in mid-2019 stood closer to 134,000 personnel, as all branches had failed to meet

[6] Major and Mölling, "Brexit, Security and Defence," 9.
[7] "Trident Renewal: Only One Scottish MP Votes in Favour," BBC News, 18 July 2016.
[8] Richard Partington, "Sterling Slumps Further as Fears Mount over No-Deal Brexit," *Guardian*, 30 July 2019.
[9] "Revealed: The Most Powerful Militaries in 2020," Grinberg News, 18 December 2019.

their recruitment goals. In fact, the British armed forces as a whole experienced a decrease in military strength between 2016 and 2019.[10] Meanwhile, the United Kingdom is ranked fifth in worldwide defense spending with a budget of approximately £55 billion.[11]

The strength of the Royal Navy and Marines, the Royal Air Force, and the British Army enables the United Kingdom to execute full-spectrum operations. The United Kingdom maintains more than 400 tanks, nearly 900 aircraft, more than 80 naval vessels (including two aircraft carriers), and a robust logistics capability.[12] The recent additions of the aircraft carriers HMS *Queen Elizabeth* (R08) and HMS *Prince of Wales* (R09) and the new Lockheed Martin F-35 Lightning II Joint Strike Fighter (JSF) aircraft further enhances British strike capability.[13] Additionally, the United Kingdom's special operations community provides some of the world's most elite units. These include the Special Boat Service (SBS), the special forces unit of the Royal Navy, whose personnel are "among the most elite and capable soldiers in the entire British military."[14] The SBS has been ranked second in the world only to the U.S. Navy SEALs (Sea, Air, and Land teams), and both provide similar special operations capabilities.[15] The Special Air Service (SAS), a part of the British Army that was heavily employed to fight the Taliban in Afghanistan, has been ranked third among the world's best special forces units.[16] Overall, the British armed forces are fully capable of conducting operations across multiple domains with a variety of capabilities, and nuclear weapons push their capabilities within a realm that few other countries are able to operate in.

Trident and British National Defense

The United Kingdom's nuclear program, Trident, currently consists of four *Vanguard*-class nuclear-powered ballistic missile submarines that can carry up to 16 UGM-133 Trident II ballistic missiles each. The *Vanguard*-class's future replacement, the *Dreadnaught*-class nuclear-powered ballistic missile submarine, expected to enter service in the early 2030s, will carry only up to 12 Trident missiles.[17] This reduction in nuclear missiles is a recent trend seen in the United Kingdom as it attempts to reduce costs and honor the Nuclear Non-Proliferation Treaty of 1968 by working toward disarmament. In 2015, the United Kingdom reduced its number of operational warheads from 160 to 120 while also reducing the number of nuclear

[10] "Strength of British Military Falls for Ninth Year," BBC News, 16 August 2019.
[11] "2020 Military Strength Ranking," Global Firepower, accessed 2 April 2020; and *Budget 2020* (London: Government of the United Kingdom, 2020).
[12] "2020 Military Strength Ranking."
[13] Louisa Brooke-Holland, *The Defence Capability Review: Equipment*, House of Commons Library Briefing Paper no. 08112 (London: House of Commons Library, 2017).
[14] "Special Boat Service," Royal Navy, accessed 6 April 2020.
[15] "The 8 Most Elite Special Forces in the World," *Independent*, 19 April 2017.
[16] "Special Air Service," National Army Museum, accessed 6 April 2020; and "The 8 Most Elite Special Forces in the World."
[17] David Bond and Sylvia Pfeifer, "Nuclear Submarines Threaten to Sink UK Defence Budget," *Financial Times*, 1 January 2019.

warheads on patrol.[18] With Lockheed Martin winning the modernization contract for the Trident missile, the bar is set high for a follow-on act within the Trident program. As a recent report states, "Since its design completion in 1989, Trident II has made 167 successful test launches—a record unmatched by any other large ballistic missile or space launch vehicle."[19]

The Trident program operates out of two main locations in Scotland: Her Majesty's Naval Base (HMNB) Clyde in Faslane, where the *Vanguard*-class submarines are based; and Royal Naval Armaments Depot (RNAD) Coulport, where the Trident missiles are stored. The two facilities are located only eight miles apart, which eases the loading and unloading process of the Trident missiles.[20]

Prior to Brexit, British politicians voted on replacing the aging *Vanguard*-class submarines that carry the United Kingdom's nuclear arsenal. The then-prime minster, Teresa May, stated, "In the last two years there has been a disturbing increase in both Russian rhetoric about the use of nuclear weapons and the frequency of snap nuclear exercises."[21] To maintain what American political scientist John J. Mearsheimer has called "balanced bipolarity" with Russia, the need to maintain and modernize a nuclear deterrence is a necessity for the United Kingdom.[22] This requirement is especially true because the United Kingdom is one of three nations within NATO that possess an independent nuclear deterrence capability (the others being the United States and France).

Some have argued that the Trident program is not truly independent since the United Kingdom's Trident missiles are leased from the nuclear pool of the United States. Moreover, the United States provides the technical design for all the components of the targeting and launching mechanisms within the weapon system.[23] However, as with any piece of technology that is imported or purchased, the Trident missile remains a capability that is wielded by the British Armed Forces. The nuclear partnership between the United States and the United Kingdom benefits both nations' defense and security postures.

As currently established, the Trident program is a significant element of the British Armed Forces, especially the Royal Navy. It enhances the United Kingdom's ability to execute a full-spectrum military capability. The United Kingdom's contributions to NATO and European security are of great value, and to understand them well, one must assess the dimensions of the British Armed Forces that both directly and indirectly affect NATO.

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[18] Emily Allen and Ben Farmer, "What Is Trident?: Britain's Nuclear Deterrent Explained," *Telegraph*, 21 March 2016.
[19] "Lockheed Wins Deal to Support UK's Trident II Missile Program," Zacks Equity Research, 5 April 2019.
[20] Vanessa Barford, "Scottish Independence: Where Might Trident Go?," BBC News, 30 June 2014.
[21] Jan van der Made, "Britain's Trident Upgrade May Encourage Scoxit," Radio France Internationale, 19 July 2016.
[22] John J. Mearsheimer, *The Tragedy of Great Power Politic*s (New York: W. W. Norton, 2001).
[23] Robert Forsyth, "Counting the Costs of an 'Independent Nuclear Deterrent'," RealClearDefense, 1 August 2019.

Brexit and NATO

A key component of NATO's ability to deter war is its ability to wield a nuclear deterrent with its three independent nuclear powers: the United States, the United Kingdom, and France. These three nations each have a capability that only a select number of countries possess. The British government has consistently made clear that its commitment to NATO is a top priority and will not be altered by Brexit. For example, in 2016, then British foreign secretary Boris Johnson emphasized the United Kingdom's support to NATO by stating, "Article five in the NATO treaty of 1948, the doctrine of mutual defense, is incredibly important. . . . It's something the British government believes in absolutely, fervently, and that we stand behind full square."[24] More recently, British defense minister Ben Wallace reemphasized the United Kingdom's commitment, declaring that "NATO remains the cornerstone of our security," as it is a "proven and unparalleled defensive alliance—our best means of countering Russian malign activity and hostility."[25]

The British armed forces not only offer a nuclear deterrence to NATO but also provide capabilities across the full spectrum of offensive and defensive military dimensions as well as nonmilitary dimensions that are extremely active across the globe.[26] At the most recent NATO summit in London, England, in 2019, now Prime Minister Boris Johnson emphasized that the United Kingdom will continue to lead "the European contribution to the NATO readiness initiative [as] we are contributing one armed brigade, two squadrons of fast jets, [and] six major warships—including the two aircraft carriers."[27] The United Kingdom also participates in ongoing NATO missions, such as the Enhanced Forward Presence (EFP) force, which maintains a presence in the Baltic region in Europe. The British Armed Forces lead the NATO battle group in Estonia and provide the largest share of the EFP force, followed by the U.S. military. The United Kingdom provides multiple capability sets, including tanks, mechanized infantry, and air defense assets, as the British-led battlegroup "is essential to discourage the persistent threat from the east."[28]

The British armed forces also fill significant roles within the defense and security communities of the EU and NATO. For example, one prime position within the defense community that would be at risk with the suspension of the Trident program and a decrease in British defense spending is the Deputy Supreme Allied Commander Europe (DSACEUR). Since the position's establishment in 1951, British military officers have primarily served as DSACEUR. With Brexit in effect, can the United Kingdom afford a nuclear deterrent if its economy is negatively affect-

[24] Mark Hensch, "Boris Johnson Rebukes Trump on NATO," *Hill*, 22 July 2016.
[25] David A. Wemer, "UK Remains Committed to Positive Global Role after Brexit, Defence Secretary Says," Atlantic Council, 5 March 2020.
[26] Valentin Naumescu and Agnes Nicolescu, "The Impact of Brexit on Central and Eastern European Security," *Romanian Journal of European Affairs* 18, no. 1 (June 2018): 93–112.
[27] Boris Johnson, "PM Statement at NATO Meeting: 4 December 2019," Government of the United Kingdom, 4 December 2019.
[28] Robert Clark and Christopher Gavin, "Underpinning Defence in the Baltics: The UK and Estonia," *UK Defense Journal*, 15 July 2019.

ed? Any degrading to either of these two areas could create a shift in priority for positions that the United Kingdom has historically maintained.[29] As recently as 2017, France has argued that its military capability makes it better suited to fill the DSACEUR position, and NATO members have discussed such a transfer from the United Kingdom to France. The deputy director-general of the Royal United Security Institute (RUSI), Malcolm Chalmers, stated that "the role [of DSACEUR] is essential to offer NATO military assets to EU missions under the Berlin Plus agreement."[30] If the United Kingdom loses Trident, the case for France would become even stronger as France would then be the only NATO nuclear state in Europe. While most experts do not expect any substantial shift in the United Kingdom's influence on European security, this circumstance will remain dependent on the nation's ability to establish a post-Brexit relationship with Europe and ensure that there are no significant changes to the current set of capabilities it provides.[31] It will also depend on how defense relations between the United Kingdom and the EU unfold in the coming months.

Prior to Brexit, the United Kingdom incorporated reductions in defense personnel and equipment investment. The nation's defense budget decreased by more than £8 billion in the early 2010s, and it has not since fully recovered to its previous levels. Although former British defense minister Gavin Williamson may have boasted about the United Kingdom's defense budget reaching 2.1 percent of GDP (£38.4 billion) in fiscal year 2019–20, a large portion of that figure includes spending on military pensions and intelligence.[32] To date, outside of the United Kingdom, the only European states meeting the 2-percent-of-GDP pledge are Greece, Estonia, Poland, and Romania.[33]

The United Kingdom has also increased its presence on NATO's eastern flank and in several other locations as a part of the "Global Britain" concept. The sustainability of these efforts are in question since the British Armed Forces are stretching their personnel and capabilities thin with these efforts.[34] Members of the British Foreign Affairs Select Committee have openly criticized the Global Britain concept, calling it an "aspiration" and "a bit of a slogan, or a headline, that people are using with different intent."[35]

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[29] Naumescu and Nicolescu, "The Impact of Brexit on Central and Eastern European Security."

[30] Lizzie Dearden, "Brexit: UK Could Lose Its Most Senior Military Position in NATO to France after Departure from EU," *Independent*, 10 January 2017.

[31] Naumescu and Nicolescu, "The Impact of Brexit on Central and Eastern European Security."

[32] Steven Erlanger, "Austerity-Battered UK 'Retreating behind a Nuclear Shield'," *New York Times*, 27 April 2019.

[33] Naumescu and Nicolescu, "The Impact of Brexit on Central and Eastern European Security."

[34] Piotr Szymański, "The Consequences of Brexit for the UK's Security Policy and NATO's Eastern Flank," Centre for Eastern Studies *OSW Commentary* no. 299, 4 March 2019. The British Ministry of Defence stated in 2018 that approximately 10,000 British military personnel (7 percent of its total forces) were spread out across five continents as a part of global efforts. This total did not include personnel deployed in any ongoing operations.

[35] "The Idea of 'Global Britain'," Foreign Affairs Committee, House of Commons, 12 March 2018.

The United Kingdom and European Security after Brexit

The impact of Brexit on British defense spreads beyond the United Kingdom's own borders. Although the United Kingdom is leaving the EU, it is not leaving Europe, NATO, or the United Nations (UN). The United Kingdom intends to maintain its role in preserving stability across the globe and remaining assertive against authoritarian aggression. During a speech at the Atlantic Council in Washington, DC, British defense minister Ben Wallace stated, "The security of Europe is vital to the United Kingdom's security [and] that will not change because we have left the political union of the European Union."[36]

The implications of Brexit will nonetheless have ripple effects on European and NATO defense and security efforts. Some of these effects have already been observed, such as the EU blocking the United Kingdom out of the Galileo global navigation satellite system data deal. According to Centre for European Reform analyst Luigi Scazzieri, EU member states "have little appetite to grant the [United Kingdom] the status of privileged EU partner," especially since the United Kingdom regularly blocked European defense initiatives while a member of the EU.[37] Even when it concerns military operations, EU chief negotiator Michel Barnier specified that British involvement in EU missions will be on a "case by case basis."[38]

When the United Kingdom was a member of the EU, it made sure that its security policies were nested in the broader EU security architecture. For example, an article in the *European Affairs* journal states, "The [United Kingdom's] 2015 Strategic Defense and Security Review (SDSR) and the EU's 2016 Global Strategy identify a set of shared challenges and priorities, which serve to guarantee continued cooperation between London and Brussels in the foreign and security policy realm."[39] In addition, the United Kingdom participated in the EU's Common Security and Defense Policy (CSDP).[40]

Although the concept of a common defense policy has been around since 1948, the CSDP that exists today was developed by the 2009 Treaty of Lisbon. Mission sets encompassed under CSDP include humanitarian assistance, conflict prevention, crisis management, peacekeeping, joint disarmament operations, military advice and assistance, and post-conflict stabilization operations.[41] The United Kingdom, France, and Germany are the largest members of the CSDP.[42] Currently, the CSDP has 6 ongoing military missions and 11 additional civilian missions.[43] EU Naval Force (NAVFOR) Somalia/Operation Atalanta, one of the largest CSDP op-

[36] Wemer, "UK Remains Committed to Positive Global Role after Brexit, Defence Secretary Says."
[37] Andrew Chuter, "Post Brexit, EU Shows 'Little Appetite' for Defense Cooperation," *Defense News*, 5 February 2020.
[38] Chuter, "Post Brexit, EU Shows 'Little Appetite' for Defense Cooperation."
[39] Naumescu and Nicolescu, "The Impact of Brexit on Central and Eastern European Security."
[40] Naumescu and Nicolescu, "The Impact of Brexit on Central and Eastern European Security."
[41] "Shaping of a Common Security and Defence Policy," European Union External Action Service, 7 August 2016.
[42] Christoph O. Meyer, *CSDP Missions and Operations* (Strasbourg, France: European Parliament, 2020).
[43] "Military and Civilian Missions and Operations," European Union External Action Service, 3 May 2019.

erations, operates within the Southern Red Sea, the Gulf of Aden, and part of the Indian Ocean. Its mission is to protect shipping vessels, deter and prevent piracy, monitor fishing activities, and support other EU missions to increase security in the region.[44] The British armed forces have supported the Atalanta mission since December 2008, contributing more than 1,000 military personnel and an annual budget of €1.2 million. Other CSDP operations with large British formations include EU NAVFOR Mediterranean/Operation Sophia (1,137 personnel, €1.2 million), EU Force Bosnia and Herzegovina/Operation Althea (803 personnel, €2.22 million), and the EU Training Mission in the Central African Republic (700 personnel, €4.4 million).[45]

As a result of leaving the EU, the United Kingdom will also leave the CSDP. However, it would behoove France to include the United Kingdom in consultation for European nuclear deterrence policies as the Russian threat continues to loom. The importance of British support to EU operations spans across multiple methods including spending, personnel, and equipment. A RUSI document entitled The Consequences of BREXIT for European Defence and Security identified numerous British "government departments and law enforcement agencies, such as the Ministry of Defence, National Crime Agency (NCA), Foreign Office and Department for International Development [that] work on EU-related missions and operations, but also provide bilateral support to host countries."[46]

Without a seat on the council, the United Kingdom will have minimal influence in CSDP decisions.[47] Yet, this loss of influence and a role outside of the CSDP could potentially save the United Kingdom upward of £3.319 million based on one estimate for 2014–15.[48] Additionally, it would allow British government and law enforcement resources to pursue other priorities that may support the Global Britain strategy. A precise role for the United Kingdom in CSDP is at present unclear. The RUSI document referenced above also addressed the consequences of Brexit on European defense, highlighting that the United Kingdom could continue to participate on a selective basis as an "associated partner," similar to Norway.[49] Retired British Army general Sir Michael D. Jackson has stated that the impact from departing the EU "is more of a policing and judicial matter rather than a military matter. The [United Kingdom's] military dimension is provided by NATO."[50] Under the 2003 Berlin Plus agreement, the EU is authorized NATO assets and capabilities

[44] "Missions," EU Naval Force–Somalia: Operation Atalanta, accessed 2 April 2020.
[45] Sara Lain and Veerle Nouwens, *The Consequences of Brexit for European Defence and Security* (London: Royal United Services Institute, 2017), 27–28.
[46] Lain and Nouwens, *Consequences of Brexit for European Defence and Security*, 20.
[47] Christine Nissen, *Forged in Crisis: The EU's Common Security and Defence Policy after BREXIT*, DIIS Report 2017:12 (Copenhagen, Denmark: Danish Institute for International Studies, 2017).
[48] Lain and Nouwens, *Consequences of Brexit for European Defence and Security*, 17.
[49] Lain and Nouwens, *Consequences of Brexit for European Defence and Security*, 15.
[50] Georgina Wright, "UK-EU Future Relationship: Defence and Security Co-Operation," Institute for Government, 25 February 2020.

during operations in which the EU takes the lead.[51] Many experts believe that the CSDP will lose credibility without the United Kingdom, seeing a reduction of its status on the global stage and a decline in the effectiveness of its military capabilities.[52] Both parties will assess cooperation on a case-by-case basis, although final approval and oversight will ultimately fall to the EU.[53]

The Need and Costs for Modernizing Trident

One of the United Kingdom's top security requirements for many years has been the need to modernize its Trident nuclear force. The current Trident fleet began supporting operations in 1992, and experts believe that it will take up to 17 years before replacements can begin operations. Former British prime minister Margaret Thatcher first agreed to acquire the Trident missile system from the United States in 1980, and the first *Vanguard* patrol did not occur until 1994. As the typical lifespan of a nuclear submarine is 30 years, a renewal should not come as a surprise to anyone, especially since Trident's predecessor, the Polaris nuclear program, operated from 1962 to 1992.[54] Unfortunately, this does not make the process of executing the recently approved renewal any less difficult. British politicians are currently dissecting the nuclear submarine modernization program in addition to other expensive weapon platforms, such as the F-35 JSFs that will go along with the Royal Navy's two new aircraft carriers, which are under construction.[55] Moreover, the Trident missiles are equipped with "multiple independently targetable reentry vehicles and thermonuclear warheads."[56] These components play a significant role in modernizing the Trident program and building a full-spectrum capability. The issue most politicians have with renewal is the substantial cost. However, in 2013, the United Kingdom conducted a Trident Alternatives Review and determined that "no alternative system is as effective or capable as the current Trident system, or as cost effective."[57]

The initial costs of Trident modernization accounts for the largest portion of the British Ministry of Defence (MOD) budget. Although the exact figures have varied across numerous sources, the generally expected cost is to be more than £41 billion for four new submarines with Trident warheads, though other projections estimate a cost of more than of £50 billion. Consequently, modernizing the Trident program would account for a quarter of the MOD's 10-year equipment plan.[58] This preparation does not clearly state if these figures include support and sustainabili-

[51] "Shaping of a Common Security and Defence Policy."
[52] Nissen, *Forged in Crisis*.
[53] Wright, "UK-EU Future Relationship."
[54] Allen and Farmer, "What Is Trident?"
[55] Kim Sengupta, "What Does Brexit Mean for Trident, Intelligence and National Security?," *Independent*, 3 July 2016.
[56] "Lockheed Wins Deal to Support UK's Trident II Missile Program."
[57] Allen and Farmer, "What Is Trident?"
[58] Paris Gourtsoyannis, "Cost of Trident 'Could Sink MOD Budget'," *Scotsman*, 3 January 2019.

ty requirements that are critical to equipment and systems of this magnitude. One report declares that the contract for equipment support efforts for modernization accounts for 65 percent of the Royal Navy's budget, worth an astounding £29.1 billion.[59] As a 2017 Rand study warned, "Any reduction in the defense budget could therefore be expected to result in the abandoning or at least delayed receipt of certain capabilities, with serious long-term effects."[60] Even before the Brexit referendum, the Trident modernization program had already encountered multiple delays and indicators that it would exceed the anticipated budget.[61] An unfortunate side effect of the increasing cost could lead to either the temporary or permanent withdrawal of ships from service, which would significantly affect the Royal Navy, the defense of the United Kingdom and Europe, and NATO's operating capabilities.[62]

Based on the above stated facts, opposition to the renewal of the Trident program has risen largely due to cost concerns. With the MOD's 10-year equipment plan already outdated and the Trident modernization program delayed and over budget, opposition continues to grow, and the scales are beginning to tip. As the reality of Brexit starts sinking in, the Scottish National Party (SNP) grows more eager to separate Scotland from Trident and the United Kingdom. The Rand study mentioned above describes the SNP as "vehemently hostile" toward the funding of Britain's nuclear deterrent.[63] At a minimum, the SNP desires the removal of Trident missiles from Scotland. If this wish was realized, the main issue that the MOD would then run into is finding a new home for Trident, as well as the cost that would be associated with conducting such a significant move. Additionally, Liberal Democrats in the United Kingdom are pushing to reduce Trident patrols and the number of Royal Navy submarines in operation.[64]

The 2016 Trident renewal vote received a majority support, but the margin may not survive the opposition to Trident that had been growing since then. British members of Parliament (MPs) voted 472 to 117 in favor of a Trident nuclear weapons system renewal. Although the margin is significant, it is important to note the 58-to-1 vote by Scottish MPs against Trident's renewal. Prime Minister May stated that "it would be a 'gross irresponsibility' for the [United Kingdom] to abandon its nuclear weapons."[65] Several MPs believe that all nuclear weapons are "immoral" and "political" weapons, while others believe the United Kingdom must be prepared for whatever threats may materialize in the future.[66] In the end, the United Kingdom

[59] Ben Goodlad, *Brexit's Toll: Defense Cuts Loom as UK Looks to Reduce Budget Shortfalls* (Washington, DC: Avascent, 2017).
[60] Jeremy Ghez et al., *Defence and Security after Brexit: A Snapshot of International Perspectives on the Implications of the UK's Decision to Leave the EU* (Cambridge, UK: Rand Europe, 2017), 17, https://doi.org/10.7249/PE225.
[61] Gourtsoyannis, "Cost of Trident 'Could Sink MOD Budget'."
[62] Goodlad, *Brexit's Toll*.
[63] Ghez et al., *Defence and Security after Brexit*, 19.
[64] Allen and Farmer, "What Is Trident?"
[65] "Trident Renewal."
[66] "Trident Renewal."

must determine if it can afford to continue with the Trident renewal program, how far Scotland is being pushed by Brexit, and if forcing Scotland to participate in Trident will influence its decision to stage an exit of its own from the United Kingdom.

The Dilemma Leading to the Suspension of Trident

After reviewing the current state of defense in the United Kingdom, the Trident renewal program, and the United Kingdom's role in NATO and European security, the potential impact of Brexit makes executing the 2016 policy for an updated Trident nuclear deterrence difficult. As a result, the negative repercussions of Brexit will lead to the end of the United Kingdom as a nuclear-armed power. First, Brexit will degrade the British economy and decrease government revenues. This reduction will result in budget cuts, including a decrease in the already strained British defense budget. Next, Brexit will lead to Scottish independence and the loss of the multibillion dollar Trident base in Faslane. Finally, the combination of shrinking British defense spending and the additional costs incurred to relocate Trident will lead to the suspension of the Trident program itself. It is important to consider the consequences of suspending Trident will have on UK, NATO, and European security as a whole.

Brexit's Impact on the British Economy and Defense Budget

The impact that Brexit will have on the British economy and defense budget will play a vital role in the eventual suspension of the Trident program. Finances play a significant role in European and British defense, both now and in the future. A recent *Financial Express* report stated, "In 2017, the [United Kingdom's] exports to the EU were GBP 274 billion (about 44 per cent of total [British] exports) and imports from the EU were GBP 341 billion (or, 53 per cent of all imports)."[67] Trade agreements with the EU are the largest hurdle that the United Kingdom will have to overcome, as they bring the most challenges. As a member of the EU, the United Kingdom was privy to 40 free-trade deals signed by the EU. This meant that the United Kingdom did not pay additional tariffs on goods under World Trade Organization terms. Since the Brexit vote, the United Kingdom has attempted to replicate those trade deals to maintain tariff-free access to 70 countries.[68] One issue that British politicians are discovering is that without the EU, it is significantly more difficult to negotiate with non-EU countries. Many analysts questioned if the United Kingdom would have the ability to negotiate trade agreements similar to the current EU deals.[69] While the United Kingdom was able to agree to 20 "continuity" agreements, trade conducted with EU countries remains unaffected.[70] As the Unit-

[67] Ali, "ABC of the Economics of Brexit."
[68] Tom Edgington, "Brexit: What Trade Deals Has the UK Done so Far?," BBC News, 21 October 2021.
[69] Ali, "ABC of the Economics of Brexit."
[70] Edgington, "Brexit."

ed Kingdom breaks off from the EU, it will also exit organizations such as the European Customs Union, which will "substantially raise transaction costs on roughly half of [the nation's] trade."[71]

This change will also impact the United Kingdom's GDP, as the nation is beginning to lag behind its fellow G7 (Group of Seven) members in demonstrating growth based on annual GDP.[72] In 2016, the United Kingdom suffered a steep decrease in annual GDP, a trend that continued in 2017. Despite a slight increase in annual GDP in 2018, the following year provided another decrease.[73]

Although trade deals do not make up a nation's total GDP, they account for a large portion and have a significant impact. As the National Institute of Economic and Social Research estimates, "By the end of the 2020s, [Prime Minister] Johnson's agreement, if accepted, would axe the size of the country's economy up to 4% . . . uncertainty over EU-UK trade have already slowed down economic growth and resulted in a 2.5% smaller economy in comparison to what was expected if Britain had voted against leaving the bloc in 2016."[74]

Ironically, one significant reason for Brexit was the payments made by the United Kingdom to the EU. Since the referendum passed, *Bloomberg Economics* reports state that the United Kingdom has lost approximately £130 billion in economic growth and is projected to lose another £70 billion through 2020. This £200 billion loss is more than the United Kingdom's total contributions to the EU during the last 47 years.[75]

Coupled with trade deals, investments and finances also play a significant role in a country's economy. This aspect is especially true in Europe, as the London Stock Exchange is the largest market for businesses and investors on the continent and is known as "the gateway to Europe" for countries in the Middle East, the United States, and numerous other foreign investors. The importance of the London Stock Exchange to the EU is captured in its market capitalization, which exceeded $4.6 trillion USD in 2018.[76] The only market with a similar or higher market capitalization in Europe is the Euronext stock exchange, which is based out of multiple cities in Europe, including London. Other European market capitalizations are less than half of the London Stock Exchange.[77] In spite of this, several firms have already re-

[71] Ali, "ABC of the Economics of Brexit."
[72] Thomas Colson, "Brexit Will Have Soon Cost the UK More than All Its Payments to the EU over the Past 47 Years Put Together," *Business Insider*, 25 February 2020.
[73] "United Kingdom (UK) GDP: Gross Domestic Product 2019," Countryeconomy.com, accessed 25 November 2019.
[74] "UK Economy Predicted to Lose $90 Billion with Johnson's Brexit Deal as New Vote Approved," *Asia News Monitor*, 31 October 2019.
[75] Colson, "Brexit Will Have Soon Cost the UK More than All Its Payments to the EU over the Past 47 Years Put Together."
[76] Ali, "ABC of the Economics of Brexit."
[77] "Market capitalization is the value of a company traded at the stock market. It is calculated by multiplying the total number of shares by the current share price and is used by the investors to rank the size of the company. It could also be used as an indicator of public opinion on the net worth of a company." See John Misachi, "The Largest Stock Exchanges in Europe," WorldAtlas, 7 June 2018.

located from the United Kingdom to mainland Europe, while others that have not yet made the move are considering it due to concerns about Brexit. Since the Brexit vote in 2016, London has seen its largest international bank move jobs out of the United Kingdom; at least 45 other financial institutions reportedly move to Frankfurt, Germany; and many other institutions depart for cities such as Paris, France; Dublin, Ireland; Amsterdam, Netherlands; Milan, Italy; and Madrid, Spain.[78] With uncertainty surrounding Brexit and the loss of duty-free access to European countries, investors are steering away from the United Kingdom. In the early months of 2019, a major Japanese automotive manufacturer canceled its plans to move a car-making plant there.[79] These lack of investments have a butterfly effect, leaving many British citizens without work and placing the burden on the government to cover unemployment cost. Although no significant data shows that unemployment rates have increased, one would anticipate that unemployment rates will indeed swell as a result of Brexit.

As the British economy goes, so too goes the MOD's budget. The United Kingdom's 10-year military equipment plan, as mentioned earlier, is under significant pressure due to the costs of modernizing the Trident program as well as from decreasing government revenues. With tightened purse strings, the MOD will be forced to prioritize which capabilities it will retain and which must be lost to stay on budget.[80] These decisions will be further aggravated by the recent economic downturn that was not anticipated or planned for by the MOD. In a 2015 spending review, the MOD anticipated a budget of $63 billion USD by 2020.[81] A subsequent spending review in late 2019 provided the MOD an additional £2.2 billion to fill a funding gap in defense.[82] While this gap is allegedly due to operational commitments, it is documented that the MOD has previously dipped into its reserve fund to assist with Trident expenses.[83] Douglas Barrie, a senior fellow for military aerospace at the International Institute for Strategic Studies, has stated that the funds are already committed: "£300 million for the 2019–20 fiscal year and £1.9 [billion] for 2020–21." However, it is only a short-term settlement, and there is the likelihood of another Strategic Defense and Security Review (SDSR) sometime in 2020.[84]

Even with additional funds, the MOD fell short of its desired budget, requiring an emergency meeting to discuss the current budget and required adjustments.[85] One of the areas at which MOD leadership must look first are defense budgetary re-

[78] Ian Mount, "Leaving London: Voices from the Financial Front Lines of Brexit," *Financial Times*, 8 April 2019.
[79] Ali, "ABC of the Economics of Brexit."
[80] Goodlad, *Brexit's Toll*.
[81] Yasmin Tadjdeh, "Brexit Could Hurt British Defense Budget," *National Defense*, 1 August 2016.
[82] Helen Warrell and George Parker, "Funding Crisis Raises Concerns on Armed Forces Readiness," *Financial Times*, 18 December 2019.
[83] Bond and Pfeifer, "Nuclear Submarines Threaten to Sink UK Defence Budget."
[84] Douglas Barrie, "UK Defence-Budget Boost Provides Short-Term Relief, but Uncertainty Looms," *Military Balance* (blog), International Institute for Strategic Studies, 20 September 2019.
[85] Warrell and Parker, "Funding Crisis Raises Concerns on Armed Forces Readiness."

quirements. Other areas that will take a priority are those related to the United Kingdom's alliances and partnerships. In the wake of Brexit, these alliances strengthen the nation's security and are of vital importance. The United Kingdom maintains one of the largest defense budgets in the world, while also maintaining the fifth largest military force in Europe. As expressed in multiple forums, the United Kingdom intends on maintaining an important role in NATO and utilizing bilateral cooperation with the United States as top priorities.[86] With that said, full-spectrum capabilities remain a defense requirement, and this includes pushing forward with Trident. The issue that the MOD continues to run into is the impact of Brexit.

European security expert Piotr Szymański believes that the United Kingdom's weakening economy will aggravate the British armed forces' current problems. He argues that these problems "include the stagnation of the defense budget (in 2011–18 expenditure fell from 2.4% to 2.1% of GDP), a decline in the overall size of the armed forces and personnel shortages, wear and tear on the equipment, and delays in implementing rearmament programmes. In addition, the depreciation of the pound negatively affects the costs of importing military equipment."[87] What does this mean to the MOD's goal of maintaining a strong presence in NATO and bilateral operations with the United States? Difficulties in funding personnel and equipment will eventually translate to fewer global activities, both soft and hard. The British armed forces are already conducting operations without usual combat platforms, with the fewest number of operational fighter aircraft in decades (136) and just 19 destroyers and frigates in operation.[88] This is just the beginning—as the British economy shrinks post-Brexit, the defense budget will also continue to decrease. Meanwhile, large financial commitments such as the Trident program, F-35 JSFs, and new aircraft carriers are consuming the budget.[89] Phillips O'Brien, who works at the Scottish Centre for War Studies at the University of Glasgow, believes that the United Kingdom "would decide to scrap its nuclear program rather than make painful cuts elsewhere."[90]

The Impact of Brexit on Scottish Independence

An immediate consequence of Brexit came shortly after the United Kingdom voted to leave the EU: the vote created a second opportunity for Scottish independence. In 2012, Prime Minister Cameron and First Minister of Scotland Alex Salmond had agreed to authorize the 2014 Scottish independence referendum. Although Cameron was confident that the people of Scotland would not vote in favor of independence, this had the potential to end the Act of Union of 1707 and allow Scotland

[86] Szymański, "The Consequences of Brexit for the UK's Security Policy and NATO's Eastern Flank."
[87] Szymański, "The Consequences of Brexit for the UK's Security Policy and NATO's Eastern Flank."
[88] Szymański, "The Consequences of Brexit for the UK's Security Policy and NATO's Eastern Flank."
[89] Warrell and Parker, "Funding Crisis Raises Concerns on Armed Forces Readiness."
[90] Griff Witte, "Britain's Trident Nuclear Program at Stake in Scottish Independence Vote," *Washington Post*, 24 August 2014.

to leave the United Kingdom.[91] Despite Cameron's confidence, a very strong pro-independence campaign by the SNP—the "Yes Scotland" campaign—gained momentum throughout Scotland. The campaign thrived from its "Yes Declaration," which stated, "I believe it is fundamentally better for us all, if decisions about Scotland's future are taken by the people who care most about Scotland, that is, by the people of Scotland. Being independent means Scotland's future will be in Scotland's hands."[92] One of the largest inspirations for a "Scotland exit" (Scotxit) from the United Kingdom was the SNP's desire for a nuclear-free Scotland.[93] The two-year campaign gained so much momentum into the 2014 vote that Scotland marginally missed achieving independence, with 55 percent voting against independence and 45 percent voting in favor of it. The SNP declared that the "once-in-a-lifetime" referendum ended the way it began, with Scotland a member of the United Kingdom and the home of the Trident program.[94]

The aforementioned consequence of Brexit came when First Minister of Scotland Nicola Sturgeon called for a second referendum in 2017. Sturgeon's request creates an additional crisis for the United Kingdom and offers evidence that Scotland's independence is a matter of *when*, not *if*. SNP has described the United Kingdom leaving the EU as a "material change" of "sufficient magnitude" that warrants the people of Scotland a second opportunity at independence.[95]

Prior to the first Scottish independence referendum, much of the support for the Yes Scotland campaign came from those wishing to remove Trident from Scotland. One condition that an independent Scotland will likely impose on the government of the United Kingdom is to force the withdrawal of the Royal Navy's nuclear submarines and Trident missiles from their bases at Faslane and Coulport.[96] This departure would help the SNP achieve a nuclear-free Scotland and may sway their pursuit of a second referendum. According to Kate Hudson, general secretary of the Campaign for Nuclear Disarmament (CND), during the renewal vote for Trident, "Every single Member of Parliament from Scotland voted against the replacement of Trident."[97] While Hudson either did not know or ignored that one conservative Scottish MP voted in favor of the Trident renewal, the commanding anti-Trident vote by Scottish MPs nevertheless made a bold statement to London.[98] Hudson also expressed concern that "the current Trident system is located in Scotland. The submarines are based in Scotland. And under the Union agreement with Scotland, the

[91] Roland Flamini, "Scotland's Independence Bid: History, Prospects, Challenges," *World Affairs* 176, no. 1 (May/June 2013): 57–63.
[92] "Scottish Independence: Yes Declaration Hits Million Target," BBC News, 22 August 2014.
[93] Flamini, "Scotland's Independence Bid."
[94] Luke Mackle, "Scotland's Leaders Want Another Independence Referendum. Scottish Voters Don't," *Washington Post*, 26 April 2017.
[95] Mackle, "Scotland's Leaders Want Another Independence Referendum."
[96] Flamini, "Scotland's Independence Bid."
[97] Van der Made, "Britain's Trident Upgrade May Encourage Scoxit."
[98] "Trident Renewal."

Scottish parliament doesn't have control over foreign policy, so at the moment those nuclear weapons remain there."[99] This directly supports the Yes Scotland campaign declaration that the Scottish parliament should have authority on decisions that directly influence Scotland. Hudson understands the strength of the SNP, as that party holds all but one of the Scottish seats in Parliament. All Scottish members of Parliament stood for an independent Scotland, including the single conservative Scottish MP, who happens to be from Faslane.[100]

All this said, a major counterargument is that the numerous jobs provided by Trident and the Royal Navy offer great value to Scotland. Currently, there are approximately 3,000 military servicemembers and 4,000 civilian workers supported by Trident in Faslane and Coulport.[101] In 2017, Defense Secretary Michael Fallon announced that the Royal Navy's eight new warships would be built at HMNB Clyde during the next 20 years, saying, "We're investing in Scotland on the basis that Scotland will be staying in the [United Kingdom]."[102] Moreover, Faslane is expected to base all Royal Naval submarines if Scotland remains in the United Kingdom, increasing the position total to 8,200 by 2022.[103] The expectation is that this commitment will benefit both Scotland and the United Kingdom.

As Brexit inches closer, a final vote will eventually come to fruition. Sturgeon's request to have a second Scottish independence referendum prior to 2019 was denied by Prime Minister May. SNP will use a pro-EU and antinuclear campaign fueled by May's denial to assist in strengthening its cause.[104] The addition of the renewed nuclear defense program, dictated by the government of the United Kingdom in London, could tip the balance in favor of Scottish independence. Scotland is in the driver's seat at this moment, and it is only a matter of time before London decides between a second referendum and the Trident program. In the event that Scotland does achieve independence, the SNP will ensure that Trident is removed from Scotland, and its written constitution will ban nuclear weapons from being based in Scotland, as Scotland will likely join the Nuclear Non-Proliferation Treaty.[105] The SNP will continue to campaign against nuclear weapons. The party has dedicated an entire webpage to Trident, titled "Trident—What you need to Know." The webpage highlights how Trident does not address modern threats such as "terrorism, cyber-attacks, and climate change."[106] Propaganda displayed on the webpage shows what Scotland could pay for instead of the Trident renewal, including

[99] Van der Made, "Britain's Trident Upgrade May Encourage Scoxit."
[100] Van der Made, "Britain's Trident Upgrade May Encourage Scoxit."
[101] Stuart Nicolson, "What Do We Know about Faslane, the Home of Trident Nuclear Weapons?," BBC News, 31 August 2015.
[102] "Letters: The People of Scotland Can Decide again on Independence Once Brexit Has Been Untangled," *Telegraph*, 15 March 2017.
[103] Nicolson, "What Do We Know about Faslane, the Home of Trident Nuclear Weapons?"
[104] Mackle, "Scotland's Leaders Want Another Independence Referendum."
[105] Sengupta, "What Does Brexit Mean for Trident, Intelligence and National Security?"
[106] "Trident: 8 Things You Need to Know," Scottish National Party, 16 March 2021.

the "training of over 227,000 new police officers," the "training of almost 289,000 nurses," and the "construction of 2,300 primary schools."[107]

Parliament knows that Scottish independence from the United Kingdom will be costly, as it is discovering that British independence from the EU is also costly. Even though Scotland is pro-EU, there is no guarantee that independence would assure its entry to the organization. Since Scotland is currently a part of the United Kingdom, Scotland will also leave the EU once Brexit is complete. The EU is staying silent on a potential Scottish referendum, though many experts believe that Scotland would be required to get in line and apply for EU membership, which could take years.[108] This process would also apply to the UN, NATO, and other international organizations that Scotland is currently a part of because it is within the United Kingdom. A timeline for approval is just one of the many obstacles that might appear. Multiple countries may oppose Scotland's entry to those organizations. For example, Spain, which has dealt with its own share of separatist movements, will likely block Scotland's aspirations to join the EU.[109] A report from the first Scottish referendum stated, "Spanish government officials have hinted strongly that Spain would exercise its veto right in the European Union to block Scotland's entry as a warning to the Catalans" who have expressed a desire for independence from Spain.[110] Changes in leadership, however, may change the Spanish position. Former Spanish foreign minister, Josep Borrell has stated, "Why not? If they leave Britain in accordance with their internal regulation . . . [and if] Westminster . . . agrees, why should we be against it?"[111] Gaining support of this kind would be a significant win for the SNP and those in favor of Scottish independence.

Even though there will be hurdles for Scotland to overcome after breaking away from the United Kingdom, they are unlikely to prevent the SNP or Scottish citizens from voting in favor of independence, especially since the Yes Scotland campaign already garnered 45 percent of the population to vote for independence. The United Kingdom will then be left with three difficult choices: to allow Scotland to conduct a second referendum; to relocate Trident; or to terminate Trident altogether. In the event that Scotland conducts a second referendum and gains independence, then the United Kingdom will have no choice but to either relocate or terminate Trident. The government of the United Kingdom previously conducted assessments to examine the feasibility of relocating Trident. The two most promising locations for rebasing the program are the Milford Haven in Wales and Plymouth in England. In the 1960s, the MOD looked at Milford Haven as a potential home for the Polaris program, but in the end it was not chosen since it also hosted an oil refinery at the

[107] "Trident: 8 Things You Need to Know."
[108] Flamini, "Scotland's Independence Bid."
[109] Mackle, "Scotland's Leaders Want Another Independence Referendum."
[110] Flamini, "Scotland's Independence Bid."
[111] "Spain Would Not Oppose Future Independent Scotland Rejoining EU—Minister," Reuters, 20 November 2018.

time. The potential of having submarines, naval warships, and oil tankers all in the same port could have been disastrous. Milford Haven no longer has an oil refinery, as it has transitioned to natural gas, making the location a viable option for Trident now.[112]

At first glance, Plymouth appears to be an easy solution since it is currently the United Kingdom's primary nuclear repair facility, a refueling station for the Royal Navy, and the current location for naval submarines. Nevertheless, there are many obstacles to overcome. One major issue is that the current facility in Plymouth does not meet the minimum three-mile radius from the populace that is required when housing Trident missiles.[113] Additionally, a former British defense advisor stated that it would take 20 years to move Trident from Scotland and £25 billion to build a new facility capable of maintaining the program.[114] This may be an exaggeration, as the current facilities took 13 years and close to £2 billion to build, but it is worth mentioning that the government of the United Kingdom spent additional funds in the 1990s to expand the facility to support the transition from Polaris to the larger Trident missiles.[115] Even if the government decided to relocate Trident on Scottish independence, the United Kingdom's defense budget would not support the move in addition to the costs of modernizing Trident as well as paying for the nation's overseas operations. The SNP is aware of the projected cost and timeline for removal. One SNP advisor stated that if Scotland gains independence, it should lease out the Faslane facility to the government of the United Kingdom for a minimum of £1.1 billion per year.[116] Even that price may be too steep for the MOD and British MPs. Consequently, for all these reasons, if Scotland succeeds in achieving independence, the government of the United Kingdom will most likely choose to terminate the Trident program.

The Role of Trident Post-Brexit

How has the role of Trident changed since Brexit? Despite strong support in 2016 for the renewal of Trident, Brexit creates a perfect storm for the opposition to establish a compelling case to suspend the program instead. With the projected shrinking of the British economy and defense budget, Trident becomes even more burdensome and a drain on other parts of the British armed forces. A London-based report stated, "This price tag is double what MPs were told when they first voted on Trident replacement in 2007 as part of a double-sided motion which didn't just decide to replace Trident, but also committed to taking 'further steps towards meeting the [United Kingdom's] disarmament responsibilities under Article VI of the Non-

[112] Sengupta, "What Does Brexit Mean for Trident, Intelligence and National Security?"
[113] Sengupta, "What Does Brexit Mean for Trident, Intelligence and National Security?"
[114] "Independent Scotland Would Need 20 Years to Remove Trident—Ex-SNP Adviser," *Scotsman* 5 August 2018.
[115] "Why Relocating Trident Away from Scotland Is Virtually Impossible," *Navy Lookout*, 22 July 2016.
[116] "Independent Scotland Would Need 20 Years to Remove Trident."

Proliferation Treaty'."[117] Technically, the MOD ensured that the renewal package included a reduction in the number of Trident missiles carried, which could be considered taking steps toward disarmament. In the event that the Trident program is relocated or suspended, the Scottish community and economy is expected to take a hard hit. It is estimated that at least 15,000 people will be impacted in some way if Trident is moved or shut down. Both Scotland and the United Kingdom will also feel the economic hardships of such a decision, though a complete shutdown would divert savings to offset some of the impact. Even without considering Trident, MPs have complained that British military operations have already endured a significant gap between "post-Brexit 'Global Britain' and the capacity to generate military capability to support the level of global presence implied in public statements."[118] Even with the additional £2.2 billion provided to the MOD, £700 million (30 percent) will go toward pensions, while the remaining will go toward Trident modernization efforts. Such short-term fixes will only delay the inevitable and generate a much larger, long-term issue that will have lasting effects on the MOD and the United Kingdom as a whole. With the upcoming SDSR later this year, the MOD anticipates getting control of the situation, but it may be too late.[119]

Between Trident and Brexit, the United Kingdom felt the political strain in 2019. On the 50th anniversary of the Royal Navy's nuclear-armed submarine patrols, British MPs called it a celebration. Is the renewal of Trident truly about deterrence or political status? This is a part of the debate between MPs in London, as SNP members and Liberal Democrats are calling for disarmament. Phillips O'Brien believes that much of the current support for Trident is "not primarily about defense but about political status—a desperate attempt by the leadership class to cling on to the delusion of being in the big power league."[120] He also argues, "The fact that the missiles are completely dependent on the United States makes it obvious the [United Kingdom] is a supplicant not a key player."[121] Both statements speak a certain degree of truth, but they can also be flipped. Possessing a nuclear deterrent strengthens defense and solidifies the United Kingdom as a great power, which also makes it a key player on the global stage. The leader of the British Labour Party, Jeremy Corbyn, has stated that he would give up the Trident deterrent if he became prime minister.[122]

Ultimately, Brexit makes Scottish independence more likely, and the extremely expensive cost to relocate Trident to England would inevitably follow suit. All of the United Kingdom's nuclear deterrence is located in Scotland, and if Scotland leaves,

[117] Rebecca Johnson, "What If?: Security Consequences of Brexit and Trident Renewal," OpenDemocracy, 19 June 2016.
[118] Barrie, "UK Defence-Budget Boost Provides Short-Term Relief, but Uncertainty Looms."
[119] Barrie, "UK Defence-Budget Boost Provides Short-Term Relief, but Uncertainty Looms."
[120] Allan Drew, "The Trident Delusion," *Herald*, 8 July 2015.
[121] Drew, "The Trident Delusion."
[122] Matt Dathan, "Jeremy Corbyn: Labour Members Will Have a 'Big Say' over Trident Policy," *Independent*, 11 January 2016.

it would likely join the UN Nuclear Non-Proliferation Treaty.[123] This would allow Scotland to force the removal of Trident. The options for the United Kingdom are extremely limited—but then again, it appears that the simplest solution is to simply suspend the renewal of Trident.

The Consequences of Suspending Trident

As currently constituted with Brexit and Trident, the MOD has suffered from decreased military funding and capabilities. The shrinking of the British Armed Forces has resulted in the smallest British military force since the Napoleonic Wars (1803–15).[124] It seems that one of the overlooked consequences of Brexit will be the end of Trident and a weakened United Kingdom that may lose its position on the global stage. If the United Kingdom does suspend Trident, it will also diminish NATO and Europe's nuclear deterrence. Former NATO secretary general George Robertson, a Scot, believes that Scottish independence and the removal of Trident from Scotland would be "cataclysmic" and result in essentially "disarming the remainder of the United Kingdom."[125] A report from the Danish Institute for International Studies highlighted that France would be left as the lone "EU member state that has nuclear weapons, a veto power in the UN Security Council and military bases in third world countries through bilateral agreements, including the option to deploy troops there."[126] Although this would slightly lower the United Kingdom's position among great powers, the money saved from Trident may be reinvested into its conventional forces—that is, if Brexit does not cut too deep into the British economy, which remains a significant unknown. John Woodcock, a former Labour Party MP, believes that giving up nuclear weapons "would leave the [United Kingdom] and its NATO allies at the mercy of nuclear blackmail from Putin."[127] This may be true, but NATO will still have two nuclear-capable members and could potentially look elsewhere to replace the British program.

In the end, Brexit weakens the power of the United Kingdom, NATO, and European regional security. One major benefactor of this will be Russia, which offers the United Kingdom one major reason as to why it should want to hold on to Trident at all cost. As Piotr Szymański explains, the United Kingdom's "perception of Russia in recent years has been influenced not only by the modernisation of the Russian armed forces and the restoration of its sphere of influence in the post-Soviet area, but also by the use of 'active measures,' such as the Russian disinformation campaigns, and the special services' actions in the United Kingdom . . . [which includes] the use of the 'Novichok' combat nerve agent in Salisbury in 2018."[128] Parliament

[123] Dathan, "Jeremy Corbyn."
[124] Alexandra Evans, "Britain to Have Smallest Army since Napoleonic Wars," *Foreign Policy*, 5 July 2012.
[125] Witte, "Britain's Trident Nuclear Program at Stake in Scottish Independence Vote."
[126] Nissen, *Forged in Crisis*.
[127] Dathan, "Jeremy Corbyn."
[128] Szymański, "The Consequences of Brexit for the UK's Security Policy and NATO's Eastern Flank," 2.

has investigated Russian influence on the Brexit vote, though then Prime Minister Johnson recently denied the claim and delayed the release of the report. This would not be the first incident of Russian activity in the United Kingdom, and it will not be the last. Additionally, according to British financier Bill Browder, Russian-backed oligarchs have compensated British politicians, lawyers, and former security service officials to gain Russian influence.[129]

Even though the United Kingdom has one of the largest defense budgets and armed forces in Europe, both remain significantly smaller than those of Russia.[130] Without Trident, the United Kingdom will be even more vulnerable and will be left to rely on the United States and France for nuclear support. This susceptibility is vastly important concerning the defense of the British Isles, which is especially important to the United States, as the United Kingdom is the last line of European defense in the North Atlantic. It is well known that European nations have underspent on defense for decades, extending their militaries too far while failing to modernize capabilities to meet current threats.[131] Russia, especially under the rule of President Vladimir Putin, pays close attention to what happens in the West and is willing to put more pressure on western democracies. After the initial Brexit vote, Putin told Prime Minister May that she "must implement the will of the people as expressed in the referendum, or that is no referendum as all."[132] Putin then followed it up by taking a shot at the West by asking, "Is this democracy?"[133] It is obvious that Putin knew the implications of the United Kingdom leaving the EU and had no issue mocking the British. Mark Galotti, an author who has covered Putin extensively, believes that "Putin's strategy is essentially to divide, distract and demoralise the West, so that either we are sufficiently worn down to strike a deal that grants Russia the status he craves . . . or else we are so fragmented, feuding and fatigued that he has a free reign."[134] Dividing the people and creating chaos is a tactic that has been seen within both the United States and the United Kingdom.

Conclusion

The United Kingdom's vote on Brexit has created a situation that will have long-term political, economic, and military repercussions. With a steady decline in GDP during the past three years, economic downturn is expected to continue.[135] It is likely that the United Kingdom will continue to reach out to neighboring states and

[129] Laura King, "Did Russia Meddle in 2016 Brexit Vote?: In Election Season, Dismay over Delayed Report," *Los Angeles (CA) Times*, 14 November 2019.
[130] Szymański, "The Consequences of Brexit for the UK's Security Policy and NATO's Eastern Flank."
[131] Nissen, *Forged in Crisis*.
[132] Michael Birnbaum, "Why Brexit May Be Good for Terrorists and the Kremlin and Bad for European Security," *Washington Post*, 25 December 2018.
[133] Birnbaum. "Why Brexit May Be Good for Terrorists and the Kremlin and Bad for European Security."
[134] Mark Galeotti, "What Does Putin Really Make of Britain's Brexit Mess?," *Spectator*, 28 February 2019.
[135] "United Kingdom (UK) GDP: Gross Domestic Product 2019."

the EU to establish trade deals to reduce to amount of tariffs imposed on goods, but this will not reap immediate benefits. As such, the nation's defense budget will continue to dwindle along with the economy. Additionally, Scotland will continue to put pressure on the government of the United Kingdom with threats of secession now that Brexit has become a reality. In order to maintain a balanced defense budget and appease Scottish popular sentiment, the United Kingdom will likely be forced to terminate the Trident nuclear program. In that event, the United Kingdom will be able to focus on its conventional forces to maintain a valuable role within NATO and European security. The loss of a third NATO nuclear deterrent is significant but survivable, as NATO possesses the capability to endure as it continues to fend off Russian aggression.

At the time of this research, the impact of Brexit continues to unfold, and the COVID-19 pandemic adds an additional factor. The United Kingdom's 2020 budget highlights the National Health Service as the "number one spending priority" and will likely require additional resources and funding to address COVID-19 treatment and prevention efforts.[136] The suspension of Trident warrants additional research as security and defense throughout the world continues to shift its approach as a result of the global pandemic.

[136] *Budget 2020*.

Bridging the "Gen Z" Gap

"Hardy Leader" Influence Increases Independence, Adaptability, and Resilience in Marine Corps Infantry Battalions

By Major Shawn F. Connor, U.S. Marine Corps[1]

The most important responsibility in our Corps is leading Marines. If we expect Marines to lead and if we expect Marines to follow, we must provide the education of the heart and of the mind to win on the battlefield and in the barracks, in war and in peace.

~ General Carl E. Mundy Jr., USMC[2]

Whereas Millennials needed praise, [Gen Z] needs reassurance. . . . Managers who learned to be cheerleaders for Millennials will find they are more like therapists, life coaches, or parents for [Gen Z].

~ Jean M. Twenge[3]

There is a critical gap between the generalized traits and behaviors of members of Generation Z (Gen Z) and the traits and behaviors that are required within the U.S. Marine Corps for decentralized operations. Born in 1995 and after, members of Gen Z have shifted significantly from previous generations in their behavior, attitudes, and personality traits. In fact, several researchers conclude that the shift from the Millennial generation, born between 1980 and 1994, to Gen Z is the greatest shift in the history of generational study.[4] The research to date has identified several trends that will impact those who educate, employ, and lead this generation. On the positive side, members of Gen Z tend to be more focused and harder working, less narcissistic and entitled, and more eager to prove themselves than Millennials. However, they also tend to be more anxious and uncertain, less independent, and more scared of making mistakes.[5] Members of Gen Z report

[1] Maj Conner is a distinguished graduate of MCU's Command and Staff College. This paper was nominated for the Col F. Brooke Nihart Award in the academic year 2019–20.

[2] *Leading Marines*, Marine Corps Warfighting Publication 6-11 (Washington, DC: Headquarters Marine Corps, 1995), foreword.

[3] Jean M. Twenge, *iGen: Why Today's Super-Connected Kids Are Growing Up Less Rebellious, More Tolerant, Less Happy—and Completely Unprepared for Adulthood* (New York: Atria Books, 2017), 310.

[4] Bruce Tulgan, "Meet Generation Z: The Second Generation within the Giant 'Millennial' Cohort," Rainmaker Thinking, 2013; Anjali Singh, "Challenges and Issues of Generation Z," *IOSR Journal of Business and Management* 16, no. 7 (July 2014): 63, https://doi.org/10.9790/487X-16715963; and Twenge, *iGen*, 3–4.

[5] Twenge, *iGen*, 310–12.

historically poor mental health, lack many problem-solving and critical-thinking skills, and are risk-averse students and workers.[6] More than any previous generation, they tend to subscribe to an external locus of control, or the belief that outside forces, vice their own decisions and actions, control their lives.[7] They were raised as the most protected and safety-conscious generation and therefore require constant reassurance and feedback.[8] One generational researcher asserts that, based on life milestones correlated to independence, 18-year-olds in 2015 were the equivalent of 15-year-olds in 2009.[9]

Meanwhile, fundamental tenets of the Marine Corps' warfighting philosophy and aspects of the 38th Commandant of the Marine Corps' *Commandant's Planning Guidance* are based on decentralized operations employing semiautonomous, adaptable small units that can overcome adversity. *Warfighting*, Marine Corps Doctrinal Publication (MCDP) 1, describes a decentralized philosophy based on subordinate initiative, judgment, and flexibility at all levels to create and exploit opportunities.[10] It recognizes that adaptation and superior human will are essential in war and emphasizes the importance of intangible traits such as courage, perseverance, and boldness.[11] The *Commandant's Planning Guidance* states that future force development must develop "elite warriors with physical and mental toughness, tenacity, initiative, and aggressiveness to innovate, adapt, and win in a rapidly-changing operating environment."[12] It expresses the expectation for increased decentralization to fulfill operating concepts such as distributed operations and expeditionary advanced base operations. Moreover, it explicitly lists rifle squads "at the forward tactical edge" of the Fleet Marine Force and calls for squads able to coordinate the "full-range of combined arms."[13]

As the Marine Corps attempts to decentralize further, it will need to entrust more responsibility and expect higher performance from junior leaders who come from a generation less capable of thinking or acting independently, solving problems, or handling stress. Based on Marine Corps demographics, Gen Z now com-

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[6] *Stress in America: Generation Z* (Washington, DC: American Psychological Association, 2018); "Meet Gen Z: The Self-Proclaimed Hardest-Working, Anxiously Optimistic Workforce of the Future," Kronos, 3 June 2019; Joseph Coombs, "Generation Z: Why HR Must Be Prepared for Its Arrival," Society for Human Resource Management, 3 October 2013; Twenge, *iGen*, 101–4; Hara Estroff Marano, "A Nation of Wimps," *Psychology Today*, 1 November 2004; "Generation Z: Taking Action," Institute for Emerging Issues, North Carolina State University, October 2013; Tulgan, "Meet Generation Z"; and E. Shelley Reid, "Teaching Risk-Taking in the College Classroom," Faculty Focus, 10 November 2010.

[7] Twenge, *iGen*, 191.

[8] Thomas Koulopoulos and Dan Keldsen, *The Gen Z Effect: The Six Forces Shaping the Future of Business* (New York: Bibliomotion, 2014), https://doi.org/10.4324/9781315230337; Twenge, *iGen*, 159; and Jessica Brack and Kip Kelly, *Maximizing Millennials in the Workplace* (Chapel Hill: University of North Carolina, 2012), 7.

[9] Twenge, *iGen*, 3, 39–43.

[10] *Warfighting*, Marine Corps Doctrinal Publication (MCDP) 1 (Washington, DC: Headquarters Marine Corps, 1997), 9, 80–81.

[11] *Warfighting*, 3–4, 14–15, 19.

[12] Gen David H. Berger, *Commandant's Planning Guidance: 38th Commandant of the Marine Corps* (Washington, DC: Headquarters Marine Corps, 2019), 12.

[13] Berger, *Commandant's Planning Guidance*, 11–12, 19–20.

prises approximately two-thirds of the active-duty force.[14] The Marine Corps must leverage the strengths of this generation while retaining traditional values such as flexibility, innovation, adaptation, and the determination to overcome adversity. Infantry battalions in particular must develop individual Marines and small unit leaders who are prepared to excel in complex, semiautonomous operations such as those envisioned in the *Commandant's Planning Guidance*.

The influence of a hardy leader can help bridge this gap. The concept of mental hardiness has been found to predict performance, adaptability, and resilience under stress.[15] *Hardiness* is a broad, generalized perspective or worldview defined by the three components of commitment, control, and challenge.[16] Individuals who are high in hardiness have a strong sense of commitment to life and work, a high sense of control over their lives and environment, and the perception that change and challenge are worthwhile learning experiences.[17] Hardiness has been correlated with effective military leadership in training and real-world operations, with various studies analyzing U.S. Military Academy (West Point) cadets, junior U.S. Army officers, U.S. Army Special Forces candidates, and Royal Norwegian Naval Academy cadets.[18] Moreover, evidence suggests that hardiness is transferable throughout an organization by the leader influence process and "micro-level policies," such as those at the battalion level.[19] Therefore, a Marine infantry battalion commander who actively facilitates hardiness through their personal example, policies, and communication with subordinates can increase the hardiness of their battalion and consequently develop small unit leaders and individual Marines who are more independent, adaptable, and resilient under stress. This thesis correlates increased independence to more autonomous small unit leaders who are capable of making

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[14] *The Marine Corps Demographic Update, June 2017* (Washington, DC: Headquarters Marine Corps, 2017).

[15] Paul T. Bartone, "Leader Influences on Resilience and Adaptability in Organizations," in *The Routledge International Handbook of Psychological Resilience*, ed. Updesh Kumar (London: Routledge, 2016), 74–85; and Paul T. Bartone, Dennis R. Kelly, and Michael D. Matthews, "Psychological Hardiness Predicts Adaptability in Military Leaders: A Prospective Study," *International Journal of Selection and Assessment* 21, no. 2 (2013): 200–10, https://doi.org/10.1111/ijsa.12029.

[16] Susan C. Kobasa, "Stressful Live Events, Personality, and Health: An Inquiry into Hardiness," *Journal of Personality and Social Psychology* 37, no. 1 (January 1979): 1–11, https://doi.org/10.1037/0022-3514.37.1.1.

[17] Paul T. Bartone, "New Wine in Old Bottles: Leadership and Personality in the Military Organization," in *The 71F Advantage: Applying Army Research Psychology for Health and Performance Gains*, ed. Paul T. Bartone, Ross H. Pastel, and Mark A. Vaitkus (Washington, DC: National Defense University Press, 2010), 135.

[18] Paul T. Bartone et al., "Big Five Personality Factors, Hardiness, and Social Judgment as Predictors of Leader Performance," *Leadership and Organization Development Journal* 30, no. 6 (2009): 498–521, https://doi.org/10.1108/01437730910981908; Bartone, Kelly, and Matthews, "Psychological Hardiness Predicts Adaptability in Military Leaders," 200–10; Paul T. Bartone, Scott A. Snook, and Trueman R. Tremble Jr., "Cognitive and Personality Predictors of Leader Performance in West Point Cadets," *Military Psychology* 14, no. 4 (October 2002): 321–38, https://doi.org/10.1207/S15327876MP1404_6; Paul T. Bartone et al., "Psychological Hardiness Predicts Success in U.S. Army Special Forces Candidates," *International Journal of Selection and Assessment* 16, no. 1 (March 2008): 78–81, https://doi.org/10.1111/j.1468-2389.2008.00412.x; and Jarle Eid et al., "Growing Transformational Leaders: Exploring the Role of Personality Hardiness," *Leadership and Organization Development Journal* 29, no. 1 (2008): 4–23, https://doi.org/10.1108/01437730810845270.

[19] Paul T. Bartone, Charles L. Barry, and Robert E. Armstrong, "To Build Resilience: Leader Influence on Mental Hardiness," *Defense Horizons* 69 (November 2009): 1–8; Bartone, "Leader Influences on Resilience and Adaptability in Organizations," 79–85; and Paul T. Bartone, "Social and Organizational Influences on Psychological Hardiness: How Leaders Can Increase Stress Resilience," *Security Informatics* 1, no. 21 (2012), https://doi.org/10.1186/2190-8532-1-21.

mature and confident decisions; increased adaptability to improved problem solving and critical thinking during training and operations; and increased resilience to better mental health and stress reaction, resulting in individuals and small units that are less in need of professional mental health services, more operationally focused, and more determined under adversity.

Research Methodology, Scope, and Limitations

This project applied a qualitative study of existing relevant literature to determine how high-hardy leaders can influence Gen Z subordinates to adopt a hardier worldview, thereby increasing independence, adaptability, and resilience under stress. It is intended to apply to active-duty Marine infantry battalions and has the end goal of providing tangible recommendations for future infantry battalion commanders. While hardiness has broad applicability, the recommendations and conclusion here emphasize operational readiness vice broader life skills.

This project's most significant limitation is the lack of quantifiable data available related to hardiness in Marine infantry battalions. Individual hardiness is measured through the Dispositional Resilience Scale (DRS), a 45-item questionnaire that produces an overall score for hardiness and subscores for commitment, challenge, and control. The DRS can also be administered in shorter 30- and 15-item versions. Future research or implementation can benefit from the use of this survey within participating units to produce quantifiable hardiness data and measurements over time.

Another problematic issue that requires clarification is definitional. While the terms *resilience* and *resiliency* proliferate throughout academic and professional literature, no universal or agreed-on definition exists. Generally, source material for this research defined *resilience* as retaining or rapidly rebuilding normal mental and emotional health in the face of stressors. The hardiness literature infers a more active process of coping, learning, and adapting, which results in positive increase to stress reaction. In military literature, *resilience* is used more contextually, referring to sustained mental health, physical survivability, or simply determination. For the purposes of this project, *resilience* refers to stronger mental health and improved stress reaction, which leads to Marines who are less in need of professional mental health services, more operationally focused, and more determined under adversity.

Literature Review

The literature review is arranged thematically to provide the current state of Gen Z behaviors and traits, Marine Corps doctrine and guidance related to decentralization and small unit performance, and the psychological concept of hardiness. There are abundant academic and peer-reviewed sources available to study both Gen Z and hardiness. The source material related to Gen Z is based primarily on statistics and polling data. Observational or anecdotal evidence is included only

when it is provided by an expert source. A few of the sources, while grounded in professional research, contain provocative titles or were marketed to popular rather than academic audiences. For example, Jean M. Twenge's book *iGen: Why Today's Super-Connected Kids Are Growing Up Less Rebellious, More Tolerant, Less Happy—and Completely Unprepared for Adulthood*, while written for mainstream distribution, is based on four major longitudinal studies conducted by professional research institutes serving academia and the U.S. government. Twenge is a recognized expert in the field of generational studies, and her work is based on a representative sample of more than 11 million anonymous surveys, some dating back to the 1970s. For hardiness, there is robust literature available from several academic disciplines. The concept has roots in existential psychology, originally developed in the medical community, and has been studied in numerous contexts. This project relied heavily on the work of Paul T. Bartone, who is the most prolific researcher of hardiness as it relates to military performance and leadership.

Gen Z

Gen Z is generally defined as the generation born between 1995 and 2012. Due to rapid technological advancement and cultural change during this period, Gen Z differs substantially from the Millennial generation that preceded it.[20] Leaders in education and private industry, still adapting to Millennials, were initially surprised and unprepared for members of Gen Z. Their arrival had far-reaching implications, as their needs and desires challenged established norms and values in new and unexpected ways. Researchers, educators, and managers led the effort to better understand and adapt to Gen Z. While their findings are not unanimous, the literature does support several broad trends and recommendations.

Raised in a safety-conscious society with near-constant parental involvement and little unsupervised activity, Gen Z is less independent and more risk-averse than any previous generation.[21] Eighteen-year-olds in 2015 were less likely to go out without their parents than 14-year-olds were in 2009, and they were also less likely to date, drive, work part-time, or even be home without a parent present.[22] Members of Gen Z engage in less physical activity, less in-person social activity, and less homework, instead spending much of their time online.[23] Gen Z is, on average, delayed in reaching every life milestone associated with independence. Its members are growing up more slowly than previous generations and are unprepared for independence after entering college or the workforce.[24] Moreover, they are exceptionally safety-conscious and risk-averse. While this is not a negative trait in gener-

[20] Twenge, *iGen*, 2–4, 12–16.
[21] Coombs, "Generation Z"; and Twenge, *iGen*, 39–43, 164.
[22] Twenge, *iGen*, 19–30.
[23] Twenge, *iGen*, 31, 51–53.
[24] Twenge, *iGen*, 159.

al, Gen Z has taken it to an unhealthy extreme. Educators have noted that their Gen Z students are noticeably more reluctant to ask questions or speak in class for fear of being wrong.[25] They have been labeled as "conservative learners" who are overly concerned about grades and lack the confidence to attempt new things or explore new ideas.[26] Some universities have identified the need to "teach risk-taking" to Gen Z, emphasizing that failure in pursuit of learning is a growth opportunity and "not a stigma to avoid at all costs."[27] Workplace reports are similar, in that members of Gen Z want to contribute, but only if they are safe from criticism.[28] Gen Z has also associated safety with "emotional safety," which includes being protected from uncomfortable situations, people who disagree with one's opinions or beliefs, and controversial ideas.[29] Researchers have noted the rise in victimhood among Gen Z, who have developed "exceptionally thin-skin" and replaced critical thinking with emotional reasoning.[30] College students widely support "safe spaces" free of controversial or offensive ideas, "disinvitation" of potentially controversial speakers, and sanitized textbooks and syllabi, causing many schools to prioritize emotional safety over intellectual development.[31]

Members of Gen Z feel less in control of their lives and are more disengaged and cynical than previous generations.[32] They believe that they are the hardest-working generation ever and are entering the workforce at the most difficult time in history.[33] They are fearful of student loan debt, demoralized about entering the workforce, and convinced that they face more barriers to success. Research shows that more members of Gen Z subscribe to an external locus of control, or the belief that outside forces control one's life, than previous generations. An internal locus of control is the belief that one controls their own life through their actions and decisions.[34] It is unclear whether the growth in defeatist attitudes is a cause or effect in relation to other Gen Z traits.

Gen Z is deficient in important skills traditionally required by higher education and private industry. As students, they lack creativity, do not imagine alternatives or engage in debate, and are reluctant to apply concepts in practical ways.[35] One research team argued that colleges and universities have allowed members of Gen Z to replace objective critical thought with subjective emotional reasoning. Since it is also culturally unacceptable to "question the reasonableness of one's emotion-

[25] Reid, "Teaching Risk-Taking in the College Classroom"; and Twenge, *iGen*, 307.
[26] Reid, "Teaching Risk-Taking in the College Classroom."
[27] "Generation Z: Taking Action."
[28] Brack and Kelly, *Maximizing Millennials in the Workplace*, 7.
[29] Twenge, *iGen*, 153–54.
[30] Greg Lukianoff and Jonathan Haidt, "The Coddling of the American Mind," *Atlantic*, September 2015.
[31] Twenge, *iGen*, 155–59.
[32] Twenge, *iGen*, 169.
[33] "Meet Gen Z."
[34] Twenge, *iGen*, 191–92.
[35] Reid, "Teaching Risk-Taking in the College Classroom"; and "Generation Z: Taking Action."

al state," students are encouraged to shut down opposing viewpoints by claiming emotional distress versus using facts or informed opinions.[36] Private industry has noted similar trends, reporting that Gen Z employees require significant remedial effort to develop broad transferable skills such as work habits, interpersonal communication, critical thinking, and problem solving.[37] In this area, large numbers of Gen Z members agree that their high school and college education has not adequately prepared them for the workplace or helped them develop skills to solve real-life problems.[38] Evidence also suggests that members of Gen Z have fewer social skill and more difficulty with in-person interaction than any previous generation.[39]

Gen Z reports the worst mental health of any generation since data has begun being collected on the subject. In 2017, Twenge summarized the data to that point by noting that "the trends are remarkably consistent: loneliness, depressive symptoms, major depressive episodes, anxiety, self-injury, and suicide are all on the rise, mostly since 2011."[40] Beginning in 2010–11, every indicator of poor mental health increased significantly among college students, with rates of loneliness, depression, and anxiety reaching all-time highs.[41] Simultaneously, feelings of life satisfaction and usefulness reached all-time lows, while rates of suicide increased by 46 percent among 15- to 19-year-olds and 250 percent among 12- to 14-year-olds.[42] In a 2018 Pew Research Center poll, 70 percent of Gen Z members believed that anxiety and depression were a major issue amongst their peers.[43] That same year, the American Psychological Association (APA) reported members of Gen Z as slightly less stressed than Millennials but significantly more likely to report poor mental health (27 versus 15 percent) and depression (23 versus 14 percent). Additionally, the APA found that more than one-third of Gen Z members reported having received therapy or other mental health treatment, while 91 percent reported having had at least one physical or emotional symptom due to stress within the previous month.[44] Gen Z also reported substantial emotional barriers in the workplace, with anxiety (34 percent), lack of motivation (20 percent), and low self-esteem (17 percent) negatively impacting work performance.[45] Overall, Gen Z is the most mentally fragile generation in history.[46]

Nevertheless, Gen Z possesses several positive trends as well. Compared to Millennials, members of Gen Z are more focused on work, realistic about expectations,

[36] Lukianoff and Haidt, "The Coddling of the American Mind."
[37] Singh, "Challenges and Issues of Generation Z," 59–63; and Coombs, "Generation Z."
[38] "Meet Gen Z"; Teresa Bridges, "5 Ways the Workplace Needs to Change to Get the Most Out of Generation Z," *Fast Company*, 19 August 2015; and Dan Schwabel, "66 of the Most Interesting Facts about Generation Z," *Dan Schwabel* (blog), 17 July 2014.
[39] Twenge, *iGen*, 90–91.
[40] Twenge, *iGen*, 302.
[41] Twenge, *iGen*, 96–98, 103–5.
[42] Twenge, *iGen*, 96, 102, 109.
[43] "Generation Z is Stressed, Depressed, and Exam-Obsessed," *Economist*, 27 February 2019.
[44] *Stress in America*, 4, 7.
[45] "Meet Gen Z."
[46] Twenge, *iGen*, 3, 312.

and eager to contribute; are less narcissistic, entitled, and overconfident; and have a stronger work ethic.[47] In fact, many researchers are optimistic regarding Gen Z's future if leaders in education and industry accommodate their needs in a few key areas. First, members of Gen Z need to be made to feel physically and emotionally secure. Leaders should create a safe environment and communicate this as a priority to Gen Z workers or students. Leaders must emphasize their desire to help and nurture members of Gen Z, which involves framing criticism as the best path to better performance. Twenge recommends that leaders literally say "I want to help you succeed" prior to offering any critical feedback.[48] Second, leaders should provide consistent, near-real-time feedback, as Gen Z craves reassurance and in-person mentorship.[49] Leaders should keep feedback brief and specific to one or two issues, since Gen Z lacks the attention span to remain engaged during lengthy performance reviews.[50] Third, leaders should be honest and transparent, communicate frequently, and be supportive of subordinates' personal and professional needs to develop trusting relationships.[51] Gen Z members want to have their concerns acknowledged and desire open dialogue with their leaders.[52] At least one research team identified mutual trust as the key element that allows members of Gen Z to accept criticism and feedback constructively.[53] While they recognize their skill gap in the workplace and want the opportunity to learn, they also want to make meaningful contributions from the very start of their employment.[54] Overall, leaders and organizations who can meet Gen Z's need for security, nurture, and trust will be rewarded with motivated, diligent workers.[55]

Marine Corps Doctrine and Guidance

The Marine Corps has well-established doctrine and tradition that promotes decentralization and adaptability. *Warfighting* describes maneuver warfare as an opportunistic concept that requires individuals and small unit leaders with the flexibility, courage, and aggression to act decisively under pressure. The Marine Corps' philosophy of maneuver warfare is enabled by decentralization and intelligent leaders who apply boldness, judgment, and initiative at the lowest levels to create and exploit fleeting opportunities.[56] It expresses the need to operate effectively despite friction

[47] Brack and Kelly, *Maximizing Millennials in Workplace*, 1–7; and Twenge, *iGen*, 94, 310–11.
[48] Twenge, *iGen*, 311–12.
[49] Koulopoulos and Keldsen, *The Gen Z Effect*; Brack and Kelly, *Maximizing Millennials in Workplace*, 1–3; "Generation Z: Taking Action"; Bridges, "5 Ways the Workplace Needs to Change to Get the Most Out of Generation Z"; Schwabel, "66 of the Most Interesting Facts about Generation Z"; and Tulgan, "Meet Generation Z."
[50] Twenge, *iGen*, 311.
[51] "Meet Gen Z"; and Schwabel, "66 of the Most Interesting Facts about Generation Z."
[52] "Generation Z: Taking Action."
[53] Koulopoulos and Keldsen, *The Gen Z Effect*.
[54] Singh, "Challenges and Issues of Generation Z," 60; and Tulgan, "Meet Generation Z."
[55] Twenge, *iGen*, 195.
[56] *Warfighting*, 44, 48, 81, 87–88.

and uncertainty by accepting risk and applying military judgment.[57] *Warfighting* implies a strong need for critical thinking, problem solving, and adaptation at all levels.

The *Commandant's Planning Guidance* calls for greater decentralization and more-capable small units to meet the demands of the contemporary and future operating environments. Operating concepts such as expeditionary advanced base operations and distributed operations require dispersed small units, empowered by new technologies and long-range communication, to deploy and operate in a complex, competitive expeditionary environment. Rifle squads will be expected to coordinate combined arms at a level commiserate with current infantry companies.[58] To develop the force of the future, the Commandant of the Marine Corps, General David H. Berger, reinforces that individual Marines are the centerpiece of the organization and will need to be tough, tenacious, and adaptable.[59] He calls for more flexibility and decentralization in home station activities; improved education that is based in adult learning methodology and focused on teamwork, critical thinking, problem solving, and a bias for making decisions and taking action; and competitive training exercises that are critically evaluated and subjected to formal critique.[60]

Hardiness

Hardiness has been linked to resilience, performance, and the leader influence process in stressful situations. It has been consistently correlated to improved resilience and performance under stress and to effective military leadership under various conditions.[61] It is also associated with the ability of a military leader to make constructive sense of a situation and then transfer this interpretation to peers and subordinates.[62] A high-hardy leader will be actively engaged and committed to their mission and subordinates, confident and organized in pursuing tasks or goals, and undeterred by obstacles or setbacks.[63] Moreover, through personal example and leadership as well as policies and actions, the high-hardy leader can transfer hardiness to subordinates and throughout an organization.[64]

The concept of hardiness is based in existential psychology and is associated with resilience and healthy reaction to stress. It originated in the medical community to conceptualize the attitudes, beliefs, and behavioral tendencies found in individuals who remain healthy after stressful life events.[65] Hardiness is best understood as a broad, generalized perspective or holistic worldview vice a strict person-

[57] *Warfighting*, 5–9.
[58] Berger, *Commandant's Planning Guidance*, 12.
[59] Berger, *Commandant's Planning Guidance*, 6, 12.
[60] Berger, *Commandant's Planning Guidance*, 16–18.
[61] Bartone, Kelly, and Matthews, "Psychological Hardiness Predicts Adaptability in Military Leaders," 201–2.
[62] Bartone, "New Wine in Old Bottles," 134–38.
[63] Bartone et al., "Big Five Personality Factors, Hardiness, and Social Judgment as Predictors of Leader Performance," 502.
[64] Bartone, Barry, and Armstrong, "To Build Resilience," 1–8.
[65] Kobassa, "Stressful Live Events, Personality, and Health," 1–11.

ality trait.[66] This is an important distinction, as personality traits are generally fixed while evidence suggests that an individual can increase their level of hardiness.[67]

Hardiness is a unitary construct defined by the three facets of commitment, control, and challenge.[68] *Commitment* refers to the sense of purpose and meaning that one relates to their life, as well as how actively they participate in life's events. *Control* refers to the belief that an individual can exert great influence on their life events and surrounding environment. *Challenge* refers to the belief that change is a normal part of life and an opportunity for growth rather than a threat or something to fear.[69] Individuals who are high in hardiness have a strong sense of commitment to life and work, a high sense of control over their life and environment, and the perception that change and challenge are worthwhile learning experiences.[70] High-hardy individuals also favor problem solving and proactive coping strategies when confronted with stressful stimuli.[71]

The existing literature consistently finds hardiness to be significantly and positively related to individual resiliency and military leader performance. Studies across diverse civilian and military occupational groups have found hardiness to moderate the impact of stress, including U.S. soldiers exposed to combat during the Gulf War, U.S. Army casualty assistance workers, and former Israeli prisoners of war.[72] The most significant research linking hardiness to military leadership performance has been conducted at the U.S. Military Academy at West Point. Numerous studies involving cadets found hardiness to be a strong predictor of retention, graduation, and leader performance for both the academic year and summer training periods.[73] One study's findings correlated effective leadership to the facets of commitment, control, and challenge, describing the "generally effective leader as competent and committed, confident in [their] ability to manage events and influence outcomes, and conscientious, persistent, and savvy in the face of complex and changing conditions."[74] Overall, hardiness was found to have a broad application for effective leadership in various situational contexts.[75]

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[66] Bartone, Kelly, and Matthews, "Psychological Hardiness Predicts Adaptability in Military Leaders," 202.

[67] Bartone, Barry, and Armstrong, "To Build Resilience," 4.

[68] Kobasa, "Stressful Live Events, Personality, and Health," 1–11.

[69] Clinton E. Lambert Jr. and Vickie A. Lambert, "Psychological Hardiness: State of the Science," *Holistic Nursing Practice* 13, no. 3 (April 1999): 11–19, https://doi.org/10.1097/00004650-199904000-00004.

[70] Bartone, "New Wine in Old Bottles," 135.

[71] Bartone, Barry, and Armstrong, "To Build Resilience," 3.

[72] Bartone, "Leader Influences on Resilience and Adaptability in Organizations," 77–78; Paul T. Bartone et al., "The Impact of a Military Air Disaster on the Health of Assistance Workers: A Prospective Study," *Journal of Nervous and Mental Disease* 177, no. 6 (June 1989): 317–28, https://doi.org/10.1097/00005053-198906000-00001; and Mark Waysman, Joseph Schwarzwald, and Zahava Solomon, "Hardiness: An Examination of Its Relationship with Positive and Negative Long Term Changes following Trauma," *Journal of Traumatic Stress* 14, no. 3 (July 2001): 531–48, https://doi.org/10.1023/A:1011112723704.

[73] Bartone, Snook, and Tremble, "Cognitive and Personality Predictors of Leader Performance in West Point Cadets," 498–521; Bartone, "Leader Influences on Resilience and Adaptability in Organizations," 78; and Bartone, Kelly, and Matthews, "Psychological Hardiness Predicts Adaptability in Military Leaders," 205.

[74] Bartone, Snook, and Tremble, "Cognitive and Personality Predictors of Leader Performance in West Point Cadets," 513.

[75] Bartone, Snook, and Tremble, "Cognitive and Personality Predictors of Leader Performance in West Point Cadets," 513.

Researchers have discovered similar support for hardiness while studying cadets at the Royal Norwegian Naval Academy and candidates training for U.S. Army Special Forces selection. One study found hardiness to increase the cohesion of small units and the performance of cadets during an intensive two-week training exercise.[76] A second study found that hardiness was positively correlated to both cadet leader performance and transformational leadership during stressful training, which emphasized autonomy, initiative, independent decision making, and flexibility.[77] In a 2008 study of U.S. Army Special Forces candidates, high-hardy individuals were found to be significantly more likely to complete a rigorous four-week selection and assessment course. Researchers noted that the high-hardy individual seemed well-suited to working in small, relatively isolated teams and reacting to challenges in uncertain environments.[78]

Research also supports the positive influence of hardiness on the adaptive performance of junior military officers in real-world operations. One study evaluated hardiness as measured at entry to the U.S. Military Academy against the results of an adaptability survey taken seven years later, following graduation and three years of active service. It found that hardiness, and in particular the facets of control and commitment, are significant predictors of the adaptability of junior officers operating in the real-world environment. In explanation, the authors suggest that individuals with a stronger sense of commitment are better able to build on experience and have more confidence in their problem-solving skills, while those with high control are more likely to effectively balance routine and initiative to adapt to a changing situation.[79]

In addition to extensive findings linking hardiness to resilience and performance under stress, there is evidence that a leader can transfer hardiness to their peers and subordinates. The underlying mechanism is not fully understood, but a key feature of individual hardiness involves how people interpret events around them or their own actions. In groups or organizations, a leader's policies and actions can influence how subordinates interpret and make sense of events.[80] In a 2006 article, Bartone described his "hardy leader influence" hypothesis by writing that "leaders who are high in hardiness themselves exert influence on their subordinates to interpret stressful experiences in ways characteristic of high-hardy persons."[81] A leader high in hardiness will tend to interpret experiences as interesting and worth engaging in, something that they can exert control over, and an opportunity for growth

[76] Paul T. Bartone et al., "Factors Influencing Small-Unit Cohesion in Norwegian Navy Officer Cadets," *Military Psychology* 14, no. 1 (January 2002): 8–9, https://doi.org/10.1207/S15327876MP1401_01.
[77] Eid et al., "Growing Transformational Leaders," 16–19.
[78] Bartone et al., "Psychological Hardiness Predicts Success in U.S. Army Special Forces Candidates," 78–81.
[79] Bartone, Kelly, and Matthews, "Psychological Hardiness Predicts Adaptability in Military Leaders," 200–10.
[80] Bartone, "Leader Influences on Resilience and Adaptability in Organizations," 79.
[81] Paul T. Bartone, "Resilience under Military Operational Stress: Can Leaders Influence Hardiness?," *Military Psychology* 18, suppl. (2006): 139, https://doi.org/10.1207/s15327876mp1803s_10.

and learning. Through personal example, policies, and communication, the leader influences the entire organization to interpret experiences in the same high-hardy way, creating a shared understanding and promoting shared values. This influence is most pronounced under high-stress conditions and when subordinates admire their leader.[82]

Multiple studies have supported the idea that high-hardy leaders can influence subordinates through policies, interaction, and training programs. For example, one 1997 project found that nurse managers who actively attempted to build hardiness in subordinates produced higher job satisfaction, productivity, and organizational commitment, as well as fewer stress-related problems.[83] A second study in 2007 found that focused and quality training had a significant effect on the physical and psychological performance of security officers under stress. It concluded that security forces can be trained to effectively deal with stressful situations through a graduated training program emphasizing assessment and feedback.[84]

Bartone offers several recommendations for leaders to increase the hardiness of an organization. First and foremost, leaders should set a clear personal example and serve as a role model for the hardy approach. The hardy leader should reflect a self-confident and calm demeanor under stress, accept responsibility for mistakes without blaming others, and demonstrate interest in learning and problem solving. Second, leaders must facilitate positive group interpretation of experience, tasks, missions, mistakes, and failures through informal daily interactions and formal processes such as after-action reviews. Leaders should set high but achievable standards, encourage subordinates to accept responsibility for their mistakes, and treat shortfalls as opportunities for growth and learning. Third, leaders must provide meaningful and challenging group tasks that are adequately resourced. Failure should be treated as an opportunity to identify what went wrong and how to improve rather than a cause for punishment or humiliation. Conversely, success should be recognized, awarded, and magnified. Assigned tasks should become increasingly difficult as groups become more proficient and confident. Fourth, leaders must always communicate a high level of respect and commitment to subordinates through respectful communications, supportive actions and policies, and promotion of personal and professional development opportunities. Finally, leaders should build cohesion across the organization through social events and offsite

[82] Bartone, "Social and Organizational Influences on Psychological Hardiness," 7–8; and Bartone, "Leader Influences on Resilience and Adaptability in Organizations," 79.

[83] D. K. McNeese-Smith, "The Influence of Manager Behavior on Nurses' Job Satisfaction, Productivity, and Commitment," *Journal of Nursing Administration* 27, no. 9 (September 1997): 47–55, https://doi.org/10.1097/00005110-199709000-00011.

[84] Sima Zach, Shula Raviv, and Reuven Inbar, "The Benefits of a Graduated Training Program for Security Officers on Physical Performance in Stressful Situations," *International Journal of Stress Management* 14, no. 4 (2007): 350–69, https://doi.org/10.1037/1072-5245.14.4.350.

Table 1. Leader actions to foster mental hardiness: commitment

How to build commitment	How to diminish commitment
Support workers' attempts to offer their own ideas and use their skills and talents to accomplish tasks.	Do not accept feedback or input from subordinates.
Give recognition, awards, and praise for accomplishments.	Criticize and denigrate worker initiative.
Conduct teamwork and cohesion-building activities.	Be self-absorbed and self-promoting.
Provide meaningful tasks where progress is visible.	Keep apart and take special privileges for yourself.
Support individual professional development, such as education and learning opportunities.	Be unfair or stingy with rewards, benefits, and recognition.
Be fair; do not show favoritism.	Avoid direct interaction with workers.
Be visible and spend time with workers.	Do not provide workers with information about the mission, goals, or purpose of the organization.
Share hardships with workers.	Show favoritism.
Provide information about what you are doing and why.	Show no interest in workers' aspirations.

Table 2. Leader actions to foster mental hardiness: control

How to build control	How to diminish control
Provide tasks that are challenging but within employees' capabilities to achieve.	Assign too many tasks for the time available.
Establish graduated training and production programs.	Assign tasks that are too difficult for workers' skill levels.
Provide resources and time needed to accomplish goals.	Criticize and punish workers for failure.
Set achievable standards.	Do not listen to feedback.
Build on success; seek short-term wins to build on.	Do not provide needed resources.

Table 3. Leader actions to foster mental hardiness: challenge

How to build challenge	How to diminish challenge
Always emphasize the value of change for learning.	Avoid change or surprise at all cost.
Incorporate surprises and variation into schedules.	Never take a risk.
Be willing to change the plan to meet changing circumstances.	Restrict innovation and experimentation by requiring rules and permission for everything.
Treat failures as chances to learn.	Never change the plan or schedule.
	Blame others for own mistakes or failures.
	Denigrate others for failure.

team activities. The above tables provide more of Bartone's specific recommendations for each hardiness facet.[85]

[85] Bartone, "Leader Influences on Resilience and Adaptability in Organizations," 82–85.

Summary

In summary, the existing academic and professional literature highlights a gap between the generalized traits and behaviors of Gen Z members with those that the Marine Corps desires. Gen Z, which comprises the current and future population of the Marine Corps, is on average less independent, less capable of problem solving, and more mentally fragile than previous generations. Simultaneously, the Marine Corps' future operational concepts require individuals and junior leaders to act more independently, solve more complex problems, and accept more responsibility than ever before. The concept of hardiness may help bridge this gap. Hardiness is found to improve performance and resilience under stress, including military leaders in both training and real-world scenarios. Evidence suggests that individual hardiness can be increased through training and experience, and that a high-hardy leader can increase the hardiness of an entire organization through interaction and policy.

Recommendations

A Marine infantry battalion commander who actively facilitates hardiness through their personal example, policies, and communication with subordinates can increase the hardiness of their battalion and, as a result, develop small unit leaders and individual Marines who are more independent, adaptable, and resilient under stress. This thesis correlates increased independence to more autonomous small unit leaders capable of making mature and confident decisions; increased adaptability to improved problem solving and critical thinking during training and operations; and increased resilience to better mental health and stress reaction. This results in individual Marines and small units who are less in need of professional mental health services, more operationally focused, and more determined under adversity. This section is arranged to provide recommendations for the battalion commander's personal example, policies, and communication. While many of the recommendations are not new or unique, the commander's specific emphasis on hardiness is a novel approach to allocate resources, build culture, and develop Gen Z Marines, soldiers, and sailors. The intent is not necessarily to make radical changes to existing doctrine, standards, or best practices, but rather to use hardy leader influence to set a command climate focused on independence, adaptability, and resilience at the individual and small unit levels.

Personal Example

The first and arguably most important pathway for a commander to influence their battalion is through personal example. As recommended by Bartone, the commander should provide a strong role model for the hardy approach by remaining calm and self-confident under stress, accepting responsibility without blaming

others, and demonstrating enjoyment in variety, learning, and problem solving.[86] They should reflect a strong sense of commitment to life and work in general and to the battalion's people and mission in particular; possess a high sense of personal control over life, the environment, and the battalion's training and readiness; and interpret new experiences as worthwhile challenges and opportunities for growth.

The commander should also demonstrate trust in subordinates, comfort with uncertainty, and high tolerance for prudent risk. They should extend trust and properly employ mission command during all activities. Importantly, this will require the commander to accept risk in baseline proficiency and standardization to develop more independent and adaptable small units. They should model flexibility in thought and action and be willing to change a plan based on evolving circumstances or to capitalize on subordinate initiative. Perhaps most importantly, the commander should resist enacting policies and procedures to the lowest common denominator. As expressed by one former commander, it is counterproductive to treat the entire unit as if it is the bottom 2 percent of its members.[87]

To be an effective role model, the commander must be present, approachable, and interact openly with subordinates. They must balance interaction and supervision to avoid micromanagement and allow autonomy. These actions would include offering insight and advice to subordinates without solving their problems for them. A commander must also be visible during periods of adversity and actively share hardship with their subordinates.[88]

The commander should set and hold high but achievable standards of performance and discipline. While the assignment of challenging group tasks is inherent within any military organization, the commander will influence how these tasks and their results are interpreted throughout the battalion. To increase hardiness, the commander should seek out challenge, expecting subordinates to overcome adversity and remain committed to the task through completion. They should reward success and treat failure as an opportunity for growth and learning.[89] Rewards can include formal awards, informal awards such as a battalion trophy, recognition at a battalion formation and/or via social media, letters to a parent or spouse, or time off from work. In keeping with Gen Z's preference for consistent rather than delayed feedback and recognition, the commander should bestow rewards as soon as feasible. This predilection indicates the transition to more emphasis on impact over end-of-tour awards, especially for more junior Marines and those new to the unit. Instead, the commander should remain positive when subordinates fail to fully meet challenging standards. They should insist that the group identify what led to failure and implement steps to improve for the future, always modeling failure

[86] Bartone, "Leader Influences on Resilience and Adaptability in Organizations," 82, 85.
[87] Lecture, Command and Staff College, Marine Corps University, Quantico, VA, 9 October 2019.
[88] Bartone, "Leader Influences on Resilience and Adaptability in Organizations," 83.
[89] Bartone, "Leader Influences on Resilience and Adaptability in Organizations," 82–85.

as an opportunity for growth and as essential to the process of getting better. However, the commander must draw a distinction for failure related to ethics, effort, or negligence. Per the Commandant's explicit guidance, commanders must uphold high standards, separate those who adversely impact readiness, and "energetically" separate those engaged in "destructive behaviors."[90]

Policies

The commander's policies are the most tangible means to transfer hardiness throughout the battalion. As recommended by Bartone, policies should promote subordinate initiative, professional development, and group tasks that are properly resourced and challenging but achievable. Training programs should be graduated and progress via the "crawl-walk-run" methodology. The commander should implement policies that reward success, learn from failure, and actively build on initial and short-term wins.[91] While Gen Z members recognize that they are lacking in professional skills, they are eager to contribute and desire education and development.[92] The battalion commander can implement and supervise policies related to field training, professional military education and development, and garrison routine that encourage hardiness, build proficiency, and reduce Gen Z's skills gap.

The primary means to developing more operationally independent, adaptable, and resilient individual Marines and small units is through field training. Policies that encourage Gen Z members to use their own skills and talents to achieve assigned goals will increase commitment and, as initial success is built on, a sense of control.[93] Field training focused on independence at lower levels will lead to more autonomous small units with more mature and confident small unit leaders who are better able to conduct decentralized operations. For example, squad leaders can, following initial training and with minimal assistance, design, supervise, and evaluate training events through the squad level. First, the battalion operations section integrates the battalion's staff sections and company leadership to develop a "train-the-trainer" course that focuses on the systems approach to training and the Marine Corps *Infantry Training and Readiness Manual* (hereafter T&R manual).[94] This course should include classroom, practical application, and field training portions that progress through preparation, execution, assessment, and feedback. Following completion of the course, all platoon commanders, platoon sergeants, and squad leaders are certified to design, supervise, and evaluate training events. These personnel should also be certified to serve as part of an exercise control group. Fol-

[90] Berger, *Commandant's Planning Guidance*, 6–7.
[91] Bartone, "Leader Influences on Resilience and Adaptability in Organizations," 83–85.
[92] Singh, "Challenges and Issues of Generation Z," 60; and Tulgan, "Meet Generation Z."
[93] Bartone, "Leader Influences on Resilience and Adaptability in Organizations," 83–84.
[94] *Infantry Training and Readiness Manual* (Washington, DC: Headquarters Marine Corps, 2020).

lowing this initial centralized investment, squad leaders are granted maximum autonomy and made responsible for the training of their unit.

Starting with individual events and progressing through multiday field exercises, squad leaders develop training plans to achieve assigned objectives. Initially, these objectives can be more concrete, such as a set of collective tasks from the T&R manual. However, objectives should purposefully become more abstract as squad leaders gain proficiency, forcing them to think critically about how to be successful. Squad training plans should be based on appropriate T&R events that the squad leader has organized and prioritized. Importantly, the squad leader should be actively encouraged to modify T&R events based on resource shortfalls, adaptation to expected adversary tactics, or any other good reason. This focus will encourage critical thought and creativity rather than a prescriptive "checklist" mentality and facilitate squad leader coordination for logistic and intelligence support. Squad leaders should also be encouraged to identify important skills not included in the T&R manual and develop the tasks, conditions, and standards to achieve proficiency. This graduated progression should continue to challenge the squad leader and their squad members while increasing their sense of control and commitment.[95]

Moving beyond conceptual design, squad leaders should participate in reconnaissance for training ranges and exercises, identify and request for shortfalls, and supervise any physical setup. For many live-fire events, this action will require coordination with the designated range safety officer and the officer in charge. As training is conducted, squad leaders and other small unit leaders should evaluate and certify proficiency, deciding who has achieved standard and who requires remediation. The remediation plan should be detailed, resourced, and integrated into the timeline. Ultimately, the squad leader will certify to their platoon commander that their Marines have achieved standard or identify who failed to do so following remediation. Making the squad leader responsible and accountable for their squad's training will reinforce independence and encourage increased hardiness among the battalion's Gen Z population.[96]

A second and more simplified example is to integrate independent small unit movements into field training. Whether moving to the field from garrison or moving from one training area to another, the commander should task squads or fire teams to meet at a designated location and time. Each element will plan their route, conduct time-space analysis, and make tactical movement. Platoon or company leaders will establish the most permissive boundaries possible, deconflict movements as required to keep independence, and establish safety procedures. Fire team leaders, especially, will be afforded an all-too-uncommon opportunity for autonomy and independence. This simple modification can facilitate increased hardiness

[95] Bartone, "Leader Influences on Resilience and Adaptability in Organizations," 82–85.
[96] Bartone, "Leader Influences on Resilience and Adaptability in Organizations," 82–85.

among Gen Z Marines while simultaneously developing risk mitigation and tolerance among platoon and company leaders.

A third example is to mandate multiday, overnight platoon field exercises. This practice will facilitate autonomous platoon-level planning, coordination, and supervision in a field training environment. Squad-level training as described above can be nested into these platoon field exercises. The parent company and battalion should treat these exercises as a rehearsal and support in the same manner that they expect to support real-world operations. Anticipated real-world conditions, such as a need for digital or other long-range communication and burst transmissions, should be applied even if artificial. Overall, these field exercises should develop proficiency in independent operations throughout all levels of the battalion. They should also increase hardiness by providing challenging group tasks and facilitating teamwork and cohesion at different echelons.[97]

The battalion can also conduct field training to improve adaptability, creating individual Marines and small unit leaders who are better able to think critically and solve problems. To do so, training should provide Gen Z members novel situations and stimuli that maximize opportunities for decision making and initiative. This constant variation will encourage Marines to adapt their plans to changing circumstances, reinforcing a key component of the hardiness challenge facet.[98] Force-on-force training is an excellent example and can be employed efficiently at multiple echelons. Lane training events, which often emplace an opposing force at a designated location with specific instructions, can instead task "red" and "blue" teams within designated boundaries. This change will result in a more realistic opponent and a competitive model that facilitates increased analytic rigor. Each unit receives a task and purpose that will bring them into contact, conducts planning, and briefs the lane supervisor on their plan. The lane supervisor makes only minimal and necessary alterations to any plan—for example, they may shift a route to ensure the teams come into contact. As an alternative to increase realism, the lane supervisor may not desire to artificially ensure contact. While this may disrupt the original training objective, a unit may learn that their scouting and reconnaissance efforts are inadequate or ineffective to gain contact with an adversary. This lane training model allows for each training unit to participate as the red and blue team, to conduct multiple runs with different stimuli, and to adapt tactics against a competitive adversary who is also adapting.

The battalion should also incorporate free play, force-on-force training into battalion and company field exercises. In one example, the battalion can supervise a rotation in which one company provides the exercise control group while two companies compete against each other. Companies can supervise platoon-against-

[97] Bartone, "Leader Influences on Resilience and Adaptability in Organizations," 83–84.
[98] Bartone, "Leader Influences on Resilience and Adaptability in Organizations," 85.

platoon force-on-force training in the same manner. These exercises should be minimally scripted and controlled to emphasize realism, creative decision making, and reconnaissance and counter-reconnaissance.

Live-fire events can also be tailored to emphasize individual and small unit decision making and adaptability. Ideally, a live-fire and movement range can be set up to allow for multiple axes of approach, providing flexibility and forcing decisions based on terrain and the disposition of the simulated enemy. This is certainly not possible on every range and may require the unit to develop its own surface danger zones, which can also be leveraged into a training opportunity led by the battalion gunner. Whether this is possible or not, an exercise control group can "paint effects" to the training unit to force decisions, problem solving, and adaptation during live-fire training. The Marine Corps' Tactical Training Exercise Control Group has been using this model for years, and most officers and staff noncommissioned officers will already be familiar with it.

To encourage learning and adaptation, evaluators should facilitate in-stride debriefs and after-action reviews during the training evolution whenever possible. This system will enable more rapid improvement and meets the preference of Gen Z for consistent, near-real-time feedback.[99] The debrief should be externally focused toward the environment, adversary, or any other external variable and should feed into the intelligence cycle, while the after action review should be internally focused on performance. Certain events, such as live-fire ranges and lane training, support a debrief and/or after-action review immediately at the conclusion of each run. Other events, such as longer-duration force-on-force exercises, will be more dependent on situation. Regardless, the evaluator's primary goal should be to facilitate discussion and pull input from participants. They should ask open questions, encourage dialogue, and avoid dominating the conversation. The evaluator's input should be integrated into the discussion or saved until the end. Eventually, small unit leaders should run their own in-stride debriefs and after action reviews based on this model.

At the conclusion of every training exercise, the battalion should conduct a more formal process of debrief and after action review. These should be in-person events with broad participation, conducted as soon as feasible following the conclusion of the exercise. One potential model for formal debrief and after action review attendance includes all participants for the squad and platoon levels, squad leaders and higher for the company level, and platoon sergeants/section chiefs and higher for the battalion level. These events should be interactive and facilitate dialogue similar to the in-stride model described above. The dialogue should be recorded by a designated note taker and ultimately produce a written document for future refer-

[99] Koulopoulos and Keldsen, *The Gen Z Effect*; Brack and Kelly, *Maximizing Millennials in Workplace*, 1–3; "Generation Z: Taking Action"; Bridges, "5 Ways the Workplace Needs to Change to Get the Most Out of Generation Z"; Schwabel, "66 of the Most Interesting Facts about Generation Z"; and Tulgan, "Meet Generation Z."

ence, vertical submission, and horizontal distribution. These in-person events are a prime opportunity for the battalion commander to model hardiness and encourage a shared hardy interpretation. They should encourage all personnel to accept responsibility, treat shortcomings as an opportunity to learn, and frame challenging training as a means for growth.[100] Especially when interacting with younger Marines, the commander should explicitly frame criticism as normal, constructive, and essential to the process of improvement. As recommended by Twenge, the commander can simply state "I want to help you succeed" prior to offering any critical feedback.[101]

The commander can also implement policies related to innovation and experimentation, professional education and development, and garrison routine, which encourage independence, adaptation, and resilience. First, they can support innovative ideas from subordinates and/or select focused areas of experimentation that contribute to future operating concepts and anticipated mission sets. As an example, 2d Battalion, 5th Marines, experimented with techniques for prolonged field casualty care throughout an entire deployment cycle from 2017 to 2019. When approached by the battalion surgeon, the battalion commander recognized the merits of their ideas and supported their initiative with funding, training resources and opportunities, and broad integration into battalion training exercises. This effort resulted in the creation of an emergency whole blood program, which was adopted as a best practice for casualty response by the 1st and 2d Marine Divisions.

Second, the commander's policies should support the professional development and education of subordinate leaders.[102] The battalion should aggressively send Marines to formal schools and advanced training programs, prioritizing career progression and long-term development over short-term unit goals. When a leader departs for school, the next senior subordinate who replaces them should be granted maximum autonomy and responsibility. The commander can also develop a robust education and development program within the battalion that is focused on tactical decision games, decision-forcing case studies, battle studies and staff rides, and competitive wargames. They should avoid definitively-right-or-wrong solutions or overly prescriptive lessons learned and instead focus on discussion. Gen Z leaders should be routinely forced to make and explain decisions with incomplete information during these events. Competitive wargames should continue for several turns, allowing teams to adapt against an adversary who is also adapting. Finally, a commander can implement policies that result in less regimented and more decentralized garrison routines. This will reinforce training and education efforts as well as meet the Commandant's intent for garrison activities.[103] As one simplified example,

[100] Bartone, "Leader Influences on Resilience and Adaptability in Organizations," 82–85.
[101] Twenge, *iGen*, 311–12.
[102] Bartone, "Leader Influences on Resilience and Adaptability in Organizations," 83.
[103] Berger, *Commandant's Planning Guidance*, 16.

squad leaders can develop daily or weekly schedules to accomplish objectives that are assigned in advance.

Communication

The commander can also increase hardiness through their communications with the battalion. Gen Z prefers frequent feedback and dialogue, honest and transparent leaders, and physical and emotional safety.[104] The commander should communicate frequently with their subordinates, using all available mediums but emphasizing in-person interaction. They should provide information about missions and goals, as well as the reasons or purposes behind them.[105] They should openly discuss goals such as increasing independence, adaptability, and resilience within the battalion; emphasize key parts of the process such as meeting challenges, overcoming obstacles, thinking critically, solving problems, and learning from mistakes; and provide feedback on progress. Most importantly, the commander should be authentic in their communication, to include both his actions and policies. Mutual trust may be the single most important variable when leading members of Gen Z, and the commander should cultivate this as their first priority. The issue of safety is problematic, as the training exercises, real-world operations, and even daily duties of an infantry battalion are inherently dangerous. The commander should not encourage risk aversion to placate this preference. Instead, they should openly communicate regarding the analysis, management, and acceptance of risk as an essential part of military operations. They should also explicitly advocate for proficiency, discipline, and professionalism as the primary tools for risk mitigation. At the same time, the commander should communicate intolerance for illegal and offensive behaviors, negligence, or lack of effort.

The commander should employ multiple methods to provide consistent, interactive feedback to subordinates. In addition to after-action reviews, the commander should engage in informal daily interactions and implement a robust counseling program. They should emphasize their commitment to helping Gen Z Marines improve and the value of constructive criticism in this process. As a method to further empower small unit leaders, the commander can task the battalion's squad leaders to develop standardized or semistandardized formats and procedures for the counseling program. This should explicitly require coordination and mentorship from senior enlisted leaders and officers. Counseling sessions should maximize dialogue and discussion, allow for subordinate feedback, and summarize and record key points. Performance feedback should be focused on one or two specific items.[106] While formal and documented counseling sessions are important, the primary goal should be to develop a culture of consistent feedback and dialogue throughout the

[104] "Meet Gen Z"; Schwabel, "66 of the Most Interesting Facts about Generation Z"; and Twenge, *iGen*, 311–12.
[105] Bartone, "Leader Influences on Resilience and Adaptability in Organizations," 84.
[106] Twenge, *iGen*, 311.

battalion which also includes informal counseling, debriefs, and after action reviews.

Finally, the commander should develop trusted feedback networks throughout the battalion. They should encourage subordinates to provide performance feedback during formal or informal counseling sessions. They may also wish to explicitly task certain individuals, such as the battalion sergeant major, executive officer, operations officer or chief, or gunner, to communicate when they disagree with a policy or decision. The commander should implement frequent councils to meet with junior officers, staff noncommissioned officers, and noncommissioned officers. While the mechanisms are important and necessary, it is more important that the commander receive feedback constructively and, when appropriate, act upon it. By accepting feedback and being willing to change based upon constructive subordinate input, the commander will encourage all three facets of hardiness in the battalion.[107]

Conclusion

For the Marine Corps to embrace greater decentralization and realize future operating concepts, it will need to develop individual Marines and small unit leaders who excel in complex, semiautonomous operations. These Marines will come from a generation less capable of thinking or acting independently, solving problems, or handling stress. The hardy leader influence process is a promising approach to help bridge the gap between the values and behaviors desired by the Marine Corps and those demonstrated by Gen Z. An infantry battalion commander who actively facilitates hardiness through their personal example, policies, and communication with subordinates can increase the hardiness of their battalion and, as a result, develop small unit leaders and individual Marines who are more independent, adaptable, and resilient under stress.

Personal example is arguably the most important pathway for the commander to influence their battalion toward hardiness. They should model the hardy approach by remaining calm and confident under stress; reflecting a strong commitment to the battalions' personnel and mission; exerting control over life, the environment, and the battalion's training and readiness; and interpreting challenge as a positive opportunity for growth and development. The commander should also demonstrate trust in their subordinates, comfort with uncertainty, and high tolerance for prudent risk, employing mission command in all activities and accepting deviation to promote independence and adaptability. They should set high but achievable goals, expecting subordinates to overcome adversity and remain committed to the task through completion.[108] The commander should reward success and treat fail-

[107] Bartone, "Leader Influences on Resilience and Adaptability in Organizations," 82, 85.
[108] Bartone, "Leader Influences on Resilience and Adaptability in Organizations," 82–85.

ure as a learning opportunity and essential to the process of getting better.[109] They should also draw a clear distinction for failures of ethics, effort, or negligence.[110]

The commander's policies related to field training, professional military education and development, and garrison routine are the most tangible means to encourage hardiness, build proficiency, and reduce the Gen Z skills gap. Field training should encourage independence, adaptability, and resilience at the small unit level and throughout the battalion. For example, squad leaders should be properly trained and certified to design, supervise, and evaluate training events, then granted maximum autonomy and responsibility for training through the squad level. They should develop training plans to achieve increasingly abstract objectives, be encouraged to use but appropriately modify the T&R manual, and made responsible to evaluate, remediate, and certify squad members as trained to standard. The battalion should also integrate independent small unit movements into field training and conduct multiday, overnight platoon field exercises as rehearsals for real-world operations. Allowing Gen Z leaders to use their own skills and talents to achieve goals, while holding them responsible and gradually escalating difficulty, will increase commitment, sense of control, and positive interpretation of challenge.[111]

To improve adaptability, critical thinking, and problem-solving skills, field training should provide novel situations and stimuli that maximize opportunities for decision making and initiative. Force-on-force training should be integrated into lane training events and larger free-play exercises with an emphasis on realism, creative decision making, and reconnaissance and counter-reconnaissance. Live-fire and movement ranges should, if possible, be set up to allow for multiple axes of approach, providing flexibility and forcing decisions based on terrain and the disposition of the simulated enemy. An exercise control group should also paint effects during live-fire events to force decisions, problem solving, and adaptation. Evaluators and small unit leaders should maximize interactive in-stride debriefs and after-action reviews to meet Gen Z's preference for consistent, near-real-time feedback.[112] At the conclusion of training exercises, the battalion should conduct a more formal process of debrief and after-action review that is in-person, interactive, and based on dialogue, which will ultimately produce a written document for future reference, vertical submission, and horizontal distribution. This process is a prime opportunity for the commander to model hardiness and encourage a shared interpretation.

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[109] Berger, *Commandant's Planning Guidance*, 6–7.

[110] Bartone, "Leader Influences on Resilience and Adaptability in Organizations," 82–85.

[111] Koulopoulos and Keldsen, *The Gen Z Effect*; Brack and Kelly, *Maximizing Millennials in Workplace*, 1–3; "Generation Z: Taking Action"; Bridges, "5 Ways the Workplace Needs to Change to Get the Most Out of Generation Z"; Schwabel, "66 of the Most Interesting Facts about Generation Z"; and Tulgan, "Meet Generation Z."

[112] Bartone, "Leader Influences on Resilience and Adaptability in Organizations," 85.

In addition to field training, the commander should adopt innovation and experimentation within the battalion, such as with the emergency whole blood program. The battalion should, as policy, aggressively send Marines to formal and advanced schools, prioritizing career progression and long-term development over short-term battalion goals. The battalion should develop a robust education and development program focused on tactical decision games, decision-forcing cases, battle studies and staff rides, and competitive wargames that avoid overly prescriptive solutions or lessons learned, force Gen Z leaders to make and explain decisions based on incomplete information, and force adaptation against an adversary who is also adapting. Finally, the commander can implement policies to decentralize garrison routines, such as allowing squad leaders to develop daily or weekly schedules to achieve assigned tasks. Constant variation will encourage Gen Z Marines to adapt their plans to evolving circumstances, reinforcing a key component of the hardiness challenge facet.[113]

The commander can also transfer hardiness through frequent, honest, and transparent communication. They should prioritize in-person communication and provide information about the battalion's mission, goals, and purpose.[114] They should be authentic and cultivate mutual trust as their highest priority. The commander should avoid risk aversion and instead communicate openly regarding the analysis, management, and acceptance of risk as an essential part of military operations. They should explicitly advocate for proficiency, discipline, and professionalism as the primary tools for risk mitigation. The commander should also provide consistent, interactive, and focused feedback to subordinates.[115] In addition to after action reviews, they should engage in daily informal interactions and implement a robust counseling program, developed by subordinate leaders, that maximize dialogue, allow for subordinate feedback, and record one or two key points. Ultimately, the goal should be to develop a culture of consistent feedback and dialogue throughout the battalion that consists of formal and informal counseling, debriefs, and after-action reviews. Finally, the commander should develop trusted feedback networks through relationships with key subordinate leaders and frequent meetings with junior officers, staff noncommissioned officers, and noncommissioned officers. Most importantly, the commander should receive feedback constructively and, when appropriate, act on it to encourage hardiness in the battalion.

[113] Bartone, "Leader Influences on Resilience and Adaptability in Organizations," 84.
[114] "Meet Gen Z"; Schwabel, "66 of the Most Interesting Facts about Generation Z"; and Twenge, *iGen*, 311–12.
[115] Bartone, "Leader Influences on Resilience and Adaptability in Organizations," 82–85.

Killing Our Way out of a Problem

Ending Lethal Unmanned Aerial Vehicle Strikes outside Zones of Active Hostilities

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Since 2002, the U.S. government has used unmanned aerial vehicles (UAVs) to conduct targeted killings of suspected terrorists and militants both inside and outside of combat zones. While those conducted inside zones of active hostilities have served their intended purpose of efficiently engaging targets while significantly reducing the risk of friendly casualties, those conducted outside of these zones have not stopped terrorism and may in fact create more anti-American militancy. These attacks contribute to broader anti-American sentiment, particularly in Muslim nations such as Pakistan and Yemen. These killings should therefore be discontinued, both as a prudent policy decision and to serve as an example to other nations, many of which have UAVs but appear to have adopted a "wait and see" approach prior to using them for their own lethal strikes. By joining the nations that do not engage in these strikes, the United States may prevent other nations from conducting lethal UAV strikes in the future.

This chapter begins with a discussion of the manner in which lethal UAV strikes are employed. Next, the legality of armed UAV use is discussed. Third, the resultant negative worldwide public opinion, specifically in Pakistan and Yemen, is examined. Fourth, the response of militant groups to UAV use is analyzed. It then transitions to the potential for proliferation of these weapons systems. Finally, alternatives to lethal UAV strikes are explored.

UAV Killing Methods and Statistics

The United States employs two types of targeted killings by UAVs: *personality strikes*, "in which the identities of targeted individuals are known," and *signature strikes*, which "are not directed against specific individuals identified as a threat to U.S. national security, but rather are based on a set of observed actions and indicators

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understood to be significant enough to warrant lethal action."[2] Whereas personality strikes target known high-level members of al-Qaeda or the Taliban, signature strikes rely solely on observed behavior of unknown and unidentified targets.[3] Though the exact percentage of each type of strike is unknown, estimates indicate that as many as 50 percent of U.S. strikes may be signature strikes.[4] Frequency of use notwithstanding, it is easier to deploy lethal UAV signature strikes, since it is easier to target anonymous individuals exhibiting suspect behavior than it is to make a positive identification of a specifically targeted person.[5]

The use of signature strikes has not been without criticism. U.S. president George W. Bush first authorized their use in 2008, but their continued use during the presidency of his successor, Barack H. Obama, led to criticism that the U.S. executive branch saw all military-age males in certain areas as potential combatants.[6] This also lent itself to the view that the Obama administration deemed all casualties guilty until posthumously proved innocent.[7] The lower standard for signature strikes, as opposed to the positive identification required for personality strikes, leads critics to contend that seemingly innocuous behavior can be mistaken for militant activity. This increases the risk of incorrect targeting and civilian harm.

The United States has used these strikes to kill militants inside designated combat zones not only in Iraq, Afghanistan, and Syria but also in Pakistan, Yemen, Somalia, and the Philippines, where UAV strikes have been used without open acknowledgment.[8] The deployment of UAV strikes in these areas blurs the distinction between combat and noncombat zones. While the law of armed conflict (LOAC) requires due diligence to protect against civilian casualties, "collateral damage" is legally accepted as an unfortunate but sometimes inevitable occurrence. The legality of killing suspected militants, much less civilians, outside areas of declared hostility is much less settled.[9]

The U.S. government released fact sheets and statistics for the number of targeted killings in 20 January 2009 – 31 December 2015 and 1 January –31 December 2016. Although this is a positive step, criticism regarding insufficient transparency and accountability to satisfy the argument over the lawfulness of the program remains.[10] Human rights groups continue to criticize the targeted killing program and

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[2] Sarah Holewinski, "Just Trust Us: The Need to Know More about the Civilian Impact of US Drone Strikes," in *Drone Wars: Transforming Conflict, Law, and Policy*, ed. Peter L. Bergen and Daniel Rothenberg (New York: Cambridge University Press, 2015), 45, https://doi.org/10.1017/CBO9781139198325.005.

[3] John Kaag and Sarah Kreps, *Drone Warfare* (Cambridge, UK: Polity Press, 2016), 131.

[4] Kaag and Kreps, *Drone Warfare*, 32; and Medea Benjamin, *Drone Warfare: Killing by Remote Control* (New York: Verso Books, 2013), 131.

[5] James Joyner, "A Drone Strike on Democracy," *New York Daily News*, 6 December 2012.

[6] Kaag and Kreps, *Drone Warfare*, 32.

[7] Jo Becker and Scott Shane, "Secret 'Kill List' Proves a Test of Obama's Principles and Will," *New York Times*, 29 May 2012.

[8] Abdi Sheikh, "U.S. Strikes Somali Militant Camp in Bid to Kill al Shabaab Leader," Reuters, 1 September 2014; and Akbar Ahmed and Frankie Martin, "Deadly Drone Strike on Muslims in the Southern Philippines," Brookings Institution, 5 March 2012.

[9] Kate Martin, "Are U.S. Drone Strikes Legal?: A Guide to the Relevant Legal Questions," Center for American Progress, 1 April 2016.

[10] Brett Max Kaufman, "President Obama's New, Long-Promised Drone 'Transparency' Is Not Nearly Enough," American Civil Liberties Union, 1 July 2016.

its inherent secrecy. This criticism would cease should these strikes be discontinued.

The first known and acknowledged successful armed UAV strike occurred in Yemen in 2002. It targeted Qaed Salim Sinan al-Harethi, wanted for the 2000 attack on the USS *Cole* (DDG 67).[11] UAVs were further used by the Bush administration, though the precise number of strikes launched are unknown. The first known use of a signature strike occurred in 2008; this type of strike then became the preferred tactic of the Obama administration.[12] The first set of statistics released, covering the period between 2009 and 2015, indicates that 473 strikes occurred outside zones of active hostilities.[13] The second set of statistics, covering 2016, indicates that 53 strikes occurred outside areas of active hostilities.[14] Strikes have continued into the presidency of Donald J. Trump, and there have been indications that some of the restrictions on UAV strikes will be or have been reduced, while the previously established restriction of near certainty of noncivilian deaths when using UAV strikes still applies.[15] Consequently, it would appear that the frequency and number of targeted killings via lethal UAV strike continued under the Trump administration based on the same targeting criteria.

Lethal UAV strikes were a particular point of contention during the presidencies of both Bush and Obama. Given the strong feelings of those in the United States who are opposed to targeted killings via lethal UAV strikes and the undeniable unpopularity of these strikes across the world, particularly in Muslim countries, the United States stands to gain more in resultant public perception by discontinuing the strikes than it does by continuing to kill low-level militants with UAVs. Many of these militants are found threatening through merely suspicious activity when they may in fact be noncombatants.

Legality of UAV Strikes

The U.S. government has deployed targeted killings in noncombat zones such as Pakistan, Yemen, Somalia, and on at least one occasion, the Philippines.[16] Many individuals and organizations, including prominent human rights groups, contend that UAV strikes are illegal. These groups claim that the strikes do not adhere to

[11] Leila Hudson, Colin S. Owens, and Matt Flannes, "Drone Warfare: Blowback from the New American Way of War," *Middle East Policy* 18, no. 3 (Fall 2011): 124, https://doi.org/10.1111/j.1475-4967.2011.00502.x.

[12] Peter L. Bergen and Jennifer Rowland, "Decade of the Drone: Analyzing CIA Drone Attacks, Casualties, and Policy," in *Drone Wars*, 15.

[13] *Summary of Information Regarding U.S. Counterterrorism Strikes outside Areas of Active Hostilities* (Washington, DC: Office of the Director of National Intelligence, 2016), 1.

[14] *Summary of 2016 Information Regarding Unites States Counterterrorism Strikes outside Areas of Active Hostilities* (Washington, DC: Office of the Director of National Intelligence, 2017), 1.

[15] Charlie Savage and Eric Schmitt, "Trump Poised to Drop Some Limits on Drone Strikes and Commando Raids," *New York Times*, 21 September 2017; and Shuaib Almosawa and Murtaza Hussain, "U.S. Drone Strike in Yemen Killed Men Who Had Nothing to Do with Al Qaeda, According to Relatives," *Intercept*, 19 May 2017.

[16] Sheikh, "U.S. Strikes Somali Militant Camp in Bid to Kill al Shabaab Leader"; and Ahmed and Martin, "Deadly Drone Strike on Muslims in the Southern Philippines."

the LOAC, since UAV use in such areas falls under the category of U.S. government involvement in undeclared wars. The strikes lead to confusion and controversy as to whether they are made against al-Qaeda and affiliated groups, which is authorized by the 2001 Authorization for Use of Military Force (AUMF), or against groups that have appeared after the terrorist attacks on 11 September 2001.[17] While these strikes have been deemed to be in compliance with the AUMF, there has been no clear statement to clearly articulate this. Moreover, these strikes may not follow the LOAC's four principles of military necessity, humanity, distinction, and proportionality. The LOAC allows for civilian casualties, but it does not permit the intentional targeting of noncombatants. This rule is complicated due to the confusion in determining civilian deaths resulting from intentional targeting versus collateral casualties attributed to these strikes. Human rights groups argue that UAV strikes violate the LOAC because the Central Intelligence Agency (CIA), not the U.S. Department of Defense, conducts these strikes, and the CIA is not trained to apply and properly adhere to the provisions of the LOAC. Lastly, the use of UAV strikes outside of zones of active hostilities illustrates that the United States engages in secret and undeclared wars, undermining democratic accountability and both national and international support for these actions.[18]

The U.S. government claims to conduct lethal UAV strikes only out of military necessity, when there is near certainty that no civilians are present and in such a manner that risk to civilians is kept to a minimum. Yet, according to the government's own statistics, there were 65–117 "noncombat" deaths from lethal UAV strikes outside of zones of active hostilities during the Obama presidency.[19] These civilian deaths alienate the very people who the United States must rely on to prevent the recruiting of terrorists and militants. Although there are many reasons individuals join terrorist groups, civilian harm, no matter how proportionate or allowed under international law, is extremely counterproductive and serves as a rallying cry and recruiting tool for extremists.[20] Civilian deaths, while possibly decreasing, will inevitably continue and stoke further anger and resentment toward the United States. This situation will not stop others from becoming terrorists.

Throughout Obama's second term in office, his administration made great strides to present a legal justification for UAV strikes and demonstrate adherence to the LOAC. John O. Brennan, who served first as homeland security advisor and later director of the CIA during the Obama administration, outlined for both the American public and the wider world the principles governing the program: maintaining the safety of the American people; using lawful tools and authority; being pragmat-

[17] Authorization for Use of Military Force, Pub L. No. 107-40, 115 Stat. 224 (2001).
[18] Martin, "Are U.S. Drone Strikes Legal?"
[19] *Summary of Information Regarding U.S. Counterterrorism Strikes outside Areas of Active Hostilities*; and *Summary of 2016 Information Regarding Unites States Counterterrorism Strikes outside Areas of Active Hostilities*.
[20] Ed Pilkington and Ewan MacAskill, "Obama's Drone War a 'Recruitment Tool' for Isis, Say US Air Force Whistleblowers," *Guardian*, 18 November 2015.

ic and flexible; and upholding core American values, such as adherence to the rule of law.[21] Harold Hongju Koh, legal advisor of the U.S. Department of State, attempted to counter what he perceived to be the four strongest arguments against the use of armed UAVs: that targeting enemy leaders violates the laws of war; that the United States uses advanced weapons systems that few or no other nations possess; that UAV strikes amount to extrajudicial killings; and that lethal UAV strikes violate domestic laws against assassination.[22] However, after he left the Department of State, Koh called for a "discipline of drones," stating that the Obama administration was not transparent enough about the use of UAVs and resultant civilian casualties, which resulted in complaints against their use as unlawful and unnecessary.[23]

Part of the justification for UAV strikes is adherence to the condition of proportionality in warfare, which is defined as whether the means employed are proportionate to the harm that is trying to be prevented.[24] The standard used by the U.S. government when lethal UAV strikes are employed is that of "near certainty" of no noncombatants being killed or injured when targeted killings occur.[25] Nevertheless, civilian deaths, injuries, and property damage have resulted from these strikes. This has led to backlash and outcry throughout the rest of the world, particularly in Pakistan and Yemen.

In 2014, Obama declared that the United States acts in a proportional and just way when using lethal force such as UAV strikes. While asserting that terrorism remained a primary focus of his administration, the president stressed that only an imminent threat would result in a strike, and that the administration had a commitment to not "create more enemies than we take off the battlefield."[26] Given the ongoing lethal strikes since that date, it is uncertain if this effort was successful. The U.S. Department of Justice went so far as to declassify a formerly top-secret document titled "Report on Process for Determining Targets of Lethal or Capture Operations," released to the American Civil Liberties Union and available on its website, in an effort to satisfy demands for greater transparency.[27] Despite these efforts, lethal UAV strikes are not any more popular than they were previously.

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[21] John O. Brennan, "Strengthening Our Security by Adhering to Our Values and Laws" (speech, Harvard Law School, Cambridge, MA, 16 September 2011).

[22] Harold Hongju Koh, "The Obama Administration and International Law" (speech, Annual Meeting of the American Society of International Law, Washington, DC, 25 March 2010).

[23] Harold Hongju Koh, "How to End the Forever War?" (speech, Oxford Union, Oxford, UK, 9 May 2013).

[24] Laurie R. Blank and Gregory P. Noone, *International Law and Armed Conflict: Fundamental Principles and Contemporary Challenges in the Law of War* (New York: Wolters Kluwer, 2013), 19–20.

[25] Barack H. Obama, "Remarks by the President at the National Defense University" (speech, National Defense University, Fort Leslie J. McNair, Washington, DC, 23 May 2013).

[26] Barack H. Obama, "Remarks by the President at the United States Military Academy Commencement Ceremony" (speech, United States Military Academy, West Point, NY, 28 May 2014).

[27] *Report on Process for Determining Targets of Lethal or Capture Operations* (Washington, DC: Department of Defense, 2014).

Strained Foreign Relations

UAV strikes strain relations between the United States and other countries, particularly in Pakistan and Yemen. This results from a lack of transparency concerning the strikes, a lack of proportionality in the strikes, and insufficient mechanisms for compensation of civilian victims. Civilian deaths lead to public outcry condemning the strikes. Despite claims that civilian outrage and the number of civilian casualties are often overreported, critics of UAV strikes state that the real issue at hand is the lack of transparency concerning the program, specifically in the outcomes of strikes, and that the discrepancy between public governmental condemnation of the strikes and secret support for them contributes to this lack of transparency.[28] Finally, the provision of adequate compensation for civilian deaths is a recurring issue. Though formal mechanisms exist to compensate for civilian deaths in zones of active hostilities, compensation outside zones of active hostilities appears to be sporadic and ineffective.

A 2014 Pew Polling survey found that UAV strikes are unpopular by significant majorities in 39 of 44 countries surveyed.[29] While this unpopularity alone is not enough to shift the overall view of the United States into negative territory, it does not help foreign relations. Some within the United States have also acknowledged that UAV strikes are incredibly unpopular. As retired U.S. Army general Stanley A. McChrystal stated in 2013, "What scares me about drone strikes is how they are perceived around the world. The resentment created by American use of unmanned strikes . . . is much greater than the average American appreciates. They are hated on a visceral level, even by people who've never seen one or seen the effects of one."[30] This statement directly captures the international opposition to the use of UAV strikes, both in countries where the strikes are deployed as well as throughout the rest of the world.

The two countries in which the majority of UAV strikes have occurred, Pakistan and Yemen, serve as important examples for evaluating the public opinion of the strikes. While there are many reasons for negative public opinion surrounding lethal UAV strikes in Pakistan, two of the most significant causes are the perceived violations of sovereignty and the deaths of civilians. UAV strikes in Pakistan have a public perception problem, as significant protests against U.S. strikes have occurred in that country. Estimates vary widely on the number of militants as opposed to civilians killed in these strikes, though the actual number of civilians killed is impossible to determine. Although the U.S. government often claims very few civilians killed, tracking of the issue via the Bureau of Investigative Journalism, the *Long War Journal*, and the New America Foundation offers different results.[31] Nevertheless, the

[28] C. Christine Fair, "Drone Wars," *Foreign Policy*, 28 May 2010.
[29] "Global Opposition to U.S. Surveillance and Drones, but Limited Harm to America's Image," Pew Research Center, 14 July 2014.
[30] David Alexander, "Retired General Cautions against Overuse of 'Hated' Drones," Reuters, 7 January 2013.
[31] Holewinski, "Just Trust Us," 51.

exact number of civilians killed is not relevant to the significant amount of damage that has occurred to the reputation of the United States. Militant groups use UAV strikes in their recruiting efforts, and although there is no exact data on whether or not this tactic is successful, it is widespread.[32] Existing polling data does indicate that the overwhelming opinion of Pakistanis is strongly against the strikes, though some polling suggests that UAV strikes are not an especially successful recruiting tool used by militants and that many people in Pakistan's Federally Administered Tribal Areas (FATA) actually support targeted killings via UAV strikes.[33]

However, while an increase in militancy may not be directly tied to the use of UAVs, the FATA is an extremely difficult area in which to accurately gauge public opinion. UAV strikes likely harden the Pakistani population against the United States similarly to other historical bombing campaigns. Examples in which the bombing of civilian populations not only failed to bring victory to the attacking nation but actually increased the resolve and defiance of the affected country include the blitz over the United Kingdom during World War II and Operation Rolling Thunder (1965–68) over North Vietnam during the Vietnam War. The former provided popular support and will for the population of the United Kingdom to continue the war against Germany, which eventually ended in victory for the United Kingdom and its allies. The latter bolstered the North Vietnamese population and was particularly ineffective as the Vietnam War dragged on, finally ending with North Vietnam's conquest of South Vietnam two years after the withdrawal of U.S. forces.

As of 2010, 68 percent of those polled in Pakistan held an unfavorable view of American UAV strikes, compared to a 17-percent favorable view.[34] Four years later, in 2014, further polling indicated that the Pakistani view of UAV strikes was 66 percent against and 3 percent in favor.[35] A similar poll in 2012 found that 74 percent of Pakistanis considered the United States an enemy, which was up from 64 percent in a poll taken three years earlier.[36] This trend concerning the attitudes of the Pakistani public towards lethal UAV strikes by the United States appears to be negative. Only one-third of the general Pakistani public is even aware these strikes occur in their country, and the argument about UAV use is only waged among the educated there. Nevertheless, these strikes still occur. Given this, it should be noted that the

[32] Saba Imtiaz, "What Do Pakistanis Really Think about Drones?," in *Drone Wars*, 104–5; and Becker and Shane, "Secret 'Kill List' Proves a Test of Obama's Principles and Will."

[33] "Global Opposition to U.S. Surveillance and Drones, but Limited Harm to America's Image."

[34] C. Christine Fair, Karl Kaltenthaler, and William J. Miller, "Pakistani Opposition to American Drone Strikes," *Political Science Quarterly* 129, no. 1 (Spring 2014): 14, https://doi.org/10.1002/polq.12474.

[35] "Global Opposition to U.S. Surveillance and Drones, but Limited Harm to America's Image."

[36] James Cavallaro, Stephen Sonnenberg, and Sarah Knuckey, *Living under Drones: Death, Injury and Trauma to Civilians from U.S. Drone Practices in Pakistan* (Stanford, CA: International Human Rights and Conflict Resolution Clinic, Stanford Law School; New York: NYU School of Law, Global Justice Clinic, 2012), 138.

Urdu-language press in Pakistan is overwhelmingly negative toward UAV strikes, while the English-language press gives space to competing viewpoints.[37]

UAV strikes have led to increased tension and complications in the relationship between the United States and Pakistan.[38] UAV strikes are indicative of Pakistan's pervasive belief of a generally interventionist American approach to foreign policy. UAV use has become the most discernible part of U.S. foreign policy in Pakistan and has a definite impact on Pakistan's internal politics.[39] Some argue that even without UAV strikes, the relationship between the United States and Pakistan would be extremely negative.[40] That said, lethal UAV strikes on Pakistani soil is clearly a divisive issue that does not contribute positively to the U.S.-Pakistani relationship.

Some in Pakistan feel that the only explanation for the United States killing who they believe to be innocent civilians is that the United States is doing so because Pakistanis are Muslim, and the attacks are part of a broader war against Islam. In interviews, some Pakistanis stated that enmity between the United States and Pakistan is due largely to lethal UAV strikes, and that a cessation of these attacks would greatly improve Pakistani impressions of the United States.[41] Eliminating these strikes would be a positive step forward in bilateral relations between the two countries.

Although the number of UAV strikes in Pakistan has decreased, they nevertheless continue.[42] Consequently, there does not appear to be a shortage of militants willing to take up arms against Pakistan and/or the United States. No matter how many strikes are employed, terrorist activity continues. This situation is further complicated by repeated claims by Pakistanis that the strikes violate Pakistani sovereignty.[43]

The following examples demonstrate the negative public opinion in Pakistan concerning UAV strikes. First, in 2011, a notable protest against UAV strikes took place in which approximately 2,000 Pakistanis laid the coffins of four individuals who they claimed were innocent victims of a UAV strike across a road and blocked traffic.[44] Second, in 2009, Pakistani prime minister Yousaf Raza Gilani complained that American UAV strikes in Pakistan were counterproductive. He further stated that the strikes unite different factions against the United States and Pakistan and lead to an increase in anti-American sentiment.[45] Third, in 2013, Pakistani prime

[37] Fair, Kaltenthaler, and Miller, "Pakistani Opposition to American Drone Strikes," 14.
[38] Dave Sloggett, *Drone Warfare: The Development of Unmanned Aerial Conflict* (New York: Skyhorse, 2014), 133.
[39] Imtiaz, "What Do Pakistanis Really Think about Drones?," 90, 100.
[40] Benjamin, *Drone Warfare*, 150.
[41] Cavallaro, Sonnenberg, and Knuckey, *Living under Drones*, 137.
[42] Sloggett, *Drone Warfare*, 201.
[43] Cavallaro, Sonnenberg, and Knuckey, *Living under Drones*, 120.
[44] "Tribesmen Protest Drone Attacks," *Dawn*, 16 June 2011.
[45] " 'American Drone Attacks Are Counterproductive': SPIEGEL Interview with Pakistan's Prime Minister," Spiegel International, 1 January 2009.

minister Nawaz Sharif complained publicly that American UAV strikes should end and that the United States should respect Pakistani sovereignty.[46]

In Yemen, the reaction to targeted killings via UAV strikes is largely similar. Besides Pakistan, Yemen has witnessed the largest amount of lethal UAV strikes to occur outside of a zone of active hostilities, which has caused significant problems regarding perception and public opinion. Such issues that exist include a lack of timely compensation for innocent victims of UAV strikes, a possible increase in terrorist recruiting due to civilian deaths (to include deaths of notable community members), discussions by educated Yemenis that the strikes are counterproductive, and that the Yemeni parliament rejects the use of UAV strikes while the president of Yemen, Abdrabbuh Mansur Hadi, approves of them. Though exact statistics for Yemen, such as those in the case of Pakistan, do not exist, much of the Yemeni public is opposed to the strikes.[47]

An investigation by the Human Rights Watch organization in 2012 and 2013 claims that UAV attacks have killed significant numbers of civilians throughout the world. Though the evidence is anecdotal, it comes from direct interviews with individuals who claim to have been directly impacted by UAV strikes, and their stories are significant. The report states that targeted killings began in 2002 but underwent a hiatus before resuming in 2009. It also claims that between 2002 and 2013, UAV strikes killed 9 high-value targets (HVT), and that between 2009 and 2013, 82 people were killed, 57 of whom were civilians. These numbers are subject to debate, but hard evidence does exist claiming the deaths of innocent people. One of the strikes in question, believed to be from a UAV, killed a Muslim cleric who preached against al-Qaeda in the Arabian Peninsula (AQAP) as well as a local police officer, both claimed by their relatives and fellow villagers to have been innocent of any militant activity. The resultant outrage caused some to claim that if the cleric and policeman were members of al-Qaeda, then all of the villagers were too.[48] Likewise, when a UAV struck a reported wedding convoy in 2013, killing 14 people and wounding 22 more, there was significant public outrage.[49] This response included calls by the Yemeni parliament for UAV strikes to cease on Yemeni soil.[50]

Of note in the case of the wedding attack, U.S. officials initially claimed that all of those who were killed were militants.[51] Much of the outrage at the time, according to those interviewed, resulted from the lack of U.S. financial compensation for

[46] Orla Guerin, "Pakistan PM Nawaz Sharif Urges End to U.S. Drone Strikes," BBC News, 5 June 2013.
[47] " 'Between a Drone and Al-Qaeda': The Civilian Cost of U.S. Targeted Killings in Yemen," Human Rights Watch, 22 October 2013.
[48] " 'Between a Drone and Al-Qaeda'."
[49] Lucy Draper, "The Wedding that Became a Funeral: U.S. Still Silent One Year on from Deadly Yemen Drone Strike," *Newsweek*, 12 December 2014.
[50] Hakim Almasmari, "Drone Strikes Must End, Yemen's Parliament Says," CNN, 15 December 2013.
[51] Ryan Devereaux, "New Details of Attack on Yemeni Wedding Prompt More Demands Obama Explain Drone Policy," *Intercept*, 20 February 2014.

civilians harmed in what was believed to be a case of mistaken identity.[52] Compensation in the form of condolence payments, for which the United States admits no wrongdoing, have gone a long way in quelling local anger over civilian deaths in active combat zones such as Iraq and Afghanistan. Many public and human rights groups support condolence payments, believing them to be respectful and help mitigate potential blowback from the larger population.[53] For these payments to be successful, they must be of sufficient value to the recipients and be made promptly.[54] This reparation did not happen initially after the wedding attack. Indeed, one year later, local Yemenis affected by the strike complained that they had not received adequate compensation for their losses.[55]

Compensation for both strikes mentioned here does appear to have been paid later. In July 2014, relatives of the cleric and the police officer killed in Yemen claim to have received payment for their losses, though some criticized the amounts as insufficient.[56] It was also reported in August 2014 that the relatives of victims in the wedding strike were compensated in the amount of $1 million. While it is unclear who made the condolence payments, they do appear to have occurred.[57]

Condolence payments have proven successful in zones of active hostilities but less so outside combat zones. Outside these areas, it is difficult to assess the aftermath of strikes and complicated to determine if in fact any civilians are killed in lethal UAV strike. Moreover, it is challenging for relatives who claim the deaths of civilian family members killed in these strikes to not only prove that they are entitled to compensation but also provide a method to receive it. Adequate compensation, a method of providing for civilian loss to improve relations, is thereby ineffective outside of combat zones. This problem further strengthens the argument that the U.S. government should stop engaging in targeted killings outside of active zones of hostilities, which would eliminate the need altogether for condolence payments as a result of these strikes.

There have been several notable examples of Yemeni opposition to UAV strikes, one of which was noticed by the U.S. Congress. On 23 April 2013, Farea Al-Muslimi, a Yemeni educated in the United States, appeared before the Senate Judiciary Committee.[58] He stated that AQAP makes use of past UAV strikes to help in its recruiting

[52] "A Wedding that Became a Funeral: U.S. Drone Attack on Marriage Procession in Yemen," Human Rights Watch, 19 February 2014.
[53] Cora Currier, "Does the U.S. Pay Families when Drones Kill Innocent Yemenis?," ProPublica, 12 August 2013; and Cora Currier, "Hearts, Minds and Dollars: Condolence Payments in the Drone Strike Age," ProPublica, 5 April 2013.
[54] Currier, "Hearts, Minds and Dollars."
[55] Draper, "The Wedding that Became a Funeral."
[56] Massoud Hayoun, "US Paid Family of Yemen Drone-Strike Victim $100k, Rights Group Says," Al Jazeera, 11 November 2014.
[57] Greg Miller, "Yemeni Victims of U.S. Military Drone Strike Get More than $1 Million in Compensation," *Washington Post*, 18 August 2014.
[58] *Drone Wars: The Constitutional and Counterterrorism Implications of Targeted Killing*: *Hearing before the Subcommittee on the Constitution, Civil Rights and Human Rights of the Committee on the Judiciary*, 113th Cong. (2013) (statement of Farea Al-Muslimi), hereafter Al-Muslimi statement.

efforts, and that UAV strikes are counterproductive when compared to aid projects.[59] Al-Muslimi reinforced the belief that regardless of who carries out strikes in Yemen, the strikes are unproductive when they result in civilian casualties, a claim that was supported by interviews with those affected. He even stated that UAV strikes serve AQAP's purposes by creating martyrs that extremists celebrate and allow AQAP "to convince more individuals that America is at war with Yemen."[60]

Al-Muslimi raised two points that contradict established and stated U.S. practices: the claim that UAV strikes only occur when there is no possibility for capture and the secrecy surrounding the targeting of militants. He stated that he had spoken to people who claimed that several individuals targeted and killed were in contact with the Yemeni government, to include face-to-face meetings, prior to their deaths.[61] This issue is further verified by others who stated that targeted individuals could have been captured and not killed.[62] If true, this belies the claim that targeted killings via lethal UAV strikes only occur when it is impossible to capture a wanted extremist.

Al-Muslimi stated that if Yemenis were aware of the identities of the targets of UAV strikes, they would avoid them, reducing the likelihood of innocent civilians being killed in the attacks.[63] Others have made similar claims that if the United States released information about the data used in targeting decisions, it might prevent innocent civilians from being killed, suggesting that the secrecy concerning the UAV strike program is counterproductive.[64] Of course, if militants used this information to lower their likelihood of being targeted, the United States would undoubtedly change its tactics. Nevertheless, the fact remains that individuals on the ground in Yemen, as well as in Pakistan, may exhibit what is considered by U.S. personnel as suspicious behavior but which is in actuality benign behavior or at least behavior that is not atypical for the country in question and which the individuals likely do not realize increases their risk of being targeted. This misunderstanding raises the likelihood of civilian deaths from UAV strikes.

An additional problem is that the tactics used in Yemen overlook the Yemeni concept of revenge, in which formerly uninvolved Yemenis will take up arms to avenge the deaths of neighbors and fellow tribesmen killed in attacks, a custom strongly adhered to in Yemen. It is also argued that although targeted killings, including those via UAV as well as from manned aircraft, have been successful, the strikes only work at the tactical level and ignore the larger strategic goal of fostering stability in Yemen.[65] This point is reinforced by antidrone murals in Yemen, which

[59] Al-Muslimi statement, 3.
[60] Al-Muslimi statement, 6.
[61] Al-Muslimi statement, 3, 7.
[62] " 'Between a Drone and Al-Qaeda'."
[63] Al-Muslimi statement, 3.
[64] Holewinski, "Just Trust Us," 65.
[65] Gregory D. Johnsen, "How We Lost Yemen," *Foreign Policy*, 6 August 2013.

have received much coverage in the media and clearly indicate that at least some of the country's population is very angry at lethal UAV strikes.[66]

As mentioned previously, Yemeni president Abdurrabah Mansur Hadi views lethal UAV strikes as legitimate. However, not all the members of the Yemeni government agree, causing a divide in the government. Yemen's parliament staged a symbolic vote calling for the cessation of American UAV strikes in Yemen, stating that the "Yemeni public is angered by the drone strikes" and that parliament acknowledged the public's anger.[67] A significant portion of the Yemeni population, to include the majority of their government representatives, view American UAV strikes as counterproductive and damaging to U.S.-Yemeni relations. Lethal UAV strikes make relations more complicated. Though Yemini officials may privately agree with U.S. policy, their expressed opposition to UAV strikes are more reflective of what their population believes. This position does not lend support to the continuation of strikes and serves to risk further and more serious backlash against the strikes, supporting the argument that lethal UAV strikes should be discontinued.

Though Pakistan and Yemen may claim violations of sovereignty when it suits them and perhaps spin the issue to their advantage despite supporting lethal UAV strikes behind the scenes, the issue of sovereignty is a significant one. In a zone of active hostilities with a large troop presence and declared hostilities, the sovereignty issue of violation of another nation's borders does not appear. Even among countries with major sovereignty challenges or a lack of an effective central government, such as Somalia, Yemen, and Pakistan, lethal strikes erode popular support, such as it exists, for the governments of those nations. Likewise, without the discontinuation of these strikes, the acute sovereignty issue in these countries will remain.

In countries in which the United States is viewed negatively, the elimination of lethal UAV strikes will not solve the entire set of issues causing these negative views, but it is a definite step forward that once taken will prove extraordinarily popular throughout the world in general and among Muslim nations in particular. The elimination of these strikes will serve to undercut, to a degree, the narrative that the United States is at war against Islam. By eliminating these lethal UAV strikes, the United States stands to gain in opinion and influence among a larger group of nations.

Militant Response to UAV Strikes

There are conflicting reports as to whether UAV strikes lead to an increase in militancy. There are indications that the number of terrorist attacks in Pakistan have decreased in the short term after targeted killing campaigns there. Additionally, UAV strikes do not appear to be a successful recruiting tool employed in Pakistan,

[66] Draper, "The Wedding that Became a Funeral."
[67] Almasmari, "Drone Strikes Must End, Yemen's Parliament Says."

though they remain a major feature used in militant recruiting in general.[68] Dave Sloggett, author of *Drone Warfare: The Development of Unmanned Aerial Conflict*, argues that populations will now be less likely to become radicalized from UAV strikes because the strikes are currently employed with greater precision than was previously the case.[69] However, strikes in Pakistan and Yemen, while successful in killing militants and terrorists, have not eliminated the continued presence of these groups. Militant and terrorist groups still recruit, train, and aspire to commit further attacks against the U.S. government, U.S. personnel, or the U.S. homeland.

Anger against these strikes in Pakistan led to at least one successful revenge attack in Afghanistan. In December 2009, a Jordanian suicide bomber targeted a CIA facility in Afghanistan and killed several U.S. personnel in an attack claimed to be revenge for the UAV strike that killed Beitullah Mehsud in Pakistan.[70] Lethal UAV strikes are clearly an issue that provokes anger among militant groups. The concern that terrorists hate a particular tactic used by the United States to combat terrorism is insufficient reason in and of itself to discontinue the tactic's use, but UAV strikes do not lead to a notable or significant decrease in militancy and sometimes fail to prevent additional terrorist attacks. In the case of the CIA bombing in Afghanistan, it is demonstrable that backlash against UAV strikes resulted in a deadly attack on U.S. personnel. It is conceivable that such anger at UAV strikes has led to other similar attacks. Anecdotal evidence from interviews with relatives of those killed in UAV strikes indicates that there may be a cycle of revenge that occurs in their wake. For example, one Pakistani stated that he would retaliate and get revenge for the UAV strike that killed his brother: "Blood for blood. . . . All I want to say to them is . . . why are you killing innocent people like us that have no concern with you?"[71] In cases such as this, killing some militants can clearly be seen as creating even more. One Pakistani politician argued in an interview that for every individual killed, many more militants are born.[72]

Americans are not the only group targeted for revenge for UAV strikes. There is an even greater toll on the civilian population of affected countries beyond the damage and injury done from the strikes themselves, as indications suggest that militants have killed civilians believed to be spies for the U.S. government. Terrorist groups target those who they believe are spies, civilian noncombatants who are accused of assisting the U.S. government in targeting suspected militants. These civilians are tortured and killed and have had their bodies displayed as a lesson to

[68] Patrick B. Johnston and Anoop K. Sarbahi, "The Impact of US Drone Strikes on Terrorism in Pakistan," *International Studies Quarterly* 60, no. 2 (June 2016): 203 – 4, https://doi.org/10.1093/isq/sqv004.
[69] Sloggett, *Drone Warfare*, 123.
[70] Hudson, Owens, and Flannes, "Drone Warfare," 136.
[71] Cavallaro, Sonnenberg, and Knuckey, *Living under Drones*, 133.
[72] Cavallaro, Sonnenberg, and Knuckey, *Living under Drones*, 133 – 34, 147.

others to demonstrate the result of perceived cooperation with the United States.[73] David S. Rohde, a journalist held captive by the Taliban in 2008–9, confirmed this practice.[74] A Pakistani reporter who published an article on a suspected UAV strike disappeared, and his family was later notified that he had been killed.[75] This targeting of suspected spies serves to dissuade individuals from assisting their governments in fighting terrorism and militancy and may lead to further deaths of those who are not involved in militant activity.

Beyond the suffering of these alleged spies, Tehrik-i-Taliban Pakistan (TTP), an antigovernment militant group, has stated that it will refuse to negotiate with the Pakistani government until the United States ceases UAV strikes. In this case, American UAV strikes hamper the peace process in Pakistan. Lethal UAV strikes have derailed peace negotiations between Pakistan and the group before.[76] This shows that the blowback from UAV strikes is not limited to those who are immediately harmed by the strikes but spreads throughout individual communities and the nation of Pakistan itself.

In Yemen, protests have occurred against lethal UAV strikes and attitudes appear to be moving in the same negative direction as in Pakistan.[77] Interviewees have stated that UAV strikes are driving formerly neutral Yemenis to join AQAP, which uses UAV strikes as part of its recruiting propaganda.[78] Although it is impossible to lay the blame entirely on UAV strikes, AQAP grew from fewer than 300 members in 2009, when the group was formed, to nearly 1,000 in 2012, indicating that UAV strikes do appear to have an influence on radicalization.[79] AQAP is an umbrella organization that combined members of al-Qaeda in Yemen (AQY) with other groups. The growth of the group shortly after its formation occurred at the same time, and was arguably assisted by, the Obama administration's increased use of UAV strikes in Yemen.[80] At a minimum, this growth occurred despite U.S. counterterrorism efforts. It is claimed that AQAP recruits through economic inducement, as they are known to pay their members locally high wages. However, it and similar groups also incorporate popular backlash against UAV strikes in their recruiting efforts.[81]

It is also worth noting that as there is such significant anger on the part of the Yemeni population concerning UAV strikes, many believe that any bombing that

[73] Brian Glyn Williams, "Death from the Skies: An Overview of the CIA's Drone Campaign in Pakistan — Part One," *Terrorism Monitor* 7, no. 29 (25 September 2009); and David Rohde, "My Guards Absolutely Feared Drones: Reflections on Being Held Captive for Seven Months by the Taliban," in *Drone Wars*, 10.

[74] Rohde, "My Guards Absolutely Feared Drones," 10; and Carol Grisanti and Mushtaq Yusufzai, "Taliban-Style Justice for Alleged U.S. Spies," MSNBC, 17 April 2009.

[75] Imtiaz, "What Do Pakistanis Really Think about Drones?," 91.

[76] Saeed Shah, "U.S. Drones Cloud Pakistan Peace Overtures with Taliban," *Wall Street Journal*, 13 September 2013.

[77] Bergen and Rowland, "Decade of the Drone," 27.

[78] " 'Between a Drone and Al-Qaeda'."

[79] Christopher Swift, "The Boundaries of War?: Assessing the Impact of Drone Strikes in Yemen," in *Drone Wars*, 79; and Benjamin Wittes, "Gregory Johnsen on Yemen and AQAP," *Lawfare*, 16 November 2012.

[80] "Al-Qaeda in the Arabian Peninsula (AQAP)," Council on Foreign Relations, 19 June 2015.

[81] Swift, "The Boundaries of War?," 79.

occurs in Yemen, whether by the Yemeni government, Saudi Arabia, or the United States, comes from American UAVs, and anger over any such strike is directed at the United States.[82] UAV strikes appear to have been, at best, unhelpful and, at worst, counterproductive to U.S. counterterrorism efforts in Yemen. Though many targets, including HVTs, have been killed, conditions on the ground, to which UAV strikes have not positively contributed, lead to ample recruiting opportunities for militant groups. A cessation of UAV strikes in Yemen would help placate the public's anger to some degree and may actually contribute to a lessening of anti-American sentiment in the country, removing the issue from extremist recruiting efforts.

Potential for International Proliferation of Armed UAV Strikes

The other nations of the world observe how the United States deploys its UAVs both inside and outside combat zones. It is possible that these nations will deploy UAVs in a more expansive manner in the future, and if sovereignty issues are not respected by the United States, it is likely that the nations that choose to deploy armed UAVs in lethal strikes will be unmoved by similar claims. The deployment of armed UAVs is a trend likely to increase in occurrence in the future. As such, its adoption by nondemocratic regimes will prove troubling.

To date, only the United States, the United Kingdom, and Israel are known to have deployed armed UAVs for targeted killings.[83] Other nations have this capacity but appear to be waiting to deploy them. China has taken steps forward in the development of UAVs, as have India, Iran, South Africa, and Russia, at times with Israeli assistance.[84] Though the proliferation of armed UAVs is to some degree addressed through the Missile Technology Control Regime and the Wassenaar Agreement, much of the compliance is through voluntary measures.[85] It is not unreasonable to expect that other nations will develop lethal UAV capacity or refine it if already in their possession. Any battlefield technology developed will eventually grow and see greater use. Since the United States, the United Kingdom, and Israel engage in lethal UAV strikes both inside and outside zones of active hostilities, it is inevitable that other nations will eventually do so as well. The United States consequently serves as an example that other nations may emulate should they choose to deploy lethal UAV strikes in the future.

It is not inconceivable that China or another repressive regime will deploy this technology against political dissidents, perhaps in other countries outside their borders if not within their own borders. In fact, it is claimed that the government of Yemen, an erstwhile ally of the United States, used an American UAV strike for this

[82] Swift, "The Boundaries of War?," 80.
[83] Kaag and Kreps, *Drone Warfare*, 31.
[84] Benjamin, *Drone Warfare*, 50 – 53.
[85] Kaag and Kreps, *Drone Warfare*, 151 – 56.

purpose.[86] Given that the United States appears to have killed a Yemeni opposition leader based on false claims made by the Yemeni government under President Ali Abdullah Saleh, it is clear that the idea of using lethal UAV strikes to control or reduce political opposition has already occurred and will likely continue.[87] If allies engage in these operations, repressive regimes can also be expected to deploy armed UAVs in a similar fashion.

Though armed UAVs rely on permissive airspace in which to operate, this restriction could change in the future. Should developers design and build UAVs that do not require this condition, proliferation of the systems may increase. Even if the United States can be trusted to use these weapons legally, the concern that other nations will not should be a consideration in the deployment of this technology.[88] If authoritarian regimes engage in lethal UAV strikes, they are less likely to give considerations for issues such as concern over noncombatant deaths, given that they are less respectful toward and accountable to their own citizens.

Repressive regimes may even use the United States' practice of engaging in lethal UAV strikes to their political advantage without even deploying the same technology. Some repressive governments with less respect for human rights than the United States, to include China, have protested publicly in the United Nations against American UAV strikes.[89] Allowing these countries to score political points at the expense of the United States is not beneficial to foreign policy, and ceasing to engage in these targeted killings would eliminate this possibility. It is in the interest of the United States to dispel false appearances or criticism that it is a nation that does not respect human rights.

The United States stands at a crossroads in time. It stands to gain in public perception by discontinuing lethal UAV strikes outside zones of active hostilities. While the United States is an early and enthusiastic developer and user of this technology, it has a history of deployment of new weapons technologies at the appropriate time only to take decisive steps to limit, or work to eliminate, the use of that same technology by others at a later time. Nuclear weapons stand as the definitive example in this regard. Though the United States deployed nuclear weapons to bring a quicker end to World War II while reducing potential American casualties, it later led the nonproliferation effort to provide a framework for other nations to follow in the deployment of nuclear weapons and prevent unstable and/or adversary regimes from obtaining them. Though the United States was not entirely successful in reducing their spread, nuclear weapons have not been deployed since 1945. The

[86] Greg Miller, "U.S. Drone Targets in Yemen Raise Questions," *Washington Post*, 2 June 2012.
[87] Megan Braun, "Predator Effect: A Phenomenon Unique to the War on Terror," in *Drone Wars*, 274.
[88] Joyner, "A Drone Strike on Democracy."
[89] Ed Pilkington and Ryan Devereaux, "US Defends Drone Strikes as 'Necessary and Just' in Face of UN Criticism," *Guardian*, 25 October 2013.

United States should expect similar results upon future discontinuation of lethal strikes outside of zones of active hostilities.

If the United States declares that it will no longer engage in targeted killings via lethal UAVs outside zones of active hostilities and leads an effort among the world community to persuade others to adhere to this principle, it will be met with international approval. Countries such as Iran, Russia, and China will continue to act in their own interests and may or may not follow the lead of the United States on this issue for themselves or their proxies. However, the broader group of nations, as well as human rights groups, can be expected to embrace this principle. This offers a way to demand and enact greater restrictions on the proliferation of this technology. Based on the popular support within their own nations for these steps, the larger international community likely would not deploy this technology in the future.

Alternatives to Lethal UAV Strikes

In the future, there will continue to be terrorist groups that seek to harm the United States. There will be, at times, individuals outside zones of active hostilities that will need to be captured or killed once determined to present an imminent threat. Yet, the current tactic of pursuit of true HVTs as well as low-level foot soldiers in terrorist and militant groups has created a significant backlash that shows no signs of improvement. Instead, the United States should only target true HVTs for kill or capture missions. Greater reliance should be placed on host-nation support in addressing the issue of apprehension of wanted terrorists, particularly lower-level militants. Though the Pakistanis and Yemenis may not be the most willing or able of partners, as sovereign nations it is in their interest to assist the United States, and other nations, to capture wanted militants. Unless the militant is truly the leader of a terrorist organization, the resulting harm from a lethal UAV strike clearly outweighs the gains made by the elimination and deaths of these individuals, particularly when there is no shortage of others willing to take their places.

In the event that a so-called partner nation is unable or unwilling to capture a HVT, the best alternative would be to engage in a direct-action raid to capture or kill them. Though this places U.S. servicemembers at greater risk of harm, certain select military units train specifically for these types of missions and have successfully accomplished such actions in the past. A prime example of this is the U.S. raid in Abbottabad, Pakistan, that killed Osama bin Laden on 2 May 2011. Though the raid violated Pakistani sovereignty, the rest of the world could not fault the United States for attempting to capture and subsequently killing a terrorist mastermind wanted for the deaths of more than 3,000 Americans in multiple attacks staged throughout the world. It is notable that an armed UAV was not the primary means of accomplishing this mission. Putting troops in harm's way to achieve the goal of the raid was deemed essential. This operation should be the example followed in the future.

Conclusion

Besides improving the public perception of the United States and serving to limit the proliferation of armed UAV technology, ceasing targeted killings via armed UAVs outside zones of active hostilities will have other significant benefits. By being more judicious about when to employ lethal force, fewer civilians will be killed. In addition to improving the image of the United States throughout the world, a cessation will take away a cause of significant anger toward the United States, weakening the recruiting ability of extremist groups. Though militants would likely continue to twist everything the United States does to fit their agenda, they would no longer be able to use the images of new civilian casualties for propaganda purposes. If this weakens the strength of their argument even to a degree, it is worth pursuing.

Terrorism will never end, but the United States can lower its potential for damage to American personnel and interests. To do so, lethal UAV strikes should be discontinued outside zones of active hostilities. The United States cannot use UAVs to kill its way out of this problem. Some individuals will have to be killed when the United States is unable to capture them. Other means must be employed in these instances, even when killing may be necessary. Outside zones of active hostilities, the blowback from lethal UAV strikes outweighs the gain achieved from their deployment. Other measures must be relied on, after greater discrimination in target selection, and then only if and when the affected nation is unable or unwilling to capture these individuals and surrender them to the United States.

The Fait Accompli and A2/AD Dilemma in Northern Europe

A New NATO Operating Concept to Counter Russia

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The North Atlantic Treaty Organization (NATO) is back in great power competition with Russia. Even though Russia is a declining power, it has the ability to threaten NATO member states and challenge the alliance.[2] In 2018, NATO published a recommendation underlining the complex challenges that lay ahead for the alliance and the need for transformation.[3] Russia challenges NATO tactics, doctrines, and strategies. Its development of the *new generation warfare* (NGW) concept, a form of unconventional warfare in which military violence is to be used as a last resort, challenges Prussian military theorist Carl von Clausewitz's famous dictums of war and boundaries between peace, conflict, and war.[4] Russia seeks to exploit legal, economic, political, and military realms.[5] It challenges NATO's understanding of war and the domains in which to fight.[6] Technological development in the Russian military has greatly improved both the precision and range of conventional missiles and sensors. Russia has invested in electronic warfare equipment that can offset NATO command, control, communications, computers, intelligence, sur-

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[2] Rolf Tamnes, "The Significance of the North Atlantic and the Norwegian Contribution," *Whitehall Papers* 87, no. 1 (2016): 19, https://doi.org/10.1080/02681307.2016.1291018. According to Michael A. McFaul, former U.S. ambassador to Russia, Russia is one of the major powers of the world due to its nuclear and conventional power, and it is among the top 10 world economic powers. This status will not change in the next 20 –30 years. See Ofer Fridman, *Russian "Hybrid Warfare": Resurgence and Politicization* (New York: Oxford University Press, 2018), 174.

[3] *Framework for Future Alliance Operations* (Norfolk, VA: Allied Command Transformation, North Atlantic Treaty Organization, 2018).

[4] Fridman, *Russian "Hybrid Warfare*," 157. The famous Clausewitzian dictums are "There is only one means of war: combat" and "War is merely the continuation of policy by other means." Both statements, the Western traditions of war, and the law of armed conflict deal with the subject of war as distinct from crisis and peace. NGW blurs that Western tradition. This chapter uses the term *concept* to describe NGW, as it is unclear if it is a formal doctrine. Several scholars such as Ofer Fridman, Michael Kofman, Janisn Berzins, and Dmitry (Dima) Adamsky have stated that they are not clear if NGW is a doctrine, strategy, or concept.

[5] Phillip Karber and Joshua Thibeault, "Russia's New-generation Warfare," Association of the United States Army, 20 May 2016; and Fridman, *Russian "Hybrid Warfare*," xi. The definition of NGW according to Fridman is "a war, in which a leading role is taken by the information-psychological struggle, directed to achieve superiority in the sphere of command and control, as well as to suppress the morale of military personnel and the population of the adversary."

[6] This concept of extended war is known in NATO as *hybrid warfare* or *gray zone operations*.

veillance, and reconnaissance (C4ISR) systems.[7] It has also displayed a long-term, deliberate buildup of its offensive cyber capacity in attacks against many Western countries during the last decade. The Russian armed forces have been primed for rapid and decisive actions in hazy situations to achieve political victory.[8] Russia has demonstrated its will to use these tools in Ukraine and Syria. It has a history of strategic approach that aims to achieve a fait accompli, as occurred in Crimea in 2014.[9] This tactic is relevant in Northern Europe, where Russia can exploit unresolved national and bilateral issues.[10]

Russia has the option to deny access to NATO forces in the Norwegian and Baltic seas with antiaccess/area-denial (A2/AD) capabilities, and NATO does not have a credible operating concept to counter these actions.[11] NATO's strategic concept from 2010 is obsolete, and its maritime strategy from 2011 does not offer a viable military concept to counter the threat.[12] Moreover, the United States, one of the leading members of NATO, is more focused on handling China and wants European NATO members to take more responsibility for the security of their own countries as well as that of Europe.[13]

The Need for a New NATO Operating Concept

NATO's current operating concept is predictable and outdated, neither addressing Russia's demonstrated fait accompli approach nor its A2/AD capabilities.[14] A new NATO operating concept must exploit Russian vulnerabilities through a multidomain, whole-of-nation approach in times of peace, crisis, and armed conflict, establishing a multilayered defense that is prepared for a protracted armed conflict and capable of neutralizing Russian A2/AD capabilities.

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[7] Bryan Clark, Mark Gunzinger, and Jesse Sloman, *Winning in the Gray Zone: Using Electromagnetic Warfare to Regain Escalation Dominance* (Washington, DC: Center for Strategic and Budgetary Assessments, 2017).

[8] Rolf Tamnes, "The High North: A Call for a Competitive Strategy," *Whitehall Papers* 93, no. 1 (2018): 11, https://doi.org/10.1080/02681307.2018.1508955.

[9] Dan Altman, "By Fait Accompli, Not Coercion: How States Wrest Territory from Their Adversaries," *International Studies Quarterly* 61, no. 4 (December 2017): 881 – 91, https://doi.org/10.1093/isq/sqx049.

[10] The Baltic states and Norway have unresolved issues with Russia that can be used in an fait accompli strategy, such as disputed borders, Russian diaspora, and different interpretations of the Svalbard Treaty of 1920. See Amund Trellevik, trans. Elisabeth Berquist, "Russia Has Always Challenged Norway on Svalbard. This Time, Parts of Its Criticism is Different," *High North News*, 10 February 2020. According to Ofer Fridman, Russia's ability to exploit grievances in Western countries is one of its strengths. See Fridman, *Russian "Hybrid Warfare*," 170 – 71.

[11] Michael Kofman. "It's Time to Talk about A2/AD: Rethinking the Russian Military Challenge," *War on the Rocks*, 5 September 2019; and Michael Kofman, "Russian A2/AD: It Is Not Overrated, Just Poorly Understood," *Stratagem*, 1 March 2020.

[12] *Active Engagement, Modern Defense: Strategic Concept for the Defence and Security of the Members of the North Atlantic Treaty Organization* (Brussels, Belgium: North Atlantic Treaty Organization, 2010); "Alliance Maritime Strategy," North Atlantic Treaty Organization, 18 March 2011; and Rowan Allport, *Fire and Ice: A New Maritime Strategy for NATO's Northern Flank* (London: Human Security Centre, 2018).

[13] Julie Hirschfeld Davis, "Trump Warns NATO Allies to Spend More on Defense, or Else," *New York Times*, 2 July 2018.

[14] NATO has one overarching strategic concept from 2010, which is referred to as the *NATO operating concept* in this paper. See *Active Engagement, Modern Defense: Strategic Concept for the Defence and Security of the Members of the North Atlantic Treaty Organization*.

This chapter proposes a military operating concept that is relevant for great power competition with Russia.[15] It is divided into three parts. The first part is about current military concepts and doctrine development in Russia and the United States. The second part presents a case study of the Cold War in Northern Europe in the 1980s. It also explains what Russia and NATO are doing today. The third part suggests a new operating concept for NATO in Northern Europe. The methods used for this chapter are a crucial case study and analysis of strengths and weaknesses for Russia and NATO.[16] The concept development is based on the framework for military concept development in accordance with the Defense Adaptive Red Team (DART) concept.[17]

Scope

This chapter will examine NATO in Northern Europe. It focuses on the operational level but also explores strategic and tactical means and considerations. The concept used herein is based on the assumption that Russia will employ nuclear weapons if either its government or the nuclear triad on the Kola Peninsula in northwest Russia is directly threatened.[18] NATO will avoid escalating the conflict to a nuclear war, limiting its approach to defending NATO territory and international waters with limited and deliberate targeting inside Russia. The current NATO deterrence strategy is based on denial.[19] In this chapter, deterrence is expanded further, with the cost imposition element being a protracted armed conflict against NATO that will threaten domestic and international support for the Russian government. The time horizon is the next 10 – 15 years. This period is the time it will take from concept development to procurement and for NATO to rearrange processes and structures.

Literature Review

New Generation Warfare and A2/AD

According to Tor Bukkvoll, Russian discussions on military theory are following three different directions: traditionalist, modernist, and revolutionary.[20] These in-

[15] An operating concept is the articulation in broad terms of the application of military art and science within some defined set of parameters. In simplest terms, operating concepts describe how military forces operate. See John F. Schmitt, *A Practical Guide for Developing and Writing Military Concepts* (McLean, VA: Hick and Associates, 2002), 4.

[16] For a strength, weakness, opportunity, and threat (SWOT) analysis of Russia and NATO, see appendix A.

[17] Schmitt, *A Practical Guide for Developing and Writing Military Concepts*.

[18] For more on regime preservation, see Allport, *Fire and Ice*, 28. For more on threats to Russia's nuclear triad, see Kristin ven Brusgaard, "Russland som Regional Utfordrer [Russia as a Regional Challenger]," *IFS Insights* (November – December 2019): 15.

[19] "Deterrence and Defence," North Atlantic Treaty Organization, 25 November 2019.

[20] These terms are constructed by Tor Bukkvoll to explain the discussions going on in the Russian military community. Traditionalists believe in the strength of Russia's exceptional fighting spirit and that technology supports rather than replaces soldiers on the ground. They also believe that doctrine and theory drives the development of technology. Traditionalists have been those promoting asymmetric concepts such as NGW. Modernists want to replace technology with a smaller and leaner force made up of professional soldiers. Revolutionists believe that technology has totally changed the character of war and want fundamental changes in the direction of a A2/AD concept. See Tor Bukkvoll, "Iron Cannot Fight: The Role of Technology in Current Russian Military Theory," *Journal of Strategic Studies* 34, no. 5 (2011): 687 – 700, https://doi.org/10.1080/01402390.2011.601094.

ternal discussions try to address how best to counter threats to national interests. The discussions are about technology or doctrine primacy and the importance of manpower and morale as compared to technology. While elements of all three directions appear in Russia's current military doctrine development and defense planning, the traditionalists are probably the most influential in promoting NGW and A2/AD technology while simultaneously financing a large conventional force.[21]

The concept of NGW was published in the Russian military journal *Voennaia Mysl'* in 2013.[22] By developing NGW, Russia seeks to expand the tools it could use as weapons and exploit the weaknesses of its adversaries with primarily nonkinetic means to shape and suppress in the informational and psychological areas before a more kinetic approach are launched. It is a whole-of-nation approach that uses all elements of national power and civilian and private means.[23] Dima Adamsky claims that "the essence of NGW is an incorporation of hard and non-kinetic tools across various domains through skillful application of coordinated military, diplomatic and economic tools. The ratio of non-military and military measures is 4 to 1."[24] While this illustrates Russia's emphasis on the use of nonmilitary means, Michael Kofman cautions against the belief that Russia is not prioritizing conventional air, land, and naval capabilities.[25]

Within NATO countries, NGW has been called *hybrid warfare* or *gray zone operations* in an attempt to explain its difference from conventional warfare.[26] Russia's seizure of Crimea in 2014 is an example of NGW that resulted in a fait accompli. According to Dan Altman, the most common strategy for seizing territory is by fait accompli. Between 1918 and 2016, there have been 112 examples of land grabs with the use of this strategy.[27] John A. Vasquez notes that the most important factors that increase the likelihood for war are rivalry, an arms race, competing alliances, and

[21] Bukkvoll, *Iron Cannot Fight*, 700 – 4.

[22] Dmitry (Dima) Adamsky, "From Moscow with Coercion: Russian Deterrence Theory and Strategic Culture," *Journal of Strategic Studies* 41, no. 1 – 2 (2018): 39, https://doi.org/10.1080/01402390.2017.1347872; and Jānis Bērziņš, "Not 'Hybrid' but New Generation Warfare," in *Russia's Military Strategy and Doctrine*, ed. Glen E. Howard and Matthew Czekaj (Washington, DC: Jamestown Foundation, 2019), 167. The elite military journal known in Russia as *Voennaia Mysl'* was founded in 1918.

[23] Russia has increasingly used private military and security companies such as the Wagner Group and Ramzan Kadyrov's Terek as well as criminal organization and motorcycle clubs such as the Night Wolfs. See Åse Gilje Østensen and Tor Bukkvoll, *Russian Use of Private Military and Security Companies: The Implications for European and Norwegian Security* (Kjeller, Norway: Norwegian Defence Research Establishment, 2018).

[24] Adamsky, "From Moscow with Coercion," 39. According to Adamsky, the ideal type of NGW campaign is composed of seven stages: 1) informational-psychological struggle; 2) asymmetrical and indirect actions that use informational struggle to neutralize an adversary without using force; 3) using public sentiments of an adversary to force military inaction; 4) massive deception to conceal the time, scope, scale, and character of the attack; 5) subversion by special operations; 6) the kinetic phase, beginning with space-aerial dominance that destroys critical civilian infrastructure and civilian-military decision centers; and 7) territorial occupation.

[25] Michael Kofman, *Russia's Armed Forces under Gerasimov: The Man without a Doctrine*, Russia Military Analysis, 4 April 2020.

[26] According to Ofer Fridman, use of the term *hybrid warfare* is problematic due to differences in interpretation and understanding in the West and Russia. The term has been highly politicized on both sides to make statements and polarize situations. See Fridman, *Russian "Hybrid Warfare*," 155 – 57.

[27] Altman, "By Fait Accompli, Not Coercion," 882.

territorial disputes. All of these factors are present in Northern Europe today.[28] Fait accompli stands in contrast to a strategy of coercion. While fait accompli exploits surprise to achieve a political aim, coercion is a form of pressuring an adversary to offer a concession.[29]

Adamsky claims that Russia has merged NGW with conventional and nuclear coercion strategies to create a cross-domain coercion strategy that combines nuclear, conventional, and informational (cyber) tools into an integrated approach, expanding the continuum of options on the escalating ladder.[30] This expansion means that Russia's credibility to coerce has greatly improved due to its range of options, and Russia has demonstrated the will to use it. Adamsky contradicts Altman by saying that NGW can be a part of both coercion and fait accompli. To achieve fait accompli, Russia can either use a rapid land grab or NGW approach and secure its success with A2/AD capabilities.

According to Kofman, A2/AD is not doctrine in Russia and is misunderstood within NATO countries. A2/AD is often portrayed as an impenetrable bubble. Russia has invested heavily in A2/AD capabilities that make it difficult for an adversary to penetrate. These include integrated air and missile defense (IAMD) systems such as the S-400 surface-to-air missile system and 3M-54 Kalibr cruise missile, advanced electronic warfare capabilities that can disrupt global positioning system (GPS)-guided munitions, and hypersonic missiles that can penetrate NATO IAMD systems. Rather than looking at these Russian systems as isolated A2/AD capabilities, Kofman argues that they have to be viewed in connection with the NGW concept and in the strategic concept of bastion defense.[31]

Multidomain Operations and C-A2/AD

The dominant military concept in development among NATO countries can be observed in the United States. To counter both NGW and A2/AD, the U.S. Army has created the concept of *multidomain operations* (MDO).[32] MDO is a holistic military concept that employs civilian and military capabilities in a unified effort to dominate the enemy in all domains of warfare (land, sea, air, space, and cyberspace, as

[28] John A. Vasquez, "What Do We Know about War?," in *What Do We Know about War?*, 2d ed., ed. John A. Vazquez (Lanham, MD: Rowan and Littlefield, 2012), 306 – 15.
[29] Altman, "By Fait Accompli, Not Coercion," 882. Coercion consists of deterrence and compellence.
[30] Adamsky, "From Moscow with Coercion," 53.
[31] Kofman, "It's Time to Talk about A2/AD."
[32] *Multi-Domain Battle: Evolution of Combined Arms for the 21st Century, 2025 – 2040* (Fort Eustis, VA: U.S. Army Training and Doctrine Command, 2017).

well as the electromagnetic spectrum and information environment).[33] MDO addresses NGW's aim to physically, functionally, and politically separate the United States and NATO in a continuous state of struggle. The main phases of MDO are 1) compete, 2) penetrate, 3) disintegrate, 4) exploit, and 5) recompete. It is conducted with a calibrated force posture, multidomain formations, and convergence. This necessitates the right mix of forward-deployed forces, expeditionary forces, and follow-on forces, with multidomain formations possessing the right task-organization of capabilities to handle NGW challenges and A2/AD capabilities.[34] The Army is currently fielding multidomain task forces in the Indo-Pacific region to test this concept, with Europe as the next step beginning in 2021.[35] Convergence in MDO means employing combined arms in all domains with a focus on disruption and destruction of enemy capabilities in a kill web of C4ISR and weapons supported by artificial intelligence (AI) for decision support.

For the U.S. Navy, one of the main military challenges is how to avoid being targeted by long-range missiles. This becomes increasingly difficult with an adversary such as Russia.[36] The Navy's solution to this problem is the concept of *distributed maritime operations* (DMO), in which warships operate in smaller formations and are dispersed, making them harder to target but still capable of bringing all the sensors and firepower to bear to defeat the enemy. DMO is about massing effects, not ships. It advocates for mission command and calculated risk acceptance.[37] However, DMO is aimed at countering an adversary's A2/AD capabilities and not the full spectrum of NGW.

Another concept aimed at countering A2/AD is *mosaic warfare*. The U.S. Defense Advanced Research Projects Agency (DARPA) has taken elements of both MDO and DMO and focused more on how to overwhelm an enemy's IAMD system to gain the effects of long-range missiles. This action includes using decoys, low-cost unmanned systems together with high-end missiles, and aviation in robust C4ISR task-organized networks. It also includes employing AI for decision support, swarming of munitions and sensors, and loitering ammunition.

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[33] The concept of *multidomain battle* is fundamentally about how U.S. forces will deter and defeat adversary strategies below the level of armed conflict and, when necessary, fight and win to overcome rapidly evolving challenges posed by powerful and intelligent peer rivals. This concept allows U.S. forces to outmaneuver adversaries physically, virtually, and cognitively, applying combined arms in and across all domains. It provides a flexible means to present multiple dilemmas to an enemy by converging capabilities from multiple domains to create windows of advantage, enabling friendly forces to seize, retain, and exploit the initiative to defeat enemies and achieve campaign objectives. Employing the ideas within this concept, the Joint Force can credibly deter adversary aggression, defeat actions short of armed conflict, deny the enemy freedom of action, overcome enemy defenses, control terrain, compel outcomes, and consolidate gains for sustainable results.

[34] *The U.S. Army in Multi-Domain Operations in 2028*, TRADOC Pamphlet 525-3-1 (Fort Eustis, VA: U.S. Army Training and Doctrine Command, 2018).

[35] Sean Kimmons, "Army to Build Three Multi-Domain Task Forces Using Lessons from Pilot," Army News Service, 15 October 2019.

[36] Benjamin Jensen, "Distributed Maritime Operations: Back to the Future?," *War on the Rocks*, 9 April 2015.

[37] *Expeditionary Advanced Base Operations (EABO) Handbook: Considerations for Force Development and Employment* (Quantico, VA: Concepts and Plans Division, Marine Corps Warfighting Lab, 2018), 22.

To support these concepts, the U.S. Marine Corps is developing *expeditionary advanced base operations* (EABO). The main purposes of this concept are to provide access to contested areas by disrupting and destroying A2/AD capabilities, secure staging areas for other forces, and contribute to sea control operations. Low-signature forces with operationally relevant sea control and denial capabilities target and strike an adversary's land, sea, and air platforms. The lethal combination of such forces operating from simple forward-basing infrastructure will enable U.S. forces to endure, partner, and operate within range of an adversary's long-range precision fires.[38]

Russia and the United States are in a competition of new military concepts and technology development not seen since the Cold War. Russia's development of concepts and technology, which combines conventional and unconventional means and methods in a whole-of-nation approach, are pushing the limits of how the United States and NATO understand war. This progress has also challenged the ability of the United States and NATO to deter in Northern Europe. The rapid ongoing development in U.S. operating concepts constitutes an opportunity for NATO to integrate itself in the processes to create a new NATO operating concept. To discuss this option further, there is a need to cover some maritime theory.

Maritime Theory

Milan Vego claims that the military problem of Northern Europe during the Cold War was mainly a maritime problem.[39] U.S. Navy rear admiral Alfred T. Mahan, who has been called the most influential naval theorist since the beginning of the twentieth century, argued that a decisive naval battle in which a concentrated navy defeats the enemy leads to command of the sea. Mahan's central ideas were about the importance of controlling sea lines of communication, maintaining a central position with a concentrated fleet, and acting offensively.[40]

British naval historian Sir Julian S. Corbett was the theoretical opposition to Mahan in the beginning of the twentieth century. While they agreed on the importance of sea lines of communication, Corbett's approach was that it is not possible to conquer the sea because the sea is not susceptible of ownership.[41] He focused on applying naval forces in support of political aims to support an overall operation integrated with land forces and with strategic combinations of dispersing or concentrating the fleet in offense, defense, raids, blockades, or by presenting a dilemma in a fleet in being. [42]

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[38] *Expeditionary Advanced Base Operations (EABO) Handbook*.
[39] Milan Vego, "The Soviet Envelopment Option on the Northern Flank," *Naval War College Review* 39, no. 4 (Autumn 1986): 26 – 38.
[40] Milan Vego, *Naval Classical Thinkers and Operational Art* (Newport, RI: U.S. Naval War College, 2009), 2.
[41] Julian S. Corbett, *Some Principles of Maritime Strategy* (Annapolis, MD: Naval Institute Press, 1988), 78.
[42] Vego, *Naval Classical Thinkers and Operational Art*, 8.

The *Jeune École* (Young School) was a competing naval theory to both Mahan and Corbett. Developed in France in the 1820s, it served as an answer to the military problem of being the weaker navy. The main idea was to fight on different terms: rather than face the enemy's capital ships in large formations, one was instead to use small but powerful ships such as submarines and motor torpedo boats.[43]

Imperial German Navy vice admiral Wolfgang Wegener criticized the naval strategy used by Germany during World War I, in which it employed unrestricted submarine warfare in an attempt to blockade the United Kingdom. He proposed an alternative maritime strategy during the interwar period, based on threatening the sea lines of communication of the United Kingdom with both surface and subsurface forces. Wegener believed that controlling key maritime terrain that threatens enemy sea lines of communication would facilitate a decisive battle with a strategic outcome.[44]

Sergey G. Gorshkov, the admiral of the fleet of the Soviet Union from 1956 to 1985, helped transform the Soviet Navy from the *Jeune École*-inspired coastal defense force with primarily submarine forces to a balanced navy with global reach. Gorshkov identified three main challenges for the Soviet (and now Russian) Navy: ice, chokepoints, and distance. Most of its naval bases are located in arctic or subarctic climate where ice is a problem. The Soviet Navy solved this problem by building an icebreaker fleet. There are major chokepoints for all of its naval bases, though less for the Northern fleet. There, the Greenland, Iceland, and United Kingdom (GIUK) gap is the major chokepoint, in addition to the gap between Svalbard and Norway. The challenge of distance has to do with fleets' ability to support each other. The Soviet Navy partly mitigated that challenge by acquiring overseas bases and support ships. Gorshkov combined conventional and unconventional military theory with Marxist theory. He viewed the navy as a political whole-of-government tool and acknowledged the potential to use all of the government and country's resources in a whole-of-nation maritime strategy.[45]

Even though NATO and Russia have treated Northern Europe chiefly as a maritime problem given its vast sea areas, today the region presents a multidomain problem because Russia's NGW concept uses all instruments of national power as means. Corbett's theory about securing sea lines of communication is highly valid today, as is his approach to securing those sea lines of communication in a wider Joint perspective that combines domains to achieve a political objective. Wegener's theory about securing key maritime terrain is also valid, and it is that which the EABO concept aims to achieve. The asymmetric approach from the Jeune École is

[43] Arne Røksund, *The Jeune École: The Strategy of the Weak* (Leiden, Netherlands: Brill, 2007).

[44] Vego, *Naval Classical Thinkers and Operational* Art, 15.

[45] Gorshkov organized naval missions into the following categories: sea presence through the use of merchant ships, fishing trawlers, and intelligence ships; sea control operations; power projection through the use of amphibious forces; and deterrence through the use of ballistic missile submarines. He also established the concept of bastion defense for the protection of the Soviet Navy's submarines.

relevant to understanding Russia's investments in A2/AD capabilities and avoiding concentration and massing effects, as MDO, DMO, and mosaic warfare all address.[46] This approach contrasts with Mahan's theories of massing fleets for decisive battles, which can pose a grave risk to NATO fleets and their survival against modern missile systems. Gorshkov's concern about chokepoints for the Soviet Navy remains valid for the Russian Navy today, and it offers a possible avenue for exploitation by NATO. Gorshkov's way of combining conventional forces with unconventional forces and means is something that can be recognized in NGW.[47] These theories and concept development directly impacted the conduct of the Soviet Union and NATO in Northern Europe in the 1980s.

The Cold War Approach

The Soviet Union

During the Cold War, Northern Europe was a strategically important area for both the Soviet Union and NATO. The Soviet Union's strategy for conflict in the region included protecting strategic assets and projecting power to attack NATO's strategic assets and places. NATO strategy included denying the Soviet Union that possibility and punishing the Soviet Union by attacking the base complex on the Kola Peninsula.

The overall maritime strategy of the Soviet Union in Northern Europe was a strategic defense and operational offense, creating defense in depth by securing key maritime terrain well inside NATO, such as Iceland, Norway, and Denmark.[48] The Soviet Union's strategic concept for the Norwegian Sea prior to 1973 was to push ballistic missile submarines through the GIUK gap and close on the American continent, achieving a position from which to launch short-range nuclear missiles. After 1973, the Soviet Navy received intercontinental missiles on its new *Delta*-class nuclear-powered ballistic missile submarines, which could target the United States from the Arctic. The GIUK gap subsequently changed from being a chokepoint for getting Soviet submarines into the Atlantic to an area in which to deny NATO ships access to the Norwegian Sea, which would protect Soviet submarines operating in the sanctuary of the Barents Sea.

The Soviet Union's concept of *bastion defense* was a layered defense that included disruption of NATO's sea lines of communication in the Atlantic through sea

[46] The primary weakness in current U.S. concept development is that there are Service-initiated concepts rather than Joint concepts. To deal with NGW and A2/AD, the United States needs to join their four concepts mentioned here. The trend is that the Joint Chiefs of Staff and the Department of Defense back MDO as the Joint force concept and consider the others to be supporting concepts.

[47] There are traditions of using all means available for the state in both the Soviet Union and Russia, which have historical links to NGW. See Fridman, *Russian "Hybrid Warfare*," 170.

[48] Tor Ivar Strømmen, "The Battle That Never Was: The Cold War in Northern Waters" (paper presented at the RSIS-IFS Workshop on "Navies, Coast Guards, the Maritime Community and International Stability," Nanyang Technological University, Jurong West, Singapore, 16 November 2016), 2.

denial operations in the GIUK gap. From northern Norway and northern Greenland, the Soviet Union's Northern Fleet would conduct sea control operations with a combination of submarines, missile-carrying warships, long-range aviation, and land-based missile defense systems.[49] The primary mission of the Northern Fleet was to protect and ensure the survival of Soviet submarines, their supporting infrastructure, and land-based nuclear missiles. The Soviet Union would deny NATO access to airfields close to the Kola Peninsula and extend the range of its own land-based aviation by seizing parts of northern Norway.[50] The Northern Fleet would seize Svalbard and the smaller islands of Bear Island and Jan Mayen to base IAMD systems and long-range missiles. In addition, NATO expected Soviet attempts to seize Iceland and Greenland as key maritime terrain for control of the Norwegian Sea and North Atlantic.[51] In 1980, the Northern Fleet had 143 attack submarines and 47 nuclear-powered ballistic missile submarines to carry out this plan.[52]

Meanwhile, the Soviet Baltic Fleet, supported by Warsaw Pact navies, would focus on sea denial operations in the Baltic Sea to deny NATO ships access to the area.[53] NATO expected the Soviet Union to seize the Danish Straits, the greater part of Denmark, and southern parts of Norway to deny NATO the use of airfields there and extend the range of its own aviation to be able to threaten NATO's sea lines of communication in the North Sea.[54]

The Norwegian Chief of Defence, General Fredrik Bull-Hansen, expressed in 1985 a grave concern about the size of Soviet forces on the Kola Peninsula and the use of exercises to camouflage preparations for war. The Soviet forces there were capable of launching an attack within 48 hours.[55] In 1985, Soviet armed forces conducted a huge exercise called Summer Exercise, which simulated the bastion defense strategy as conducted by the Northern Fleet and supported by the Baltic Fleet.[56] Bull-Hansen believed that the Soviet Union would use exercises to position its forces before an invasion, as it had in Czechoslovakia in 1968.[57] It is worth noting that this is also the way that Russia began its invasions of Georgia in 2008 and

[49] *The Russian Navy: A Historic Transition* (Washington, DC: Office of Naval Intelligence, 2015), 3; F. J "Bing" West Jr., "U.S. Naval Forces and the Northern Flank of NATO," *Naval War College Review* 32, no. 5 (July – August 1979), 20; and Tamnes, "The Significance of the North Atlantic and the Norwegian Contribution," 11.

[50] West, "U.S. Naval Forces and the Northern Flank of NATO," 22.

[51] Vego, "The Soviet Envelopment Option on the Northern Flank," 32.

[52] Tamnes, "The Significance of the North Atlantic and the Norwegian Contribution," 10.

[53] Vego, "The Soviet Envelopment Option on the Northern Flank," 30.

[54] Vego, "The Soviet Envelopment Option on the Northern Flank," 35.

[55] Rolf Tamnes, Jacob Børresen, and Gullow Gjeseth, *Norsk Forsvarshistorie,* bind 5, *Allianseforsvar i Endring, 1970 – 2000* [*A History of Norwegian Defense*, vol. 5, *Alliance Defense under Change, 1970 – 2000*] (Bergen, Norway: Eide 2004), 44, hereafter *Alliance Defense under Change*.

[56] Tamnes, Børresen, and Gjeseth, *Alliance Defense under Change*, 45.

[57] Tamnes, Børresen, and Gjeseth, *Alliance Defense under Change*, 37.

Ukraine in 2014, both of which offer good examples of employing a rapid transition to achieve fait accompli.[58]

Russia Today

Since 2008, the Russian military has modernized to meet traditional security threats. In the Arctic, the Russian Navy's Northern Fleet has been reestablishing forward bases for the dispersal of forces, to establish support capabilities, and to extend the range of aviation and missiles. New capabilities have renewed the bastion defense concept, though it is still essentially the same as it was during the Cold War.[59] Russia integrates old Soviet concepts into its new concepts of NGW and gray zone/maritime hybrid warfare operations, as are portrayed in Russian maritime doctrine.[60] Russia has the capability, through gray zone activities, to disrupt decision making and undermine NATO unity. As Rolf Tamnes describes it, "Russia's military posture is oriented to achieving rapid peace to war transition, seizing the strategic initiative, and employ military power to intimidate and coerce. To do this the force posture is optimized for high readiness, prompt mobilization, and quick movement of large forces over long distances."[61] Russia has an advantage in space, time, and power in Northern Europe. It could seek to impose a fait accompli before NATO decides to engage or reinforcements arrive.[62]

Russia established the Arctic Joint Strategic Command in 2014 to integrate all military services of the Russian Armed Forces within the framework of the Northern Fleet, the pivot in Russia's bastion defense.[63] The Northern Fleet has been significantly reduced to 23 attack submarines in service, but it has also experienced formidable modernization. The new multipurpose nuclear-powered cruise missile submarine *Severodvinsk* (K 560) is one example. Russia is modernizing old surface ships with new missiles and building smaller but very capable warships such as the *Admiral Gorshkov*-class frigate. IAMD systems and long-range precision-guided missiles such as the 3M-54 Kaliber, 9K720 Iskander, and Kh-47M2 Kinzhal are examples of new missiles that are integrated on sea, land, and air platforms to serve as A2/AD capabilities.[64]

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[58] Johan Norberg, "The Use of Russia's Military in the Crimean Crisis," Carnegie Endowment for International Peace, 13 March 2014.

[59] Tamnes, "The Significance of the North Atlantic and the Norwegian Contribution," 21.

[60] NGW consist of elements from asymmetric warfare, low-intensity conflict/political warfare, sixth-generation warfare, and reflexive response. See Bērziņš, "Not 'Hybrid' but New Generation Warfare," 157; and Tamnes, "The Significance of the North Atlantic and the Norwegian Contribution," 22.

[61] Tamnes, "The High North," 11.

[62] Tamnes, "The High North," 13.

[63] Tamnes, "The Significance of the North Atlantic and the Norwegian Contribution," 23.

[64] Thomas Nilsen, "Russia's Top General Indirectly Confirms Arctic Deployment of the Unstoppable Kinzhal Missile," *Barents Observer*, 19 December 2019; Tamnes, "The Significance of the North Atlantic and the Norwegian Contribution," 26; and Kofman, "It's Time to Talk about A2/AD." Kofman criticizes the overall discussion about the Russian A2/AD concept being about technical capabilities, but for Russia this is a comprehensive concept and strategy that uses all the government's resources to influence the adversary.

In September 2019, Russia conducted Exercise Ocean Shield, the largest naval exercise since 1985, to train in bastion defense off the coast of Norway in a joint Northern Fleet-Baltic Fleet operation.[65] This operation demonstrates that the Soviet Union's Cold War-era concepts remain valid today, updated with new A2/AD capabilities.

NATO

In the 1970s, the defense of Northern Europe by NATO came to rely heavily on bases in the northern triangle of Norway, the United Kingdom, and Iceland.[66] The Supreme Allied Commander Atlantic of NATO was responsible for containing Soviet maritime forces in the Atlantic. NATO went through several maritime doctrinal and strategic evolutions until the early 1980s, when it implemented its Concept of Maritime Operations with underlying campaign plans called graduated response plans.[67] NATO designed these graduated response plans around three principles: enemy force containment, defense in depth, and retaining the initiative. The U.S. Navy had a more aggressive strategy, the Forward Maritime Strategy, with four phases: 1) deterrence or transition to war; 2) seizing the initiative; 3) carrying the fight to the enemy; and 4) striking strategic assets. This plan meant moving U.S. ships forward to defend Norway, counter any attempts to disrupt sea lines of communication, and deny the Soviet Union the wider ability to wage war. The U.S. principles for this strategy were to avoid nuclear confrontation, establish a protracted war, and apply offensive pressure to protect sea lines of communication for massive mobilization.[68] This approach presented a major change from the more cautious strategy of the 1960s and 1970s, when the U.S. Navy was reluctant to push carriers north of the GIUK gap.[69]

The U.S. Navy's Carrier Strike Force, supported by the British Royal Navy-led Anti-Submarine Warfare Strike Force and Amphibious Strike Force, led a multinational formation called Striking Fleet Atlantic, which was the heart of NATO's naval power. To support Striking Fleet Atlantic, the United States built numerous bases and installations for logistics support along the Norwegian coast.[70] In 1974, the United States established colocated operating air bases in Norway for U.S. aircraft.[71] The United Kingdom, Canada, and Germany also increased their commitments to Northern Europe in the late 1970s.[72] In 1982, NATO agreed on the Rapid

[65] Audun Halvorsen (speech, Center for Strategic and International Studies, Washington, DC, 22 October 2019).
[66] Tamnes, "The Significance of the North Atlantic and the Norwegian Contribution," 12.
[67] These response plans included the Atlantic Lifeline (the Atlantic SLOC) and the Shallow Seas (the North Sea and Baltic Sea).
[68] F. J. "Bing" West Jr., "Maritime Strategy and NATO Deterrence," *Naval War College Review* 38, no. 5 (September – October 1985): 8.
[69] Rolf Tamnes and Svein G. Holtsmark, "The Geopolitics of the Arctic in Historical Perspective," in *Geopolitics and Security in the Arctic*, ed. Rolf Tamnes and Kristine Offerdal (London: Routledge, 2014), 20.
[70] Tamnes, "The Significance of the North Atlantic and the Norwegian Contribution," 15.
[71] Tamnes, Børresen, and Gjeseth, *Alliance Defense under Change*, 53.
[72] Tamnes, "The Significance of the North Atlantic and the Norwegian Contribution," 12.

Reinforcement Plan, which was a reinforcement plan for the defense of the whole of Europe. Some units were earmarked for certain areas, while others were assigned to serve as rapid reaction units or Supreme Allied Commander Europe's reserves. The plan consisted of four operational elements: Allied Command Europe Mobile Force (Land), Standing Naval Forces, the Quick Reaction Mobile Force, and the Maritime Contingency Force. Included in this design were plans for prepositioning equipment to reduce reaction time.[73] In 1981, the U.S. Marine Corps began to preposition equipment for a brigade of II Marine Expeditionary Force (II MEF), which was named the Norwegian Air-Landed Marine Expeditionary Brigade. There were also plans for deploying the rest of II MEF to Norway if the need arose.[74]

The NATO headquarters responsible for planning and leading the defense of Norway, Denmark, and Germany was Allied Forces Northern Europe, located in Norway. NATO was well prepared for potential aggression by the Soviet Union.[75] Its posture allowed it to control the GIUK gap, which was key to secure access to the North Atlantic, Norwegian Sea, and Barents Sea and to deny the Soviet Navy's Northern Fleet the ability to employ its submarines. The United States had stationed maritime patrol aircraft on Iceland that worked in cooperation with British and Norwegian patrol aircraft to detect Soviet submarines. Mobile and static sonar systems around the GIUK gap completed the picture. In the event of war, NATO ships would conduct antisubmarine warfare operations to detect and destroy Soviet submarines, while U.S. and British nuclear submarines would interdict Soviet surface ships and submarines farther north near the Kola Peninsula. By securing Norway and the sea lines of communication, the U.S. Navy could bring aircraft carrier groups to the north of Norway into the fjords to gain aviation range into the Kola Peninsula and to protect the carriers.[76] Carriers could be pushed even farther north into the Barents Sea to strike strategic targets and pressure Moscow to end the war.[77] The role of European NATO forces would be to contain an attack by the Soviet Union until large U.S. reinforcement could arrive. NATO plans were regularly tested in exercises, such as Exercise Teamwork in the Norwegian Sea and Exercise Ocean Safari in the fjords of Norway.[78] These exercises were vital tools for deterrence by displaying NATO's abilities and its will to employ forces.[79]

In 1989, Richard D. Hooker criticized the United States' maritime strategy for Northern Europe by being too naval centric and too optimistic in handling Soviet

[73] Tamnes, Børresen, and Gjeseth, *Alliance Defense under Change*, 64.
[74] Allport, *Fire and Ice*, 10; and Tamnes, Børresen, and Gjeseth, *Alliance Defense under Change*, 62 – 63.
[75] Allport, *Fire and Ice*, 9 – 10.
[76] Tamnes, "The Significance of the North Atlantic and the Norwegian Contribution," 13.
[77] Allport, *Fire and Ice*, 11. This offensive strategy was developed in response to a calculated risk that the Soviet Union's overall strategy was defensive and that the Soviet concept of bastion defense could be threatened by a direct approach toward its strategic assets on the Kola Peninsula.
[78] Tamnes, "The Significance of the North Atlantic and the Norwegian Contribution," 13 – 14.
[79] Allport, *Fire and Ice*, 12.

aviation and submarines. He asked for a more comprehensive strategy, to include the prepositioning of more equipment in Norway and the deployment of larger land forces to secure a greater part of Norway, preventing the country from being used as a launching area for Soviet aviation and missiles. Hooker also criticized the offensive phase in the Barents Sea, which he argued would trigger a nuclear response from the Soviet Union.[80]

During the Cold War, the Nordic countries developed a whole-of-government concept called Total Defense.[81] The civilian side of government created the concept to support any war effort and protect the populations of the countries involved. The concept transformed a region at peace to a region at war.[82] This concept still exists in the Nordic countries as a whole-of-nation concept, but it changed during the 1990s to focus more on crisis management than war. Today, the Nordic countries are planning to revitalize the concept to counter today's gray zone challenges.[83]

NATO Today

NATO has been through several strategic changes since the end of the Cold War. Throughout the 1990s, there was a long period of cutting costs, integrating new countries into the alliance, and using NATO as a tool for out-of-area operations. It was not until the Russian invasion of Ukraine in 2014 that NATO truly turned its focus to collective defense against Russia.[84] As a result, NATO established measures such as the Enhanced Forward Presence in the Baltic states, the Very High Readiness Joint Task Force, the revitalization of naval standing forces, an increased presence of the United States in Europe, and resurrection of the graduated response plans and Rapid Reinforcement Plan (now called Readiness Action Plan). Today, NATO is planning to improve readiness, speed of decision making, and unity of command, as well as binding graduated response plans together into a theater-wide approach.[85] It has also adapted to new challenges by setting up a new cyber center and improving C4ISR capability.[86] The United States has been improving airbases in Iceland and Norway, and the U.S. Marine Corps has increased its activities in Norway with training and rotational forces. NATO is intensifying its pattern of exercises, such as Exercise Trident Juncture in Norway in 2018 and Exercise Baltops in the Baltic Sea in 2019. Nonetheless, NATO faces internal differences over what should be the chief focus of the alliance. Southern European countries are mainly concerned about ter-

[80] Richard D. Hooker Jr., "NATO's Northern Flank: A Critique of the Maritime Strategy," *Parameters* 19, no. 1 (June 1989): 34, https://doi.org/10.55540/0031-1723.1528.
[81] Allport, *Fire and Ice*, 9.
[82] Tamnes, Børresen, and Gjeseth, *Alliance Defense under Change*, 275.
[83] "Resilient Civilians in Hybrid and Population-Centric Warfare," Resilient Civilians Project; and Magnus Håkenstad, "Totalforsvarets Moralske Dimensjon [The Moral Dimension of Total Defense]," *IFS Insights* (November–December 2019): 16 – 19.
[84] Jeremy Støhs, *The Decline of European Naval Forces: Challenges to Sea Power in an Age of Fiscal Austerity and Political Uncertainty* (Annapolis, MD: Naval Institute Press, 2018), 185.
[85] Tamnes, "The High North," 16.
[86] *The Secretary General's Annual Report 2019* (Brussels, Belgium: North Atlantic Treaty Organization, 2020), 27.

rorism and refugees, while Northern and Eastern European countries are more concerned about Russia.

For Northern Europe, there is no clear overall strategy or operating concept. Rolf Tamnes suggests six considerations: 1) merge the Baltic region and the Norwegian Sea into one theater of operation; 2) integrate U.S., British, and Norwegian maritime patrols in the greater North Atlantic area; 3) reform command structure to reintroduce geographical areas; 4) improve situational awareness; 5) protect forces and bases with missile defense; and 6) conduct more extensive training and exercises in NATO Article 5 operations to reestablish a "new normal."[87]

With NATO failing to be coherent in its overall threat perception and not agreeing on an overall strategy, there are attempts to regionalize the alliance. The Northern Group is one example in which the countries of Northern Europe have formed an alliance within NATO to address the Russian threat.[88] This system also raises the question about strengthening the regional focus of individual headquarters in contrast to today's 360-degree focus of NATO headquarters.[89] By designating the three Joint headquarters to specific regions and aligning them to national headquarters, the ties between NATO plans and national plans could be better coordinated.[90]

There are clear links between the Soviet Navy of the Cold War and the Russian Navy of today, even though the current navy is much smaller. Admiral Gorshkov's bastion defense concept is revitalized and constitutes a big challenge for NATO today and in the future. Russia's use of new A2/AD capabilities has presented NATO with challenges not seen since the 1980s. With the clever use of NGW to compensate for lack of military quantity, Russia constitutes a credible threat that expands the current military problem from a maritime issue to an all-domain problem that NATO does not have a concept to counter. NATO's approach to Northern Europe in the 1980s remains valid today, but it needs to be updated with new capabilities and integrate new concepts. The U.S. Navy's approach of the 1980s in seeking protraction remains valid as well, but the aggressive offensive factor is not feasible for the future because it will likely trigger a nuclear response to targeting strategic assets and threats to the Russian government.[91] Neither is Mahan's theory of massing naval forces, since that can result in losing numerous key naval capabilities to Russian missile salvos. NATO is doing several things to close the gap between the Russian security challenge and its ability to counter it. Nonetheless, the alliance still lacks a credible concept. The United States' concept development does not present a unit-

[87] Tamnes, "The Significance of the North Atlantic and the Norwegian Contribution," 29.
[88] The Northern Group includes Denmark, Estonia, Finland, Germany, Iceland, Latvia, Lithuania, the Netherlands, Norway, Poland, Sweden, and the United Kingdom. See Tamnes, "The High North," 5.
[89] *Allied Joint Doctrine for the Conduct of Operations*, Allied Joint Publication 3 (Brussels, Belgium: North Atlantic Treaty Organization, 2019), 1-8.
[90] Tamnes, "The High North," 22.
[91] Allport, *Fire and Ice*, 28, 68, 72.

ed solution to the military problem described in this paper. NATO therefore needs to apply a mix of concepts.

The NATO Adapted Multidomain Defense in Depth Operating Concept

The NATO operating concept for Northern Europe will have to counter and balance two threats that constitute a Russian security dilemma: the threat of fait accompli and A2/AD. The first threat contains the possibility for both rapid land grabs and a longer-term, NGW, gray zone short-of-war approach. The A2/AD threat contains multilayered IAMD systems, long-range missiles from land, sea, and air platforms that are supported by electronic warfare, cyber, and space capabilities. The dilemmas that Russia can create for NATO are plenty, including uncertainty over whether a state of war exists, an unclear intelligence picture to declare Article 5, a lack of unity within NATO to commit to any action, the protection of NATO forces and a willingness to take risk inside Russia's A2/AD coverage, the ability to penetrate that A2/AD coverage, and avoiding escalation to a nuclear response from Russia.

Russia's chief weaknesses in an armed conflict with NATO are the sustainment of high-end A2/AD capabilities, distance between fleets for mutual support, maritime choke points through which to deploy these fleets, international legitimacy as an aggressor against NATO, a vulnerable economy, and fading support for the Russian government.[92] To exploit these weaknesses, NATO should adapt a multidomain, whole-of-nation approach for peace/competition, crisis, and armed conflict, established in a multilayered defense that is prepared for a protracted armed conflict and which is capable of neutralizing Russian A2/AD capabilities. To succeed, NATO must expose Russian malign activities and escalate to an Article 5 operation to activate the NATO mandate and plans to defend a member state. Member states must mobilize their populations, industries, and economies to support a protracted armed conflict. NATO must be willing to take risks to respond to an armed conflict with Russia that will likely result in losing ships, aircraft, soldiers, and civilians to expose Russian aggressive activities and get inside its A2/AD coverage.

As NATO will remain dependent on U.S. forces and capabilities, this concept will use elements from U.S. military concept development.[93] NATO needs to apply a mix of concepts to establish a complete concept, as none of them alone present a complete solution to the military problem described here. NATO will increase interoperability by creating a concept that is based on U.S. concepts and capabilities and that is integrated in plans and exercises. This arrangement will give NATO access to

[92] Rachel Ellehuus and Ian King, "Putin and the COVID Crisis: Instability as Opportunity," Center for Strategic and International Studies, 31 March, 2020; and Jeffrey Mankoff and Cyrus Newlin, "The Resignation of Russia's Government," Center for Strategic and International Studies, 17 January, 2020.

[93] Støhs, *The Decline of European Naval Forces*, 190 – 91.

advanced missile systems, C4ISR, space capabilities, AI, and a quantity of forces for a protracted armed conflict.

The MDO concept addresses both NGW and A2/AD by calibrated force posture, multidomain formations, and the convergence of effects through multidomain combined arms to create multiple dilemmas. The DMO and mosaic warfare concepts are mutually supporting counter-A2/AD concepts that protect the force from being targeted and penetrate the adversary's A2/AD coverage by establishing kill webs with C4ISR and weapons and using multiple capabilities synchronized in time and space to overwhelm the adversary's systems. The EABO concept supports the need to seize, control, and dominate key maritime terrain such as Iceland, the Denmark Strait, and the coast of Norway to deny the Russian Navy freedom of movement and the ability to threaten NATO sea lines of communication.

To handle Russian NGW and gray zone activities, NATO nations need to adapt a whole-of-nation approach to use all the instruments of national power, mobilize their populations and organizations to collect intelligence, expose Russian hostile activities, encourage legal authorities to act, and be able to endure a protracted conflict. The Nordic system of Total Defense should be expanded and adapted by NATO members to increase national resilience against gray zone activities and protracted armed conflict by protecting their populations and supporting security forces.[94]

NATO will also need to transform the concept of forward defense into a multilayered defense-in-depth concept that can operate in all domains. Today's organizations with trip-wire forces, forward defense forces, rapid reaction forces, and follow-on forces are still relevant and necessary for a protracted concept. This concept needs to be updated to handle future threats with the right capabilities present in contested areas to facilitate for the deployment of rapid reaction forces and follow-on forces by degrading Russian A2/AD capabilities. Hence, IAMD, cyber, electronic warfare, and information systems must be in place, with a minimum capability in the most exposed member states supported by NATO rotational forces and reach-back capabilities.

NATO should transform from a 360-degree security system to a regional system with mutual support between regions. Consequently, the alliance should designate Joint headquarters, forces, and plans that are coordinated with other regions to avoid mutually excluding plans and force employment. This will create an opportunity for the designated NATO Joint headquarters to build close relationships with the member state's Joint headquarters, forces, and national plans. NATO's naval fleets also need to increase in size and capability and cooperate closely with the U.S. Navy's Second and Sixth Fleets for the coordination of plans and adaptation to the DMO concept.

[94] For the purpose of this study, *security forces* include police, border forces, coast guard, paramilitary forces, militia/home guard, and regular armed forces.

Finally, the overall tenets of maneuver warfare are not irrelevant even when seeking a protracted campaign to attrite Russian A2/AD capabilities. The fight on the tactical level, in all domains, must seek opportunities through maneuver and create dilemmas to expose vulnerabilities that can be exploited. Mission command will be of great importance, especially for land and naval forces understanding the vulnerabilities from electronic warfare and cyberattacks. Clear intent, authority, and the will to take risks must be promoted and trained, along with the education to understand the consequences of uncontrolled escalation of the conflict.[95]

Jaap de Hoop Scheffer, the secretary general of NATO from 2004 to 2009, warned about regionalization of NATO, stating that it "is the path to fragmentation."[96] While fragmentation of NATO is indeed a risk with regionalization, the time has come to create clear divisions of labor within the alliance's command structure and clear commitment of forces to different plans and regions. The lack of credible plans and concepts are a greater risk to the credibility of NATO's conventional deterrence than regionalization. The cohesion of NATO can be upheld with the overarching objective of peace and security in Europe and North America and the commitment to mutual support.

There is a reason to be cautious against radical changes to military structures and concepts to reflect a purely technological focus, as the tendency was in the United States at the end of the 1990s.[97] It will require seizing and securing terrain and populations in the future. Without balanced ground forces, there is a risk that Russia will use its large ground force to achieve its aims instead of using its high-end capabilities.[98] There will also be a need for large amounts of security forces to secure key infrastructure and populations in a prolonged gray zone crisis to avoid a situation such as in Ukraine.

Having analyzed Russian, U.S., and NATO doctrines, concepts, and capabilities, this chapter concludes that NATO should establish a new operating concept for Northern Europe that is adapted to the U.S. concept development of MDO with a whole-of-nation approach. Furthermore, NATO should convince its member states to follow this direction in doctrine development and procurement in the future to be able to effectively deter Russia in a strategy of denial. Finally, the United States should invite NATO into its concept development to ensure interoperability and credible conventional deterrence.

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[95] *The U.S. Army in Multi-Domain Operations in 2028*, 21.

[96] Jaap de Hoop Scheffer, "Speech by NATO Secretary General Jaap de Hoop Scheffer on Security Prospects in the High North" (speech, Reykjavik, Iceland, 29 January 2009).

[97] Much of the United States' concept development at the end of the 1990s, such as *Joint Vision 2010*, was technologically focused and disregarded the need for soldiers on the ground to seize and secure land and population, which culminated during Operation Iraqi Freedom in 2003. See *Joint Vision 2010* (Washington, DC: Joint Chiefs of Staff, 1997); and Michael R. Gordon and Gen Bernard E. Trainor, USMC (Ret), *Cobra II: The Inside Story of the Invasion and Occupation of Iraq* (New York: Pantheon Books, 2006), 6.

[98] Kofman, *Russia's Armed Forces under Gerasimov, the Man without a Doctrine*.

Appendix A

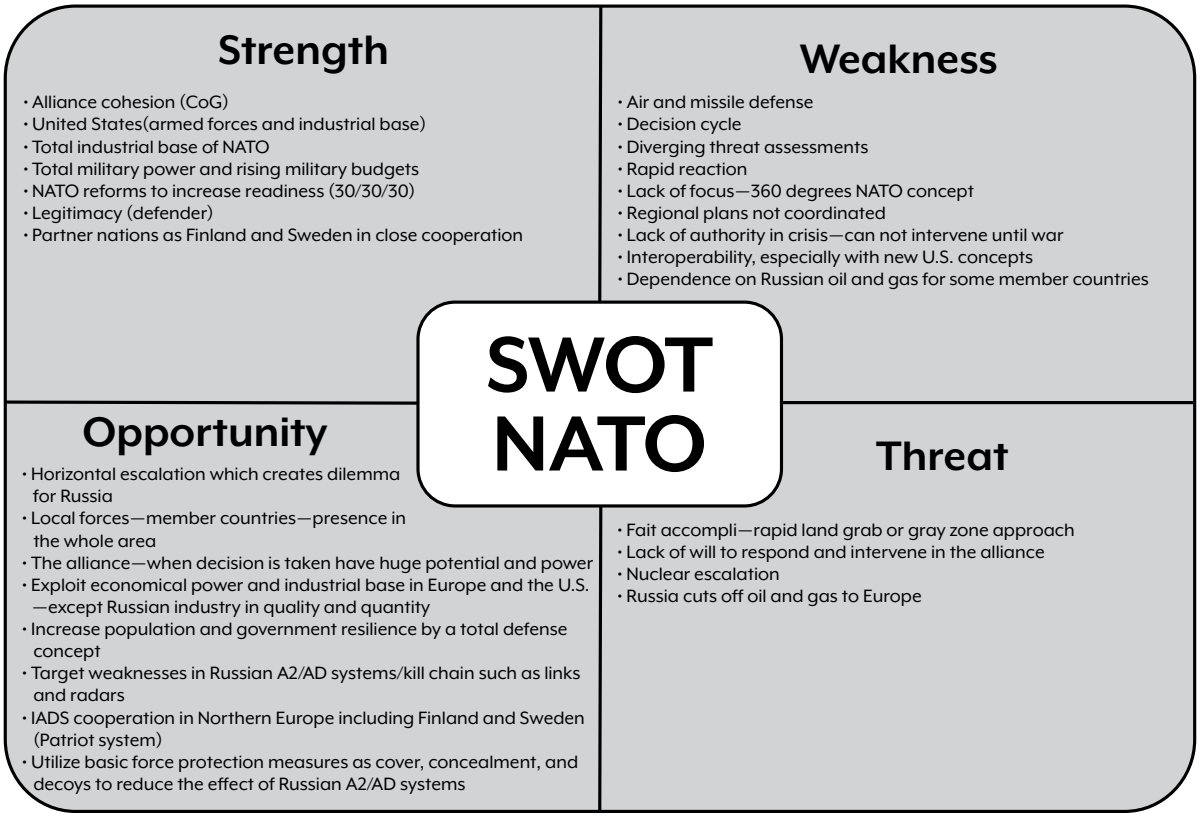
SWOT Analysis of Russia and NATO

The strength, weakness, opportunity, and threat (SWOT) analysis of Russia and NATO is conducted with data collected for this study. The relevant conclusions of this SWOT analysis are integrated into the study.

Figure 1. SWOT analysis of Russia

Source: courtesy of the author, adapted by MCUP.

Figure 2. SWOT analysis of NATO



Source: courtesy of the author, adapted by MCUP.

Appendix B

The NATO Adapted Multidomain Defense-in-Depth Operating Concept in NATO Joint Functions[1]

Maneuver is conducted in all domains with the possibility for cross-domain maneuver by exploiting success in one domain to gain progress in another domain. In the land, sea, and air domains, small units must be able to maneuver in contested areas to get in range for effect and at the same time stay concealed and covered to avoid being targeted. On the operational level, the right balance of forward-deployed forces, rapid deployment forces, and larger follow-on forces must be postured to be able to react to any gray zone activity or rapid land grab. In addition, NATO must be able to defend and forward-deploy forces into a theater of operations under the threat of an adversary's A2/AD.

Fires is conducted in all domains with the possibility for cross-domain fires by exploiting effects in one domain to gain effect in another domain. To penetrate A2/AD coverage, mosaic warfare techniques are utilized in multiple domains to overwhelm sensors and target critical vulnerabilities in the adversary's A2/AD kill chain. Attrition is achieved by deception and decoys to trigger the use of high-end A2/AD capabilities. On the tactical level, targeting must be deliberate and controlled to target critical vulnerabilities and conserve NATO high-end strike capabilities. On the operational level, targeting must be deliberate and controlled to avoid nuclear escalation by balancing targeting operational-level capabilities without striking vital strategic capabilities.

Command and control is vital for cross-domain maneuver and fires coordination. Russian electronic warfare, space, and cyberspace capabilities are powerful and can threaten NATO command and control. Therefore, a proper balance between low-signature management and proper command and control must be planned and exercised. All units must be trained for emission control and be able to execute operations without communication. Mission command is vital for success. Innovations in C4ISR architecture and capabilities, supported by AI, will be important for rapid decision support. The exposure of the systems needs to be thoroughly assessed and timed. Rapid sensor to shooter transmission of target intelligence is key for the successful targeting of an adversary's A2/AD systems. Command and con-

[1] *Allied Joint Doctrine for the Conduct of Operations*, 1–21.

trol of plans and operations must be closely coordinated between member states and NATO through regionally aligned Joint Force Command (JFC) headquarters. Close coordination and general support in the seams between the different JFCs are important. For Northern Europe, it is especially important between JFC Brunssum, Netherlands, and JFC Norfolk, Virginia, for the deconfliction and support in the transition from the Atlantic Ocean to the European continent. A thorough assessment of where the boundary between these JFCs should be is vital, but the deconfliction and cooperation between the JFCs is even more important to avoid being exploited by the adversary.

Intelligence collection has several aspects for this concept. Proper and detailed knowledge about atmospherics and the normal pattern of life is an important starting point. That is the baseline for understanding if Russia will conduct gray zone operations in an area of operations. Continuous intelligence collection on capabilities, capacities, training standards, and will is also important. Good networks and infrastructure to pull and push intelligence across security forces and domains are vital for early warning of gray zone operations. National legislation must be addressed by NATO member states to make this work in times of peace, crisis, and armed conflict. Good international intelligence cooperation is key for rapid decision making to deploy NATO forces to preempt malign activities. Collection of information on the critical vulnerabilities of A2/AD systems must also be compiled in targeting databases in national and NATO JFC headquarters. A mix of inexpensive and high-end unmanned sensors, as well as manned sensors and human intelligence, must be available for both gray zone collection and A2/AD threats. Intelligence fusion on the tactical, operational, and strategic levels must be facilitated to exploit cross-domain collection and integrate national intelligence, international intelligence, and security services intelligence. Host nation intelligence access in times of peace, crisis, and armed conflict must be exploited by enabling technology, training, and processes for the rapid transmission of target intelligence to NATO or U.S. high-end strike capabilities.

Operations in the **information** environment must be planned and coordinated to make sure that NATO does what it says. This coordination must be done internally within the host nation as well as the larger alliance. Collection assets must be tasked to disclose Russian malign gray zone activities and widely distributed to mobilize populations, build unity in the alliance, and target Russian credibility. Proactive information operations are more important than precision in messaging due to the expected massive information operations from Russia.

Sustainment to endure attrition and protraction starts in NATO member states. By adapting the Total Defense concept, the host nation can mobilize its industry,

economy, and support. Prepositioned logistics and equipment for rapid response and sustainment must be planned by the host nation, NATO, and the United States. Vulnerabilities for the buildup of large logistic hubs and logistics transport must be addressed. Logistics must be well integrated in the operational plans with thorough knowledge of the generic and specific threats to avoid logistics being easily targeted. Use of civil infrastructure and contractors can reduce this signature. Tactics and equipment for low-signature deployment and logistics must be developed.

Force protection must be addressed for gray zone activities, threats from a rapid land grab, and A2/AD. For gray zone activities, this applies to the protection of civil and military infrastructure and counterintelligence operations to deny malign collection. The whole population must receive increased awareness of the threats, which includes private companies and civil services to avoid them being easy targets for cyberattacks and other malign activities. Resilience in a nation is built over time by awareness education, protection of critical infrastructure, and development of a culture for readiness into the civil and private sectors. To avoid being victim to a rapid landgrab, the host nation's armed forces and NATO must be postured near the most exposed member states and areas. To protect forces from being targeted, procurements, plans, and training must be established to improve emissions control, deception, camouflage, decoys, electronic warfare, and cover. Transitioning to the employment of smaller dispersed formations is vital for survival against the present adversary, but at the same time these forces must be able to mass fires and effects at the right time and place.

The Total Defense concept is a good tool for **civil-military cooperation** and integration for the purpose of the defense of a country. Legislation to achieve this end must be addressed to make sure that it is possible. To have optimal use of a nation's resources, the combined capabilities of that nation's military, civil, and private sectors must be utilized. This is also the case of host-nation support to NATO reinforcements.

Appendix C

Recommendations to Implement the NATO Adapted Multidomain Defense-in-Depth Operating Concept

This chapter has analyzed Russian, NATO, and U.S. doctrines, concepts, and capabilities and concluded that NATO needs a new operating concept in line and adapted to U.S. concept development of MDO with a whole-of-nation approach. NATO should also convince member states to follow this direction in doctrine development and procurement in the future to be able to effectively deter Russia in a strategy of denial. What follows are recommendations to NATO, NATO member countries, and the United States to help implement a new relevant NATO operating concept and implement it in plans, investments, activities, and operations.

NATO

- Follow the military concept development of the United States.
- Develop a new NATO operating concept: the NATO Adapted Multidomain Defense-in-Depth Operating Concept.
- Develop a new maritime strategy that is in line with the new operating concept.
- Regionalize the Joint headquarters, allocate forces regionally to fulfill graduated response plans and readiness action plan, and coordinate regional plans in NATO-wide mutually supporting plans.
- Establish NATO multidomain task forces for rapid deployment to secure and defend exposed NATO members until NATO follow-on forces are in place.
- Task-organize very high readiness joint task force and enhanced forward presence forces to be more relevant to counter NGW and A2/AD.
- Encourage and demand member states to develop their national plans, doctrine, and structure in line with new NATO concept.
- Encourage and demand member states to fulfill the NATO aim for spending 2 percent of their national gross domestic product (GDP) on defense.
- Actively use the European Centre of Excellence for Countering Hybrid Threats in Finland to inform NATO member states about NGW to build national resilience against threats from the information environment and cyberspace. Cooperate closely with the European Union in these matters.

- Further develop counterhybrid support teams to provide tailored targeted assistance to allies upon their request, in preparing against and responding to hybrid activities.[1]
- Conduct dynamic exercises to test concepts and plans to increase efficiency and conventional deterrence.
- Continue to improve and expand NATO's IAMD systems and Ballistic Missile Defense system.
- Continue integrating Sweden and Finland into defense planning, especially with the graduated response plans and readiness action plans that cover the defense of the Baltics and Northern Europe.

NATO Member Countries

- Fulfill the NATO aim for spending 2 percent of the GDP on defense.
- Establish national multidomain task forces that are able to secure and defend nations until NATO rapid reaction forces are in place.
- Establish balanced security structures that can counter threats both from fait accompli and A2/AD capabilities.
- Establish a total defense concept that prepares society and industry for a protracted armed conflict with Russia.
- Build awareness about NGW in public services and the population in cooperation with academia and the European Centre of Excellence for Countering Hybrid Threats in Finland.
- Invite NATO and partner countries to military exercises to test concepts and plans.
- Collect target intelligence on critical vulnerabilities to the Russian kill chain.

The United States

- Invite NATO and NATO nations to collaborate in the development of future military concepts.
- Make a Joint U.S. concept that integrates the many Service concepts, including MDO, DMO, and EABO.
- Combine lessons learned within NATO with the operational experiences of multidomain task forces.
- Enable rotational forces with knowledge and capabilities to counter NGW and A2/AD.
- Test new concepts and capabilities in relevant climates and geographies in cooperation with host nations and NATO.
- Share technology with fellow NATO member countries to establish capable IAMD systems, and rapidly share target intelligence to neutralize adversary A2/AD.

[1] "NATO's Response to Hybrid Threats," North Atlantic Treaty Organization, last updated 21 June 2022.

The Marine Corps Infantry Battalion's Newfound Dilemma

The Integration and Employment of Small Unmanned Aircraft Systems

By Major Kevin C. Nicholson, U.S. Marine Corps[1]

Charlie Company is staged and prepared to conduct a deliberate attack on a near-peer adversary's strongpoint defensive position. Before commencing the assault, the commander wants to confirm the suspected locations of the dug-in machine gun positions. He orders the launch of the company's small unmanned aircraft system (SUAS) to conduct a reconnaissance mission of the objective area. Launched from the center of the company's operational rally point three kilometers away, the SUAS is flown directly toward the adversary's defensive position. Once overhead, the operator loiters the SUAS for 30 minutes to collect the requested information.

In all this time, however, due to the elevation limitations of the company's SUAS used for the mission, the system remains easily observable by the adversary. Rather than attempting to shoot down or degrade the SUAS, the adversary employs its own SUAS platforms to follow the company's system back to its point of origin. The adversary can now determine the exact location of Charlie Company's operational rally point and utilize this information to begin conducting fire missions on the company's static location and likely avenue of approach. This results in the complete failure of the planned attack before it has a chance to commence.

~ A fictional scenario based on current SUAS employment

Think of it! What a superb advantage: SUAS assets that can fly over the enemy and discern their position, their crew-served weapons, and any obstacles that they have laid to kill or maim advancing Marines. What a great advantage to increase the creditability and lethality of U.S. Marine Corps infantry battalions. And yet, as the above scenario depicts, SUASs are not currently meeting the needs of ground force commanders and living up to their potential. SUASs are a fan-

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tastic new technology and should represent a distinct advantage on the battlefield, but with their current usage, they will likely lead to tactical blunders while engaged with a comparable adversary.

Colin S. Gray, a professor of strategic studies at the University of Reading in England, warns, "For every shiny new solution, new problems will be discovered. The principal reason why this is always so is because of the inconvenience represented by the enemy."[2] This uncertain future operating environment demands that the Marine Corps review every aspect of how SUASs are currently distributed and used, as the adversary of the future will have a vote. As of now, the integration and employment of "Group 1" SUASs within Marine Corps infantry battalions has not produced the desired results of creating a more lethal fighting force due to the lack of comprehensive DOTMLPF (doctrine, organization, training, materiel, leadership and education, personnel, and facilities)-derived and -tested capability solutions. Updating the DOTMLPF solutions would provide a more cohesive SUAS program, making the Marine Corps infantry battalion a more capable fighting force.

This current lack of DOTMLPF solutions creates a large void in the necessary knowledge and expertise of proper integration and employment of SUAS platforms across Marine Corps infantry units. This has led to the underutilization and misuse of SUASs throughout not just the infantry, where most of the Group 1 systems reside, but within the force at large. The introduction of SUASs to the infantry is an attempt to achieve a higher percentage of battlefield awareness and to provide small units organic intelligence, surveillance, and reconnaissance (ISR) capabilities. Although the systems continue to become more capable, the stagnant DOTMLPF solutions fail to provide the necessary conditions for their success. Without these supporting conditions to enable seamless integration and employment, the ultimate goal to enhance a unit's combat capabilities falls short.

With the current focus of SUAS employment taking place in a relatively passive and asymmetrical environment that allows for predominantly defensive operations or limited offensive operations from a defensive position, the Marine Corps has become overly confident. These operations are conducted mainly from forward operating bases, such as patrol bases or outposts against an irregular enemy force. Although forward operating bases are tactically achievable in the low-intensity conflicts of the recent past and present, they are a nonexistent option for frontline troops when pitted against a near-peer adversary on the battlefields of the future.

This chapter will first define Group 1 SUAS assets and their intended mission set while reviewing the current SUAS assets used within the Marine Corps. Next, it will explore all aspects of the DOTMLPF capability solutions of the Marine Corps in general as well as the overall integration and employment of SUASs within in-

[2] Colin S Gray, "War — Continuity in Change, and Change in Continuity," *Parameters* 40, no. 2 (2010): 5–13, https://doi.org/10.55540/0031-1723.2521.

fantry battalions in particular. Throughout this study, possible solutions across the DOTMLPF spectrum will be identified in an attempt to provide answers to the current issues plaguing the integration and employment of SUASs. This discussion is meant to stimulate discussion on the current SUAS program and will ideally lead to Marine Corps infantry units becoming more lethal, enabled rather than burdened by added technology on the battlefield.

Group 1 SUAS Defined

Group 1 SUASs consist of portable platforms that provide small units an organic means to conduct ISR operations.[3] These systems weigh less than 20 pounds, travel at speeds no greater than 100 knots per hour, and operate below an altitude of 1,200 feet above ground level.[4] Group 1 systems have manual operator controls with which ground station operators can manually fly every aspect of a mission, or the systems can be preprogrammed to fly specified routes to accomplish preplanned missions. These systems collect live video and still images with onboard cameras that are directly streamed to the operator on the handheld controller at the launch site.[5]

The Marine Corps' Group 1 portfolio currently consists of three systems: the AeroVironment RQ-11 Raven, the AeroVironment RQ 12A Wasp III, and the AeroVironment RQ-20 Puma.[6] These are all fixed-wing assets, and together they form the Small Unit Remote Scouting System (SURSS) program of record.[7] Each of these systems is resident within Marine Corps infantry battalions and distributed at the discretion of the commander to best support each company. There is nothing stated in current doctrine regarding the specified or directed distribution of SURSSs within a given unit. This lack of direction requires each infantry battalion to develop its own unique solution to the problem on how to integrate the systems to best accomplish its assigned tasks.[8]

The InstantEye family of SUASs and the Prox Dynamics PD-100 Black Hornet Nano, both of which are nonprogram of record systems within the Marine Corps portfolio, are the only vertical takeoff and landing (VTOL) systems currently resident in infantry battalions. This is with the exception of units that are experimenting with 3D-printed VTOL systems.[9] These VTOL systems are maintained and operated at the squad level and allow for rapid use due to the limited support needs

[3] Caroline Rees, "TALSA Offers Marines Unmanned Air System Training," Unmanned Systems Technology, 30 August 2012.
[4] *Command and Control of Joint Air Operations*, Joint Publication (JP) 3-30 (Washington, DC: Joint Chiefs of Staff, 2014), III-30.
[5] "Group 1 Small Unmanned Aircraft Systems," Naval Air Systems Command, accessed 5 December 2018.
[6] *U.S. Marine Corps Concepts and Programs, 2013* (Washington, DC: Headquarters Marine Corps, 2013), 186 – 88.
[7] *Fielding Plan for the Small Unit Remote Scouting System (SURSS)* (Washington, DC: Headquarters Marine Corps, 2015), 15.
[8] *Fielding Plan for the Small Unit Remote Scouting System (SURSS)*, 52 – 56.
[9] "InstantEye Mk-3 Systems," InstantEye Robotics, accessed 5 December 2018; "Personal Reconnaissance System," FLIR Systems, accessed 5 December 2018; "Group 1 Small Unmanned Aircraft Systems"; and Megan Eckstein, "Marines' 3D-Printed 'Nibbler' Drone Creating Lessons Learned on Logistics, Counter-UAS," *USNI News*, 27 September 2017.

compared to fixed-wing systems. Fixed-wing SUASs require radio frequencies and more robust ground command stations to allow for greater flight distances. Each VTOL SUAS generally supports squad and platoon-size operations, with the operators being resident within each squad.

Marine Corps SUAS Doctrine

While the Marine Corps has a specific and detailed doctrinal manual that explains how to implement and integrate SUASs within infantry battalions, it lacks doctrine on how to properly employ SUASs within tactical operations. The implementation guidance can be found in *Group 1 Unmanned Aircraft Systems (UAS) Training and Readiness Manual*, dated 26 March 2014.[10] This publication covers information ranging from the proper table of equipment for an infantry battalion to the specific standards a Marine must meet to become a SUAS operator.[11] The manual also includes a training progression model and outlines the required skills that SUAS operators must master during training to achieve higher qualifications.[12] Since all training past the introductory level of training is conducted at the battalion level by the command-designated SUAS manager, the information within this manual assists commanders in ensuring that their unit possesses a mission-ready SUAS program with capable SUAS operators.

To conduct entry-level training for SUAS operators, the Marine Corps has established two schoolhouses, Training and Logistics Support Activities East (TALSA-E) and Training and Logistics Support Activities West (TALSA-W). These schoolhouses are responsible for training all new SUAS operators while also supporting the logistical needs for sustaining SUAS platforms in the operational forces. Each TALSA runs continuous 10-day initial qualification training (IQT) 1000-level courses that qualify selected Marines on each specific platform. This is the only formal instruction that newly minted SUAS operators receive before returning to their units, where they will, in theory, receive 2000-level and above training from their unit's in-house instructor, generally the battalion's assistant intelligence officer.[13]

When a Marine completes the 10-day IQT course, they possess the skills necessary to establish a ground station, launch, fly, and recover SUAS assets.[14] These skills are all extremely important, but what the schoolhouses do not teach sufficiently is how best to integrate SUAS operators and systems within a maneuver unit's tactical operations. This ultimately leads to a lack of expertise needed to fully integrate within a unit and develop the necessary trust and confidence of that unit's members on the system's and operator's capabilities. Trust and confidence is currently built

[10] *Group 1 Unmanned Aircraft Systems (UAS) Training and Readiness Manual*, NAVMC 3500.107A (Washington, DC: Department of the Navy, 2014).
[11] *Group 1 Unmanned Aircraft Systems (UAS) Training and Readiness Manual*, 1-10.
[12] *Group 1 Unmanned Aircraft Systems (UAS) Training and Readiness Manual*, 2-4.
[13] *Group 1 Unmanned Aircraft Systems (UAS) Training and Readiness Manual*, 2-3.
[14] Rees, "TALSA Offers Marines Unmanned Air System Training."

through trial and error due to the absence of a manual or handbook that describes tactical guidance or the employment of SUASs.[15] This results in small unit leaders, commanders, and SUAS operators operating each system below its full potential.

The development of a warfighting or reference publication that outlines the best practices and basic principles of integrating and employing SUAS assets would establish a baseline of trust and confidence in the tactical application of SUASs. The current training and readiness manual does not suffice as the only SAUS doctrinal publication, as it only outlines procedural flight applications.[16] A tactical handbook would be beneficial to both SUAS operators and small infantry unit leaders and commanders. This handbook, coupled with a Marine's early exposure to SUASs within their various training pipelines, would be extremely valuable and create a buy-in of the assets. Leaders from the squad level to battalion level are currently reliant on the information that a SUAS operator learns during a 10-day course for all technical information of SUASs within the battalion. This training is neither sufficient nor practical.[17]

With SUAS assets now being an interwoven and potentially integral aspect of infantry operations, greater education of small unit leaders and commanders who are charged with managing, integrating, and tactically employing the systems is necessary. Greater exposure to the systems could come as early as entry-level training, such as at the School of Infantry or The Basic School. If this proves to be too early, Marines' exposure to the systems could come later while they are in school for their military occupational specialty (MOS) billets, such as during the Infantry Small Unit Leaders Course for squad leaders and the Infantry Officer's Course for platoon commanders. Having discussions and practical applications on the integration and employment of SUASs during this time is crucial to prepare junior infantry leaders to utilize the systems during tactical operations.[18] This exposure will be an educational starting point to ending the era of misuse and underutilization of these tactically valuable assets.

Current SUAS Organization

Marine Corps infantry battalions are allocated a specific number of assets that allow for the completion of assigned missions while integrating SUASs. According to the current training and readiness manual, each battalion maintains 3 RQ-20 Pumas, 3 RQ-11 Ravens, 2 RQ-12A Wasp IIIs, and as many as 54 InstantEyes. As the PD-100 Black Hornet Nano remains in an experimental status, it is not resident in all battalions and is selectively fielded.[19] This current allocation of assets allows each

[15] Capt Ryan K. Welsh, USMC, and Capt Ian T. Webb, USMC, "The Squad-Copter Dilemma: Leveraging UAS Technology," *Marine Corps Gazette* 103, no. 1 (January 2019): 43.
[16] *Group 1 Unmanned Aircraft Systems (UAS) Training and Readiness Manual*, 1-4.
[17] *Fielding Plan for the Small Unit Remote Scouting System (SURSS)*, 43 – 44.
[18] *Sea Dragon ITX 3-18 Final Report* (Quantico, VA: Marine Corps Warfighting Laboratory, 2018), 30 – 32.
[19] *Group 1 Unmanned Aircraft Systems (UAS) Training and Readiness Manual*, 1-10 – 1-11.

infantry battalion to retain two fixed-wing assets for its collection plan, each rifle company to have two fixed-wing assets, and each rifle squad to maintain two VTOL assets.

The Puma is the largest and most capable platform residing at the regimental and battalion levels.[20] This system generally supports the battalion's main effort and collection plan. When the asset is in support of a rifle company, the company generally receives the system and is charged with operating it with its own organic operators. This arrangement ultimately allows the battalion to maintain its operators to continue the battalions collection plans. Distributing systems this way taxes the limited company-level operators and detracts from the inherent SUAS capabilities while taking additional Marine infantry off the line and transplanting them into a supporting role. When the Puma is accompanied by an operator, that individual comes from the battalion S-2 (intelligence) section, and it takes time for them to integrate with a rifle company.[21] The limited number of S-2 SUAS operators leads to a lack of flexibility when required to shuffle them around the unit to where SUAS support is needed.[22]

The primary platforms used at the company level are the Wasp and Raven, which can be interchangeable in terms of employment functionality but require separate 10-day TALSA-led training courses for operators.[23] These platforms support company- and platoon-level operations with organic operators from either the company headquarters platoon or the rifle platoons. The company's attached analyst is a battalion intelligence specialist (MOS 0231) who leads the company-level intelligence cell (CLIC) and is often in charge of maintaining the company's SUAS. This individual is the company's default SUAS manager and makes sure that the selected infantry operators have a basic understanding of how to launch and recover the systems. This current configuration demands that the analyst be an expert with SUASs and have the personality to instruct junior infantry SUAS operators while also advising squad leaders and company commanders. This is often not the case due to a lack of familiarity with the infantry, a lack of SUAS instructor training, and demanding CLIC responsibilities.[24]

The last officially distributed platform in Marine Corps infantry battalions is the InstantEye.[25] The InstantEye is a VTOL quadcopter that each infantry squad possesses and utilizes for platoon- and squad-level operations. Marine infantry within the squad operate the system, which is designed to improve the squad's enhanced

[20] *Fielding Plan for the Small Unit Remote Scouting System (SURSS)*, 43 – 44.
[21] Capt Ryan K. Welsh, USMC, discussion with author, 7 February 2019, hereafter Welsh discussion.
[22] *After Action Report for Ground Combat Element, Special Purpose Marine Air-Ground Task Force — Crisis Response — Central Command, 17.2B-18.1* (Quantico, VA: Marine Corps Center for Lessons Learned, 2018), 5 – 8.
[23] *Fielding Plan for the Small Unit Remote Scouting System (SURSS)*, 65.
[24] *After Action Report for Ground Combat Element, Special Purpose Marine Air-Ground Task Force — Crisis Response — Central Command, 17.2B-18.1*, 5 – 9.
[25] *Fielding Plan for the Small Unit Remote Scouting System (SURSS)*, 53 – 56.

local situational awareness and "see beyond the next terrain feature" during all operations.[26] The fielding of the InstantEye at the squad level is an ongoing process that gives the squad its own organic ISR platform, which is new ground for the Marine Corps. Command and control with proper deconfliction for the InstantEye and Nano microplatform will no doubt prove demanding at the company and platoon levels.[27]

SUAS Integration

The SUAS operator training process begins by selecting individuals who are capable of performing the required tasks and are occupying a billet that is able to support the desired unit. The only requirement to attend the TALSA training course is completion of the online Basic UAS Qualification (BUQ) course.[28] This leads to infantry personnel comprising the vast majority of SUAS operators who support infantry battalions, specifically riflemen (MOS 0311), since a large number of young riflemen within an infantry battalion can easily meet the requirement. This ultimately taxes the battalion's rifle assets, as rifle squads lose combat power when their members are taken away to operate the numerous SUAS platforms within the battalion's companies. While the idea is that the impact of losing a rifleman is outweighed by the addition of greater situational awareness and intelligence provided by the SUAS, this often falls short due to lack of employment and integration into operations.

Within the modified rifle squad table of organization proposed by the *Marine Corps Force 2025* review (2018), a Marine from each rifle squad will be billeted as the "squad tech manager."[29] This would officially take infantry duties away from the Marine and relegate them to being solely responsible for the squad's technological assets, stripping riflemen from their primary MOS and having them conduct non-MOS-driven tasks. This proposed table of organization is less than ideal for these reasons and needs reevaluation with a focus on the manpower model of sustainment and rifleman progression. Each rifle squad having a resident "tech guy" would undoubtedly be beneficial on the future battlefield, but the loss of a rifleman is a hefty price to pay.

Other than the SUAS program manager, who is usually from the battalion S-2 (security) section, SUAS training within a unit begins and ends with the designated operators at TALSA.[30] Small unit leaders, from squad leaders to company command-

[26] *After Action Report for Forward Deployed Forces — Hawaii from June 2018 to December 2018* (Quantico, VA: Marine Corps Center for Lessons Learned, 2018), 2 – 4.
[27] *After Action Report for Ground Combat Element, Special Purpose Marine Air-Ground Task Force — Crisis Response — Central Command, 17.2B-18.1*, 6 – 8.
[28] *Group 1 Unmanned Aircraft Systems (UAS) Training and Readiness Manual*, 2-3.
[29] "GCE Advocacy Overview and Infantry Advocate Update" (PowerPoint Presentation, Headquarters Marine Corps, Washington, DC, 24 October 2018), slide 12.
[30] Welsh and Webb, "The Squad-Copter Dilemma," 42 – 43.

ers, have little buy-in on the integration and employment of SUAS assets due to the forced integration of those assets without any formal education. The full potential of the systems is not realized, which leads to further misuse and underutilization. This is when a small unit leader's sheer thought of integrating a SUAS asset into an operation becomes a burden rather than a tactical enhancement as intended.

To produce a more lethal force, the establishment of formal SUAS courses for small unit leaders and commanders will create buy-in within the program. As Captains Ryan K. Welsh and Ian T. Webb, the intelligence officer and air officer for 3d Battalion, 3d Marines, stated in the *Marine Corps Gazette*, "Our investment in the SUAS continues to be focused on technology in volume, not tactics."[31] The abundance of SUAS assets without the proper education and expertise on employment leads to slow discovery learning and the lack of successful employment.

The current necessity of having infantry personnel fill the billets of SUAS operator leads to a lack of SUAS employment for numerous reasons. A possible solution to this problem is to simply stop requiring infantry personnel to become SUAS operators. With the involvement of SUAS assets becoming a more significant aspect of current and future operations, it is time to create a "SUAS operator" MOS. A MOS-designated SUAS operator would require training and expertise on the integration and employment of SUAS assets to ensure that they are intelligently advising leaders within the rifle company. The addition of a SUAS operator MOS would change the dynamic of SUAS usage within rifle companies and ensure greater employment throughout the Marine Corps' operating forces.

The SUAS operator MOS would be best suited as a secondary MOS within the intelligence community, where SUAS assets are currently nested tightly. Entry-level intelligence specialists (MOS 0231) would be the target population to receive the secondary SUAS operator MOS and provide support to units as small as the rifle squad. With 648 rifle squads in the Marine Corps, 648 SUAS operators would be required to join these squads permanently. These individuals would each join a rifle squad and function as an enabler, not unlike a dog handler or combat engineer. This would offer the benefit of increased situational awareness and intelligence gathering, which would thereby increase the lethality of the squad.

Within the 15-person infantry squad proposed by *Marine Corps Force 2025* (which includes three gapped billets), this SUAS operator would take the place of the squad tech manager.[32] This would alleviate the necessity of having a rifleman filling the SUAS billet and allow for a more capable and better-trained individual to provide enhanced technological capabilities to the squad. The rifleman gained back by the squad could be billeted as the squad's official "designated marksman" while

[31] Welsh and Webb, "The Squad-Copter Dilemma," 43.
[32] "GCE Advocacy Overview and Infantry Advocate Update," slide 12.

again establishing a 13-person unit (comprising 12 infantry Marines and 1 SUAS operator) with no gapped billets.

The addition of a SUAS operator MOS and training for small unit leaders on how to properly integrate and employ SUAS assets during training exercises and operations would enable the SUAS to become a force multiplier rather than the burden it currently is. No longer would an infantry Marine be selected to leave their squad only to come back ill-prepared as a SUAS operator. Instead, a highly trained, MOS-designated Marine would join the squad to advise the squad leader on integrating SUAS assets and properly employ those assets in support of squad- and platoon-level operations. SUAS operators would also replace the current CLIC Marines operating with rifle squads, which would enhance each squad's organic intelligence functions. Coupled with the education of small unit leaders on the integration and employment of SUAS assets, this will provide units with the necessary trust and confidence in SUAS capabilities, which will lead to greater utilization of the systems. Ultimately, this will make Marine infantry a more lethal fighting force.

With infantry units set up for success with efficient manning and education on SUAS assets, the outdated training installations and facilities of today are bound to need updating to allow for infantry units to fully utilize their new enhancements.[33] When SUAS usage became a regular part of training, units immediately ran into roadblocks that prevented them from truly integrating Group 1 SUAS assets. Although these issues are currently being worked through, they persist at predominate training installations and detract from small unit training.[34] The bulk of installation impediments include a lack of frequencies available for fixed-wing use of SUAS assets, the need to have preplanned launch and recovery sites during non-live-fire events, and the lack of deconfliction training that units and installations currently possess.

When Marine infantry battalions stationed on the East Coast of the United States conduct "deployment for training" events, many do so at Fort Pickett, Virginia. Fort Pickett is great for maneuver training and offers premier live-fire range complexes, but it lacks the infrastructure to support realistic integrated training with SUAS platforms. The installation has three established frequencies dedicated to SUAS use, which means that only three systems from either single or multiple training units can conduct flight operations simultaneously.[35] This causes units to struggle to obtain frequencies when desired and forces them to overplan the use of SUAS platforms within operations, which detracts from realistic usage of the sys-

[33] *Mountain Warfare Exercise 4-18 After Action Report (14 July – 9 August 2018)* (Quantico, VA: Marine Corps Center for Lessons Learned, 2018), 2.

[34] "Range Order for Range Control Operations," Marine Corps Installations East — Marine Corps Base Camp Lejeune Order 3570.1, 7 November 2014, 4 – 10.

[35] *Policy, Procedures and Standards for Maneuver Training Center Fort Pickett, Regulation 350-2* (Fort Pickett, VA: Army National Guard Maneuver Training Center, 2018), 53.

tems. This lack of frequencies available to units for the conduct of flight operations forces the installation's range operations section to obtain detailed flight plans from units days or weeks before execution to ensure adequate frequency deconfliction.[36]

This range operations section requires a detailed concept of operations that outlines exact launch and recovery sites with specific flight plans of all utilized platforms.[37] The availability of this information is to ensure deconfliction with the Federal Aviation Administration (FAA) and other training units that cannot be completed by Joint terminal attack controllers or forward air controllers during training.[38] Although it is necessary to deconflict all air assets, this method prevents training units from fully embracing and employing SUAS assets as intended. In the end, this task becomes impossible to complete as a unit attempts to employ multiple companies in a free-play, nonlive-fire scenario during a week-long period while utilizing dozens of SUAS platforms. This leads to the canned usage of these systems on live-fire ranges and from preplanned landing zones, which is not within the scope of how SUAS assets are used when facing a near-peer adversary.[39]

This problem is not unique to Fort Pickett. Indeed, training installations across the Marine Corps and Army need to modernize to meet the current aspects of how units are attempting to employ SUAS assets and embracing near-future employment concepts such as "swarming."[40] Zachary Kallenborn and Philipp C. Bleek define swarming as "multiple unmanned platforms and/or weapons deployed to accomplish a shared objective, with the platforms and/or weapons autonomously altering their behavior based on communication with one another."[41] Current training installations need to change standing limitations that inhibit methods of employing SUAS platforms within current maneuver formations to continually experiment and improve SUAS capabilities.[42]

Training installations have recently adopted the establishment of restricted operating zones (ROZs) and "keypads" as precoordinated control measures between training units and range operation sections.[43] This is done in an effort to achieve less restrictive SUAS flights. Range control conducts deconfliction with the FAA to establish a ROZ or keypad at the request of the training unit. This is permitted through the FAA-issued "Class G Certificate of Waiver or Authorization," which specifically allows the military complete airspace control over a specified installation for the

[36] "Range Order for Range Control Operations," 4 – 13.
[37] *Policy, Procedures and Standards for Maneuver Training Center Fort Pickett*, 53.
[38] "Range Order for Range Control Operations," 4 – 25.
[39] *After Action Report for MCCRE for the Period of December 2, 2018 – December 8, 2018* (Quantico, VA: Marine Corps Center for Lessons Learned, 2018), 31 – 32.
[40] *Range Safety*, Department of the Army Pamphlet 385-63 (Washington, DC: Department of the Army, 2014), 141.
[41] Zachary Kallenborn and Philipp C. Bleek, "Drones of Mass Destruction: Drone Swarms and the Future of Nuclear, Chemical, and Biological Weapons," *War on the Rocks*, 14 February 2019.
[42] "Range Order for Range Control Operations," 4 –26.
[43] *Policy, Procedures and Standards for Maneuver Training Center Fort Pickett*, 53.

use of flying SUAS platforms.[44] The waiver allows the training unit to call in the ROZ "hot" after the required coordination.[45] The employment of SUAS assets at training installations has dramatically improved, though additional unrestrictive measures can be developed.[46]

As SUAS usage proliferates within Marine infantry units, training installations need to view the utilization of SUAS assets as the norm and not as an anomaly. Requests to employ SUAS platforms will become as common — if not more so — than the request to go "hot" to shoot a ground-fired weapon system. If conducting SUAS flight operations were viewed in the same way as employing current weapon systems such as artillery or direct-fire weapons, there would be little change to current operating procedures. This would require deviation from the more complicated ROZ deconfliction model and rely on the more simplified surface danger zone (SDZ) method used for weapon systems. The establishment of an SDZ deconflicts all manned aircraft while providing a training unit the freedom to fly within the capacity of the system rather than have a restricted zone that limits creativity and realistic training.

SUAS Employment

The internal deconfliction of all air assets within a Marine infantry battalion's training area is coordinated by the battalion air officer or a forward air controller through range control and supporting aircraft. This responsibility includes coordination with SUAS operators and each of their planned flights, as well as sorties of manned aircraft in support of the battalion's scheme of maneuver. With the large number of flights that the limited air personnel of an infantry battalion must coordinate, the education and experience of SUAS operators must be good enough to alleviate any unnecessary or redundant coordination. Unfortunately, this is not the case, since many individuals who are selected to become SUAS operators are junior infantry Marines who are new to their units. These individuals have a difficult time attempting to complete both their infantry tasks as well as their SUAS operator commitment. Even after receiving a 10-day initial operator's course, SUAS operators are not prepared to coordinate any of the deconfliction of their own SUAS flights, as it is not an introductory skill taught within the course.[47]

Due to the inability of SUAS operators to deconflict and coordinate the flights that their leaders are requesting, small unit leaders typically take on the burden of conducting the coordination for the flight with the battalion air officer. This is not ideal, as the SUAS operator should be educated and equipped to call in and coordinate at the appropriate level to successfully perform a SUAS flight in support of

[44] "Unmanned Aircraft Systems (UAS): DoD Purpose and Operational Use," Department of Defense, accessed 19 December 2018.
[45] "Range Order for Range Control Operations," 4 – 30.
[46] Welsh discussion.
[47] *Group 1 Unmanned Aircraft Systems (UAS) Training and Readiness Manual*, 2-3 – 2-9.

their unit. For example, if a squad leader wants to use the InstantEye quadcopter to conduct a route reconnaissance mission, they should be able to turn to the squad's SUAS operator and task them to conduct the flight. The SUAS operator should then be able to quickly plan the flight route, launch site, and recovery site and call in the appropriate mission details to conduct coordination with the company leadership. This synchronization, however, is hardly the case, since the average SUAS operator does not understand the coordination necessary to complete a flight.[48] This action requires the squad leader to shift focus from the mission at hand and become consumed by the preparation, conduct, and aftermath of the SUAS flight by exercising direct command-and-control of the supporting operation.

At the battalion level, command and control of SUAS flights is difficult to manage. This struggle is due to the potential number of flights being conducted at one time, the lack of deconfliction experience of SUAS operators, and because coordination rests in the hands of two individuals: the battalion air officer and forward air controller. In theory, at any given time, more than 30 SUAS assets within just one infantry battalion can be conducting either launch, flight, or recovery operations within the battalion's area of operations. These responsibilities alone are far too much for two individuals to handle and can both lead to a delay in the approval of flights and weaken the overall efficiency of the integration of SUAS platforms. The sheer number of SUAS flights that may be conducted at a given time oversaturates the air officer and forward air controller's time and detracts from their original purpose of coordinating manned fixed- and rotary-wing air support for the battalion's operations.[49]

Possible solutions to this problem include offering a more decentralized approach to controlling SUAS platforms. Establishing doctrinal procedures that span the entire Marine Corps rather than forcing each infantry battalion to conduct discovery learning on how to best control air assets would set a foundation. This doctrine, coupled with a greater level of training for SUAS operators, would allow the operators to become active participants within the deconfliction process rather than passive recipients who have all initiative stripped away.

Possible procedures could be to establish semipermanent or standard deconflictions measures through time and space. Time deconfliction would be much more restrictive and possibly hindering to a maneuvering unit if it is unwarranted or unnecessarily levies time restrictions. Space deconfliction, conversely, is more simplified in that it would allow SUAS platforms to remain below certain altitudes within a ROZ, while manned aircraft would remain above or adjacent. An appropriate ROZ or SDZ establishes a restricted fly zone that elevates the unnecessary friction during deconfliction.[50] Currently, a rifle squad does not request approval for every rock-

[48] Welsh and Webb, "The Squad-Copter Dilemma," 43.
[49] Welsh and Webb, "The Squad-Copter Dilemma," 43 – 45.
[50] Welsh discussion.

et shot it takes, so it should not have to request approval every time its desires to utilize its organic SUAS assets. This action would develop a standard deconfliction approach to controlling multiple assets, while the battalion air officer can conduct further deconfliction as necessary.[51]

A standing deconfliction would alleviate and decentralize a tremendous amount of additional command and control exercised by the battalion's air officer.[52] It would allow company commanders to initiate local SUAS operations within their area of operations without having to call for permission, which gives the initiative back to maneuver units. Company commanders with a firm grasp of operations occurring within their area of operations would be able to delegate authority down to their platoon commanders when necessary to accomplish more timely SUAS missions in support of tactical operations. This more fluid approval process to use SUAS assets would return valuable time to the commander and allow for advanced employment techniques to be explored and mastered down to the squad level.

An advanced technique in which to use SUAS assets at the tactical level is to call for and observe supporting fires from indirect-fire weapon systems. This method was explored in detail by Major James T. Kay in his master of military studies thesis, "Group I Type Unmanned Aerial Systems (UAS) as a Force Multiplier to the Fire Support Team."[53] Kay focused on how SUAS platforms integrated with the fire support team (FST) within a rifle company or artillery battery can conduct target accusation. He argues, "This method does not present itself very often in offensive operations where the battlefield is dynamic and fluid. It does work well in defensive operations."[54] Even with substantial technological advances with Group 1 SUAS platforms in the last decade, the conduct of target accusation and execution within offensive operations remains challenging for tactical units due to the high tempo of those operations and the ever-changing enemy situation.

Infantry battalions currently use SUAS assets most effectively in a defensive role, rather than integrating them into offensive actions. This emphasis is due to the nature of recent conflict. During the last 15 years, the majority of SUAS flights have originated from operating bases that are permanent or semipermanent locations. These sites are ideal for the launch and recovery of SUAS platforms because of their relative protection and static nature. The standard mission that SUAS platforms conduct from these static locations is ISR, which enables small unit leaders to build their overall situational awareness.[55]

This situational awareness becomes vitally important while operating out of a static position, such as a forward operating base, due to the inherent loss of tem-

[51] Welsh and Webb, "The Squad-Copter Dilemma," 42 – 43.
[52] Welsh and Webb, "The Squad-Copter Dilemma," 42 – 43.
[53] Maj James T. Kay, USMC, "Group I Type Unmanned Aerial Systems (UAS) as a Force Multiplier to the Fire Support Team" (thesis, U.S. Marine Corps Command and Staff College, Marine Corps University, 2011).
[54] Kay, "Group I Type Unmanned Aerial Systems (UAS) as a Force Multiplier to the Fire Support Team," 7.
[55] Welsh discussion.

po, momentum, and speed relative to the adversary. The adversary has the freedom of movement around static locations, and the only viable way for Marines to interdict this freedom of movement is through systems that provide ISR. The use of a ground-based operations surveillance system (G-BOSS), a RAID tower, or an aerostat provides a tremendous capability while viewing immediate surrounding terrain in a direct line of sight, but these platforms lack the ability to observe past direct-fire range and in the surrounding dead space.

The use of SUAS platforms takes ISR to the next level, enhancing the overall situational awareness of a static unit by providing observation within surrounding dead space and outside direct-fire range. This improvement allows the unit to deny the adversary the freedom of movement in the surrounding areas when not actively patrolling. The development of named areas of interest (NAIs) allows for units to focus their SUAS assets on geographic locations where activity is happening that will provide actionable information to the unit. In current operational theaters, this is generally historical improvised explosive device (IED) locations, indirect fire points of origin, and future friendly patrol routes. SUAS platforms allow a unit to observe these locations at times of high activity to either deter adversary actions or to observe and target these activities.

The use of SUAS assets within this capacity is critical while a unit is in a static location and greatly enhances the unit's survivability by providing greater capacity and depth of lethality from a defensive location. These systems greatly improve a unit's force protection and deny the adversary the absolute freedom of movement once enjoyed, which allows small units to gain an advantage when conducting patrols. However, while this is a critical capability, the use of SUAS platforms in this way will not be achievable when facing a near-peer threat with similar SUAS assets and SUAS denial capabilities. The utilization of operational bases by frontline troops will no longer be applicable in a near-peer conflict, which is why the need to master the offensive use of SUAS platforms is a necessity.

Due to the use of operational bases being obsolete when facing a near-peer adversary, small units must integrate SUAS assets into every training exercise, especially offensive operations and maneuvers. Many units have begun exploring the integration of SUAS platforms into offensive operations simulated against a near-peer, but these training evolutions are providing little to no valuable feedback. This response is due to a false sense of confidence that is gained through employing SUAS platforms with the same tactics, techniques, and procedures used in conducting defensive operations. As outlined in the introduction to this paper, the use of Group 1 SUAS platforms from a static location within range of an adversary's position will only degrade the lethality of a unit and compromise the unit's security.

This degradation imposed by the adversary will come in many forms that will result in the ultimate failure of a planned offensive operation. If the adversary uses its SUAS assets as the Marine Corps currently does against adversaries in Iraq and

Afghanistan, the results will be similar to what was detailed in the introductory scenario. This outcome will be caused by the immediate knowledge that a static unit can obtain through observing an adversary's SUAS platform that is conducting an ISR mission over or even offset of its location. With little deviation among SUAS platforms and the existence of open-source information on all program of record assets, it is well assumed that any potential adversary knows the capabilities and limitations of assets employed within its area of operations. This knowledge alone will hamper the usefulness of these assets on the future battlefield.

When a Marine Corps SUAS asset is observed conducting an ISR mission over or offset of an adversary position, there are a few things that the adversary can immediately seek to determine. First, is the range that the system is operating from due to each system having a specific maximum range that it can travel away from the ground control station? Second, is the approximate loiter time that the system has on station over the adversary position due to the known battery endurance that each system maintains?[56] Third, is the direction from which the system approached the most likely direction of the static attacking force? Fourth, is the SUAS operator in a static position with the leader of the attacking force, and is the leader observing the video at a ground command station? This gained information allows for the adversary to choose which SUAS platform they will employ to conduct counter-ISR on the Marine SUAS assets.

Just as the Marine Corps currently conducts counter-ISR on adversary SUAS assets, the future adversary will do so similarly. After observing the SUAS platform(s) above their position, they will launch an equivalent or superior system that will attempt to follow the friendly system back to its launch and recovery location. The adversary will attempt to do this by achieving a greater altitude above the friendly system and observe it as it returns to its point of origin. If able to observe the system back to the operator, the adversary can conduct ISR of its own, which will allow it to reorient its defensive position toward the most likely avenue of approach and target the static unit with fires to stall or break up the pending attack.

This scenario highlights a gap in the current training that is not conducted with small units during training exercises. An example of the training of this problem set was observed with infantry squads from Charlie Company, 1st Battalion, 2d Marines, at Camp Lejeune, North Carolina, while they were conducting live-fire deliberate attacks on the Golf 6 (G-6) range. Each squad was directed to integrate and employ an InstantEye system during its attack to confirm or deny assumptions developed in regards to the adversary's disposition on the objective. Each squad leader unanimously employed their InstantEye from the attack or assault position, which were both inside one kilometer of the objective. The average time of employ-

[56] "Group 1 Small Unmanned Aircraft Systems."

ment of the system was 25 minutes, and every operator flew a direct line to and from the objective under 200 feet above ground level to expedite the flight.

The mere use of the SUAS platform was rewarded due to the novel employment method while conducting a deliberate attack, even though the information gathered by the InstantEye was rather trivial. This information offered confirmation of the adversary's location and disposition, which was already known to a great extent before conducting the SUAS mission, hence the deliberate attack. Traditionally, a reconnaissance unit or scout snipers would covertly observe and report on the objective to provide greater intelligence of the enemy before conducting the attack. With these units absent, the overt SUAS mission ultimately hindered the squad's ability to conduct the mission effectively, due to the SUAS asset compromising its position to an adversary that was ready and willing to defend its position.

This kind of mission would alert the adversary of the presence of an enemy force within two kilometers (the maximum range of an InstantEye) and give away any element of surprise that the Marines might have had. *Tactics*, Marine Corps Doctrinal Publication (MCDP) 1-3, states that "achieving surprise can greatly increase leverage" and "surprise can be generated through stealth."[57] The employment of SUAS platforms in this way spoils the surprise of the attack and ultimately allows the defenders to better prepare for an imminent attack while transferring the advantage away from the friendly squad. The collection of intelligence through the means of reconnaissance is still vitally important for a well-informed attack, but if it is not covert, the risk of losing surprise can spoil the attack.

The use of SUAS assets in this offensive capacity is done with good intentions but has negative results when facing a near-peer adversary. The search for greater situational awareness has an overall degrading effect on the tactical effectiveness of frontline units. The "70 percent solution," in which leaders seek to have at least 70 percent of the intelligence they think they will need before making a decision, is a common goal to make a timely decision and execute an aggressive plan due to the inherent uncertainty of warfare. The use of SUAS assets should not be used to search for the other 30 percent of uncertainty if it degrades the facets of Marine infantry units that make them lethal in the first place. *Tactics* emphasis that speed, tempo, surprise, and decisiveness are necessary to gain the advantage against an adversary.[58] The current misuse of SUAS platforms in the offense degrades each one of these attributes and ultimately weakens the combat effectiveness of small tactical units within the Marine Corps.

[57] *Tactics*, Marine Corps Doctrinal Publication (MCDP) 1-3 (Washington, DC: Headquarters Marine Corps, 1997), 47 – 48.
[58] *Tactics*, 47 – 48.

Proposed Organization

There are scenarios in which the use of SUAS platforms at the small unit level makes complete tactical sense, but the majority of these scenarios originate from a defensive position to which speed, tempo, and surprise are not necessary tenets for mission success. To solve this offensive SUAS dilemma with fixed-wing assets, SUAS assets need to be farther from the front line while providing small unit leaders the same amount of elevated situational awareness. A possible solution is the creation of SUAS units that are kept at the battalion level. These units would be tasked with supporting subordinate units from a greater distance while under the command and control of the battalion. Emulating an 81-millimeter mortar platoon, which conducts supporting operations to the rifle companies of an infantry battalion at the battalion level, would provide the needed support without the added friction of employment.

One possible solution is the creation of a battalion-level SUAS platoon, which would contain multiple assets that provide ISR support to frontline units from a location beyond the reach of a small adversary unit. This platoon, comprised of three RQ-20 Puma sections that have two squads apiece, would be able to support multiple rifle companies simultaneously. This arrangement alleviates the command and control burden from the individual company and delivers actionable and effective support. The remaining assets within the platoon would allow the battalion to retain platforms to support battalion-specific requirements. It is important to retain assets at the battalion level to accomplish the battalion's collection plan while not detracting from rifle companies' assets and support.

The requirement of tablets at the small unit level allows for video feeds to be transmitted to small unit leaders. Tablets would allow the small unit leaders to remain on the move with their unit while observing the feed from the battalion asset rather than being tied to a SUAS operator at a static launch and recovery site within enemy range. Remaining mobile while gaining the requested ISR allows for commanders and small unit leaders to maintain momentum, speed, and tempo while either pursuing an adversary or attempting to conduct deliberate offensive action against an adversary position.

The SUAS platoon's assets could be requested similarly to the 81-millimeter mortar platoon's fire support "target list worksheet." SUAS support is requested through an "NAI list worksheet," which specifies the time, duration, location, and mission of the requested sortie. This element would provide the information needed to the SUAS platoon to conduct mission planning and assign the appropriate asset from a suitable location to best support the requesting unit. Taking this action removes the demanding and time-consuming responsibility of flight planning from the rifle company, allowing it to focus on conducting its offensive action and maintain tempo and momentum without losing the element of surprise.

The SUAS platforms from the battalion-level SUAS platoon would be launched from a greater distance from the front. They would not be under the physical control

of small unit leaders, though they would still provide the needed ISR. Each member of the SUAS platoon would be a school-trained intelligence specialist (MOS 0231) who is crossed-trained as a SUAS operator, ensuring that their support is professional and accurate. Conducting SUAS operations in this manner would greatly improve the offensive potential of the systems by integrating each into a rifle company's operations without putting the burden on the company itself. The company could then focus on the mission at hand while being supported by its higher command. It would not have to remain static during the SUAS flight, and the flight pattern of the SUAS platform would not originate or terminate at its location, which would prevent an adversary SUAS platform from being guided to its location. This flexibility will ultimately make the rifle company a more lethal fighting force, as it receives the required support from a well-trained, MOS-qualified SUAS operator and can focus entirely on closing with and destroying the enemy.

Conclusion

In the foreword of *Unmanned Aircraft System Operations*, Marine Corps Warfighting Publication (MCWP) 3-20.5, Lieutenant General Robert S. Walsh states that unmanned aircraft systems "are the persistent link and combat multiplier that allow the MAGTF [Marine Air-Ground Task Force] to improve its situational awareness and achieve timely combined arms effectiveness."[59] Although this is undoubtedly the goal of all unmanned aircraft systems operations to include SUAS assets, the integration and employment of Group 1 SUAS platforms within Marine Corps infantry battalions has not produced the desired results of creating a more lethal fighting force. A lack of comprehensive DOTMLPF-derived and -tested capability solutions created to provide an environment for the seamless integration and employment of all SUAS platforms has restricted the desired outcomes. Colin Gray explains how future war demands change within U.S. military doctrine and practices, which can take decades to update while equipment comes and goes.[60] Embracing future war concepts and integrating new technology within front line troops needs to be accompanied with flexible and adaptable DOTMLPF solutions.

As outlined throughout this paper, there are multiple aspects within the DOTMLPF spectrum that need updating to best set the conditions for the seamless utilization of SUAS assets within Marine infantry battalions. Potential near-peer adversaries of the future battlefield are currently preparing for the fight; the Marine Corps must meet them with technology that is not only superior but also fully integrated. This technology will ensure that the Marine Corps maintains tactical dominance through sound employment techniques that enhance the lethality of the force at large.

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[59] *Unmanned Aircraft System Operations*, Marine Corps Warfighting Publication (MCWP) 3-20.5 (Washington, DC: Headquarters Marine Corps, 2016), ii.

[60] Colin S. Gray, *Another Bloody Century: Future Warfare* (London: Phoenix Press, 2006), 326.

Achtung—Boxer!

How to Employ Cavalry in the Mid-Twenty-First Century

By Major Joshua E. Higgins, Australian Army[1]

I knowe the Knights walke in this Game too well . . . hee may skip ouer mee, and where am I then?

~ Thomas Middleton[2]

The rollout of the German-made Boxer combat reconnaissance vehicle (CRV) into cavalry units of the Australian Army provides an enormous opportunity for the Australian Army to reevaluate its understanding and use of cavalry forces. Doing so prevents intellectual stagnation from 20 years of stimuli in previous wars while also evolving operational and tactical concepts that match the technology and tactics toward a future conflict. Optimal cavalry use demands that cavalry commanders overcome the instruments of friction that threaten success, such as insufficient cavalry doctrine, inadequate understanding of cavalry force design following two regimental restructures in a decade, and inadequate tactical adaptation to the new Boxer CRV platform. Success requires that cavalry forces and their commanders understand the role of cavalry, as this forms the linchpin of successful employment.

Despite the morphing chessboard of war, cavalry maintains an enduring role that comprises a trinity of purposes, balances a context dilemma of three competing factors, and has a series of enduring tactical concepts. Successful cavalry operations encompass a balanced application of this "cavalry trinity" with the cavalry context dilemma.

Through theoretical analysis, this discourse will redefine the role of cavalry and outline the revised cavalry trinity of purposes, while also exploring the context for cavalry that is missing in Australian military doctrine. This study exposes the competing factors of an economy-of-force nature and a desire for disproportionate effects, which are underpinned by the force's capabilities, technology, and tactics—a cavalry context dilemma. Historical analysis subsequently demonstrates that optimal cavalry operations ensue when the cavalry force correctly balances the cavalry

[1] Maj Higgins is a distinguished graduate of MCU's Command and Staff College and a graduate of the School of Advanced Warfighting (SAW). This paper was nominated by the SAW dean of academics in category of "future war" papers in academic year 2020–21.

[2] Thomas Middleton, *A Game at Chess*, ed. Robert C. Bald (Cambridge, UK: Cambridge University Press, 1929), 80.

trinity with the context dilemma and seeks the simultaneous achievement of each of the three purposes, whereas an unbalanced approach spells disaster. This understanding provides the platform for a comparative analysis that supports future cavalry development, ensuring that tactics and technological amendments meet fundamental enduring tactical concepts, purposes, and contexts, rather than serve the "good ideas fairy" of incoherent capability augmentation. Only then will the cavalry personify the "smiling horse" that taught this author a lesson 24 years prior.

Understanding the Smiling Horse

> *One note on photographs: images of the mechanized cavalrymen doing their job are scarce. This is not surprising given that they were often closer to the enemy than anybody else.*
>
> ~ Harry Yeide[3]

Isn't Cavalry Supposed to Ride Horses?: Obstacles to Understanding

Australian military doctrine insufficiently supports an optimal understanding of cavalry. The Australian Army defines the role of cavalry as "to locate, dislocate and disrupt the enemy through the conduct of offensive, defensive, reconnaissance and security activities both mounted and dismounted."[4] This definition generates confusion for cavalry forces and their commanders in several ways. First, it neglects the three ingredients that make up an optimal doctrinal definition: tactical concepts (the *what*), purpose (the *why*), and context (the *competing factors*) in which to ensure efficient employment, all of which exist in comparative definitions of such things as the infantry or the Special Air Service Regiment.[5] Rather than list tactical concepts, purpose, and then context, the Australian definition lists available purposes (to locate, dislocate and disrupt) and tactical concepts (offensive, defensive, reconnaissance and security activities).[6] This definition does not describe the higher context, despite cavalry tactics necessitating an understanding of this background, nor does it address the circumstances in which cavalry operates, thereby depriving readers

[3] Harry Yeide, *Steeds of Steel: A History of American Mechanized Cavalry in World War II* (Minneapolis, MN: Zenith Press, 2008), 10.
[4] Recent iterations of the Australian Army's *Cavalry Regiment* land warfare procedure (LWP) publication have removed the mention of "dismounted" in the doctrinal statement. As this removal historically followed the transition of the cavalry scout role to the Army Reserve in quick succession, this was a case of the tail wagging the dog. Cavalry forces, like any other military force, conduct both mounted and dismounted operations as the terrain and situation dictate. The consideration of cavalry forces as light tank crews tethered to vehicles is not consistent with effective cavalry operations. See *Cavalry Regiment*, LWP-CA (MTD CBT) 3-3-6 (Canberra: Australian Army, 2014), 1–4.
[5] Special Air Service Regiment special forces "conduct protracted, difficult and challenging [context] small-team operations [concept] involving high-level precise military skills [context], often in remote areas and with little tactical-level support." They provide "special-operations capabilities in support of the Australian Defence Force [purpose]. This includes providing unique capabilities to support sensitive strategic operations [purpose]." Similarly, the role of Royal Australian Infantry Corps is "to seek out and close with the enemy [concepts], to kill or capture him, to seize and hold ground [purpose], and to repel attack by day or night [concept and context], regardless of season, weather, or terrain [context]." See "Special Air Service Regiment," Army.gov.au, accessed 8 March 2020; and "Royal Australian Infantry Corps," Army.gov.au, accessed 8 March 2020.
[6] *Cavalry Regiment*, 1–4.

of the critical framework that binds a task to a purpose. It also notably omits stability operations and transition tasks, both of which are essential tactical concepts to cavalry employment.[7] Doing so simplifies the scope of cavalry operations and disconnects the definition from the chapters of its doctrine.

Second, unlike *disruption* or *dislocation*, the term *locate* is nondoctrinal.[8] Consequently, cavalry commanders frequently interpret this term as a direct replacement for the tactical task of reconnaissance, which causes a second-order problem. By replacing *locate* with *reconnoiter*, this misnomer elevates a tactical concept (reconnaissance) into a purpose for conducting operations. Such elevation risks a wasteful use of cavalry to perform reconnaissance for its own sake.

Third, the Australian definition is complex, demanding an advanced understanding of maneuver warfare theory—most notably the concepts of dislocation and disruption—which is not remedied by a comprehensive study in ab initio officer or junior noncommissioned officer training.[9] While these terms appear in several publications without definition, including the revised *Operations*, Land Warfare Doctrine (LWD) 3-0 (2018), only the superseded, operational-level *Operations (Developing Doctrine)*, LWD 3-0 (2008) defines these terms.[10] The latter publication defines *dislocation* as "the result of actions to render the enemy's strength irrelevant by not allowing its employment at a critical time or place."[11] Similarly, *disruption* is "the result of a direct attack that neutralizes or selectively destroys key elements of the enemy's capabilities. . . . Disruption aims to reduce the enemy's cohesion and will to fight by neutralising or destroying parts of his force in a manner that prevents the force from acting as a coordinated whole."[12] Such definitions do not address the competing treatments of both terms by military theorists Richard E. Simpkin, J. F. C. Fuller, Robert R. Leonhard, and David Funk, who grant a holistic understanding of these concepts by introducing such ideas as energy, momentum, and asymmetry.[13] Consequently, the majority of Australian cavalry forces cannot understand their allocated role beyond a rote definition until reaching the sergeant or combat-team-level-officer instructional milestones.

Finally, the current Australian cavalry regimental structure has recently evolved to a multiplatform construct, challenging an extant myth that *cavalry* is a vehicle

[7] Stability operations and transition tasks are each dedicated an entire section within *Cavalry Regiment*.

[8] Neither the Australian Defence Force glossary nor the Australian Army's warfighting doctrine defines this term.

[9] Dislocation, disruption, and related ideas such as centers of gravity and critical capabilities are not taught in detail until sergeant subject courses and the Combat Officers' Advanced Course. For a critique of the Australian Army's poor understanding of decisive events, which often incorporate dislocation and disruption, see Luke Dawson and Benjamin Gray, "Australian Tactical Design: Development and Use of Decisive Events," *Grounded Curiosity* (blog), 4 January 2018.

[10] *Operations (Developing Doctrine)*, Land Warfare Doctrine (LWD) 3-0 (Canberra: Australian Army, 2008), 25.

[11] *Operations (Developing Doctrine)*, 25.

[12] *Operations (Developing Doctrine)*, 25.

[13] Richard E. Simpkin, *Race to the Swift: Thoughts on Twenty-First Century Warfare* (London: Brassey's Defence Publishers, 1985), 139–40; Robert R. Leonhard, *The Art of Maneuver: Maneuver-Warfare Theory and AirLand Battle* (Novato, CA: Presidio Press, 1991), 66, 73; and Maj David E. Funk, USA, *Tactical Dislocation: Force XXI Doctrine or Just Another Pretty Theory?* (Fort Leavenworth, KS: U.S. Army Command and General Staff College, 1997).

type and not a tailored force. The sole prevalence of the Australian Light Armored Vehicle (ASLAV) within cavalry regiments during the past two decades is the likely culprit for this misnomer, reinforced by the most current ratified cavalry publication displaying an obsolete single platform regiment structure based on the ASLAV.

Consequently, a revised definition of *cavalry* must address three critical areas to lay the foundation for successful doctrine revision and proper employment. First, it must contain correctly defined purposes. Specifically, this must entail the replacement of the word *locate*. Doing so enables understanding of the three enduring purposes of cavalry operations, henceforth known as the "cavalry trinity." Second, like other doctrinal examples, this classification must also include the unique context of cavalry operations, a dilemma of competing factors that shape, hinder, and enhance them, which will henceforth be known as the "cavalry context dilemma." Understanding and then negotiating this quandary provides a potent engine for the successful execution of cavalry operations. Third, the definition must be holistic, encompassing all the enduring components of the role of cavalry, thereby ensuring definition longevity. U.S. Marine Corps reconnaissance doctrine, U.S. Army cavalry and reconnaissance doctrine, and historical synthesis provide the research engines to rectify these shortfalls.

Saddle Up: Defining the Cavalry Trinity and Context Dilemma to Frame a Revised Definition

> *Altogether, Cavalry operations are exceedingly difficult, knowledge of the country is absolutely necessary, and ability to comprehend the situation at a glance and an audacious spirit are everything.*
>
> ~ Maurice de Saxe[14]

The terms *orient* and *orientation* provide a suitable replacement for the ambiguous *locate* that is expressed in Australian doctrine, as *orient* and *orientation* both appear in it and also represent a closer alignment to the purpose of cavalry reconnaissance and combat operations.[15] Cavalry reconnoiter to orient the commander, colloquially recognized as "providing time and space for the commander to make a decision."[16] Additionally, cavalry forces seek to misorient the enemy commander through a combination of main force shielding and disproportionate decisive action, justifying *orient* and *orientation* of both friend and foe.[17]

U.S. cavalry doctrine hints at the purpose of orientation by indicating that cavalry "set conditions for successful operations of the unit for which they are con-

[14] Maurice de Saxe, *Reveries on the Art of War*, ed. and trans. BGen Thomas R. Phillips, USA (Mineola, NY: Dover, 2007), 67.
[15] *Operations*, LWD 3-0 (Canberra: Australian Army, 2018), 25, 45.
[16] Jonathan Ozols, Tim Hurley, and Grant Chambers, "The Preparation and Employment of the ACR Based Cavalry Group" (unpublished essay, last modified 29 November 2018).
[17] Ozols, Hurley, and Chambers, "The Preparation and Employment of the ACR Based Cavalry Group."

ducting reconnaissance and security tasks. These roles are not necessarily missions themselves, but translate into mission statements."[18] Marine Corps Light Armored Reconnaissance (LAR) battalion doctrine additionally indicates that LAR is responsible for performing "combined arms reconnaissance and security missions in support of the [Ground Combat Element]."[19] (While the Marine Corps officially considers the LAR battalion an infantry element, its employment specifications, doctrine, and personnel acknowledge an inherent cavalry role.[20]) This emphasis placed on linking cavalry operations in support of another unit provides the bridge between purpose and context, while also demonstrating that cavalry orients beyond just the enemy. Cavalry, therefore, takes orientation from both the enemy and friendly forces, as well as the terrain (inclusive of physical, human, and informational terrain). Importantly, this synthesis hints at the overlap that occurs between such cavalry tactical concepts as force orientation, adversary cohesion degradation, and enhanced understanding coincide—a critical idea that will be discussed later in the historical analysis.

By solidifying this definition, cavalry's three purposes of orientation, dislocation, and disruption form a trinity that shapes appropriate cavalry use. These three purposes lie between receipt of mission and the formulation of tactical concepts. Embedded within this trinity, importantly, is the missing link within Australian doctrine, and that which differentiates cavalry from other arms: the cavalry context dilemma. This context impacts the transition from purpose identification through to task selection and execution, therefore becoming essential to cavalry operations.

The cavalry context dilemma contains three parts that formulate the unique nature of cavalry operations. First, cavalry campaigns with a constant desire for an economy of force. While absent from Australian doctrine, William Stuart Nance, Harry Yeide, and M. H. Gillie's historical syntheses all reinforce this desire within cavalry operations.[21] Similarly, U.S. Marine Corps LAR doctrine addresses this factor by defining its mission to "conduct reconnaissance, security and economy of force operations, and, within its capabilities, limited offensive or defensive operations that exploit the unit's mobility and firepower."[22] The phrases *within capabilities* and *economy of force* not only differentiate cavalry's context from infantry but also forewarn that where infantry consistently seeks combat, cavalry tends to perform com-

[18] *Reconnaissance and Security Operations*, Field Manual (FM) 3-98 (Washington: DC: Department of the Army, 2015), 1-3.
[19] *Employment of the Light Armored Reconnaissance Battalion*, Marine Corps Tactical Publication (MCTP) 3-10D (Washington DC: Headquarters Marine Corps, 2018), 1-1.
[20] While G. J. Michaels acknowledges the difference in force structure between U.S. Army and Marine Corps cavalry, he clarifies that the roles and tactical concepts associated with the Marine Corps' LAR battalions were those consistent with cavalry in all but official name—including members of the units referring to themselves as cavalry. G. J. Michaels, *Tip of the Spear: U.S. Marine Light Armor in the Gulf War* (Annapolis, MD: Naval Institute Press, 1998), 7–8.
[21] William Stuart Nance, *Sabers through the Reich: World War II Corps Cavalry from Normandy to the Elbe* (Lexington: University Press of Kentucky, 2017), 1–8, 263; Yeide, *Steeds of Steel*, 16–19, 23; and M. H. Gillie, *Forging the Thunderbolt: History of the U.S. Army's Armored Forces, 1917–45* (Mechanicsburg, PA: Stackpole Books, 2006), 41–44.
[22] *Employment of the Light Armored Reconnaissance Battalion*, 1-1.

bat in the pursuit of other objectives. Examples, such as reconnaissance or coup de main, logically shape the practitioner toward employing cavalry for disproportionate effects.

Second, sound cavalry employment pursues disproportionate effects. Marine Corps LAR's doctrinal inclusion of "exploit the unit's mobility and firepower" hints at the fact that cavalry pursues unequal outcomes with capable firepower and tempo. These themes match Gervase Phillips and William Stuart Nance's scholarly appraisal that cavalry missions occur beyond local "tactical" responsibilities during reconnaissance and covering force operations, such as in the Franco-Prussian War (1870–71) and World War II (1939–45).[23] Scholars Paul Handel and Joseph C. Barto III highlight cavalry's disproportionality through its possession of multiple infantry support weapon skills, thereby providing increased flexibility.[24] As historian Mark Lardas notes, "Putting soldiers on horses does not make them cavalrymen."[25]

While U.S. Army cavalry doctrine avoids the word *disproportionate*, it still considers a blended inclusion of economy of force with disproportionate effects by indicating that cavalry frequently creates surprise through stealth or deception.[26] Though deception is not unique to cavalry, its frequent participation in such actions is evident. The Carthaginian general Hannibal's camouflaged cavalry in the Battle of Lake Trasimene in 217 BCE; French emperor Napoleon Bonaparte's cavalry feint into the Black Forest during the Battle of Günzburg in 1805; British Army lieutenant general Sir Garnet Wolseley's advance to Tel el-Kebir, Egypt, in 1882; the British Commonwealth's Battle of Beersheba in 1917 and British Army general Edmund Allenby's Megiddo operation in 1918; and the use of both dummy and actual vehicles by the Allies during Operation Bertram in Egypt in 1942 all demonstrate classic examples of cavalry achieving disproportionate effects with economical force arrays.[27] In these instances, smaller or less capable cavalry forces misoriented, dislocated, and disrupted disproportionate enemy forces by engaging in advantageous

[23] As an example, the U.S. Army's 4th Mechanized Cavalry Group in World War II (the size of a regiment) was relieved by an entire infantry corps on two occasions in 1944. Gervase Phillips, " 'Who Shall Say that the Days of Cavalry Are Over?': The Revival of the Mounted Arm in Europe, 1853–1914," *War in History* 18, no. 1 (2011): 19, https://doi.org/10.1177/0968344510382606; Nance, *Sabers through the Reich*, 264; and *Employment of the Light Armored Reconnaissance Battalion*, 1-1.

[24] Qualifications include antiarmor, automatic grenade launcher, advanced communications, micro-size unmanned aerial vehicle (UAV) use, and reconnaissance. See Maj Joseph C. Barto III, USA, *Task Force 2-4 Cav—"First In, Last Out": The History of the 2d Squadron, 4th Cavalry Regiment, during Operation Desert Storm* (Fort Leavenworth, KS: U.S. Army Command and General Staff College, 1993); and Paul Handel, *Fifty Years of the Royal Australian Armoured Corps, 1948 to 1998* (Puckapunyal, Australia: Royal Australian Armored Corps Memorial and Army Tank Museum, 1998), 28.

[25] Mark Lardas, *Roughshod through Dixie: Grierson's Raid 1863* (London: Bloomsbury, 2012), 73.

[26] *Reconnaissance and Security Operations*, 4-27.

[27] Barton Whaley, *Practice to Deceive: Learning Curves of Military Deception Planners* (Annapolis, MD: Naval Institute Press, 2016), 8–10, 77–80; Thaddeus Holt, *The Deceivers: Allied Military Deception in the Second World War* (New York: Lisa Drew, 2004), 240–45; Maj Brian J. Dohan, USA, "From Beersheba to Megiddo: British Deception Operations during the Palestine Campaign, 1917–1918," in *Weaving the Tangled Web: Military Deception in Large-Scale Combat Operations*, ed. Christopher M. Rein (Fort Leavenworth, KS: Army University Press, 2018), 27–45; Nic Fields, *Lake Trasimene, 217 BC: Ambush and Annihilation of a Roman Army* (Oxford, UK: Osprey, 2017), Kindle edition, loc. 1228–1314; and David G. Chandler, *The Campaigns of Napoleon*, vol. 1 (New York: Macmillan, 1966), 147.

combat or avoiding untimely combat. While this relationship between an economy of force and disproportionality is essential, it remains underpinned by one crucial factor: the force structure's capabilities.

Third, the commander's understanding of the cavalry force's capabilities concerning assigned missions underpins sound cavalry employment. While this factor is essential for all troops, it is critically vital to cavalry, as cavalry's economy of force nature and desire for disproportionate effects significantly elevate risk to force and mission. A symptom of the prevalence of this factor includes scholars and military personnel debating over cavalry unit structure, arguing over light-versus-heavy cavalry platforms, and mandating specific main-gun size and armor protection capabilities.[28] Noting that the rollout of the Boxer CRV has commenced, military scholar Daniel Gouré's indication that successful platform integration is only balanced by understanding and fusing the full ability of a force's unique training and technological capabilities is ever relevant.[29] As the historical analysis will later show, cavalry failure often incorporates the dilemma failing via this factor.

An expanded role encompassing the full range of tactical concepts remediates the final shortfall in Australian cavalry doctrinal. As scholars demonstrate that cavalry conducts reconnaissance, security operations, economy of force missions, stability operations, and coordination and liaison duties (including enabling and transition tasks), these concepts must appear in a revised definition.[30] While this synthesis elevates the importance of coordination and liaison duties buried within doctrinal annexes, it also demonstrates the simultaneity and overlap of reconnaissance and security actions to generate shaping and disproportionate effects.[31] The conduct of reconnaissance-in-force, reconnaissance-by-fire, and reconnaissance-pull demonstrate this simultaneity in action. Frequent historical precedence also binds the components of each of the three definitions together, showing that each is correct in its own right, which provides a platform for a revised definition. A concise definition of *cavalry* that synthesizes the tactical concepts, purpose, and context together is by the conduct of reconnaissance, security, transition, and disproportionate economy of force-driven offensive, defensive, and stability operations, cavalry forces support the commander through orientation, dislocation, and disruption. This proposal requires a historical validation. To prove the enduring role of cavalry, successful cavalry operations must demonstrate the pursuit of a nested caval-

[28] John J. McGrath, *Scouts Out!: The Development of Reconnaissance Units in Modern Armies* (Fort Leavenworth, KS: Combat Studies Institute Press, 2008), 198–200; Matt Gonzales, "Marine Corps Plans to Replace LAV with New, 'Transformational' ARV," Marines.mil, 16 April 2019; and Maj Matthew Dooley, USA, "Ignoring History: The Flawed Effort to Divorce Reconnaissance from Security in Modern Cavalry Transformation" (master's thesis, U.S. Army Command and General Staff College, 1994), 95–108.

[29] Daniel Gouré, "Winning Future Wars: Modernization and a 21st Century Defense Industrial Base," Heritage Foundation, 4 October 2018.

[30] Nance, *Sabers through the Reich*, 263; Yeide, *Steeds of Steel*, 19–20, 29–32; Gillie, *Forging the Thunderbolt*, 41–44; and Heinz Guderian, *Achtung—Panzer!*, trans. Christopher Duffy (London: Cassell Military Paperbacks, 1999), 163–65.

[31] Nance, *Sabers through the Reich*, 1–2.

ry trinity of tactical concepts, purpose, and context. This trinity's presence during cavalry's horseback years, after the changeover years of the interwar period, and during the twentieth century's vehicle-mounted evolution confirm this enduring role while also demonstrating the value of its retention.

Proving the Enduring Role of Cavalry

> *Heavy rains and mists prevented the air force from observing. The British carried on with their cavalry—the Turks, without cavalry, were helpless.*
>
> ~ Major Malcolm Wheeler-Nicholson, U.S. Army[32]

The Cavalry Has Arrived: When Cavalry Successfully Nests the Trinity

To provide examples of the enduring role of cavalry, optimal cavalry operations must achieve a nested cavalry trinity. Similarly, cavalry failures must contain a disconnect of that triad. Within this trinity, cavalry's three purposes are the most elusive but essential binding agent for successful operations, as they bridge tactical concepts to context. Consequently, the identification of these purposes makes their pursuit the most critical component of testing cavalry's enduring role—and the focal point of this discourse. In the saddle era, U.S. Army colonel Benjamin H. Grierson's raid through Confederate-held territory during the Vicksburg Campaign of the American Civil War demonstrated a successful application of the trinity within a total war. The interwar years show that despite significant technological change, the trinity remained consistent. Furthermore, several U.S. Army cavalry units in the Vietnam War demonstrated a successful application of the trinity within a hybrid war. Finally, U.S. Army cavalry units in the Gulf War exemplified the retention of achieving the cavalry trinity in a limited war.

Grierson's Raid: Cavalry Orients, Dislocates, and Disrupts in Total War

During the American Civil War, Colonel Grierson's cavalry raid from La Grange, Tennessee, to Baton Rouge, Louisiana, from 17 April to 2 May 1863 demonstrated the extraordinary value of cavalry pursuing operational and tactical-level orientation, dislocation, and disruption of the enemy through shaping and combat actions. By early 1863, the well-defended port of Vicksburg, Mississippi, on the Mississippi River, stood as the critical strongpoint for the Confederacy in maintaining lines of communication and supply between its eastern and western states. For the U.S. forces, Vicksburg was the final linchpin for securing the Mississippi River and effectively splitting the Confederacy in two.[33] With limited forces available, Grierson and the Union Army of the Tennessee faced an uphill challenge.

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[32] Maj Malcolm Wheeler-Nicholson, USA, *Modern Cavalry: Studies on Its Role in the Warfare of To-Day with Notes on Training for War Service* (New York: MacMillan, 1922), 154.

[33] Lardas, *Roughshod Through Dixie*, 30–31.

As the Army of the Tennessee marched south down the western side of the Mississippi River, its commander, Major General Ulysses S. Grant, sought an unopposed or lightly defended crossing point as a precondition for his ensuing assault on Vicksburg. Recognizing the strength of regional Confederate Army forces, Grant ordered Grierson's cavalry to raid—a tactical task within the tactical concept of offensive operations—east of the Mississippi River to physically dislocate Confederate defenders away from his crossing point and weaken the rebel defenses around Vicksburg.[34] Doing so would misorient the enemy commander to the incorrect objective, consequently facilitating dislocation and disruption. Grierson's raid extraordinarily achieved both operational and tactical orientation, disruption, and dislocation, paving the way for later Union success at Vicksburg.

Operationally, Grierson's raid achieved all three cavalry purposes. He misoriented and dislocated thousands of Confederate troops from Mississippi, Tennessee, Alabama, and Louisiana under Confederate lieutenant general John C. Pemberton, who was in pursuit of his 1,750-strong understrength brigade.[35] Critically, Grierson's raid lured Confederate lieutenant colonel Clark R. Barteau's 2d Tennessee Cavalry Regiment away from Grant's crossing site. This distraction enabled Grant to cross the river and encircle, starve, and prevent reinforcement of the beleaguered Vicksburg defenders before their surrender on 4 July 1863.[36] Importantly, Vicksburg and Port Hudson, which fell five days later, ceded strategic control of the Mississippi River to Union forces, and dislocated Confederate forces from critical operational-level trans-Mississippi supply stocks that historians identify as one of the vital turning points of the war.[37] Without this necessary dislocation, Grant would have faced the kind of amphibious and land operational scenario that had previously resulted in defeat. Consequently, Grierson's raid possessed immense importance for Union operational and strategic success, operationally disrupting rebel forces and exposing the Confederacy's weak industrial base that was later exploited by U.S. Army major general William T. Sherman's March to the Sea in 1864.

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[34] While Mark Lardas states that the original main effort was to facilitate the river crossing and capture Port Hudson, LA, with Vicksburg as a subsequent objective, he does indicate that the strategic objective did not change throughout. Similarly, Timothy B. Smith indicates that Grierson's raid contained two primary objectives: to destroy the Southern Railroad of Mississippi and to facilitate Grant's crossing. Lardas, *Roughshod through Dixie*, 24; and Timothy B. Smith, *The Real Horse Soldiers: Benjamin Grierson's Epic 1863 Civil War Raid through Mississippi* (El Dorado Hills, CA: Savas Beatie, 2018), xviii.

[35] While Grierson's brigade should have contained 3,600 troops at full strength, he only possessed 1,750 at the time of his raid. Similarly, while debate rages between historians as to the number of CSA forces rediverted to intercept Grierson, it is accepted that the number was substantial. Grierson's raid also drew CSA infantry units from Vicksburg, Jackson, and Port Hudson. For more information, see Capt Paul C. Jussel, USA, "Operational Raids: Cavalry in the Vicksburg Campaign, 1862–1863" (master's thesis, U.S. Army Command and General Staff College, 1979), 71–73; Dee Brown, *Grierson's Raid* (New York: Open Road Integrated Media, 2012), 18; and Smith, *The Real Horse Soldiers*, 352.

[36] Lardas, *Roughshod through Dixie*, 14.

[37] James M. McPherson indicates that this was, in conjunction with the Battle of Gettysburg, the war's crucial turning point. See James M. McPherson, *Battle Cry of Freedom: The Civil War Era* (New York: Oxford University Press, 1988), 665; and "10 Facts: The Vicksburg Campaign," American Battlefield Trust, accessed 20 January 2020.

Without Grierson's concurrent ability to dislocate and disrupt, Sherman's campaign would not have been possible. Grierson's destruction of 50 miles of critical railroad infrastructure along the three lines leading to Vicksburg (the Southern Railroad from Meridian, Mississippi, to Vicksburg; the New Orleans and Jackson line from Memphis, Tennessee, to Mississippi; and the Mobile and Ohio Railroad between Mobile, Alabama, and Columbus, Kentucky) operationally disrupted the Confederacy's supply basing. The destruction of rail lines, locomotives, and more than 100 rolling stock resulted in the New Orleans to Jackson line ceasing to function for the remainder of the war. Additionally, other networks only received minor repairs as the Confederacy struggled to contain the hemorrhage.[38] Such destruction struck at the heart of the Confederate's ability to maintain a capable fighting force in the Western theatre of the war, exacerbated further by Grierson's torching of a Confederate clothing factory at Bankston, Mississippi, that provided critical shoes and blankets to Confederate forces.[39] While these operational achievements overshadowed their tactical success, the prevalence of tactical-level dislocation in conjunction with disruption reinforces the value of cavalry maintaining this ability.

Grierson achieved tactical-level dislocation on multiple occasions during the raid. First, his dispatch of Colonel Edward Hatch and the 2d Iowa Cavalry Regiment to destroy the Mobile and Ohio Railroad (a secondary objective) drew the remainder of available Confederate cavalry with it.[40] This diversion misoriented and dislocated the rebel cavalry in pursuit of Hatch's force, enabling Grierson's main force of two regiments to continue to penetrate south toward the main objective at Newton's Station.[41] Consequently, Confederate cavalry, unable to maintain contact with Grierson's force from the north, ensured the dislocation of their southern encamped, slow-moving, but powerful infantry and artillery forces that could not reconnoiter and occupy a suitable blocking position to fix Grierson's force for subsequent destruction. Meanwhile, Grierson commenced disruption operations in the Confederate's deep space.[42] This diversion prevented the forewarning of local Mississippi militia brigades who were capable of identifying and eroding the Union cavalry force through persistent skirmishing into ineffectiveness, causing a slower but effective end to the raid's duration.

Second, Grierson's frequent replacement of lame and tired mounts with captured Confederate ones during the raid dislocated the rebel cavalry from a critical source of individual capability overmatch: faster and superior-bred horses.[43] While superficially trivial, this undermatch was a contributing factor to Confederate cav-

[38] Mark Lardas says that the locomotives were so valuable that Stuart hauled a captured one via oxen to Confederate encampments. See Lardas, *Roughshod through Dixie*, 70; Smith, *The Real Horse Soldiers*, 252–53; and Brown, *Grierson's Raid*, 110–11.
[39] Brown, *Grierson's Raid*, 78.
[40] Brown, *Grierson's Raid*, 22.
[41] Smith, *The Real Horse Soldiers,* 132–38; and Lardas, *Roughshod through Dixie*, 74.
[42] Lardas, *Roughshod through Dixie*, 18.
[43] Smith, *The Real Horse Soldiers*, 352; and Lardas, *Roughshod through Dixie*, 31.

alry victories during the first half of the conflict. In the context of waning Confederate stocks by 1863, it became of operational importance as the war continued. Grierson's replenishment continually propped up the force structure capabilities of his units by managing fatigue and increasing mobility, thereby allowing for greater risk to pursue disproportionate effects and stave off the economy of force concerns generated by the depth of his raid. Balancing this dilemma through mobility superiority and effective forward screening, Grierson effectively reoriented on several occasions with superior situational awareness to avoid Confederate ambushes.[44] As the raid wore on, Grierson also disrupted intelligence efforts to locate him.

Third, Grierson dislocated Confederate forces that were attempting to establish contact with his raiding party by feeding false narratives (via ruses) to Confederate prisoners who were allowed to "escape" as well as civilian personnel when passing through known belligerent areas.[45] These methods also distracted rebel forces from Grant's main force. Civilian interaction importantly provides an essential clue in cavalry's pursuit of future operations in densely populated areas: a requirement for human intelligence (HUMINT) collection and deception dissemination to orient and misorient. Together, these abilities provide the practitioner with an opportunity for simultaneous orientation, dislocation, and disruption.

Finally, Grierson's mastery of concentration and dispersion, as well as perfidious deception, achieved dislocation. Several of his scouts dressed as Confederate militia (nicknamed the "Butternut Guerrillas" under Sergeant Richard Surby) dislocated superior Confederate information gathering efforts that were afforded through garrison outposts and what would amount to, in modern parlance, southern civilian HUMINT networks.[46] Firsthand accounts demonstrated the successful duping of Confederate military and civilians during portions of the raid, disrupting Confederate efforts to find and target Grierson while also assisting his resupply through foraging.[47] The rebel's ability to orient despite human terrain dominance was ineffective.

Grierson's pursuit of the cavalry trinity during the saddle era demonstrated the enduring role of cavalry, as his raid had the presence of all three cavalry purposes. Additionally, his ability to achieve strategic effects with an understrength force confirms an interrelationship of economy of force with disproportionate effects. Superior tactics and horse mounts (i.e., technology) underpinned Grierson's balanced approach. But was this role inherently linked to the platform, or was it genuinely enduring? The interwar years provide the answer to this question: the role of cavalry was enduring, and it transcended platform or mount type despite significant stress testing by technology and intellectual stagnation.

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[44] Smith, *The Real Horse Soldiers*, 289–91.
[45] Brown, *Grierson's Raid*, 86, 172.
[46] The CSA found it difficult to determine the size and main effort of Grierson's raid. Smith, *The Real Horse Soldiers*, 189.
[47] Brown, *Grierson's Raid*, 85–86.

Are We Riding or Driving?: Cavalry's Trinity Despite Significant Technological Change

Despite significant technological stressors at the end of the saddle era, which initially unbalanced the cavalry context dilemma, cavalry maintained its trinity during the interwar years (1919–39) through a multiplatform approach to cavalry operations. Nevertheless, the transition was not easy for cavalry forces. In the United States, change was initially farcical, with horse cavalry deployed unrealistically against machine-gun-wielding armored vehicles and infantry during several interwar trials, with skewed results.[48] Least memorable were the U.S. Army's 1929 Divisional Field Maneuvers and portions of the 1934 Kansas Maneuvers, which pitched horse cavalry in both offensive and defensive operations in a similar fashion to the disastrous cavalry operations of the Polish army against the German *Wehrmacht* (armed forces) in 1939.[49] Despite John J. McGrath, Mathew Darlington Morton, and Harry Yeide indicating that U.S. congressional and military demands desired mechanization after 1927, change was slow. Vehicle-mounted cavalry was hampered by doctrine lag, the downturn of the Great Depression, insufficient tactical training, Luddite cavalry officers, and a lack of equipment to reach its full potential in barracks.[50]

Similarly, during U.S. Army interwar trials at Camp Knox, Kentucky, exercise participants constrained vehicle-mounted cavalry forces to reconnaissance duties due to insufficient radios, turreted weapons, and cavalry scout numbers.[51] Commanders of both horse- and vehicle-mounted cavalry failed to understand their force structure capabilities, resulting in an unbalanced dilemma and suboptimal cavalry employment.[52] Notwithstanding, together both forces provided the cavalry trinity as vehicle-mounted forces began replacing horse cavalry via motorized and mechanized means. Yet, how would the cavalry divide its role among distinct platforms to ensure the dilemma was balanced?

Recognizing the limitations of formative cavalry vehicle platforms, acquisition officers ensured that vehicle-mounted cavalry's development balanced the force structure technology demands—in this instance, mobility, speed, and armored protection trade-offs—toward an economy of force mindset and a desire for ex-

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[48] Yeide, *Steeds of Steel*, 15, 17, 19, 21; Robert S. Cameron, ed., *Armor in Battle: Special Edition for the Armored Force 75th Anniversary* (Fort Benning, GA: U.S. Army Armor School, 2015), 8; Nance, *Sabers through the Reich*, 14; and Matthew Darlington Morton, *Men on Iron Ponies. The Death and Rebirth of the Modern U.S. Cavalry* (DeKalb: Northern Illinois University Press, 2009), 19–23.

[49] *Field Service Regulations, Operations*, FM 100-5 (Washington, DC: Department of War, 1941) still recognized horse cavalry as a type of cavalry in 1944. However, the defeat of Poland in 1939 signified the death blow for the horse cavalry community. Morton, *Men on Iron Ponies*, 8, 222.

[50] *Field Service Regulations, United States Army, 1923* (Washington, DC: Department of War, 1924), 18; Morton, *Men on Iron Ponies*, 6–8, 18–19; McGrath, *Scouts Out!*, 51–52; Yeide, *Steeds of Steel*, 17–18, 22–23; and George F. Hofmann, *Through Mobility We Conquer: The Mechanization of U.S. Cavalry* (Lexington: University Press of Kentucky, 2006), Kindle edition, loc. 2751.

[51] Gary W. Palmer, *The United States Cavalry: Time of Transition, 1938–1944, Horses to Mechanization* (San Diego, CA: Voyak Publications, 2013), 233–79; Morton, *Men on Iron Ponies*, 8–11, 21; Nance, *Sabers through the Reich*, 19–21; and Yeide, *Steeds of Steel*, 22–23.

[52] Matthew Darlington Morton accuses some horse cavalry practitioners of pursuing technologies with a bias for ensuring the retention of horse cavalry. Morton, *Men on Iron Ponies*, 14–15.

traordinary effects.[53] Motorized cavalry (armored and scout car variants) provided early disproportionality and economy of force tenets to cavalry operations. Troop A, 1st Armored Car Squadron's 1928 experiments and 1929 field evaluation demonstrated motorized cavalry's successful contribution to reconnaissance, holding actions, and delaying actions, part of the tactical concept of defensive operations.[54] Backed by operational concept development in the 1930s under Major General Guy V. Henry Jr., motorized cavalry units organized and executed deep operations and operational-level reconnaissance during the 1932 war games, demonstrating motorized cavalry's employment for extraordinary effects.[55]

The superior speed of early motorized cavalry also outpaced mechanized infantry, which preserved the cavalry's ability to seize fleeting opportunities against a vehicle-mounted adversary through offensive, defensive, transition, and security tactics. Colonel Adna R. Chaffee Jr.'s 7th Cavalry Brigade personified this during the September 1939 Plattsburgh Field Maneuvers. Chaffee's force, outfitted for reconnaissance, conducted a short-notice 193-kilometer envelopment maneuver by night without lights, dislocating and disrupting the enemy's tactical and operational defensive arrays, securing the operational objective, and soundly defeating its opponent.[56] Similarly, Colonel Bruce Palmer's use of an armored car platoon during the 1936 Camp Custer Maneuvers to reorient to an open flank by rapidly outpacing infantry and destroying the enemy's rear artillery positions demonstrated the abilities of motorized cavalry beyond reconnaissance.[57] Motorized cavalry performed its fair share of the cavalry trinity, but its off-road mobility weakness threatened a holistic coverage that horse cavalry had maintained previously.[58]

Mechanized cavalry soon clanked to the rescue. Light tanks and tankettes excelled at off-road reconnaissance, including reconnaissance in force and reconnaissance by fire; guarding, particularly against armored forces; pursuit in complex terrain; counterreconnaissance; and deception operations, consolidating the enduring task repertoire maintained by horse cavalry through previous millennia.[59] Major General George S. Patton Jr., Major General Joseph W. Stilwell, and Colonel Mark W. Clark demonstrated the successful transition of these tasks to vehicle-mounted cavalry during the 1941 Louisiana Maneuvers by a series of bold and well-coordinated offensive, defensive, transition, and reconnaissance tasks.[60]

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[53] Matthew Darlington Morton personifies this division via the thesis of Maj General Robert W. Grow, USA, during several *Cavalry Journal* submissions. Morton, *Men on Iron Ponies*, 39.

[54] Morton, *Men on Iron Ponies*, 18–21.

[55] Morton, *Men on Iron Ponies*, 30–31.

[56] John Cranston, "1940 Louisiana Maneuvers Lead to Birth of Armored Force," *Armor* 99, no. 3 (May/June 1990): 30–33.

[57] Morton, *Men on Iron Ponies*, 35–36.

[58] Yeide, *Steeds of Steel*, 14–15.

[59] Morton, *Men on Iron Ponies*, 22–25, 221, 226; Robert Edwards, *Scouts Out: A History of German Armored Reconnaissance Units in World War II* (Mechanicsburg, PA: Stackpole Books, 2013), 19, 27; and Roman Jarymowycz, *Tank Tactics: From Normandy to Lorraine* (Boulder, CO: Lynne Rienner Publishers, 2001), 212.

[60] Mark Perry, "Louisiana Maneuvers (1940–41)," HistoryNet, 25 November 2008.

As a theorist, Patton mandated that mechanized cavalry forces achieve tactical and strategic impact simultaneously, cementing disproportionality as a critical factor of mechanized cavalry.[61] Italy's crushing defeat of Ethiopia in 1935 provides an example of light tanks and tankettes delivering such a blow to hapless, unprotected, infantry.[62] Nevertheless, mechanized cavalry was not without its limitations. Slower top speeds, loud movement, and an increased fuel consumption rate ensured cavalry's multiplatform approach.[63]

Working in unison, the combined motorized and mechanized cavalry provided the holistic consummation of horse cavalry tactical concepts. Furthermore, vehicle-mounted cavalry's achievement of disproportionate effects while maintaining a relatively small size compared to infantry demonstrated the enduring cavalry context dilemma in both theoretical unit design and practical maneuvers. With vehicle-mounted cavalry capable of multirole combat and reconnaissance in an economy of force and disproportionate setting, and with well-understood force structures, cavalry practitioners looked to the sky for reconnaissance competition.

While the development of the airplane briefly challenged cavalry's holistic responsibility of reconnaissance in the U.S. Army during the 1920s, it failed to achieve complete success.[64] Patton's post-1918 warning of the limited persistence of the airplane stifled serious consideration of air fully replacing ground cavalry roles.[65] Brigadier General Omar N. Bradley validated this criticism following the Louisiana Maneuvers, during which the air element managed just 2 of 34 scheduled air missions.[66] Military scholars Malcolm Wheeler-Nicholson and Gordon L. Rottman reinforce the limitations of aircraft by demonstrating that it could not reconnoiter at night, could not conclusively identify camouflaged vehicles and positions by day, and could not maintain persistent observation due to cloud cover and rain during several campaigns of the First and Second World Wars, most notably in Palestine between 1916 and 1918.[67] Wheeler-Nicholson further discredits air power's ability to perform the suite of cavalry tactical concepts and their subordinate tasks by citing aircraft's inability to take prisoners, examine dead and wounded personnel for intelligence, and judge enemy morale.[68]

The United States was not alone in this realization. Germany was unwilling to replace its cavalry for the same reasons. In 1935, the German *Wehrmacht* highlighted

[61] Hofmann, *Through Mobility We Conquer*, loc. 952.
[62] Gillie, *Forging the Thunderbolt*, 91–92.
[63] Morton, *Men on Iron Ponies*, 165; Hofmann, *Through Mobility We Conquer*, loc. 692, 804–69; and McGrath, *Scouts Out!*, 100, 107.
[64] Morton, *Men on Iron Ponies*, 17; and McGrath, *Scouts Out!*, 49–51.
[65] Patton indicated that the airplane lacked persistence in storms, darkness, and forests. George S. Patton Jr., *Cavalry and Tanks in Future Wars: A Collection of Writings by George S. Patton Jr.* (Silver Spring, MD: Dale Street Books, 2017), Kindle edition, loc. 681; and Morton, *Men on Iron Ponies*, 22.
[66] Palmer, *The United States Cavalry*, 745–64.
[67] Wheeler-Nicholson, *Modern Cavalry*, 152, 155–56.
[68] Morton, *Men on Iron Ponies*, 93–94; Wheeler-Nicholson, *Modern Cavalry*, 152, 155–56; and Gordon L. Rottman, *World War II Combat Reconnaissance Tactics* (Oxford, UK: Osprey, 2007), 4–5.

two of six roles of the *Luftwaffe* (air force) as conducting "combat and other action in support of ground troops" and "actions to interdict routes of enemy communications."[69] While the Germans recognized the early communication and mobility misalignment of vehicle cavalry, which in some instances had promoted research of other forces such as air, their provision of radios within armored vehicles rectified range and effectiveness limitations.[70] This inclusion granted command and control dominance over aircraft that struggled to communicate and provide effective strafing for ground combat forces, as had been seen during the German Condor Legion's experiences in several battles of the Spanish Civil War.[71] Writ large, the airplane's role consequently solidified as providing close air support, delivering a long-range nonpersistent reconnaissance supplement, and serving as a strategic bombing asset.[72] Mechanized and motorized cavalry collectively remained the primary proponent of tactical, operational, and strategic reconnaissance until special operations forces consumed strategic reconnaissance with cavalry tactics.[73] The trinity was safe.

World War II validated vehicle-mounted cavalry's complete absorption of the horse cavalry trinity, thereby proving an enduring role within cavalry operations. While the airplane has briefly challenged cavalry's reconnaissance dominance, its relegation to a nonpersistent support arm endures today through the medium of manned and unmanned systems. Importantly, the production of both types of mounted cavalry, combined with solely supplementary effects by aircraft, gives credence to cavalry's balance of the dilemma. With the decline of total war following the end of World War II, cavalry's enduring role requires examination in hybrid and limited wars. The unforgiving jungles of Vietnam provided cavalry's hybrid war test.

[69] These are two of the six tenets mentioned in *Luftkriegsfuhrung [Conduct of Aerial War]*, Luftwaffe Regulation 16 (1935). James S. Corum, *The Roots of Blitzkrieg: Hans von Seeckt and the German Military Reform* (Lawrence: University Press of Kansas, 1992), 167.

[70] Heinz Guderian recognized the importance of radios and aircraft limitations by 1934. Similarly, Matthew Darlington Morton indicates that cavalry maintained some contribution to strategic reconnaissance in 1928. Guderian, *Achtung—Panzer!*, 138, 164–65; Morton, *Men on Iron Ponies*, 18, 164; and Karl-Heinz Frieser, *The Blitzkrieg Legend: The 1940 Campaign in the West* (Annapolis, MD: Naval Institute Press, 2005), 237–38, 241–42.

[71] Michael Alpert, *Franco and the Condor Legion: The Spanish Civil War in the Air* (London: Bloomsbury, 2019), Kindle edition, loc. 2667.

[72] Corum, *The Roots of Blitzkrieg*, 166–68; and Guderian, *Achtung—Panzer!*, 207.

[73] Cavalry continues to support special operations forces during strategic reconnaissance. See chapter 7 of *Cavalry Regiment*.

Rumble in the Jungle: Cavalry Orients, Dislocates, and Disrupts in a Hybrid War

> *I was mistaken in the belief that modern armor had only a limited role in the fighting in Vietnam.*
>
> ~ General William C. Westmoreland, U.S. Army[74]

The above quotation from U.S. Army general William C. Westmoreland personifies the common misnomer that airmobile operations superseded armored warfare after World War II. The U.S. Army's cavalry employment in Operation Cedar Falls (8–26 January 1967) during the Vietnam War demonstrated cavalry's enduring role in a hybrid war. Although the operation received appropriate strategic criticism for its heavy-handedness, as well as its consequences contributing to North Vietnamese exploitation of Cambodian staging areas and recruitment of disenfranchised, relocated civilians, the contribution of cavalry remained important.[75] Cavalry forces achieved disproportionate effects through simultaneous orientation, dislocation, and disruption during the U.S. Army's II Field Force, Vietnam (II FFV) corps-level reconnaissance-in-force operation to permanently disrupt the Viet Cong's "Iron Triangle" stronghold. In the first significant U.S.-South Vietnamese coalition offensive ground operation of the Vietnam War, II FFV committed several cavalry organizations to the multidivisional operation 25 kilometers north of Saigon, South Vietnam.[76] Cavalry employment achieved immediate operational-level effects through battlefield intelligence collection and validated the "search-and-destroy" mission type, which was designed to incorporate reconnaissance with combat actions to achieve orientation with dislocation or disruption.

II FFV's cavalry accomplished disproportionate effects before H-hour, the time at which the operation began. A cavalry and infantry demonstration of "uncoordinated routine clearance operations" (Operations Fitchburg and Niagara Falls) in nearby villages dislocated the enemy's operational-level intelligence, surveillance, and reconnaissance capabilities by masking the movement of blocking forces to Cedar Falls' "anvil" assembly areas. This action then facilitated a rapid "hammer" clearance operation from H-hour. Consequently, the North Vietnamese could neither remove or destroy operational-level intelligence products nor preempt and interdict the highly vulnerable airmobile blocking and clearance force insertion during the mission.[77] Viet Cong forces in the vicinity of the main assault landing zone were too stunned to react.[78] This dislocation led to significant operational-

[74] William C. Westmoreland, *A Soldier Reports* (Garden City, NY: Doubleday, 1976), 178.
[75] Rod Paschall, "Operation Cedar Falls: Search and Destroy in the Iron Triangle," HistoryNet, 6 July 2012.
[76] Paschall, "Operation Cedar Falls."
[77] LtGen Bernard William Rogers, USA, *Cedar Falls–Junction City: A Turning Point* (Washington, DC: Department of the Army, 1989), 37.
[78] Shelby L. Stanton, *The Rise and Fall of an American Army: U.S. Ground Forces in Vietnam, 1965–1973* (New York: Ballantine Books, 1985), Kindle edition, loc. 2277.

level gains for the U.S.-South Vietnamese forces during and after the operation, with cavalry's flexibility for reconnaissance and multirole combat and stability operations proving extraordinarily useful.

During the operation, squadrons of the 4th Cavalry Regiment, attached to several infantry brigades, and E Troop, 17th Cavalry Regiment, attached to the 173d Airborne Brigade, conducted a synchronized divisional-level reconnaissance-in-force operation. The mission included marches from brigade assembly areas before a transition to simultaneous screening and blocking positions west of the Saigon River and east of the Thi Tinh River. These operations shielded and oriented the respective main forces during the march. Due to their success in generating surprise, the cavalry forces dislocated enemy withdrawal routes while shielding the main infantry force for the conduct of the decisive clearance operation.[79] The low signature that the cavalry forces established through their small size was a crucial ingredient to achieving surprise, validating conclusions that cavalry's unique structure and training were causal to misorienting and dislocating the enemy. Practically, the cavalry's integral attack aviation, flamethrowers, and "tunnel rat" trained scout personnel enabled its success, providing a highly effective economy of force balancing act to the understrength dismounted aspect of cavalry.[80]

Together, units of the 4th Cavalry and 17th Cavalry successfully achieved the trinity of cavalry's purposes as the supporting force, demonstrating cavalry's disproportionate ability to achieve effects when commanders focused resources elsewhere. Their brethren in the 11th Armored Cavalry Regiment simultaneously proved cavalry's achievement of similar outcomes as the supported force.

As an independent unit within the main assault force, the 11th Armored Cavalry Regiment conducted a mounted and dismounted clearance operation during Cedar Falls, resulting in the capture of the most significant intelligence breakthrough of the war. As part of the clearance force, the regiment identified 177 enemy facilities and captured half a million pages of documents.[81] These documents outlined cryptographic information, as well as command structures and battle plans for the entire North Vietnamese Army and Viet Cong hierarchy.[82] This find enabled Republic of Vietnam counterintelligence personnel to identify spy networks, thereby disrupting the campaign effectiveness of the Viet Cong in the Saigon area.[83] Looking ahead, it also critically weakened the Viet Cong's Saigon-based forces before the Tet Offensive of 1968, with Communist documents admitting that the operation was a disaster for the Viet Cong. This point is frequently overlooked by historians

[79] As an example, 1st Squadron, 4th Cavalry, destroyed 30 sampans, achieved five enemy killed in action, and took two prisoners during the rapid occupation and establishment of the block. Rogers, *Cedar Falls–Junction City*, 25, 36.
[80] Rogers, *Cedar Falls–Junction City*, 60.
[81] Rogers, *Cedar Falls–Junction City*, 154.
[82] Cavalry personnel, like the infantry, deployed "tunnel rats" to search underground. Donn A. Starry, *Mounted Combat in Vietnam* (Washington, DC: Department of the Army, 1989), Kindle edition, loc. 1201–16, 1219; and Rogers, *Cedar Falls–Junction City*, 77, 103.
[83] Paschall, "Operation Cedar Falls."

who cite the *9th Viet Cong Division*'s ability to avoid decisive battle at Cedar Falls as a milestone of U.S. failure.[84]

While critics may attempt to discard such a success as "luck," cavalry's predisposition for disproportionate effects via its multiskilled order of battle and purposeful mission design of reconnaissance-in-force operations and search-and-destroy tactics (involving a combination of reconnaissance and offensive tactics) dispute this critique. The ability of the 11th Armored Cavalry to transition to intelligence collection in support of orientation, when tasked initially with a disruption mission, demonstrated a sound understanding of the force structure capabilities in pursuit of disproportionate effects. Facilitated by their brethren of the 4th Cavalry who established blocking positions with economy, stealth, and speed, the 11th Armored Cavalry's application of the cavalry trinity demonstrated why the arm is greater than the sum of separate reconnaissance and multirole combat forces, which critics cite as the alternate to cavalry forces.[85]

Operation Cedar Falls demonstrated the achievement of the cavalry trinity at the operational and tactical level, with U.S. forces achieving a successfully balanced cavalry context dilemma against North Vietnamese Military Region IV control.[86] Using their economy of force and sound force structure capabilities of technology, surprise, and speed, the 4th Cavalry and 11th Cavalry demonstrated mastery of the cavalry context dilemma in their pursuit of the trinity. For all their obstacles, the jungles of Vietnam failed to deny cavalry forces the role that had accompanied them for millennia.

With cavalry's enduring role evident in both total and hybrid war, its enduring role in limited war solidifies the overall enduring role.

Recon and Reload: Cavalry Orients, Dislocates, and Disrupts in a Limited War

As the U.S. Army evolved after the Vietnam War via the procurement of the "Big Five" technologies in the 1980s (the M1A1 Abrams main battle tank, the Bradley Fighting Vehicle, the MIM-104 Patriot surface-to-air missile defense system, the Boeing AH-64 Apache attack helicopter, and the Sikorsky UH-60 Black Hawk utility helicopter), cavalry's enduring role faced a technological test. The 2d Armored Cavalry's performance in Operation Desert Storm demonstrated cavalry's enduring role in a limited war. With a numerically inferior force, the regiment masterfully achieved the cavalry trinity of orientation, dislocation, and disruption while neatly balancing the cavalry context dilemma. It facilitated operational and strategic effects that were critical to the coalition's strategic success.

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[84] Shelby L. Stanton criticizes Operation Cedar Falls as a failure due to the *9th Viet Cong Division* eluding battle and returning to the region later. Stanton, *The Rise and Fall of an American Army*, loc. 2277.

[85] Vincent A. Thomas, *A Dying Beed: The United States Cavalry in Today's Army* (Fort Leavenworth, KS: U.S. Army Command and General Staff College, 2013), 33.

[86] Rogers, *Cedar Falls–Junction City*, 18.

The 2d Armored Cavalry, the cavalry force of the Army's VII Corps, demonstrated disproportionate value with its rapid ability to transition from a tactical-level mission seeking friendly corps-level orientation to primary combat, resulting in operational-level disruption and strategic dislocation. At the onset of Desert Storm's ground assault phase on 24 February 1991, the regiment was the corps-level covering force, committing to a 200-kilometer advance-to-contact mission to identify the western edge of Iraqi Republican Guard (IRG) forces while clearing the lightly defended security zone for VII Corps.[87] Lieutenant General Frederick M. Franks Jr., the VII Corps commander, ordered Colonel Leonard D. Holder, commander of 2d Armored Cavalry, to "fight to find out the Tawakalna dispositions without becoming pinned down in a big fight."[88] Combined with the 2d Armored Cavalry's covering force frontage width of four armored divisions in-depth, Holder applied an economy of force to the use of his regiment.[89] As the operation commenced, however, the situation demanded more from the 2d Armored Cavalry than was initially expected.

The advance-to-contact was initially slow. The U.S.-led coalition lost an operational-level element of surprise for a left-hook encirclement maneuver, which enabled IRG armored forces to partially reorient to the west and prepare to block VII Corps' armored penetration. Franks redirected the 2d Armored Cavalry to an eastern axis to retain operational tempo, extending the unit's limit of exploitation east to the 70 Easting coordinate (thereby increasing its depth of penetration) and amending the passage of lines between the 1st Infantry Division and the 2d Armored Cavalry to 0200 on 27 February.[90] This decision immediately transformed the 2d Armored Cavalry from the covering force to a component of the main assault force. The regiment was instrumental in the reestablishment of operational-level initiative, from which the Iraqis never recovered.[91] The famous Battle of the 73 Easting ensued, with the 2d Armored Cavalry destroying the majority of the IRG's Tawakalna Division, the operational-level blocking force critical to Iraq's reorienting.[92] This battle not only saw the disruption of a tactical-level armored counterattack but also opened a gap in the Iraqi defenses for several VII Corps units.[93] These units, including the 1st Infantry Division, subsequently penetrated the enemy's operational-level depth and reserve areas. Ultimately, the 2d Armored Cavalry dis-

[87] H. R. McMaster, "Eagle Troop at the Battle of 73 Easting," *Strategy Bridge*, 26 February 2016; McGrath, *Scouts Out!*, 172–73; and Rich Creed and Nathan Jennings, "Winning the Deep Fight: Why We Should Return to Echeloned Reconnaissance and Security," Modern War Institute, 15 March 2019.
[88] McGrath, *Scouts Out!*, 173.
[89] McGrath, *Scouts Out!*, 173; and Creed and Jennings, "Winning the Deep Fight."
[90] McMaster, "Eagle Troop at the Battle of 73 Easting."
[91] McGrath, *Scouts Out!*, 174.
[92] George F. Hofmann and Donn A. Starry, *Camp Colt to Desert Storm: The History of U.S. Armored Forces* (Lexington: University Press of Kentucky, 1999), Kindle edition, loc. 6617.
[93] Hofmann and Starry, *Camp Colt to Desert Storm*, loc. 6652.

located the Iraqi strategic-level defense with a 4,500-strong force, exemplifying economy of force and disproportionate effects.

The achievements of the 2d Armored Cavalry demonstrated the enduring role of cavalry. The regiment's economy of force by fighting outnumbered, combined with its rapid transition from performing a security mission to conducting an offensive operation as part of the main penetrative thrust, achieved a disproportionate battlefield effect. Lieutenant General Herbert R. McMaster's verification of superior training and technology within the regiment compared to that of the IRG also satisfied the third aspect underpinning the cavalry dilemma: the force's structure was superior in tactical and technological abilities, without depriving the main force of sufficient combat power. Despite the weather depriving the regiment of its integral air-support element for the majority of the operation, the 2d Armored Cavalry's use of technology, such as thermal and global positioning systems (GPS), enabled U.S. tactical and operational commanders to achieve superior orientation through a sound understanding of the force structure capabilities.[94] Excellent tactical training also supported this technology by allowing U.S. forces to rapidly acquire and destroy IRG forces in well-defended but predictable positions. This understanding came from recognizing Soviet doctrinal defensive patterns, which the Iraqis had mimicked most notably during a 23-minute engagement with the regiment's Eagle Troop. By the end of the engagement, Eagle Troop had destroyed the majority of an enemy tank battalion.[95]

Despite significant characteristic changes to warfare, cavalry forces continued to achieve the cavalry trinity. The previous case studies demonstrated that successful cavalry operations equal a sufficient nesting of the trinity, practically facilitated through tactical and technological superiorities, balancing the dilemma in the pursuit of disproportionate effects. While victories contain valuable lessons, defeat also provides a powerful examination tool in the context of future cavalry design, training, and acquisitions. Without the cavalry trinity and an imbalance of the cavalry context dilemma, the exponential likelihood of failure ensues.

When Cavalry Cannot Achieve the Trinity

Forward, the Light Brigade! Charge for the guns!

~ Alfred, Lord Tennyson[96]

While forces lose battles for several competing reasons, the absence of cavalry applying a successful trinity during defeats reinforces the value in cavalry's enduring role. Confederate major general James E. B. "Jeb" Stuart and Israel Defense Forces

[94] Hofmann and Starry, *Camp Colt to Desert Storm*, loc. 6652.
[95] Mike Guardia, *The Fires of Babylon: Eagle Troop and the Battle of 73 Easting* (Philadelphia, PA: Casemate Publishing, 2015), Kindle edition, loc. 2639–712.
[96] Alfred, Lord Tennyson, "The Charge of the Light Brigade," *Tennyson's Poetry*, accessed 2 February 2020.

(IDF) major Yoav Brom demonstrated the folly of a cavalry force unable to either simultaneously or rapidly transition between orientation, dislocation, and disruption or effectively balance the cavalry context dilemma. When cavalry forces cannot achieve the trinity, their inherent weaknesses emerge, and they either expose and destroy their assigned unprotected main force or destroys themselves.

Failure to Balance the Dilemma: Jeb Stuart Missing in Action at Gettysburg, 1863

> *Stuart's cavalry was too far removed from the Army of Northern Virginia to warn Lee of the Army of the Potomac's movements. Lee's army inadvertently stumbled into the Union army at Gettysburg, walking blindly into what became the largest battle of the war.*
>
> ~ Henry B. McClellan[97]

Major General Stuart's cavalry raid and the ensuing defeat of Confederate general Robert E. Lee's Army of Northern Virginia at the Battle of Gettysburg in July 1863 demonstrated the folly of a cavalry organization that does not achieve the trinity through a poor orientation of purpose, reduced flexibility, and an inability to balance the context dilemma. While historians frequently focus on the orders dispute or absence of Stuart during a critical point as causal to failure, Stuart's force structure decisions and tactical limitations demonstrate how an initially capable force can become incapable and consequently ineffective during battle.[98]

As the finest reconnaissance commander in the Army of Northern Virginia, Stuart demonstrated superior tactical acumen during several campaigns preceding the Battle of Gettysburg that incorporated cavalry's full range of enduring tactical operations.[99] His prior successes, as well as Lee's previous achievements, thwart a counterargument that Stuart was incompetent. Notably, however, Lee and Stuart's victories before Gettysburg all contain a vital element: cavalry forces provided timely and accurate information to orient the tactical commander while also being ready for combat actions to achieve orientation, dislocation, and disruption.

Practically, Lee and Stuart achieved this synergy through combined arms familiarization and personal familiarity, liaison officers (message riders) between adjacent units, and unambiguous orders in those pre-1863 operations. Executed tactical concepts were also well balanced to achieve cavalry's three purposes with an econ-

[97] As quoted in Edward G. Longacre, *The Cavalry at Gettysburg: A Tactical Study of Mounted Operations during the Civil War's Pivotal Campaign, 9 June–14 July 1863* (Lincoln: University of Nebraska Press, 1986), 37.

[98] Historians debate whether Lee's orders were either too vague to the point of being ineffective or whether Stuart ignored the commander's intent component of the order and raided too far south, with too large a force, dislocating himself from the main body of the Confederate force and blinding Lee. Warren C. Robinson, *Jeb Stuart and the Confederate Defeat at Gettysburg* (Lincoln: University of Nebraska Press, 2007), ix–xiii; and Longacre, *The Cavalry at Gettysburg*, 9.

[99] Both Edward G. Longacre and Warren C. Robinson demonstrate Stuart's significant reconnaissance and raiding victories at Centreville, VA; Richmond, VA; Catlett's Station, VA; and Chambersburg, PA. Longacre, *The Cavalry at Gettysburg*, 24–27; and Robinson, *Jeb Stuart and the Confederate Defeat at Gettysburg*, 37–38.

omy of force, counterbalancing Lee and Stuart's desires for disproportionate effects. The preliminary actions for the Seven Days Battles, which included the battles of Beaver Dam Creek and Gaines' Mill, and the Second Battle of Bull Run contained a well-balanced use of Stuart's cavalry to screen and guard to orient. Subsequently, these battles also demonstrate efficient offensive tactics to dislocate and disrupt with a relatively small force.[100] However, at Gettysburg, Stuart failed to balance the cavalry context dilemma, spelling doom for the rebels.

Following Lee's orders on the evening of 23 June 1863 to screen his main body's movement, Stuart executed a deep raid with three cavalry brigades between 25 June and 2 July.[101] This action left the Army of Northern Virginia with a significantly reduced cavalry footprint that was incapable of main body reconnaissance or shielding. Stuart's tactical application of the cavalry context was fundamentally flawed, as his lack of investment in his stay-behind cavalry element demonstrated a poor balance between force structure capabilities, disproportionate effects, and economy of force.

Stuart's decision to divert the majority of his force to the raid without leaving behind a sufficiently capable force to orient Lee's main force demonstrated a lack of sufficient consideration of economy of force against the tactical and technological capabilities of the army. While critics cite Stuart's decision to leave 3,000 cavalry with the main force as a rebuttal, the cavalry left behind was tactically insufficient. From the outset, Stuart selected two brigades under Brigadier Generals William E. Jones and Beverly H. Robertson to stay behind. Robertson's brigade was not battle-hardened and had reported poorly following its performance at the Battle of Brandy Station on 9 June. His brigade was also severely understaffed, reducing his freedom of action despite being in command of both his and Jones's brigades as the ranking officer.[102]

Additionally, while Jones's reputation as a military commander was extremely sound, his subordination to Robertson stymied his aggressive nature. This temperament was critical to complete a timely return to Gettysburg after completing the preliminary mountain pass guarding missions during the Army of Northern Virginia's movement. Robertson was more cautious and arrived late on 3 July, rendering

[100] Stuart's identification and circumnavigation of U.S. Army Gen George B. McClellan's Army of the Potomac before the Seven Days Battles in 1862 was a masterstroke of cavalry operations, encompassing timely reconnaissance and limited offensive operations, as was his successful reconnaissance of the Union flank at the fights at Beaver Dam Creek and Gaines' Mill in that operation. Similarly, his identification and capture of Union battle plans at Catlett's Station prior to the Second Battle of Bull Run and his actions during the Battle of Fredericksburg, both in 1862, demonstrated his significant worth to Lee by placing Lee in a favorable situation to commit to battle. Monte Ackers, *Year of Glory. The Life and Battles of Jeb Stuart and His Cavalry, June 1862–June 1863* (Philadelphia, PA: Casemate, 2012), Kindle edition, loc. 830–2200; and Robinson, *Jeb Stuart and the Confederate Defeat at Gettysburg*, 12–13.

[101] While Henry B. McClellan attempts to justify a third set of orders that authorized a raid toward Washington, DC (the essence of what Stuart did), this is mostly disputed by contemporary historians. Robinson, *Jeb Stuart and the Confederate Defeat at Gettysburg*, 154.

[102] Eric J. Wittenberg and David J. Petruzzi, *Plenty of Blame to Go Around: Jeb Stuart's Controversial Ride to Gettysburg* (New York: Savas Beattie, 2006), Kindle edition, loc. 3820–29.

his force ineffective. Additionally, Lee's remaining cavalry brigades under Brigadier Generals Albert G. Jenkins and John D. Imboden were insufficiently manned and trained to fulfill Stuart's responsibilities given by Lee.[103] Stuart's decision to take Brigadier General Wade Hampton III with him, as well as his failure to provide Lieutenant General James Longstreet with sufficient situational awareness through a credible liaison officer, saw Stuart's tactical strawman course of action fail spectacularly.[104]

Stuart's absence resulted in the main body of the Army of Northern Virginia being surprised and committing to battle in a confused and disorderly manner on the first day of Gettysburg. Consequently, Confederate major generals Henry Heth and W. Dorsey Pender's engagement with U.S. cavalry and infantry along the Chambersburg Pike needlessly killed Confederate infantry.[105] Had Stuart better balanced and led the cavalry left with the main rebel force or imposed a limit of exploitation further to the north, Lee may have had a better operational picture to seek a battle of advantage. Stuart failed to both orient his commander and misorient the U.S. forces marching north.

Historians hypothesize that Lee may still have achieved success once the battle commenced with a successful cavalry orientation of Longstreet's forces on the first day, but the on-hand cavalry was overwhelmed and understrength with tasks.[106] The lack of sufficient cavalry conducting reconnaissance also influenced Confederate lieutenant general Richard S. Ewell's timidity, leading to his failure to capture the decisive terrain of Cemetery Hill on 1 July. The occupation of this position could have captured a critical piece of the Union's defensive position and isolated its infantry to the north and east for destruction before receiving reinforcements. Consequently, the Union forces occupied, reinforced, and defended Cemetery Hill throughout the battle, neutralizing the Confederate infantry over open ground with potent artillery fire and retaining the fishhook perimeter through successful interior lines. Unquestioningly, the failure of the Confederacy to seize this position promptly contributed significantly to its tactical-level defeat.[107] Had Stuart provided an accurate depiction of the disposition of U.S. forces in the vicinity or conducted guarding actions in support of the main assault, the result likely would have been different.[108]

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[103] Wittenberg and Petruzzi, *Plenty of Blame to Go Around*, loc. 3122–31.
[104] Longacre, *The Cavalry at Gettysburg*, 151.
[105] Longacre, *The Cavalry at Gettysburg*, 155.
[106] Longacre, *The Cavalry at Gettysburg*, 158.
[107] This position offered an exponential advantage to the occupier, facilitating a superb view over the surrounding countryside, as well as dominant artillery battery positions. Edward Porter Alexander, *Fighting for the Confederacy: The Personal Recollections of General Edward Porter Alexander*, ed. Gary W. Gallagher (Chapel Hill: University of North Carolina Press, 1989), 232; and Bradley M. Gottfried, *The Maps of Gettysburg: An Atlas of the Gettysburg Campaign, June 3–July 13, 1863* (New York: Savas Beattie, 2007), 216–25.
[108] Though Stuart was not officially reprimanded by Lee, historians accept an implied rebuke through his lack of promotion to the rank of major general. Edward H. Bonekemper III, *How Robert E. Lee Lost the Civil War* (Fredericksburg, VA: Sergeant Kirkland's Press, 1997), 139.

Stuart's cavalry at Gettysburg demonstrated the importance of the cavalry trinity within mission design and execution. By inappropriately dividing his force, Stuart failed to balance his roles. His units were underprepared for orientation and dislocation at the expense of a failed disproportionate attempt to disrupt. By splitting his troops and assigning himself to the raid, thereby leaving untrusted junior commanders behind, Stuart could not achieve a balance between economy of force and disproportionate effects. While Stuart had all the tools at his disposal to balance the cavalry trinity, his poor tactical decisions broke the trinity. Conversely, Yoav Brom's failure would not come by his hand—technology and tactics worked in unison to defeat him. Unlike Stuart, Brom would not escape the folly with his life.

Failure to Achieve All Purposes: The Destruction of the Israel Defense Force's 87th Armored Reconnaissance Battalion at the Battle of the Chinese Farm, 1973

> *Reshef called on Brom at Matsmed to send one of his [reconnaissance] companies north to reinforce what was left of Mitzna's battalion. The company that arrived was Rafi Bar-Lev's. Within minutes of arriving, Haim Bar-Lev's nephew was killed by a tank shell.*
>
> ~ Abraham Rabinovich[109]

The destruction of the IDF's 87th Armored Reconnaissance Battalion on 16 October 1973 demonstrated the folly of cavalry forces that breaks the trinity through misalignment of both tactics and technological limitations of the force.[110] While effective at reconnaissance in support of orientation, the battalion was ill-equipped to conduct disruption or dislocation by direct action against a heavily armored force. By committing to battle, the battalion's leaders ignored the limitations of its economy of force nature. Consequently, this folly destroyed the battalion.

On 6 October 1973, the first day of the Yom Kippur War, Egyptian Army forces crossed the Suez Canal, occupying the Sinai Peninsula before transitioning to the defense to seek a favorable negotiating position at expected peace talks. The Egyptian Second and Third Field Armies dug in astride the natural obstacle of the Great Bitter Lake. In response, the IDF planned a Suez Canal crossing of its own to attack the Egyptians' lines of supply to dislocate them, thereby reversing the fate of the conflict. The ensuing plan, Operation Abirey-Halev, entailed a crossing near Deversoir, to the west of the region known as the Chinese Farm.[111]

Following a successful reconnaissance that identified the seam between the Egyptian Second and Third Field Armies on 9 October 1973 astride the Great Bitter

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[109] Abraham Rabinovich, *The Yom Kippur War: The Epic Encounter that Transformed the Middle East* (New York: Schocken Books, 2004), 371.

[110] While this unit was not directly titled a cavalry unit, the IDF's divisional reconnaissance units performed cavalry duties. McGrath, *Scouts Out!*, 132.

[111] Rabinovich, *The Yom Kippur War*, 376–409.

Lake, IDF major general Ariel Sharon sought to counterattack to exploit the seam immediately.[112] However, he was incapable of doing so due to the lack of mass and potency that his divisional cavalry asset, the 87th Armored Reconnaissance Battalion, provided.[113] The battalion's vulnerabilities, which included jeep reconnaissance vehicles, no integral fire support capabilities, and obsolete tanks, made it unable to establish and maintain contact. Consequently, it could not neutralize the Egyptian infantry that were digging fortifications at the Tirtur crossroads on 9 October. The battalion missed its first opportunity to unhinge the Egyptian defense and facilitate route security for the movement of IDF forces to the anticipated bridgehead.[114] Herein, the inability of a cavalry force to conduct both reconnaissance and combat actions exposes the folly of divorcing lethal combat power from cavalry assets.

Despite possessing tanks, the 87th Armored Reconnaissance Battalion was highly vulnerable to portable antitank guided missiles (ATGMs), while also lacking sufficient scouts who could assist with the neutralization of ATGMs through fighting and fires. A cavalry force that is better supported with integral fires to immediately fix or neutralize exposed enemy infantry can better support immediate action to facilitate penetration and the destruction of underprepared dismounted flank guards. Such forces may also avoid the counterbattery fire implications that had disrupted the IDF's main body artillery use.[115] Had this been so, the 87th Armored Reconnaissance Battalion could have rapidly secured the decisive terrain supporting the ensuing river crossing and potentially prevented later heavy losses.[116]

Additionally, the battalion's inability to join and exploit the penetration by a company of the IDF's 14th Armored Brigade into the rear echelon of the Egyptian Army on the night of 15 October proved its impotence. After infiltrating between the Egyptian Army's 16th Infantry and 21st Armored Divisions via the 16th Infantry Brigade's flank security position, a tank company from the IDF's 40th Tank Battalion under Captain Gideon Giladi discovered that it had penetrated the rear of the Egyptian defensive position, entering the logistical node location for the Egyptian Army. After destroying some Egyptian fuel reserves, ammunition dumps, and surface-to-air (SAM) batteries, Giladi's force was overwhelmed by Egyptian counterpenetration forces.[117]

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[112] LtCol Scott Pence, USA, *The Role of Reconnaissance in the Counterattack* (Fort Leavenworth, KS: U.S. Army Command and General Staff College, 2016), 8.

[113] The battalion consisted of three tank companies, a jeep reconnaissance company, a medical platoon, and a repair platoon. McGrath, *Scouts Out!*, 130.

[114] Pence, *The Role of Reconnaissance in the Counterattack*, 8.

[115] Charles River, eds., *Israel's Wars: The History and Legacy of the Jewish State's Most Important Military Conflicts* (n.p.: CreateSpace, 2018), Kindle edition, loc. 2251.

[116] Ariel Sharon reportedly called the resultant carnage on the morning of 16 October the "most terrible sight" he had ever seen. Similarly, the bloody nature of the IDF victory is demonstrated in David Rodman, *Israel in the 1973 Yom Kippur War: Diplomacy, Battle, and Lessons* (Sussex, UK: Sussex Academic Press, 2017), Kindle edition, loc. 1038; and *Israel's Wars*, loc. 2402.

[117] Rabinovich, *The Yom Kippur War*, 412.

Acknowledging that the 14th Armored Brigade's mission was a south-to-north feint to mask the intended river crossing to the west, a more potent penetration of this position by the 87th Armored Reconnaissance Battalion in support of Giladi's force might have increased the deception quality of a northern thrust, thereby supporting dislocation. Additionally, this maneuver would have further disrupted enemy counterpenetration efforts through direct fire and the inherent cueing of close air support, noting the previous destruction of the Egyptian SAM umbrella, a skill innate to cavalry practices.[118] Instead, IDF colonel Amnon Reshef, commanding the 14th Armored Brigade, held the 87th Armored Reconnaissance Battalion to the rear. The battalion contributed nothing to the fight, enabling the Egyptian consolidation at the Lexicon-Tirtur junction and the reshielding of its critical vulnerability of flank security, which led to the neutralization of precious IDF main force armored commodities.[119] Subsequently, the successful counter-penetration employment by elements of the Egyptian armored forces rapidly destroyed Giladi's tank company and supporting infantry forces, ending the opportunity for exploitation and the retention of the decisive terrain.[120]

Reshef's later decision to deploy the 87th Armored Reconnaissance Battalion into an assault across open ground against the enemy's entrenched position on the morning of 16 October is a timely reminder of the intellectual rigour required to understand and employ cavalry forces successfully. The ensuing attack, which killed the battalion's commanding officer, Major Yoav Brom, and destroyed the unit, demonstrated the limited offensive operations in which cavalry operate as an economy of force option.[121] Reshef failed to understand the cavalry dilemma, seeking disproportionate effects without understanding the force's capabilities or cavalry's economy of force aspects. By pitting his cavalry force against entrenched defenses, Reshef exposed cavalry's weaknesses of limited mass and protection, which it could not balance with an integral fires capability to achieve disruption or dislocation. Consequently, the 87th Armored Reconnaissance Battalion failed to balance the dilemma and failed to perform its three enduring roles.

The Battle of the Chinese Farm reminds cavalry practitioners of the importance of the cavalry context dilemma as a component of the cavalry trinity. The 87th Armored Reconnaissance Battalion did not attack to selectively neutralize or destroy critical capabilities that would reduce the coherent defence of the Egyptian Second Field Army. Nor could the battalion destroy the Egyptian will to fight by attacking command and control nodes that presented for destruction during the raid by Giladi's company. A decision to do either would have significantly reduced IDF casual-

[118] Rabinovich, *The Yom Kippur War*, 398–400.
[119] Chaim Herzog details the subsequent destruction that this position inflicted on the IDF forces. Chaim Herzog, *The War of Atonement: The Inside Story of the Yom Kippur War* (New York: Skyhorse Publishing, 2018), Kindle edition, loc. 3246–94.
[120] Herzog, *The War of Atonement*, loc. 4277–311.
[121] Rabinovich, *The Yom Kippur War*, 420.

ties and may have contributed to tactical disruption and operational dislocation of the Egyptian defensive array if IDF forces had secured the Lexicon-Tirtur junction sooner. Instead, the 87th Armored Reconnaissance Battalion deployed against an enemy surface, resulting in its rapid destruction and the IDF achieving victory at unnecessary cost. Cavalry forces must continue to possess the ability to successfully disrupt the enemy through security operations and limited offensive and defensive operations. Integrated systems must also facilitate a rapid transition from reconnaissance to combat actions for cavalry forces to retain their tempo inducing qualities. A cavalry force capable of solely reconnaissance duties will remain impotent at the critical point of the engagement or battle.

Cavalry's Future Requirements for a Trinity

> *Seize the outpost K5 with your Knight, and you can go to sleep. Checkmate will come by itself.*
>
> ~ Savielly Tartakower[122]

Past cavalry successes and failures provide a treasure trove of lessons to orient the pursuit of future cavalry acquisitions and training focus while remaining relevant through the full spectrum of the gray zone, limited war, and total war. When focused through the filter of cavalry's enduring role, however, some evident tactical and technical requirements emerge. The ability of cavalry to continually achieve its three purposes within the cavalry trinity offers the tangible link to categorize these requirements.

A New Spyglass and Saddle: Technological Requirements of Future Cavalry to Successfully Orient

> *During that late night meeting, Grierson talked with Lieutenant-Colonel Blackburn, bringing up a subject which had been discussed between them on the march during the day—the need for better scouting now that they were entering unknown territory.*
>
> ~ Dorris A. "Dee" Brown[123]

U.S. Army colonel Benjamin Grierson's continual success in orienting toward objectives and away from adversary ambushes—despite operating in enemy territory saturated with civilians, enemy combatants, and insurgent-like militias—during his 1863 raid through Mississippi and Louisiana provides cavalry with tangible milestones for enduring success. A modern Grierson must reconnoiter beyond the visual, audible, tactile, and infrequently olfactory sensory realm, which formed the

[122] As quoted in Irving Chernev, *The Most Instructive Games of Chess Ever Played: 62 Masterpieces of Chess Strategy* (New York: Dover, 1992), 15.
[123] Brown, *Grierson's Raid*, 64.

baseline of Grierson's collection plan. Cavalry forces need inherent informational and physical domain collection capabilities that enable open and closed source collection, much like Grierson did within the civilian community via his "Butternut Guerrilla" scouts.

Butternut Cyber Guerrillas: Expedient Orientation through the Cyber Spectrum

Today, cavalry must collect and transmit data on social media platforms and other telecommunications networks to expediently translate information into intelligence and feed the commander's estimate. Much like Grierson's Butternut Guerrillas provided up-to-date knowledge from unsuspecting civilians, captured mail couriers, newspapers, and telegraph stations, so too must the future cavalryman.[124] Various contemporary terrorist cells have demonstrated the value of social media to transmit orders; share technology, tactics, and procedures; distribute information operations messaging; conduct reconnaissance, targeting, and surveillance; and recruit new fighters in the previous two decades.[125] In this medium, the Australian tactical-level commander more likely personifies the bumbling Confederate infantry and cavalry trying to find Grierson.

Australia's current process of conducting open-source collection with precious specialist intelligence assets is too slow and cumbersome. Its method represents an industrial-age warfare approach that is increasingly obsolete, granting a nimble enemy automatic collection and decision superiority.[126] However, the inclusion of this capability within cavalry platforms drastically improves a commander's understanding, exponentially improving orientation, and providing a gateway for disruption and dislocation, regardless of the type of conflict of the future.

A neo-Luddite rebuttal that justifies the partitioning of open-source collection to a specialist operator within the formation intelligence cell significantly limits effective reconnaissance. Rejectionists frequently cite the "reliability issues," "vast volumes of data," or "searching difficulty" associated with "unqualified" lower-level open-source collection as justification for specialist control of the capability.[127]

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[124] Brown, *Grierson's Raid*, 87.

[125] Geoff Dean, Peter Bell, and Jack Newman, "The Dark Side of Social Media: Review of Online Terrorism," *Pakistan Journal of Criminology* 3, no. 3 (January 2012): 110; Liane Rothenberger, "Terrorist Groups: Using Internet and Social Media for Disseminating Ideas. New Tools for Promoting Political Change," *Romanian Journal of Communication & Public Relations* 14, no. 3 (December 2012): 7–23; Thomas D. Mayfield III, "A Commander's Strategy for Social Media," *Joint Force Quarterly* 60, no. 1 (1st Quarter 2011): 79–83; Thomas Elkjer Nissen, "Terror.com: IS's Social Media Warfare in Syria and Iraq," *Military Studies Magazine: Contemporary Conflicts* 2, no. 2 (2014): 1–3; and Drew Herrick, "The Social Side of 'Cyber Power'?: Social Media and Cyber Operations," in *8th International Conference on Cyber Conflict Proceedings* (Tallinn, Estonia: NATO Cooperative Cyber Defence Centre of Excellence, 2016), 110.

[126] While outlining opportunities for exploitation, PTE E demonstrates the ingrained mindset of the Battlegroup Intelligence analyst owning the open-source intelligence capability. PTE E, "The Tactical Application of Open Source Intelligence (OSINT)," *Cove* (blog), 12 December 2018.

[127] Nihad A. Hassan and Rami Hijazi, *Open Source Intelligence Methods and Tools: A Practical Guide to Online Intelligence* (New York: APress, 2018), 16; "Advantages and Disadvantages of Open Source Intelligence," *Expert System* (blog), 24 February 2017; and *OSINT and Intelligence: On the Significance of OSINT for the Overall Intelligence Effort* (Leiden, Netherlands: Reuser's Information Services, 2013), 6.

This rebuttal, however, is a conflation of the differing responsibilities of information and intelligence collection. It also underestimates the technologically savvy abilities of the youngest generation in the Australian Army, who are wedded to the digital age through smartphone technology.

So, Australia needs this capability, but where to source these Butternut Guerrillas? Cavalry scouts provide a modern answer. The redesign of the cavalry scout capability is the next evolutionary measure to achieve the "Butternut Cyber Guerrilla." Previously, the cavalry scout has possessed the auxiliary skills of personnel tracking, demolitions and antiarmor weapon use, marksmanship, and motorcycle operation. Combined with the regimental surveillance troop operator who holds specialist surveillance mast equipment and micro-unmanned aircraft system (UAS)-platform qualifications, the cyber scout may now replace or augment one of these skills. The role of this scout includes the ability to collect digital footprint information on open-source platforms of identified and suspected targets. The digital scout must also master electromagnetic passive reconnaissance and surveillance. This role includes the use of open-source platforms to identify events, activities, and patterns relevant to an immediate tactical situation or area of operations historically defined through visual and audible observation methods. By doing so, cavalry may again replicate Grierson's overmatch in Mississippi provided by his scouts' mail courier seizures or the U.S. Army's 4th Cavalry Regiment's document finds during Operation Cedar Falls in Vietnam.[128]

This opportunity is significant, acknowledging the civilian populace's transmission of high-fidelity data in the modern battlespace during significant events.[129] The Australian Army's provision of a tablet with language translation software for open-source collection facilitates digital reconnaissance-pull with the targeting and fusion center, while also reducing the loss of clarity associated with fusion center attempts to understand tactical-level actor reactions to friendly force actions. This is something a room full of computers far from the battlefield cannot achieve. This realization also defeats the historical argument that task-specific combined arms augmentation is a viable alternative based on information quality and target familiarity. Like Confederate brigadier general John D. Imboden's cavalry at Gettysburg, a reconnaissance asset unfamiliar with its commander will perform suboptimally. These new Butternut Guerrillas will provide a substantial advantage to the cavalry of the future.

The potential of this capability to orient the commander successfully is enormous. Open-source collection facilitates the orientation of the platoon or combat

[128] U.S. Army Gen George G. Meade, the Union commander at Gettysburg, used an interwoven mesh of cavalry, spies, and passive human intelligence sources to gain information superiority in the lead-up to the battle. Similarly, Riley Murray comments on the potency of the civilian population in informing the methods of collection via open sources. Robinson, *Jeb Stuart and the Confederate Defeat at Gettysburg*, 144–47; Riley Murray, "The Unrealized Value of Open Source Intelligence for Irregular Warfare," *Strategy Bridge*, 25 July 2018.

[129] Murray, "The Unrealized Value of Open Source Intelligence for Irregular Warfare."

team to action time-sensitive targeting against adversaries using open-source systems, much like U.S. Army colonel Edward Hatch did at the Mobile and Ohio Railroad in 1863, or U.S. Army colonel Leonard D. Holder's 2d Cavalry Regiment did on approach to the 73 Easting in Iraq in 1991. Additionally, when networked to the higher headquarters, this technology may cue the orientation and movement of the main force, retaining that enduring aspect of cavalry as an economy of force agent. Open-source collection also ensures a reduction in sensor-to-shooter cueing time, forearming the modern Grierson with disproportionate decision speed reminiscent of the special forces community, thereby facilitating the link between superior orientation and dislocation or disruption.[130]

But what about a powerful enemy that can destroy cavalry at first sight or beyond the line of sight? How does a cavalry organization detect the modern armored defensive position that saw the end of the IDF's 87th Armored Reconnaissance Battalion?

Holder's New Thermal and Grierson's Better Horses: Expedient Orientation via the Electromagnetic Spectrum

Grierson's brigade and Holder's regiment distinguish themselves from IDF major Yoav Brom's battalion and IDF captain Gideon Giladi's tank company by their ability, when outnumbered, to orient first onto the adversary and avoid concentrating in the enemy's engagement area. Where Holder's regiment had technological overmatch in thermal sights, and Grierson's brigade had overmatch through superior mounts and effective scouting techniques, modern cavalry must now pursue these tactical edges that generate the superior speed to orient. A modern adaptation to this technological edge is the permanent augmentation of electromagnetic direction-finding and listening equipment, such as the TCI Model 803 or the Wolfhound system. Adversary forces tether to high-frequency, very-high-frequency, ultra-high-frequency, tri-band, and quad-band cellular global system for mobile communications devices. Cavalry exploitation of this capability enables adversary detection and orienting beyond the line of sight via the equipment's direction-finding and geolocating ability. This proficiency increases battlespace lethality and provides a platform for dislocation via spoofing.[131]

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[130] Gen Stanley McChrystal, USA (Ret), demonstrates the high-fidelity of intelligence, surveillance, and reconnaissance assets available to the Joint special operations task forces in the preceding two decades. Gen Stanley McCrystal, USA (Ret), *Team of Teams: New Rules of Engagement for a Complex World* (New York: Penguin, 2015), 18–19.

[131] The TCI Model 803, or the Praemittias Systems Wolfhound Cooperative Radio Direction Finding System, is capable of complete signal search, collection, direction-finding, and geolocation solution. Additionally, Daniel Brown demonstrates the prevalence of technology that can locate and commence data collection from adversary mobile phone technology, pinpointing their locations as well as seeding deception and information operations product to disrupt or dislocate. "TCI Model 803 VHF/UHF/SHF DF Subsystem," TCI, accessed 27 December 2019; "Mongoose Cooperative Digital Direction Finding System," Praemittas Systems, accessed 27 December 2019; "Electronic Weapons: The Wolfhound Is a Nasty Surprise," Strategy Page, 31 October 2013; Daniel Brown, "Troops in Europe Are Jumping in Lakes and Wrapping Their Phones in Condoms to Thwart Russian Hackers," *Business Insider,* 5 October 2017; and "Accelerated Warfare," Army.gov.au, accessed 29 December 2019.

While critics indicate that electronic attack is a separate signals intelligence (SIGINT) function enabled through combined arms integration, this argument is obsolete for two reasons. First, open-source reports demonstrate that the Australian Army's 7th Signal Regiment's electromagnetic capability exists outside the combat brigade structures and therefore cannot achieve routine tactical-level augmentation.[132] The fleeting opportunities afforded through savvy threat groups who rapidly concentrate under low emission control (EMCON) and then quickly disperse under zero EMCON demand that cavalry permanently embed this capability for expedient orientation. The status quo fails to consider unfamiliar combined arms groups, which severely degrade effectiveness. Recent U.S. and Russian decisions to recommence permanent augmentation of this capability within cavalry and reconnaissance forces bolsters this notion.[133]

Second, where SIGINT capabilities were once highly technical, modern tactical-level equipment no longer requires the performance of this trade through a specialized employment category. With modern technology only requiring as little as 20 hours of instruction for competency, the Australian Army must redefine this skill as an auxiliary ability and align it to the performance of digital reconnaissance.[134] Cavalry's augmentation of this skill is achievable within current training continuum timelines while also enabling current SIGINT personnel to focus on operational-level SIGINT duties with higher-grade technology. Several commercial off-the-shelf solutions already exist that include a small power supply and antennae demand that is sustainable within the Boxer CRV.

Cavalry must reconnoiter on the electromagnetic spectrum to enable superior orientation. Integral tactical-level direction-finding and listening equipment are sustainable within existing platforms while also generating an opportunity for SIGINT personnel to focus on higher-level SIGINT demands. Failure to orient beyond the line of sight exposes both the cavalry and main force to early concentration and therefore destruction with long-range precision munitions. While long-range orientation is essential, fleeting close-range intelligence-based opportunities also remain critical. The lessons of the interwar years and combat in Vietnam provide a clue to cavalry's enduring human exploitation requirements.

The experience of the U.S. Army's 11th Armored Cavalry Regiment during Operation Cedar Falls, combined with the interwar realization that the airplane could not conduct sufficient tactical field exploitation and reconnaissance, warns future cavalry practitioners of these enduring components of orientation. The 11th Armored

[132] "7th Signals Regiment," Army.gov.au, accessed 27 December 2019; and *Signals Intelligence*, Marine Corps Reference Publication 2-10A.1 (Washington DC: Headquarters Marine Corps, 2018), 4-1.

[133] Maj Morgan J. Spring-Glace, USA, demonstrates that the U.S. Army has identified an undermatch of signals intelligence, including radar platoons and electronic attack capability, against peer competitors. Maj Morgan J. Spring-Glace, USA, "Return of Ground-Based Electronic Warfare Platforms and Force Structure," *Military Review* (July/August 2019): 42.

[134] "Electronic Weapons"; and Cortney Weinbaum, Steven Berner, and Bruce McClintock, *SIGINT for Anyone: The Growing Availability of Signals Intelligence in the Public Domain* (Santa Monica, CA: Rand, 2017), https://doi.org/10.7249/PE273.

Cavalry's ability to locate and immediately process battlefield intelligence on enemy corpses, within caches, and through prisoner capture mimics the concerns over airplane reconnaissance raised by Malcolm Wheeler-Nicholson in 1922. This deficiency demands that cavalry continue to perform these tactical-level activities in support of orientation. Onboard biometric enrollment and verification software, such as the IDF's automatic target recognition system, is the modern solution for cavalry's ability to perform this activity expediently. This technology, validated by conventional and special forces' use in recent training and operations for special reconnaissance, surveillance, and exploitation missions, provides an opportunity for dislocation and disruption.[135] Such technology provides an incredible advantage to future reconnaissance demands by transmitting high-value target data for capture or destruction.

A New Camera Pigeon: Expedient Orientation via Low-Level Air Integration

The interwar era and the Vietnam War experience demonstrate the potency of cavalry forces possessing an integral air observation and attack augmented platform within the organization. While the interwar years and the fragility of the U.S. Army's 2d Cavalry Regiment's grounded air during a critical day in Operation Desert Storm warn cavalry practitioners against air replacing ground cavalry, they provide an increased detection capability to support superior tactical orientation.[136] An affordable, modern version of this capability is an armed UAS with onboard observation and recording equipment.

An Australian Army brigade standard, an armed UAS platform that is resourced and housed on the Boxer CRV provides increased physical standoff and difficult terrain access in support of superior orientation. Cavalry units have demonstrated the potency of this combination with recent trials integrating the unarmed AeroVironment Wasp III micro-UAS, as well as the Boxer CRV's capability demonstration video, which shows that it is capable of UAS augmentation.[137] This capability, however, must continue to evolve with modern demands. The UAS's possession of communications relay equipment that is capable of transmitting burst video data in thermal, infrared, and day camera formats back to higher headquarters is the next evolutionary step supporting orientation. Additionally, the augmentation of a weapon on the platform provides cavalry with a disproportionate opportunity to threaten enemy command and control nodes, logistics, or reserves with a precision strike. That said, cavalry must consider the trap falls of this capability if it is to con-

[135] Anthony Kimery, "USSOCOM, Army Look to Biometrics Industry for New Technologies for SOF of the Future," Biometric Update, 13 November 2018; and Ami Rojkes Dombe, "Biometric Target Recognition," *Israel Defense*, accessed 27 December 2019.
[136] McMaster, "Eagle Troop at the Battle of 73 Easting."
[137] The Rheinmetall GTK Boxer JODAA (Joint operational demonstrator for advanced applications) concept video shows the Boxer housing a quadcopter UAS. "GTK Boxer JODAA," Rheinmetall, accessed 27 December 2019; and Brian Hartigan, "ADF Buys Wasp UAS," *Contact*, 1 July 2017.

tinue to replicate the surprise that the U.S. Army's 4th Cavalry Regiment and Eagle Troop, 17th Cavalry Regiment achieved during Cedar Falls.

The use of UAS platforms by cavalry forces can be a double-edged sword, as it has the potential to reveal cavalry's presence through the known proximity of UAS tethered to possible vehicle hide locations. Consequently, cavalry must pursue this capability with two considerations in mind if it is to expedite orientation without affording the adversary the same through indicators and warnings. First, the UAS must be capable of sending data via a signature more discreet than radiotelephone conversation. Doing so supports simultaneous orientation and adversary disorientation by starving enemy reconnaissance of electromagnetic indicators of friendly force presence. Second, to reduce the distinguishability indicators for enemy reconnaissance, the platform must be identical to brigade main force UAS platforms. Doing so creates the same ambiguity that the 4th Cavalry Regiment and Eagle Troop's blocking position occupation achieved in Cedar Falls. Confederate major general Jeb Stuart's return ride during the Battle of Gettysburg offers the final lessons for the augmentation of this capability: have a familiar force design, and avoid the burden of an unfamiliar and slow logistics train.

Combined arms integration via the assignment of existing artillery-owned surveillance assets is not a viable alternative to integral UAS augmentation, as it deprives cavalry of a lightweight logistics train already threatened by external pressures and survivability concerns. The Australian Army's artillery surveillance capability does not have the mobility match afforded by the armored cavalry regiment, and under the current force design it would increase the artificial intelligence (AI) echelon to an inappropriate size. By having the platform integral to the armored cavalry regiment and responsibilities performed by existing crews and scouts, the UAS capability would be more familiar and therefore competent to cavalry's needs, could more readily augment into repair parts chains, would reduce divisional manning, and would prevent the unnecessary addition of liaison and communications vehicles to the echelon. Artillery surveillance would then be free to pursue more sophisticated operational and strategic effects such as counter-battery fire detection and neutralization.

Cavalry's enduring role demands early commander orientation. Accordingly, the Australian Army must recognize that the Boxer CRV is not just a "heavy ASLAV," in which extant tactics, techniques, and procedures are retrofitted into a new vehicle, relying on primarily visual, audible, and tactile collection means to inform the commander's estimate. At the same time, long-range fires can destroy the force from several hundred kilometers away, and a gray zone force avoids the battle. As the vehicle's gun and armor have increased, so too must the built-in sensors that the platform provides. Similarly, the Australian Army must avoid stove-piped thinking that conducts electromagnetic collection outside of front-line units in old

structures. Some of that must be pushed down to the commander's primary orienting asset: the cavalry.

A New Carbine and Baggage Train: Technological Requirements of Future Cavalry to Successfully Dislocate and Disrupt

> *To mask the cavalry's withdrawal, dummy horses and camps were constructed. . . . Every horse on the lines had its dummy counterpart erected beside it, while sham men similarly constructed were dotted about the camps.*
>
> ~ David R. Woodward[138]

The economy-of-force aspect of cavalry, combined with the desire for disproportionate effects, drives the cavalry acquisition of cost-effective but potent technology to dislocate and disrupt the enemy. Frequently, this effort includes the addition of technology that assists with deception and precision strikes while also driving savvy logistics procurement. Operation Cedar Falls demonstrated inherent linkages between cavalry and deception through technological acquisition. Complementarily, the U.S. Army's 2d Cavalry Regiment in Iraq showed the requirement for technology that facilitates dislocation by traversing unpredictable routes. In 1991, it was GPS. In modernity, it is via the cyber highway.

The failure of the IDF's 87th Armored Reconnaissance Battalion at the Chinese Farm in 1973 and the success of the 2d Cavalry in the desert forewarns cavalry practitioners of the requirement for cavalry forces to possess integral fires and ATGM capabilities to survive when operating in the close or rear space. Similarly, the 2d Cavalry complements this concern by confirming the requirement for cavalry forces to possess systems capable of high lethality, currently provided by the main battle tank. Major General Stuart's untimely return at Gettysburg shows the danger of unwieldy logistics, which Colonel Grierson's forces solved through technological and tactical exploits.

Surprise in the Digital Ardennes: Electromagnetic Deception and Attack as Methods of Dislocation and Disruption.

In 1967, U.S. forces successfully deceived the enemy of the location and intention of its main and supporting units during Operation Cedar Falls. The prevalence of the M11s armored personnel carrier in both infantry and cavalry organizations provided sufficient ambiguity to provide this deception. Technology that spoofs and masks cavalry's signature from enemy electromagnetic spectrum (EMS) detection capabilities is the modern equivalent. Consequently, cavalry must pursue technology that facilitates manipulative EMS deception, simulative EMS deception, imitative EMS deception, electromagnetic hardening, electromagnetic interference,

[138] David R. Woodward, *Hell in the Holy Land: World War I in the Middle East* (Lexington: University Press of Kentucky, 2006), 188–89.

and electromagnetic masking.[139] Such a provision affords cavalry with the ability to degrade enemy commander cohesion across the various types of conflict, supporting disruption or dislocation against conventional enemy reconnaissance, insurgent commanders, special operations with long-range fires, or mechanized forces via electromagnetic disruption.[140] These systems are already vehicle portable and require a small-power source and antennae array that does not affect vehicle maneuverability or operation.[141]

Like the U.S. Army's 2d Cavalry Regiment's use of GPS to attack from an unexpected direction in the Iraqi desert, cavalry must continue to augment technology that affords this effect. Modern cyberattack systems that are capable of detection, bypass, and attack capabilities facilitate a digital 73 Easting battle by rapidly overwhelming predictable defensive patterns and equipment. When conducted with sufficient virulence, this capability can complete network infection, thereby enabling operational dislocation and disruption from the back of a CRV or via a remotely deployed cavalry UAS capable of short-range communications intercept, decryption, and communications disruption.[142] Cavalry will again threaten the close and rear space boundaries with such technology.

Notwithstanding the cyber close space, IDF major Yoav Brom and U.S. Army colonel Leonard D. Holder provide a timely warning to cavalry practitioners of the dangers associated with operating in the close physical space of the enemy.

Surviving and Thriving in the Close Space: Fires and Antitank in the Close Space

Both Brom's 87th Armored Reconnaissance Battalion and Holder's 2d Cavalry Regiment demonstrate the potency and inherent requirement for cavalry forces to possess an integral fires capability when disrupting or dislocating. Brom's inability to disrupt critical flank guard elements or to later fix, blind, or disrupt Egyptian counter-penetration forces spelled his doom. Similarly, when the 2d Cavalry transitioned to the attack from covering force duties during Operation Desert Storm, it immediately destroyed and neutralized IRG defensive positions by adding a field artillery brigade.[143] Without this capability, the regiment's disproportionate disruption and dislocation achievements are doubtful.

Integral fires remain a critical capability to facilitate cavalry disruption as an economy of force option. Fires critically shield cavalry's economy of force limita-

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[139] The U.S. Army's *Tactics, Techniques, and Procedures for Electronic Attack* articulates the electronic warfare and deception activities. *Tactics, Techniques, and Procedures for Electronic Attack*, FM 34-45 (Washington, DC: Department of the Army, 2000), A-1–A-6.

[140] John R. Hoehn, *Defense Primer: Electronic Warfare* (Washington DC: Congressional Research Service, 2019), 1.

[141] The Krasuha-4 and Moskva-1 electronic warfare systems had the ability to suppress radio signals in their entire spectrum without large radiating antennas with extensive power sources. Samuel Bendett, "America is Getting Outclassed by Russian Electronic Warfare," *National Interest*, 19 September 2017; and Renaud Mayers, "Russian Electronic Warfare Systems," *Defensionem: The War Bible* (blog), 27 November 2017.

[142] Terrestrial platforms are limited by their available power sources and terrain variation that shields or disrupts EMS signature. Bendett, "America is Getting Outclassed by Russian Electronic Warfare"; and Mayers, "Russian Electronic Warfare Systems."

[143] McGrath, *Scouts Out!*, 173; and McMaster, "Eagle Troop at the Battle of 73 Easting."

tions of a reduced dismounted capability and negate temperamental air attack assets. Fires also enable cavalry to perform several enduring tactical actions, such as a *coup de main* through medium-range precision strikes, leading to disruption; blinding enemy observation positions; screening main force movement without revealing main force artillery, thereby misorienting the enemy; and facilitating a break clean during a transition, thereby achieving dislocation.

Furthermore, fires solve modernity's demands for increased dispersion by covering vehicle weapon range limitations with lethal effects. While critics may see this requirement as a "back to the future" mindset, the technological requirements proceed beyond the pre-1994 2d Cavalry Regiment of the U.S. Army, which possessed an integral mortar variant. Modernity demands a portable system that is capable of interdiction beyond the 100-kilometer mark to meet potential adversity parity.[144] Accordingly, this capability must also be readily replenishable and straightforward to use. While this will likely be an artillery-owned, human-operated system in the short-term, the M113 Unmanned Ground System (UGV) provides an excellent platform for future "artillery in a box" capabilities for cavalry. A UGV can move and shoot well forward without increasing the logistical burden of the cavalry force. A fuel and spare parts variant within the technical section of the combat team could also enable self-replenishment of this UGV capability before higher-echelon refurbishment. Cavalry's ability to shape and thereby orient the main force requires a credible economy-of-force lethality. While fires provide the first solution, cavalry requires an economical tank-killing asset beyond the main battle tank.

The folly of IDF colonel Amnon Reshef and major Yoav Brom demonstrated the requirement for cavalry to possess a potent tank-killing asset in addition to the main battle tank's existence in the cavalry force. Operation in the full spectrum of conflict demands that cavalry protect itself sufficiently against the main force. While the 30-millimeter cannon does so against infantry, the ATGM remains the only weapon capable of physically destroying enemy main battle tanks. Cavalry's possession of ATGMs degrades enemy confidence through the threat of presence and lethality of use. Had Brom possessed such technology, he may have been able to defeat Egyptian armor or achieve a break clean.

Recent events have stymied Australia's acknowledgment of this requirement. The 2019 government decision to scale back turret-mounted ATGMs on Boxer CRV purchases is a dangerous decision that risks sufficient crew familiarity and competency.[145] Such a removal degrades cavalry's potency in several enduring tactical tasks, such as coup de main, raids against armor, and defensive operations against mounted forces. The Australian Army's possession of a "fitted-for-but-not-with"

[144] Matthew Cox, "The Marine Corps Wants to Equip Armored Recon Units with Long-Range Precision Fires," *Task and Purpose*, 7 March 2019.

[145] Ian Bostock, "Only 1 in 3 Boxer CRVs to Receive ATGM Launchers," *Defence Technology Review* 60 (December 2019/January 2020), 6–7.

mentality fails to consider the lessons of Confederate brigadier generals Albert Jenkins and John Imboden's cavalry failures at Gettysburg—that inadequate training familiarity and insufficient manning leads to defeat. Additionally, the FGM-148 Javelin antitank missile is a suboptimal alternative, with unsatisfactory three-minute acquisition time and nonvehicle friendly stabilization demands.[146] The loss of the spike is similar to the removal of machine guns from an infantry battalion. Cavalry consequently is forced to rely on the main battle tank, a platform already under pressure from competing demands.

While the existence of the main battle tank in the armored cavalry regiment deserves a separate paper in itself, the 2d Cavalry's success in Iraq advocates for the retention of main battle tanks in the armored cavalry regiment. Though mechanized infantry practitioners posit this idea in support of close combat, the technological status quo of armor currently demands that both forces possess such capabilities. Simplistically, mechanized infantry requires the main battle tank for mechanized assaults and defence. Cavalry requires the capacity to threaten the adversary's close and rear space by forcing the enemy to fight sooner than expected. The 120-millimeter gun and thick armor of the M1A1 Abrams tank allow cavalry to appear suddenly with a highly potent force, just as the 2d Cavalry did in Desert Storm. With tanks, cavalry continues to exploit fleeting battlefield opportunities for disruption through mounted raids or ambush with high lethality. The tank also supports dislocation through force grouping ambiguity when also grouped with the main force, thereby supporting the misorientation of the adversary.

Grierson's Foragers and Stuart's Captured Wagons: Future Cavalry Logistics

Major General Stuart's captured baggage trains during the Battle of Gettysburg that slowed his movements remind the cavalry practitioner of the impact an unwieldy baggage train has on cavalry's enduring ability to dislocate and disrupt the enemy. While this is partially a tactical problem, technology provides necessary support to the resolution. The elephant in the room for the mid-twenty-first century combat brigade is the logistical wagon chain. While the design of holistic future brigade logistics is beyond the scope of this paper, the cavalry force must embrace a revised logistics train solution to meet current and anticipated future demands, offsetting the increased weight of repair parts, the current strain on critical trades, and the increasingly lethal battlespace.

The imposition of the M113-based UGV and unmanned logistics UAS capabilities under commercial production provides two mediums that would improve integral consumption ratios and reduce workforce demands of specialist trades. This capability would also increase pod survivability due to its ability to operate dispersed, without mutual support, and cached until needed, mimicking Colonel Grierson's

[146] Charlie Gao, "Is Russia Getting Ready to Build Its Very Own 'Javelin' Tank-Killer Missile?," *National Interest*, 2 October 2019.

success in Mississippi and avoiding Stuart's pitfalls at Gettysburg. A ground-based UGV provides a medium to carry heavy repair parts, water, and bulk fuel capabilities without crew sustainment, while the aerial capabilities provide rapid response for lightweight requirements such as medical supplies, ammunition delivery, and single-patient transport.[147]

Cavalry's ability to perform its enduring functions demands technological advancement to adapt to the changing characteristics of modern and future conflict. Savvy procurement must offset the high costs associated with modern developmental demands. Cavalry's procurement of cost-effective antitank and fires capabilities, combined with unmanned logistics and cyber detection and attack capabilities, afford cavalry an economy of force consistency that can achieve disproportionate effects in pursuit of dislocation and disruption. For the small but professional Australian Army, this is an absolute must.

The New Caracole: Tactical Requirements of Future Cavalry to Successfully Orient, Dislocate, and Disrupt

> *The success of the cavalry was here due to the manner in which Henry had re-organized and trained them; and it is worthy of remark that light horsemen are first mentioned in this battle. Armed with cross-bows, they competed successfully with the Hungarian horsemen, and distracted the enemy's attention during the battle by constant skirmishing.*
>
> ~ Louis Edward Nolan[148]

The cavalry context dilemma and its relationship to the three enduring purposes of cavalry underpin cavalry's tactical evolution. The current characteristic changes to conflict demand that cavalry operate in an environment characterized by increased lethality, weapon precision, prolonged or timeless conflict (or at least with a mixture of conflict and "gray zone peace"), and among the people.[149] While these characteristics are not entirely new, their prevalence has increased. Subsequently, lessons from the past remain relevant.

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[147] Maj John V. McCoy, USA, "Unmanned Aerial Logistics Vehicles: A Concept Worth Pursuing," *Army Logistician* 36, no. 2 (March/April 2004): 40–44.

[148] Louis Edward Nolan, *Cavalry: Its History and Tactics* (London: Bosworth and Harrison, 1860), 11.

[149] John Ferris, "After the RMA: Contemporary Intelligence, Power and War," in *The Ashgate Research Companion to Modern Warfare*, ed. George Kassimeris and John Buckley (London: Routledge, 2010), 119; Shawn Woodford, "The Russian Artillery Strike that Spooked the U.S. Army," *Mystics and Statistics* (blog), 29 March 2017; Gen Rupert Smith, British Army, *The Utility of Force: The Art of War in the Modern World* (London: Allen Lane, 2005), 271; John Raine, "War or Peace?: Understanding the Grey Zone," International Institute for Strategic Studies, 3 April 2019; and Michael O'Hanlon, *The Future of Land* (Washington, DC: Brookings Institution, 2015), 4.

The Cavalry Accordion: Mastering Concentration and Dispersion

Colonel Grierson's mastery of concentration and dispersion as tactical elements of force structure capabilities was a key ingredient to the sustained dislocation and disruption he displayed during his 1863 raid. With increased battlefield lethality, this concern returns to prevalence. Cavalry tactics must now evolve extant procedures for mutual support, the microtactical baseline consideration for concentration. The existing "half visual range to half effective weapon range—whichever is the least distance" mantra requires evaluation.[150] An amendment to "half detection sensor range to half weapon system effectiveness—whichever is the least distance" is the first step in this evolution. While superficially this may seem a nuanced argument, it has practical implications for individual cavalry platform detection demands. Cavalry forces must frequently employ reconnaissance support tools such as the quadcopter UAS. They must also demonstrate competence with all-arms fires employment. Both of these skills facilitate increased dispersion without isolation.[151] Doing so maintains cavalry dispersion until the critical point, negating long-range lethal fires and counter-reconnaissance capabilities while also ensuring the ability to deep strike the metaphorical Ohio Railroad at the crucial point. While such situational awareness and lethality at the front remain necessary, a future Grierson remains hampered by the Australian Army's current logistical shortfalls. Replicating existing armored cavalry regiment logistics on a 35-ton scale hampers a future cavalryman like Major General Stuart's captured wagon trains. Cavalry requires a revised approach to logistics that challenges the status quo.

Do Not Circle the Wagons: AI-Assisted Logistics and Foraging

Major General Stuart's folly of escorting slow baggage trains north reminds cavalry practitioners of the requirement for dispersed and fast logistics wagons. Unmanned logistics systems programmed for heterogeneous swarming increase the likelihood of delivery success while also shielding the critical vulnerabilities associated with a single platform holding all or the majority of a single class of supply. Cavalry's possession of this capability reduces the personnel required to conduct logistics operations while also providing them with further physical standoff from threat areas. As logistics get faster and more autonomous, they reduce the burden on the combat force. Notwithstanding, the horses remain hungry. Cavalry must again live off the land to supplement this capability.

Colonel Grierson's sustained success demanded cavalry forage. Cavalry training must again understand how to source appropriate classes of supply—particularly power, bulk fuel, food, and water—from civilian infrastructure and from the land in both friendly and enemy terrain. Practically, this stresses that cavalry possess

[150] *Employment of Armor*, LWD 3-3-4 (Canberra: Australian Army, 2009), 1–11.

[151] Turkey has developed a quadcopter armed with a machine gun as an example of these tools. "Turkey's New Drone Comes with a Machine Gun," UAS Vision, 17 December 2019.

training and technology that prolongs the duration of the "horse" and of the rider. With power and fuel demands as the main limiting factors of the horse, cavalry forces must build habitual relationships with special forces and friendly guerrilla elements, as they provide an opportunity for both horse and rider sustainment via captured, manufactured, or locally procured resources (chiefly food and fuel). Cavalry forces achieve the latter through superior intelligence collection and coercion capabilities, which includes integral HUMINT. Technologically, cavalry may augment this skill by procuring long-range batteries, efficient alternators, and solar-power capacity to mimic Grierson's sustained foraging, thereby enabling cavalry's enduring achievement of persistent orientation, dislocation, and disruption.

Dispelling the Myth of "Death before Dismount": Mounted and Dismounted Combat

Colonel Grierson's Butternut Guerrillas, Colonel Holder's 2d Cavalry Regiment, and U.S. Army cavalry forces in Vietnam prove that it is vital to be competent both at mounted and dismounted combat to continually orient, disrupt, and dislocate. U.S. Army cavalry's operational-level success during Operation Cedar Falls occurred because cavalry retained the ability to fight both mounted and dismounted, discovering critical intelligence inside enemy facilities while also employing specialist dismounted weapon systems for disproportionate effects. Similarly, 2d Cavalry's lack of sufficient dismounted capability denied it the ability to capture and process surrendering Iraqis sufficiently during Operation Desert Storm, thereby exposing risk to the main force as they maintained their advance. Additionally, Grierson's ability to deceive the civil populace with his Butternut Guerrillas occurred because he used them to seed false narratives through verbal interactions with civilians.

Cavalry practitioners who see cavalry as a combat force that is purely mounted fail to understand that the enduring role of cavalry requires human interaction, access to all forms of terrain, and seeks disproportionate effects. Previous cavalry scout iterations contained a potent mixture of antiarmor, marksmanship, and pioneering skills for a reason: it generated economy of force with limited manning. While critics may cite the difficulty of the increased system as a deterrent for cavalry's possession of these skills, this fallacy fails to consider the increased automation within existing technologies, such as the Boxer CRV. The intellect of cavalry soldiers has transcended the industrial-age requirements of the mid-twentieth century. Cavalry must harness this with increased responsibility and training.

Cavalry tactical acumen must continually evolve to recognize the improved intellectual quality of the soldier. A well-trained cavalry force in mission command supports team consciousness, enabling rapid orientation, dislocation, and dis-

ruption.[152] Practically, this demands that cavalry forces train and fight in smaller combat groupings, with less rank but more responsibility, such as those offered by Australian Army colonel Michael Krause in "The Case for Minimum-Mass Tactics in the Australian Army."[153] The special operations continuum provides the model for this development, with junior noncommissioned officers well-trained in operational theory, collection planning, and mission design and retaining several auxiliary trade skills.[154] Doing so extends responsibility and risk levels mimicking those given to Grierson while also avoiding the pitfall of Major General Stuart's unsynchronized actions before the Battle of Gettysburg. This continuum includes troops operating for more extended periods of physical isolation, operating under zero-EMS signatures, and operating without verbal orders in the pursuit of sustained main force orientation or to capitalize on fleeting opportunities to dislocate and disrupt. Additionally and alternatively, this will require cavalry to operate closer to the civilian populace, a challenge that comes with additional opportunities and risks.

Conclusion

The cavalry role offered herein provides a more thorough and appropriate synthesis of the enduring aspects of cavalry. By the conduct of reconnaissance, security, transition, and the disproportionate economy of force-driven offensive, defensive, and stability operations, cavalry forces support the commander through orientation, dislocation, and disruption. Cavalry forces achieve this role by successfully balancing the cavalry context dilemma while also retaining the three enduring purposes of orientation, dislocation, and disruption. Doing so ensures that cavalry retains the range of enduring tactical concepts that translate into tactical tasks.

Cavalry forces conduct these tactical concepts in the pursuit of commander and adversary orientation through reconnaissance and fighting, while also seeking to degrade the cohesion of the enemy commander through dislocation and disruption. In proving cavalry's enduring nature, analysis of the previous two centuries has stress-tested the enduring nature of cavalry juxtaposed against common concerns of the modern era—periods of technological advancement with conflict metamorphosis through gray zone peace, limited war, and total war.

In providing a portal to examine the technological and tactical requirements of cavalry in the present and within a broad range of futures, history shows the folly of removing the enduring role of cavalry, while also demonstrating the disproportionate effects achieved through its retention. This realization is critically important in a world characterized by smaller, more professional and lethal armies, where forces

[152] Gen Stanley McCrystal identifies the benefit of a collective team consciousness in developing strong teams. McCrystal, *Team of Teams*, 93–98.

[153] Michael G. Krause, "The Case for Minimum-Mass Tactics in the Australian Army," *Australian Army Journal* 2, no. 2 (2006): 73–75.

[154] Josh Sutoff demonstrates the prevalence of missions with risk being designated to special operations forces, rather than being conducted by conventional forces who have the capability to do so. Josh Sutoff, "What's Really Wrong with Mission Command," *From the Green Notebook* (blog), 12 February 2019.

pursue economy of force. In each instance of failure, the inability to perform tactical concepts in support of the trinity has led to suboptimal performances—namely defeat of the force, and at times the loss of the battle or conflict.

Implementation of the Boxer CRV platform demands technological and tactical progression of thought to ensure maximum potential achievement. To negotiate the minefield of "good idea procurement" with expensive technology, modern adaptations of old lessons provide a logical framework to evolve cavalry to the changing characteristics of war while retaining adherence to enduring roles and responsibilities. Some of the technology and tactical structure exists within current Australian Army stocks—they merely require redistribution to improve efficacy. Other future recommendations require development within means that the Army can achieve in the short term. Importantly, the Army must approach this without bias of existing structures, risk tolerance thresholds, or mindsets wedded to existing industrial warfare baselines. If the Australian Army can heed the ghosts of the past, it can provide the platform for a dangerously potent cavalry. Australia must be at the forefront of technological and tactical adaptation. Achtung—Boxer!

The King of Battle Versus the God of War

Reforming the Division Artillery to Defeat Peer Competitors and Win in Large-Scale Ground Combat Operations

By Captain Matthew Van Arsdale, U.S. Army[1]

With respect to Russia . . . we are outranged, outgunned on the ground.

~ General Mark A. Milley, U.S. Army Chief of Staff[2]

Today, the U.S. Army's field artillery assets at the division and brigade combat team levels are outranged and outnumbered by Russian forces of similar size, and they have significantly fewer target acquisition assets than their Russian counterparts. Additionally, the organization of the Russian strike complex ties observation equipment, including unmanned aerial vehicles (UAV), radar, and electronic warfare systems, directly to artillery formations, providing fires that are much faster and more responsive than U.S. formations. These factors have created a distinct advantage for Russian ground commanders in the fires warfighting function. The U.S. Army must modernize its artillery forces and restructure the division artillery formation to defeat current threats, compete, and win during large-scale ground combat operations.

In August 2008, Russia launched an overwhelming military assault on neighboring Georgia, annexing territory and crushing the Georgian armed forces. Despite the successes of the Russian armed forces, its high command sought to improve its military forces. During the next few months, Russia's ministry of defense developed a plan for a series of sweeping changes that would overhaul the Russian military, specifically emphasizing ground forces. These modernization efforts capitalized on the lessons learned from the First and Second Chechen Wars (1994–96; 1999–2009) and the invasion of Georgia, during which Russian ground forces learned the importance of target acquisition assets, electronic warfare systems, and overwhelming long-range firepower. As a result of these efforts, the Russian military became

[1] Capt Van Arsdale is a distinguished graduate of MCU's Command and Staff College. This paper was nominated for the LtGen John A. Lejeune Award for academic year 2019–20.

[2] *Hearing to Receive Testimony on the Posture of the Department of the Army in Review of the Defense Authorization Request for Fiscal Year 2019 and the Future Years Defense Program, before the Committee on Armed Services*, 115th Cong. (2018) (statements of Secretary of Defense Mark T. Esper and Gen Mark A. Milley, USA), hereafter Esper and Milley statements.

more agile, flexible, and deadly, increasing its number of artillery systems and vastly improving battlefield surveillance capabilities.

These reorganized and reequipped formations proved highly effective during combat operations in eastern Ukraine in 2014. Russia's newly developed capabilities were highlighted during a single artillery strike that July, when it made two Ukrainian mechanized battalions combat ineffective. The Ukrainian forces were first located through electronic warfare assets, and their location was confirmed by an UAV. They were then struck by rocket and cannon forces within approximately 14 minutes of detection.[3] This strike demonstrated that Russian ground forces were willing and capable of employing massed artillery fires against enemy formations, in contrast to the small volume of precision strikes that U.S. forces prefer. The event also demonstrated the range overmatch that the Russian ground forces had developed, as the strike came from outside the range of any U.S. artillery system assigned to brigade combat teams or divisions.

Methodology

Russia was chosen as the case study for this paper primarily because of the U.S. Department of Defense's emphasis on Russia as a great power competitor and a pacing threat for U.S. force design and modernization.[4] This study will analyze the modernization efforts that the Russians undertook as well as the reorganization of their ground forces, focusing on battalion tactical groups and brigades. It will then compare these Russian formations to current U.S. military formations and equipment. This chapter looks at the capabilities of both the Russian battalion tactical group and brigade in comparison to the U.S. brigade combat team, unlike many studies that have only focused on the battalion tactical group.[5] This expanded analysis is conducted herein because U.S. formations will likely not be able to achieve the desired force ratio during combat operations, or they will be able to only engage a unit one echelon smaller. Russia is capable of fielding more brigade-size formations than the United States and its North Atlantic Treaty Organization (NATO) allies, leading to the distinct possibility that a U.S. brigade combat team will be required to engage two Russian battalion tactical groups or one Russian brigade at one time.[6]

The U.S. Army's division artillery formation was selected as the focus of proposed modernization efforts due to the flexibility of the proposed organization and the Army's reemphasis of the division as its primary tactical formation. The division artillery element is a direct-support formation that coordinates field artil-

[3] Robert H. Scales, "Russia's Superior New Weapons," *Washington Post*, 5 August 2016.
[4] Esper and Milley statements; and Ryan D. McCarthy, "Under Secretary Remarks at Brookings Institute," Army.mil, 15 March 2019.
[5] Amos C. Fox and Andrew J. Rossow, *Making Sense of Russian Hybrid Warfare: A Brief Assessment of the Russo–Ukrainian War*, Land Warfare Papers no. 112 (Arlington, VA: Institute of Land Warfare, Association of the United States Army, 2017).
[6] Lester W. Grau and Charles K. Bartles, *The Russian Way of War: Force Structure, Tactics, and Modernization of the Russian Ground Forces* (Fort Leavenworth, KS: Foreign Military Services Office, 2016), 36.

lery operations for a maneuver division. A standard component of Army divisions since World War I, the division artillery formation was removed from all divisions in 2006 during force restructuring in support of stability and counterinsurgency operations.[7] Currently, each of the Army's 10 active divisions contains a division artillery element, but these formations contain headquarters units only and do not include any firing batteries, logistics units, or observation capabilities. Reorganizing these formations will provide the Army division flexibility and more capable fire support for large-scale ground combat operations.

The Russian Threat: Modernizing the Force

The Russian military has undergone three major reforms and restructuring initiatives since the collapse of the Soviet Union in December 1991. Each of the reforms were primarily driven by different factors: political, economic, and lessons learned from combat. The first major reform occurred in the early to mid-1990s under Russian president Boris Yeltsin and saw the contraction of Russian military forces from 5,000,000 uniformed members to less than 2,000,000.[8] Simultaneously, the budget for the Russian Army was drastically cut. This reform was driven by the collapse of the Soviet Union and the lack of a need for such a massive military organization. While the Russian government decreased the number of personnel within the army, the number of units at the brigade and division level remained relatively stable. The reduction in personnel produced a "hollow" army that had multiple division-size units that were less than 30 percent manned.[9] The reduced budget produced an army that lacked new equipment, funds for training, and maintenance capabilities.

In December 1994, this depleted force was ordered into Chechnya to prevent an Islamic succession of the region.[10] While Russia mustered and deployed a sizable force, after two years of intense fighting in Chechnya, the army withdrew without achieving its objectives. The First Chechen War was viewed as a tactical and strategic defeat for the Russian Army. With this defeat in mind, and as an economic downturn loomed, the Russian government looked at a second set of military reforms.[11]

Driven by the need to decrease defense budgets, the number of brigade-size units in the Russian Army was reduced from 2,134 to 1,890.[12] The army remained grossly undermanned, often fielding only 30–35 percent of required personnel in

[7] LtCol Michael D. Vick, USA, "Fire Support in Division Large-Scale Combat Operations: Shifting the Focus from Counter-insurgency-Centric Fires," in *Large-Scale Combat Operations: The Division Fight*, ed. Dennis S. Burket (Fort Leavenworth, KS: Army University Press, 2019), 89.
[8] Grau and Bartles, *The Russian Way of War*, 27–28.
[9] Grau and Bartles, *The Russian Way of War*, 30–32.
[10] Carlotta Gall and Thomas de Waal, *Chechnya: Calamity in the Caucasus* (New York: New York University Press, 1998), 36.
[11] LtCol Timothy L. Thomas, USA (Ret), and LtCol Lester W. Grau, USA (Ret), "Russian Lessons Learned from the Battles for Grozny," *Marine Corps Gazette* 84, no. 4 (April 2000): 45.
[12] Grau and Bartles, *The Russian Way of War*, 34.

each unit. This reduction in end strength enabled more funds to be applied to training, maintenance, and equipment upgrades. While the Russian Army remained undermanned, it was considerably more proficient than the army that deployed to Chechnya in 1994.

This new military proficiency would be demonstrated in 1999, when Islamic separatists from Chechnya invaded the Russian province of Dagestan. After initial delays, the Russian Army mobilized four brigades and swiftly crushed the separatists, which was subsequently used as the pretense to conduct a second campaign within Chechnya.[13] The Second Chechen War was executed with a much higher level of competence and confidence by the Russian Army, pacifying the province and cementing Russian control over the region. While a low-level insurgency continued until 2009, the Russian Army viewed the operation as a resounding success, justifying earlier reforms.

In August 2008, Russian forces massed along the border of Georgia and within the Georgian provinces of South Ossetia and Abkhazia in support of pro-Russian separatists within the region.[14] As the situation deteriorated and Georgia attempted to forcefully retain its control of the region, Russian forces launched a swift four-day assault that devastated the Georgian military.[15] The attack demonstrated new Russian capabilities such as cyber warfare. More importantly, it proved a proficiency and competence not seen during the Chechen wars.

Despite the overwhelming success of the Georgian offensive, in 2008 the Russian military underwent its third major reform since the collapse of the Soviet Union. These reforms were known as the "New Look" reforms and included the most drastic changes to the Russian military since the end of the Cold War. They drove military reorganization at almost every echelon, from the strategic level down to tactical formations.[16] The reforms began with a reorganization of the Russian high command structure and ministry of defense, streamlining the organization by eliminating more than half of the general officer positions within the military. They continued by reorganizing the Russian military's strategic operational commands, consolidating six regional commands into four. The most drastic aspects of the reforms took place at the tactical organizations of the Russian Army. With the exception of the airborne forces, the division and regiment were eliminated as echelons, and the brigade was established as the army's primary tactical unit. This shift was made to allow for easier rapid deployments and for the army to be more responsive throughout the four strategic operational commands.[17]

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[13] Grau and Bartles, *The Russian Way of War*, 37.

[14] Grau and Bartles, *The Russian Way of War*, 38.

[15] David J. Smith, "The Saakashvili Administration's Reaction to Russian Policies before the 2008 War," in *The Guns of August 2008: Russia's War in Georgia*, ed. Svante E. Cornell and S. Frederick Starr (London: Routledge, 2015), 129.

[16] Roger McDermott, "Russia's Armed Forces Undergoing 'Unparalleled' Transformation," Radio Free Europe, 13 August 2009.

[17] Grau and Bartles, *The Russian Way of War*, 33–34.

Russian brigades are analogous to U.S. Army brigade combat teams. Each forms a self-supporting combined arms formation comprised of approximately 3,500–4,500 soldiers, which is much smaller than legacy regimental and division formations.[18] The smaller size and self-supporting nature of the Russian Army's "New Look" brigades facilitate the need for quickly mobilized and deployable forces in support of limited-scale conflicts on the perimeter of Russian territory and in the nation's spheres of influence. In addition to eliminating its division and regimental formations, Russia again reduced its number of large formations (brigades and above) from 1,890 to 172.[19] This reduction in personnel and the overall number of formations has enabled the Russian Army to focus its efforts on manning, equipping, training, and deploying highly proficient and capable forces.

The reduction in forces reflects Russia's changing attitudes on what its military needs to accomplish and the types of conflicts that the Russian military must be prepared to fight. Russia still views large-scale conflict with the United States as the primary threat to its sovereignty and continued existence, and it dedicates most of its training resources to defending against it. While large-scale ground combat remains the most pressing threat, the Russian ministry of defense has also increased its focus on limited-scale conflicts. These conflicts cover a wide range of operations, from ensuring territorial integrity (as during the Chechen wars) and countering invasions (as in Dagestan) to protecting ethnic Russians (such as those in Crimea and Ukraine) and bolstering regional allies (such as Syria).[20] Rapid, independent, and capable formations are ideal for these conflicts, providing the Russian government cost-effective and flexible options for deploying forces.

Tactical Formations

The two predominant formations used by the Russian Army during combat operations are the combined arms brigade and the battalion tactical group. These formations are task-organized to be self-supporting for short durations of time, containing robust fires, logistics, electronic warfare, and protection assets. Combined arms brigades within the Russian Army are permanent organizations assigned directly to army groups and strategic operational commands.[21] Battalion tactical groups are ad hoc formations created and task-organized by brigades and are comprised of brigade assets. With the exception of a small number of airborne regiments, the majority of operations within Georgia, Ukraine, and Syria have been conducted by brigades and battalion tactical groups.[22]

[18] Grau and Bartles, *The Russian Way of War*, 35.
[19] Grau and Bartles, *The Russian Way of War*, 39.
[20] Scott Boston and Dara Massicot, *The Russian Way of Warfare: A Primer* (Santa Monica, CA: Rand, 2017), https://doi.org/10.7249/PE231.
[21] Grau and Bartles, *The Russian Way of War*, 32.
[22] Phillip A. Karber, *"Lessons Learned" from the Russo-Ukrainian War: Personal Observations* (Vienna, VA: Potomac Foundation, 2015).

Brigades

The Russian Army has four general types of combined arms brigades: light infantry, motorized, mechanized, and armored. Russian Army brigades are organized similarly to U.S. Army brigade combat teams but contain a disproportionately higher number of support organizations within their structure. Russian brigades contain four maneuver battalions (equipped based on brigade type), five artillery battalions (two howitzer, one rocket, and two air defense), one antitank battalion, one reconnaissance battalion, one engineering battalion, one signal battalion, and one logistics battalion.[23] The brigade also contains robust UAV, electronic warfare, chemical warfare, and sniper capabilities. Each brigade includes a fire control battery, which contains a fire support coordination element, a survey platoon, a counterfire radar platoon, and two reconnaissance platoons. Additionally, each mechanized and motorized battalion contains a battery of eight 120-millimeter self-propelled or towed mortars, while each company is supported by three 60-millimeter mortars for close-range support.[24] The wide array of capabilities available to brigade commanders enable a brigade-size element to conduct independent operations for short durations of time without higher echelons attaching or assigning additional capabilities. The high number of support assets also support the Russian concept of fighting as a fires-centric force rather than a maneuver warfare-centric force.

Battalion Tactical Groups

The Russian battalion tactical group is not a permanent organization within the Russian Army, but an ad hoc formation task-organized and formed for specific missions.[25] The Russian Army has used this technique of task organizing for decades, and there are plenty of historical examples of battalion tactical groups operating in Afghanistan and Eastern Europe in the 1960s and 1970s.[26] Task-organizing the battalion tactical group in support of specific missions enables the brigade or army group commander the flexibility to tailor the force to meet the needs of the mission. In addition, the smaller size of the battalion tactical group enables rapid deployment with a limited logistics train. The successful use of battalion tactical groups in areas of operation such as Chechnya, Georgia, Ukraine, and Syria have led the Russian high command to dictate that each combined arms brigade will have two battalion tactical groups fully manned, equipped, and trained for operations at all times. Additionally, the Russian ministry of defense has stated that the Russian Army will expand its number of ready battalion tactical groups to 125 by 2018.[27] Be-

[23] Grau and Bartles, *The Russian Way of War*, 207.
[24] Grau and Bartles, *The Russian Way of War*, 213.
[25] Fox and Rossow, *Making Sense of Russian Hybrid Warfare*.
[26] Roger McDermott, "Moscow Resurrects Battalion Tactical Groups," Jamestown Foundation *Eurasia Daily Monitor* 9, no. 203, 6 November 2012.
[27] Grau and Bartles, *The Russian Way of War*, 34.

cause the battalion tactical group is still not a permanent organization, it is difficult to assess if this goal has been met.

Despite the fact that no official organizational structure for the battalion tactical group exists, most of these formations share several characteristics. Each is formed with a command element, four maneuver companies (one tank and three mechanized or motorized), three artillery batteries (two howitzer and one rocket), one antitank company, and two air defense companies.[28] While these are the basic building blocks of the battalion tactical group, brigade commanders can add additional capabilities depending on the mission. Battalion tactical groups operating along the Ukrainian border have deployed with additional reconnaissance, rocket artillery, radar, logistics, and electronic warfare assets.[29] Battalion tactical groups operating in Syria have been observed with additional rocket artillery, air defense, engineering, and sniper capabilities.[30] The battalion tactical group is designed to conduct independent operations when augmented and supported by higher elements' logistics assets and formations. The large amount of fires assets that can be task-organized to the battalion tactical group provide a much larger fires capability than comparably sized formations in Western armies.

Artillery Formations

Russian Army howitzer and rocket battalions and batteries are organized similarly to their U.S. Army counterparts, with the exception of the brigade's fire control battery and the fire control centers found at the battalion and battery levels.

Russian howitzer battalions are comprised of three firing batteries of six guns each, a support platoon for maintenance and ammunition transportation, and a fire control platoon. Similar to U.S. Army howitzer batteries, Russian guns are organized into two platoons of three guns each. The primary difference between U.S. and Russian artillery structure is in the command and control elements. Russian artillery formations use three types of fire control squads that serve the functions of forward observation, tactical fire control, and technical fire control. Within each howitzer battalion and battery's headquarters platoon is a fire control squad equipped to operate as forward observers.[31] Forward observer-equipped fire control squads and artillery spotter squads are capable of establishing mounted and dismounted observation posts and transmitting requests for fire to the tactical fire control elements. Tactical fire control within the Russian Army is executed by artillery battalion and battery commanders in squads and vehicles described as the command observation post (COP). Artillery commanders are responsible for devel-

[28] Fox and Rossow, *Making Sense of Russian Hybrid Warfare*.
[29] Phillip Karber and Joshua Thibeault, "Russia's New-Generation Warfare," Association of the United States Army, 20 May 2016.
[30] Ruslan Pukhov, "Russia's Intervention in Syria: Lessons Learned," Center for Strategic and International Studies, 13 January 2017.
[31] *Worldwide Equipment Guide*, vol. 2, *Air and Air Defense Systems* (Fort Leavenworth, KS: U.S. Army Training and Doctrine Command G-2, 2015).

oping fires plans as well as clearing and prioritizing fires. The COPs are often collocated with the maneuver commanders to facilitate operations and fire support. Commanders will route the approved and prioritized fire mission orders from the COP to the technical fire direction centers located at the battalion and battery. The technical fire direction centers calculate firing solutions and manage ammunition expenditure.[32]

Russian rocket battalions follow the same organizational structure as howitzer battalions. Each battalion is divided into three batteries that contain six rocket launchers, logistics elements, and fire control squads.[33] Observation, tactical, and technical fire direction are executed and conducted in the same way that howitzer battalions operate.[34] Unlike U.S. Army rocket formations, Russian rocket battalions have organic forward observers in support of rocket fires.

Russian brigades are also manned and equipped with a fire control battery. This battery is an artillery support organization that includes radar, observation, reconnaissance, and survey capabilities. The battery's radar capabilities include counterfire, ground sensing, and aerial warning radars. Observation and reconnaissance elements use both visual observation as well as electronic and signals "listening" observation elements. The observation and radar elements are linked directly to the artillery COPs at the battalion or battery level and provide rapid observation in support of fire missions. The signal elements of the fire control battery provide the brigade's artillery elements dedicated retransmission and communication support, facilitating fire control nets without support from the brigade's signal battalion.[35] Lastly, the fire control battery's topographical support platoon provides survey support to radar systems, observers, howitzer formations, and rocket elements for accurate positioning.

The organization of Russian Army brigades and the task organization of battalion tactical groups reflects the Russian preference for using overwhelming long-range firepower to facilitate mission accomplishment. The high number of artillery assets coupled with advanced electronic warfare capabilities, multiple radar systems, and UAV support enable the Russian Army to effectively locate, target, and destroy enemy formations.

Equipment

In addition to organizational improvements and modernization, the Russian Army has also undergone a massive series of equipment modernization programs since its 2008 invasion of Georgia. Applying lessons learned from the Georgian conflict,

[32] Lester Grau, and Charles Bartles, "Russian Artillery Fire Control for Large-Scale Combat Operations" *Fires Bulletin* (May/June 2019): 8.
[33] Grau and Bartles, *The Russian Way of War*, 231.
[34] Grau and Bartles, "Russian Artillery Fire Control for Large-Scale Combat Operations," 7.
[35] Grau and Bartles, "Russian Artillery Fire Control for Large-Scale Combat Operations," 9.

the Russian Army has concentrated its modernization efforts in several key areas: electronic warfare capabilities, UAV systems, and communication systems.[36] While equipment of this kind has seen the most radical modernization efforts, the Russian Army has also been improving its combat vehicles, artillery delivery systems, and observer equipment.[37] Outside of electronic warfare and UAV equipment, Russia's approach to modernization is incremental, improving most systems one component at a time. The BM-21 Grad multiple launch rocket system (MLRS) exemplifies this tendency for incremental improvements. Designed and fielded in the early 1960s, the BM-21 is still the primary MLRS within maneuver brigades and artillery battalions. Improvements have been made to munitions, reloading mechanisms, and communication systems, but the launcher remains basically the same piece of equipment that was first employed in combat by the Russians in 1969 during border conflicts with China.[38]

Delivery Systems

Cannon systems remain the most common form of artillery within the Russian Army, which uses a variety of towed and self-propelled systems in support of maneuver forces. While the Russian Army still has many brigades of towed artillery, it is modernizing and moving to an all self-propelled howitzer force. The primary self-propelled howitzer of front-line units is the 2S19 MSTA, a 152.4-millimeter tracked howitzer. Since entering service in 1989, the 2S19 has seen significant upgrades and modifications. The most current version, the MSTA-S, is capable of self-locating and self-laying, reducing emplacement time to less than 90 seconds. A digital gun aiming device facilitates rapid traverse and elevation of the gun tube and is able to receive digital fire missions from the fire direction center. Equipped with an autoloader, the howitzer is capable of firing 10 rounds per minute continuously and can load the tube at any elevation, which provides a much higher rate of fire during high-angle fire missions than U.S. cannon systems.[39] With a turret capacity of 50 rounds and an integrated ammunition resupply conveyor, the crew of five can theoretically keep the system in operation for extended periods of time with minimal downtime for ammunition restocking.

Current munitions enable the 2S19 to fire standard rounds out to 24 kilometers and rocket assisted projectiles to 36 kilometers.[40] Munition capabilities include high explosives, dual-purpose improved conventional munitions, top attack anti-armor munitions, illumination munitions, chemical munitions, smoke munitions,

[36] Roger N. McDermott, *Russia's Electronic Warfare Capabilities to 2025: Challenging NATO in the Electromagnetic Spectrum* (Tallinn, Estonia: International Centre for Defence and Security, 2017).
[37] Grau and Bartles, *The Russian Way of War*, 273.
[38] *Worldwide Equipment Guide*, 6–19.
[39] "Russia: Artillery Units of Volga-Urals Military District Receive New Howitzers," BBC Monitoring, 3 March 2009.
[40] Roger McDermott, "Russian Military Pursues 'Artillery Reform'," Jamestown Foundation *Eurasia Daily Monitor* 16, no. 143, 16 October 2019.

family of scatterable mines (FASCAM) munitions, thermobaric munitions, incendiary munitions, electronic warfare jamming munitions, global positioning system (GPS)- and laser-guided warheads, and tactical nuclear warheads.[41] Modernization efforts continue to improve the 2S19's fire control system, protection systems, and communications equipment.[42] The 2S19 provides the Russian brigade and battalion tactical group a direct support howitzer system that currently outranges U.S. cannon artillery systems, is more mobile and protected than U.S. towed systems, and has more capable munitions than U.S. systems.

While a majority of artillery systems within the Russian Army are cannons, the multiple rocket launcher (MRL) is growing in importance. The Russians employ an extremely diverse range of MRL systems, ranging from the 9K720 Iskander-M, with ranges exceeding 500 kilometers, to the 122-millimeter BM-21 Grad.[43] The Russian army organizes its MRL formations into three general categories: strategic, army support, and tactical support. Strategic MRL forces are equipped with the Iskander-M and other extremely long-range systems; army support artillery brigades, with the 300-millimeter 9A52-2/BM-30 Smerch-M MRL or the 220-millimeter 9P140/BM-27 Uragan MRL; and tactical artillery formations that are attached to maneuver brigades, with BM-21s.[44]

The BM-21 is a tube-launched MRL that is mounted on a wheeled chassis and capable of emplacing and displacing within five minutes. Capable of launching its 40-rocket payload in just 20 seconds, the BM-21 is used extensively for mass barrages and area bombardments. Current munitions for the BM-21 provide ranges of approximately 40 kilometers. These munitions include high-explosive, smoke, thermobaric, mine-laying, electronic warfare-jamming, antitank, incendiary, chemical, and illumination capabilities. Modernization efforts to improve the BM-21 have been focused on improving communications systems and adding GPS location equipment. While the launch system has seen several modernization efforts, improvements have been made primarily to the munitions.[45] The Russian army is looking to finally replace the venerable BM-21 with the 9A52-4 Tornado MRL, which has increased ranges as well as the ability to fire 122- or 220-millimeter rockets. The first Tornadoes entered Russian military service in 2014 and have been employed in combat in Syria. The Tornado has upgraded communication, self-locating, and self-laying systems and is able to emplace in approximately two minutes. While the 122-millimeter Tornado shares many of the same munitions as the BM-21, the

[41] "Russia Developing 'Smart' Munitions and Electronic Warfare Artillery Shells," Russian News Agency TASS, 6 February 2018.
[42] *The Czar of Battle: Russia Artillery Use in Ukraine Portends Advances* (Coulsdon, UK: Jane's Information Group, 2018).
[43] Karber and Thibeault, "Russia's New-Generation Warfare."
[44] Lester W. Grau and Charles K. Bartles, *The Russian Reconnaissance Fire Complex Comes of Age* (Oxford, UK: Changing Character of War Centre, University of Oxford, 2018), 2.
[45] *Worldwide Equipment Guide*, 6–24.

220-millimeter version has extended ranges out to 70 kilometers with conventional rockets and 120 kilometers with GPS-guided munitions.[46]

Russian formations may be augmented by additional fires assets from artillery brigades attached to army groups. These reinforcing battalions usually consist of BM-27 or BM-30 systems. The BM-27 can provide fires out to 70 kilometers, whereas the BM-30 has conventional ranges of 90 kilometers. The BM-27 and BM-30 can also provide additional capabilities, including electronic warfare-jamming munitions, rocket-launched UAVs, and cluster munitions.[47] Both organic and reinforcing MRL assets provide Russian brigade and battalion tactical group commanders with weapon systems that greatly outrange current U.S. Army organic fires systems at the brigade combat team level, providing advantages in counterbattery operations and preparatory fires. The number of MRL systems organic to Russian maneuver units enable mass fires that have demonstrated considerable effectiveness against lightly armored targets.

Communication Systems

Operations during the defense of Dagestan in 1999 and the invasion of Georgia in 2008 revealed extensive weaknesses within the Russian Army's communications systems. The "New Look" reforms subsequently placed a great deal of emphasis on improving and hardening the communication systems used by Russian ground forces.[48] These modernization efforts focused on transitioning older radios to a completely digital communications infrastructure and the development of networked command and control systems. Russia replaced its older fleet of radios with advanced digital radios in 2010. Currently, Russian forces operate with systems capable of communicating over high-frequency (HF), very-high-frequency (VHF), and ultra-high-frequency (UHF) radio bands. Transitioning to digital systems also enabled the development of advanced encryption technologies, such as cypher text and frequency hop capabilities.[49] Digital radios allow for the transmission of data, including targeting and fire mission request data. The digital radios employed by the Russian Army provide their forces extended communications ranges, more secure transmissions, and the ability to transmit data, which facilitates faster and more effective coordination between units and supporting assets.

In addition to upgraded radios, the Russian Army has been developing new digital command and control systems to improve battlefield coordination, battlefield tracking, and situational awareness. In 2015, the Russian Army began development of the Andromeda system, a computerized common operational picture and unit tracking system that is analogous to the U.S. Army's Force XXI Battle Command

[46] Grau and Bartles, *The Russian Way of War*, 236.
[47] Grau and Bartles, *The Russian Way of War*, 236.
[48] Boston and Massicot, *The Russian Way of Warfare*, 8.
[49] Keir Giles, "Assessing Russia's Reorganized and Rearmed Military," Carnegie Endowment for International Peace, 3 May 2017.

Brigade and Below (FBCB2, or Blue Force Tracker) system.[50] The system provides maneuver and artillery commanders better real-time data of friendly unit locations and can receive requests for fire to coordinate artillery strikes.

These systems have been fielded to the airborne brigades in the Western and Southern Military Districts and are starting to appear in mechanized units operating near the Ukrainian border.[51] Additional digital command and control systems have been developed specifically for artillery formations and observers. Russia has been employing increasingly digital and sophisticated ballistic computation systems that can send and receive fire missions, mission status messages, and fire support coordination graphics. On the observer end of the artillery kill chain, the Russians have developed a handheld tablet computer that is capable of displaying friendly units and graphics on satellite map overlays and can be used to call for artillery, air, or maneuver support. The system, known as Strelets or KRUS (a Russian acronym for *reconnaissance and command and control communications system*) allows a user to essentially point to a location on the tablet's map, and the system will send a digitally formatted request for fire to the supporting artillery unit.[52] The system is under initial development but has seen use in Syria and on the Ukrainian border during exercises. Future improvements include inertial navigation units for degraded operations, integration with aviation assets, live video feed monitoring from UAVs, and additional coordination functions.[53] These digital systems decrease the amount of time required for fire mission requests to be executed on unplanned targets, reducing the time that friendly forces have to act and gain the initiative.

Observation Systems

To effectively employ the considerable fires assets assigned to brigades and battalion tactical groups, the Russian Army needed to improve its observation capabilities. Two factors drove the need to modernize artillery observation and reconnaissance systems: the introduction of precision weapons and operational environments. First, the advent of precision guided weapons increased the need for more sophisticated observation platforms, requiring real-time data that had margins of error less than 30 meters. Second, the terrain in which the Russian Army believes it will operate—the grasslands and plains of Ukraine and eastern Europe—is flat and open. Flat ground provides little in the way of highpoints to place observers with long fields of observation. Russia's modernization efforts with respect to observation equipment can be divided into three categories: radars, optical sensors, and UAVs.

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[50] Lester W. Grau and Charles K. Bartles, "The Integration of Unmanned Aerial Systems within Russian Artillery," *Fires Bulletin* (July/August, 2016): 37.

[51] Sergey Abdulov, "Russia's Latest Amphibious Tracked Vehicles," *Moscow Defense Brief*, Special Issue on Russian Armoured Cars (2019): 21.

[52] Grau and Bartles, "Russian Artillery Fire Control for Large-Scale Combat Operations," 10.

[53] Roger McDermott, "Russian Military Introduces New Automated Command-and-Control Systems," Jamestown Foundation *Eurasia Daily Monitor* 16, no. 86, 11 June 2019.

Radars

The past decade has seen improvements to and increasing numbers of radar systems assigned to Russian Army maneuver brigades. Russian radar systems at the brigade level fall into three categories: air defense radars, artillery locating radars, and ground sensing radars. The Russian Army's two air defense battalions have numerous stand-alone and integrated radar systems that are dedicated to detecting UAVs, rotary-wing aircraft, and fixed-wing aircraft. The fire control battery at the brigade level has six radar systems: two self-propelled artillery locating radars and four vehicle-mounted ground sensing radars.[54]

Russian artillery locating radars are either the IL-219 Zoopark-1 or IL-220 Zoopark-2 systems. These radars can accurately locate mortar, howitzer, and rocket fires at ranges up to 50 kilometers. They are also capable of locating adversary radar systems through passive electromagnetic spectrum monitoring. The IL-219 can emplace and displace in 15 minutes, while the IL-220 can emplace within 10 minutes.[55] The Russian Army is upgrading its IL-219s to the IL-220, providing additional range, faster emplacement times, better electronic countermeasures, and more robust communications capabilities. Each fire control battery also employs four SNAR-10 vehicle-mounted ground sensor radars. These systems are primarily used to sense and identify moving vehicles out to 40 kilometers, though they also have the ability to locate artillery impacts. The shell impact feature has been used to adjust artillery rounds that go unobserved by other systems.[56] Additionally, each maneuver company within mechanized and motorized brigades are equipped with the FARA-1 dismounted ground sensor radar. These systems provide another observation system that can observe out to 2.5 kilometers.[57] In combination, these radar systems provide the Russian maneuver brigade multiple systems to conduct observation through vehicle and munitions tracking as well as monitoring adversary radar emissions.

Visual Systems

Russian forward observer teams have also seen an influx of modernized equipment since 2008. To improve its visual observation capabilities within frontline units, the Russian Army developed and deployed the PRP-4A Argus artillery reconnaissance vehicle. The PRP-4A includes an optical laser range finder capable of locating vehicles out to 10 kilometers. The system has an additional ground sensing radar for wide scanning observation, is fully digital, and is capable of transmitting target location data directly to the command observation post. Additional improvements have been made to dismounted systems as well, to include man-portable systems

[54] Grau and Bartles, *The Russian Way of War*, 256.
[55] *Worldwide Equipment Guide*, 6–38.
[56] Mark Episkopos, "Russia Might Have a New Way to Kill the Army's 'Big Guns'," *National Interest*, 1 December 2018.
[57] *Worldwide Equipment Guide*, 6–55.

capable of laser-designating targets and accurately locating targets out to 10 kilometers.[58] These systems provide additional observation capabilities to the Russian reconnaissance complex, enabling rapid observation and calls for fire along brigade and battalion tactical group front lines.

UAVs

UAV growth within the Russian Army has grown exponentially in the last decade. Since 2008, Russia has developed and deployed more than 20 new tactical, micro, nano, and medium-altitude long-endurance UAVs.[59] These UAVs are used for observation and electronic warfare attack and support. Russian brigades are assigned one UAV company with three UAV platoons, while micro UAVs are found within maneuver battalions, companies, and platoons.

UAVs have been incorporated into the Russian artillery reconnaissance complex, and Russian forces have extensively operated the Orlan-10 UAV for artillery spotting.[60] The Orlan-10 is a micro-UAV weighing only 35 pounds and possessing an operational range of 140 kilometers. Capable of day and night operations, infrared capabilities, and limited electronic warfare capabilities, the Orlan-10 can locate targets within one meter of accuracy. The Orlan-10 uses both the U.S. GPS constellation and the Russian global navigation satellite system (GLOSNASS) constellation for target and self-location, making it extremely difficult to jam.

Russia continues to rapidly modernize its drone force, with more than 11 new models of UAV being introduced in 2019. Future modernization efforts for artillery reconnaissance UAVs include integrating targeting data directly into the Andromeda and Strelets command and control systems.[61] These UAVs enable the Russian brigade or battalion tactical group commander to conduct wide-ranging reconnaissance of the battlefield without higher headquarters assets. Tying UAVs directly to artillery formations has led to extremely fast acquisition to engagement times with devastating results in both Ukraine and Syria. With the widespread success of UAV employment under combat conditions, the Russian army will only increase its UAV capabilities in the near future.

Electronic Warfare

As Russian military operations commenced in Georgia in 2008, the Russian Air Force lost five aircraft to Georgian air defense systems. Reviews of the engagements revealed that the downed aircraft lacked sufficient electronic warfare defense systems, both on the aircraft itself and within supporting ground forces, to effectively operate against modern air defense systems. In light of the reviews, the Russian

[58] Grau and Bartles, *The Russian Reconnaissance Fire Complex Comes of Age*, 5.
[59] *Russian New Generation Warfare Handbook* (Fort Meade, MD: Asymmetric Warfare Group, 2016), 26.
[60] Grau and Bartles, *The Russian Reconnaissance Fire Complex Comes of Age*, 8.
[61] Grau and Bartles, "The Integration of Unmanned Aerial Systems within Russian Artillery."

ministry of defense made electronic warfare system modernization one of the highest priorities of its "New Look" reforms.[62]

The Russian army has developed electronic warfare systems that perform three types of actions: electronic support, electronic protection, and electronic attack. Electronic support provides intelligence capabilities for the Russian Army, including radio frequency location and direction finding, electronic intelligence, signals intelligence, communications intelligence, and measures and signals intelligence.[63] Electronic protection capabilities provide electronic warfare emissions control and camouflage as well as electronic weapons interference. Russian electronic warfare protection systems have been employed to detonate electronic artillery and missile fuses prior to the weapon systems reaching their targets. Electronic attack systems include the ability to jam enemy radio and satellite communications, spoof GPS systems, jam sensors and create interference for radars and infrared sights, and provide guidance and targeting for weapon systems. These capabilities have been incorporated into dismounted, vehicle-mounted, munition-launched, and UAV systems.[64]

While different electronic warfare systems within Russian brigades have specific uses, all systems are capable of conducting radio frequency direction finding. These systems are closely tied to the command observation posts of artillery units and have been used extensively for targeting within Ukraine and Syria.[65] They provide Russian forces excellent capabilities to disrupt and target adversary electronic warfare and command and control systems, as well as suppressing fires formations.

Tactics

Fires Planning and Execution

The Russian Army is an artillery army. This tradition extends back to World War II, during which Soviet forces were described as a massive artillery formation with an excessive number of combat vehicles. This reliance and focus on artillery continued throughout the Cold War with the development of the Soviet "deep battle" concept, an operating concept based on tactical, operational, and strategic fires ranging and striking enemy formations in depth.[66] Russian formations and tactics continue to revolve around overwhelming fires to attrite and disrupt enemy formations prior to the engagement of maneuver forces.[67] Currently, Russian forces are evolving the strike complex doctrine, in which Russian artillery and fires systems are central to

[62] Niklas Nilsson, "Georgia's Rose Revolution: The Break with the Past," in *The Guns of August 2008*, 87.
[63] Paul McLeary, "Russia Winning Info and Electronic War in Syria, US & UK Generals Warn," Breaking Defense, 9 October 2018.
[64] McDermott, *Russia's Electronic Warfare Capabilities to 2025*, 23.
[65] Ben Brimelow, "Syria Is Now 'The Most Aggressive Electronic Warfare Environment on the Planet,' SOCOM Says," *Task & Purpose*, 26 April 2018.
[66] Grau and Bartles, *The Russian Way of War*, 245.
[67] Amos Fox, "Understanding Modern Russian War: Ubiquitous Rocket, Artillery to Enable Battlefield Swarming, Siege Warfare," *Fires Bulletin* (September/October 2017): 22.

both offensive and defensive operations. This doctrine is finally maturing into an effective option due to modernization of observation and communication systems. Strike complex uses multiple and layered reconnaissance assets (including visual, electronic warfare, radar, and UAV) and new digital command and control architectures to rapidly locate and engage targets with kinetic and electronic fires.[68] These tactics have seen a great deal of improvement and maturation since the 2008 invasion of Georgia and operations within Ukraine and Syria.

The primary objective of the strike complex doctrine at the brigade and battalion tactical group levels is to first overwhelm enemy formations with electronic warfare attacks to disrupt and prevent coordination and then conduct devastating massed artillery strikes and limited precision strikes on high-priority targets. Strike complex executes these missions through dynamic and preplanned targeting methods, while attempting to achieve four categories of effects.[69] It is worth noting that all nonprecision Russian fire missions are targeted at wide areas, not specific targets. While an identified target may form the center of the area fires, individual munitions will rarely target the actual location of the artillery strike.

Dynamic or on-call targets are engaged using two types of fire: individual target and fire concentration. Individual targets are on-call fire missions targeting low-priority targets of opportunity. Russian tactical fire direction elements will usually only dedicate a small number of tubes to engage, typically a battery or platoon of three to six guns. Fire concentration works similarly, but on a much larger scale. These strikes on targets of opportunity are executed with a battalion or multiple battalions that employ a mixture of munitions for increased effect. Fire concentrations target larger formations and are often accompanied by electronic warfare attacks to disrupt early warnings and indicators and to prevent medical evacuations and counterbattery support.[70] One example of a fire concentration attack is the Russian artillery strike on two Ukrainian mechanized battalions at Zelenopillya, Ukraine, in 2014. After laagering for the night, the Ukrainian battalions were observed by a Russian Orlan-10 UAV. Within 10 minutes, the battalions' radio and GPS communications were jammed, and approximately 20 minutes after first observation, the Ukrainian forces received between one and three battalion-size strikes from Russian Tornado MRL systems. These strikes mixed thermobaric and high explosives to devastating effect, in which the Ukrainian battalions suffered more than 150 casualties and almost the complete loss of all their armored vehicles.[71]

Preplanned targets and artillery strikes form an important part of Russian brigade and battalion tactical group tactics. Preplanned fires fall into four types: barrage fire, rolling barrages, massed fire, and successive concentration. Preplanned

[68] Grau and Bartles, *The Russian Reconnaissance Fire Complex Comes of Age*, 6.
[69] Grau and Bartles, *The Russian Reconnaissance Fire Complex Comes of Age*, 7.
[70] Grau and Bartles, *The Russian Way of War*, 257.
[71] Scales, "Russia's Superior New Weapons."

fires are targeted against known and suspected enemy defensive positions or against terrain that the brigade or battalion tactical group is attempting to seize or secure. On-call targets are executed in order of priority, with enemy nuclear systems, artillery systems, FASCAM systems, command posts, and reconnaissance elements considered high-payoff targets.[72]

Russian barrage fire is similar to the U.S. concept of final protective fires. Barrage fires are primarily defensive and planned as a linear target 300–400 meters in front of friendly troops. Artillery units assigned a barrage fire will fire continuously until out of ammunition or requested to cease loading. Rolling barrages are similar but used both offensively and defensively. They are a series of linear targets executed sequentially as maneuver forces advance or withdraw. Rolling barrages prevent enemy forces from accurately engaging or following friendly forces. Russian rolling barrages were employed during the engagements in and around Debal'tseve, Ukraine, in 2015, preventing Ukrainian forces from initially closing with and later retreating from Russian forces.[73] Massed fire is a set of area targets executed simultaneously by multiple battalions. These types of fire suppress wide areas and are used when exact locations of high-priority targets are unknown. Russian forces besieging the Donetsk International Airport in Donetsk, Ukraine, in 2014 employed massed fires to suppress widely dispersed and concealed Ukrainian defensive positions during attacks to seize the airport.[74] Finally, successive fire concentrations use a sequence of area targets along the axis of advance of maneuver forces. These targets are engaged and then shifted based on ammunition expenditure, time, or by request. Examples of successive fire concentration can be seen during the Ukrainian retreat from Debal'tseve. Area targets were established along potential retreat routes and executed in sequence, killing more than 250 Ukrainians and destroying dozens of armored vehicles.[75]

The fire mission types described above are designed to achieve four different effects: annihilation, destruction, neutralization, and harassment. These effects are based on the amount of enemy personnel, equipment, and capabilities that the fires degrade. Annihilation fires are executed by multiple battalions and aim to attrite an enemy until they cannot reconstitute in any form. Destruction fires reduce a unit to combat ineffectiveness, capable of only sporadic resistance. Neutralization fires aim to temporarily deprive a unit of combat effectiveness through disruption, suppression, or destruction of key systems. Both destruction and neutralization fires are executed by battalion-size elements. Finally, harassment fires are used to disrupt enemy formations, tempo, and communications. They are also

[72] Grau and Bartles, *The Russian Way of War*, 245.
[73] Karber, *"Lessons Learned" from the Russo-Ukrainian War*, 28.
[74] Maj Amos C. Fox, USA, *Cyborgs at Little Stalingrad: A Brief History of the Battles of the Donetsk Airport, 26 May 2014 to 21 January 2015*, Land Warfare Paper no. 125 (Arlington, VA: Institute of Land Warfare, Association of the United States Army, 2019), 6.
[75] Capt Nicolas J. Fiore, USA, "Defeating the Russian Battalion Tactical Group," *Armor* (Spring 2017): 16.

used to conduct reconnaissance by fire, attempting to force an adversary to reveal their positions and systems through a response. Harassment fires are executed by single batteries using temporary firing positions.[76] Examples of harassing fires can be found in operations within the Donbas region of Ukraine, during which Russian artillery batteries would fire small harassing missions toward Ukrainian lines. The Ukrainian counterfire would be immediately suppressed by additional battalions on standby to engage any response. These harassment fires resulted in Russian forces attritting Ukrainian artillery units by more than 60 percent during operations in 2014 and 2015.[77]

Artillery Positioning

Whether fighting as a brigade or a battalion tactical group, Russian artillery positioning tactics remain consistent. Due to a lack of fire direction centers for each platoon, communications range limits, and preference for massed fires, Russian forces will often form artillery "parks." These parks are similar to the U.S. concept of position areas for artillery but are occupied by multiple battalion-size elements. Within the artillery park, Russian howitzer batteries will occupy one primary position and have one or two alternate positions established. Batteries will displace and move to their alternate and subsequent positions after expending a certain number of rounds. Howitzer artillery parks are generally located five to 6 kilometers behind the forward line of troops, although Russian artillery positions in Ukraine have been observed as close as 500 meters from the front line.[78] This aggressive positioning during operations in Ukraine enabled Russian howitzer crews to execute direct-fire missions on Ukrainian armored vehicles. Russian artillery forces will also designate a "roving" battery for harassment fires. This battery will leave the artillery park and rotate through several firing positions to execute harassment fires before returning to the park. MLR systems and battalions are often located further to the rear, occupying firing positions 8–10 kilometers from the forward line of troops. Similar to howitzers, MRL units will have a primary and one or two alternate positions.

Russian artillery forces prefer to keep their howitzer and launcher sections relatively close together, with only 30- to 50-meter spacing between systems. This helps facilitate command and control as well as mitigate logistics and communications issues.[79] Radars and observers are placed with maneuver units, operating along the forward line of troops. The Russian tactics for positioning artillery provide advantages for massing fires but leave units vulnerable to detection and counterfire.

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[76] Grau and Bartles, *The Russian Way of War*, 246.
[77] Karber, *"Lessons Learned" from the Russo-Ukrainian War*, 36.
[78] Grau and Bartles, *The Russian Way of War*, 248.
[79] Grau and Bartles, "Russian Artillery Fire Control for Large-Scale Combat Operations," 14.

Observation Tactics

Russian military observation techniques are continuing to evolve as new equipment rolls out to the force, but trends from operations in Syria and Ukraine are emerging. Russian forces are dramatically increasing their use of electronic warfare systems, UAVs, and radars for observation, target location, and adjustments of artillery strikes. These systems can be used as stand-alone observers but are more commonly used in synchronization.[80] A common technique is to first obtain a general location of enemy forces through direction-finding equipment and then send a UAV or a group of UAVs to confirm the location and send targeting data to firing units. Once target locations are confirmed, Russian electronic warfare assets will jam the enemy's communications and artillery fires will commence. Ukrainian reports have estimated the average time between detection and receiving fire to be approximately 10 minutes.[81] Russian UAVs have also been observed adjusting artillery rounds to ensure accuracy. They have been seen operating in groups of three to four, with different systems often being employed on each UAV. One or two UAVs will be equipped for visual observation, one for electronic warfare detection and jamming, and one for communications relay.[82] Russian forces continue to develop and improve their UAV observation tactics, techniques, and procedures through real-life application on the battlefields of Ukraine and Syria.

Russian Fires Complex Vulnerabilities

Despite rapid modernization, improvement in equipment, and reorganization of forces, the Russian brigade, battalion tactical group, and supporting artillery forces have multiple vulnerabilities that U.S. forces can exploit. These vulnerabilities stem from both tactics and equipment design and include centralization of assets and forces, reliance on UAVs and electronic warfare assets for surveillance, and issues with logistics.

Current Russian tactics with regard to artillery support at the brigade and battalion tactical group levels often collocate and centralize assets.[83] The centralization of assets occurs within command and control elements, technical fire direction elements, and firing units. With much smaller staff elements than U.S. counterparts, Russian command and control elements at both the brigade and battalion tactical group levels are often collocated. These elements do not have the personnel or systems to split into multiple command elements, such as a main command post and tactical command post. Russian forces also often collocate artillery command posts with maneuver command posts. This speeds fires in support of maneuver

[80] Niklas Masuhr, *Lessons of the War in Ukraine for Western Military Strategy*, CSS Analyses in Security Policy no. 242 (Zurich, Switzerland: Center for Security Studies, 2019).
[81] Karber, *"Lessons Learned" from the Russo-Ukrainian War*, 42.
[82] Grau and Bartles, *The Russian Reconnaissance Fire Complex Comes of Age*, 9.
[83] Grau and Bartles, "Russian Artillery Fire Control for Large-Scale Combat Operations," 11.

forces but poses risks if located and targeted. The lack of secondary command posts poses an issue when communications are disrupted or the command element is destroyed. Efforts focusing on disrupting and destroying command elements by targeting command observation posts will help desynchronize artillery support and coordination of the brigade or battalion tactical group. Russian technical fire direction assets are also highly centralized, as each battalion and battery only include one fire direction center. The battery fire direction centers are limited to executing battery fire missions and do not directly communicate with observers.

Targeting fire direction centers will produce disproportionate disruption, as eliminating an artillery battalion's fire direction center cuts the communication link with observers and batteries. Targeting battery fire direction centers will prevent guns from operating, as each battery does not have a backup fire direction center and cannot execute technical fire direction of battalion-size elements. In addition to centralizing command and control and fire direction assets, Russian forces also collocate their artillery systems. Battalions and batteries are collocated in artillery parks, with spacing between guns often not exceeding 40 meters.[84] Guns are collocated to ease logistics issues and prevent communications problems. Because communications gear within the launchers and howitzers are extremely limited on range, reducing the distance between systems reduces communications issues. While Russian forces do establish alternate and subsequent positions within their established artillery parks, they often reuse the same firing positions. The Russian preference for collocated units, limited dispersion, and repeated use of positions provides an opportunity for U.S. forces to locate and target Russian artillery systems. Artillery parks have large visual and electronic warfare signatures, and the lack of dispersion makes them vulnerable to counterbattery fires.

Russian forces operating in Syria and Ukraine have begun to develop a reliance on UAV and electronic warfare observation assets for target location.[85] While these systems have proven extremely effective, they are also prone to disruption. UAVs are easily tracked and observed through several methods. Ukrainian forces report that the Orlan-10 UAV, most often used by Russian artillery units for observation, flies at very low altitudes and is easy to spot on the ground.[86] The systems are also easily tracked by radar. UAVs can be disrupted by shooting them down (either with air defense assets or with ground fire) or jammed by electronic warfare assets. Once their UAV systems have been disrupted, Russian forces often struggle to accurately locate enemy forces.[87] Additional means of disrupting UAV reconnaissance include rapid displacement and camouflage. As fire mission times average between

[84] Grau and Bartles, *The Russian Way of War*, 144.
[85] LtCol Benjamin A. Bennett, USA, "Enabling Brigade Combat Team Success in Europe: Lessons Learned," *Military Review* (November/December 2017), 76.
[86] "Ukrainian Troops Shoot Down Russian Drone in ATO Zone," Ukrainian Independent Information Agency, 29 December 2017.
[87] "Ukraine Military Down Russian Drone in Donbass," *Kyiv Post*, 19 November 2019.

10 and 15 minutes after a UAV has located a target, Ukrainian forces have found that displacing within that timeframe prevents being caught in an artillery strike.[88] Returning to traditional military skills such as camouflaging positions has also seen effectiveness in disrupting Russian efforts to employ effective artillery strikes.

UAV Observation Techniques

The last major vulnerability of the Russian brigade and battalion tactical group centers on logistics, especially the replenishment, resupply, and maintenance of front-line units. While Russia plans to field more than 125 battalion tactical groups by 2021, most maneuver brigades are only operating at 50-percent manning levels.[89] While priority is placed on battalion tactical groups, brigades and army groups have few replacement troops and formations to replace front-line losses, which extends to equipment as well. Although Russian modernization efforts have greatly improved the quality of Russian arms, there are not enough systems to equip all units with modern equipment. For example, *Jane's International Defence Review* estimates that Russia has only produced 1,100 2S19M2 howitzers, enough to equip only 112 of the proposed 125 battalion tactical groups.[90] Battalion tactical groups not equipped with the latest equipment will have degraded ranges and capabilities. The more losses suffered by frontline and reserve units, the more frequently less capable equipment will be deployed, including short-range towed howitzers as artillery support.

Russian forces also suffer from resupply issues during extended campaigns. Centralized supply systems that suffer from inefficiencies and disorganization have prevented essential munitions and parts from reaching front-line units. While Russia has made significant strides in improving its strategic and operational logistics systems, significant issues remain at the tactical level.[91] Disrupting and targeting logistics elements would exacerbate issues with an already fragile system. Finally, Russian systems lack the capability to conduct extensive field maintenance. The growing complexity of systems in conjunction with a less-than-robust logistics system creates issues in keeping equipment fully operational. With these logistics issues, Russian forces will seek short, intense operations to seize objectives and inflict casualties to mitigate replenishment and resupply issues associated with long-term conflicts.

Current U.S. Stryker Brigade Combat Team Organization

The current U.S. Army unit on the "front lines" of Eastern Europe is the 2d Cavalry Regiment, a Stryker Brigade Combat Team (SBCT). The SBCT is organized similarly

[88] Karber, *"Lessons Learned" from the Russo-Ukrainian War*, 42.
[89] Grau and Bartles, *The Russian Way of War*, 27.
[90] *The Czar of Battle*.
[91] Grau and Bartles, *The Russian Way of War*, 61.

to both Army infantry and armored brigade combat teams, and units are equipped with variants of the Stryker M1126 Infantry Carrier Vehicle. The SBCT contains three infantry battalions, one reconnaissance squadron, one artillery battalion, one support battalion, and one engineer battalion. The engineer battalion contains only one engineer company but also includes a signal company and a military intelligence company. The SBCT contains approximately 4,000 soldiers and is capable of conducting independently sustained operations for five days.[92] With higher echelon logistics support, the SBCT can function independently on the battlefield, executing missions without requiring task-organized support.

The field artillery battalion within the SBCT contains three firing batteries, one headquarters battery, and a forward support company. These batteries provide the SBCT with 18 M777A2 155-millimeter towed howitzers, one radar platoon with five radar systems, and enough ammunition carrying capacity to support combat operations for two days. Howitzer batteries are organized into two platoons of three howitzers and one fire direction center each, providing the capability to execute widely dispersed operations.[93] The M777A2 is capable of ranging 19 kilometers with conventional munitions such as high-explosive, smoke, incendiary, and FASCAM rounds. Rocket-assisted projectiles can range up to 30 kilometers, and precision-guided munitions, such as the M982 Excalibur round, can range up to 40 kilometers.[94] The forward support company contains a transportation platoon for resupply and a maintenance platoon for field repairs. The headquarters element provides battalion staff support, a radar platoon, and a medical platoon. The radar platoon is currently equipped with one ANTPQ-36 and one ANTPQ-37 trailer-mounted fire-finder radar for counterbattery operations, though these systems are being upgraded to the ANTPQ-53 vehicle-mounted system. The radar platoon also operates three ANTPQ-50 vehicle-mounted fire-finder radars. The SBCT's towed artillery battalion is capable of providing a variety of direct support fires for the maneuver commander.

The U.S. Army has recently reintroduced the division artillery formation. With a return to the division as the primary tactical fighting formation during large-scale ground combat operations, the Army reestablished division artillery as the force field artillery headquarters for the division.[95] These organizations have been established as the fire support element for the division, but they do not have any assigned fires assets and only consist of staff elements.

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[92] *Brigade Combat Team*, Field Manual 3-96 (Washington, DC: Department of the Army, 2015), 1-8.
[93] *The Field Artillery Cannon Battery*, Army Tactics, Techniques, and Procedures (ATP) 3-09.50 (Washington, DC: Department of the Army, 2017), 3-18.
[94] *Worldwide Equipment Guide*, 6–31.
[95] Burket, *Large-Scale Combat Operations*, 2.

Comparing Russian and U.S. Tactical Fire Support Systems

The Russian Army brigade and battalion tactical group have some significant advantages over the U.S. Army's SBCT in terms of artillery and fire support assets. Russian forces hold an advantage in range, number of launcher systems, and observation systems. Adding Russia's electronic warfare capability advantages at the tactical level increases the disparity between Russian and U.S. capabilities. A Russian brigade contains 36 howitzers, 18 MRL systems, and 4 long-range radars, compared to the SBCT's 18 howitzers and 2 long-range radars. Even compared to the Russian battalion tactical group, which has 12 howitzers and 6 MRL systems, the U.S. SBCT finds itself outgunned and outranged.

An additional problem facing U.S. Army artillery formations is the organization of fires systems. Currently, Army artillery formations have no organic long-range reconnaissance platforms. While SBCTs do contain a UAV platoon, its four UAVs are shared across all four maneuver battalions as well as the brigade's S2 (intelligence) cell. These assets are primarily tasked to maneuver units and objectives. Russian formations regularly supply artillery formations with UAVs that are dedicated to hunting down and locating enemy fires assets. The ability to conduct long-range reconnaissance specifically for artillery targets provides the Russian fires complex additional advantages during operations.

Reorganizing U.S. Army Artillery Formations

To effectively combat Russian forces, the U.S. Army should focus on reorganizing and restructuring division artillery elements within each division. Based on current force projections and structure, the U.S. Army will not outnumber Russian artillery pieces on the battlefield. While manning an equal number of artillery battalions is too cost prohibitive, the U.S. Army can defeat Russian formations through reorganization. Using division artillery, a centralized artillery formation within the division, division commanders can either weight artillery assets toward the decisive effort or spread fires assets evenly throughout the division. Centralizing artillery within division artillery provides a more flexible option for employing artillery than the current direct support battalion concept. Division artillery will also possess an expanded set of capabilities, including MRL units, dedicated UAV assets, dedicated logistics, and a more robust radar package. The redesigned division artillery will have three howitzer battalions, one MRL battalion, one air defense battalion, one support battalion, one target acquisition battery, one UAV company, and a headquarters element.

This proposed structure would support a division with three subordinate brigades that could provide the commander with a wide range of flexible options for artillery employment. With the ability to mass large numbers of howitzers and an MRL capability for long-range and precision fires capabilities, the division can accomplish any fires task required without requesting additional assets.

The division artillery headquarters and headquarters battery would remain unchanged from current division artillery structures. The battery would continue to house the division artillery staff elements, fire support element, medical platoon, and signal support platoon. The medical and signal support platoons would be more robust than the medical and signal support elements found within the battalions, enabling division artillery to train and support subordinate platoons.

The target acquisition battery would reform within division artillery. Consisting of a headquarters element and three radar platoons, the battery could train and manage radars across the battlefield. Each platoon would consist of seven radars: three ANTPQ-53s and four ANTPQ-50s, which would represent an increase in three ANTPQ-53s across the division. Platoons could be employed by assigning them direct support roles with a habitually related howitzer battalion or operating under centralized control across the division's area of operations. The additional radars, whether employed in a decentralized or centralized manner, would provide much greater operational flexibility and survivability than the current two-radar structure. With three vehicle-mounted radars, one system can be operational and scanning for counterfire operations, one system emplacing or resupplying, and one system moving to a subsequent position. This three-system "leap-frog" technique provides better coverage of the battlefield, reducing the amount of time that friendly units are not under the protection of radar surveillance. Under the current two-system construct, brigades are often left without radar coverage while systems are moving or down for maintenance. Operating three systems also allows for shorter queuing from any single radar, reducing the radar's exposure to enemy electronic warfare detection assets. Reintroducing an enhanced target acquisition battery to division artillery provides increased flexibility and reliability of counterfire radar coverage for the division, enabling effective location and targeting of Russian fires assets.

The revised division artillery would include a UAV company structured to provide long-range observation, signals intelligence, and communications relay capabilities. The UAV company would contain a headquarters element and two UAV platoons. The two UAV platoons will be equipped with two variants of a trailer-launched UAV, one equipped for electronic warfare detection and visual observation and the other equipped for radio retransmission. These UAVs should have operational ranges of more than 100 kilometers and loiter times exceeding nine hours. These range and loiter times allow for the UAVs to continuously scan for targets at the maximum range of the artillery systems or provide uninterrupted communications relay support. The U.S. Army's current AAI RQ-7A Shadow UAV meets these requirements, and with the Army currently searching for a replacement, adequate numbers of the RQ-7A may be available to field within division artillery for-

mations.[96] The UAVs would be directly assigned missions and tasks by the division fire support element and the division artillery commander, providing targeting information and communications relay without retasking UAVs from supporting maneuver forces. These UAVs would fill the aerial observer role that Cessna O-1 Bird Dog pilots filled during the Korean and Vietnam wars. After action reviews from those conflicts highlighted the importance of aerial observers, and a robust UAV capability tied directly to the division artillery formation would return those benefits to the entire division.[97]

The restructured howitzer battalions would remain relatively unchanged with three firing batteries, a headquarters battery, and a forward support company. Changes would be made to the platoon structure and the equipment used by the battalion. The current configuration and equipment of the direct-support field artillery battalions supporting SBCTs have several issues, including a lack of resupply vehicles, too few guns per platoon, and the towed howitzers themselves. The reorganized howitzer battalions would add an ammunition platoon to each battery, increase the number of howitzers per platoon from three to four, and replace the M777A2 towed howitzer with a self-propelled system.

During the Army's transition to the brigade combat team in the early 2000s, a majority of ground transportation assets were divested from the unit force structure.[98] Numbers of transportation trucks—primarily the Heavy Expanded Mobility Tactical Truck (HEMTT) and Family of Medium Tactical Vehicle (FMTV) systems—were cut by roughly half, leaving brigade combat teams with inadequate transportation assets. Sustainment battalions organic to brigade combat teams have struggled to supply multiple infantry and artillery battalions during large-scale exercises at the National Training Center at Fort Irwin, California, and the Joint Readiness Training Center at Fort Polk, Louisiana.

Each field artillery battalion currently has a forward support company with a transportation platoon, but this platoon is also inadequate to supply the three subordinate firing batteries. The forward support company's transportation platoon is responsible for supplying the firing batteries and headquarters elements with all classes of supply, and it suffers from the same issues that the brigade's support battalion does during simulated combat exercises. Currently, each artillery platoon has three FMTV ammunition trucks, totaling six per battery. These trucks are capable of carrying a maximum of 650 complete rounds (fuse, projectile, and/or propellant). Based on average expenditure rates during combined training center rotations, 650 rounds are usually expended within 24 hours of combat operations.[99] Heavy fir-

[96] Connie Lee, "Army Looks to Replace RQ-7 Shadow," *National Defense*, 12 April 2019.
[97] Bernard C. Nalty, George M. Watson, and Jacob Neufeld, *An Illustrated Guide to the Air War over Vietnam: Aircraft of the Southeast Asia Conflict* (New York: Arco Publishing, 1981), 72.
[98] Burket, *Large-Scale Combat Operations*, 64.
[99] *CTC Trends: FY 2017*, Center for Army Lessons Learned Bulletin 18, no. 14 (Fort Leavenworth, KS: Center for Army Lessons Learned, 2018), 79.

ing cycles consisting of obscuration missions, counterfire operations, and FASCAM emplacements will deplete a battery's ammunition stockpile significantly faster. While howitzer batteries have ammunition trucks that are separate from the prime movers, these vehicles are crewed by the howitzer sections. A battery cannot send these ammunition trucks to a resupply point without sending howitzer crewmen, which either degrades the crew's capabilities or prevents the gun from firing when reduced to fewer than seven crewmembers.

The addition of an ammunition platoon to each firing battery would greatly improve operational capabilities. A small platoon of 16 soldiers operating four FMTVs with trailers and two high mobility multipurpose wheeled vehicles (HMMWV or humvee) could be sent to ammunition holding areas without interrupting firing operations. In addition to enabling battery firing operations, an ammunition platoon would provide tactical flexibility. An ammunition platoon loaded with special munitions, such as smoke or FASCAM, could establish hasty ammunition points for howitzers to fall in on and execute smokescreen or minelaying missions. The ammunition platoon will also reduce the stress on the forward support company. Working in conjunction with the forward support company, an ammunition platoon can effectively halve the distance transportation assets need to travel from higher unit supply areas to the firing elements. The addition of an ammunition platoon to each firing battery would greatly increase tactical flexibility and improve sustainment operations.

Changes to artillery force structure during the last 15 years have seen artillery platoons reduced in size from four guns to three. Three-gun howitzer platoons have decreased combat effectiveness and are unable to effectively execute many basic fire missions. While executing fire for effect missions, smaller platoons inflict significantly fewer enemy casualties. The addition of a single gun can dramatically increase the effects of fire missions, providing maneuver commanders better support. The smaller platoons also cannot effectively execute basic fire missions independently. For example, building a 200-meter-long smokescreen with three guns takes more than 25 more rounds and approximately 8 more volleys than a four-gun platoon.[100] This leaves the platoon in position for up to five minutes longer and dangerously exposed to counterfire. Range-spread illumination missions are also impossible to execute with a three-gun platoon. Increasing the number of howitzers per platoon to four would greatly increase the effectiveness and tactical flexibility of artillery units.

Modern advancements in acquisition technology and assets make the battlefield increasingly lethal and have dramatically increased the pace of warfare. The increased battlefield awareness of enemy forces and speed at which targets can be engaged have made speed and mobility a critical factor in survivability. The M777A2

[100] *Field Artillery Manual Cannon Gunnery*, ATP 3-09.83 (Washington, DC: Department of the Army, 2018), 15-34.

towed howitzer is too slow and cumbersome to survive on today's battlefield and needs to be replaced with a self-propelled howitzer. Russian forces can effectively execute fire missions on targets within five minutes of accurately locating a target.[101] This poses a significant problem for U.S. Army M777A2 units, which require an average of nine minutes to displace and begin moving to a new location. While 9 minutes is the standard, the average M777A2 battery displaces in 14 minutes during training rotations at the National Training Center.[102] Towed howitzer platoons will not survive during future combat operations. Highlighting this lack of survivability is the 80-percent casualty and equipment loss rate of Ukrainian towed artillery systems in combat against Russian forces. Using the D30 122-millimeter howitzer, which is faster to displace and move than the M777A2, Ukrainian artillery forces have been devastated during operations in the Donbas and Donetsk. On the other hand, Ukrainians have suffered only 15-percent casualties among frontline self-propelled howitzer formations.[103] The U.S. Army's current self-propelled howitzer, the 155-millimeter M109A7 Paladin, can emplace and displace within 45 seconds, drastically improving its survivability. The Army must upgrade field artillery units within SBCT formations with self-propelled howitzers to increase survivability on today's battlefield.

Division artillery will be task-organized with an MRLS battalion, providing organic long-range and precision fires to the division. SBCT-supported divisions will be equipped with the M142 High Mobility Artillery Rocket System (HIMARS), providing the division standard MRL capabilities that include both guided and unguided rockets as well as the MGM-140 Army Tactical Missile System (ATACMS). The immediate benefit of adding a HIMARS or MRL battalion to division artillery is the drastic increase in range, extending ranges to 70 kilometers with rockets and to 300 kilometers with the ATACMS. Additional rocket munitions are in development to extend the range of the HIMARS to 499 kilometers.[104] The 70-kilometer range on the HIMARS provides the division commander with an asset that can match the range of the latest Russian MRL systems that are currently supporting brigades and battalion tactical groups. The HIMARS can act as a dedicated counterbattery force as well as a precision strike asset for high-value targets. The increased range, destructive power, speed, and accuracy of HIMARS munitions makes the platform ideal for ranging deep into enemy formations to disrupt key systems. Functioning as a pseudo-general support artillery unit within the division, the HIMARS battalion can position itself to support wide frontages during division maneuvers, enabling the cannon systems to be centralized to support the main effort.

[101] Grau and Bartles, *The Russian Reconnaissance Fire Complex Comes of Age*, 6.
[102] *CTC Trends*, 81.
[103] Karber, *"Lessons Learned" from the Russo-Ukrainian War*, 47.
[104] *Worldwide Equipment Guide*, 6–72.

A battalion provides tactical flexibility without support from outside units. Currently, the U.S. Army task-organizes a HIMARS battery to deployed units and brigades training at combat training centers. HIMARS batteries have been attached to brigade combat teams in 16 of the last 18 combat training center rotations to provide support for training brigades. These HIMARS units often become the main source of artillery support for the brigade due to their ability to range targets without lengthy repositioning and engage from beyond counterbattery ranges.[105] While task-organizing HIMARS batteries to brigades during training is an adequate solution, during a large-scale conflict in Europe or another theater, the limited number of HIMARS units that are currently in the Army may prevent support to every brigade combat team and division. If HIMARS batteries are task-organized to brigade combat teams, the corps and division levels will lose their general support and reinforcing artillery formations.

The Army has already recognized the need for additional HIMARS and MRL battalions, with plans to create four new battalions during the next two years. These units should be built into the new division artillery formation, establishing training, support, and operational familiarity within a supported division.

Almost all short-range air defense assets were removed from the active-duty U.S. Army during the past 15 years, leaving maneuver and artillery forces exposed to aerial threats. With the increasing threat of drone observation and strikes, as well as the possibility of facing adversaries who possess rotary-wing and fixed-wing assets, the reorganized division artillery should include a short-ranged air defense (SHORAD) battalion. Comprised of three batteries, the SHORAD battalion could provide the division and supported SBCTs with air defense systems that protect against medium-range missiles, UAVs, helicopters, and fixed-wing aircraft flying close air support missions. Retaining an air defense battalion at the division level provides the division with the flexibility to protect key assets as opposed to spreading air defense systems thinly across the battlefield.

The SHORAD battalion should be equipped with two types of systems: a mobile system designed to keep pace with frontline units and a point defense system for defending logistics areas and command posts. The Army is currently designing two systems for these exact purposes: the Maneuver-SHORAD (M-SHORAD) vehicle and a trailer-mounted multimission launcher. An M-SHORAD system based on a Stryker vehicle and using FIM-92 Stinger surface-to-air missiles will enter service in 2020.[106] Additional M-SHORAD systems using guns and lasers to inexpensively down cheap micro-UAVs are also in development. To guard fixed logistics sites and command posts, the Army is purchasing the Israeli Iron Dome air defense system until a domestic system is developed. All these systems will be assigned to

[105] *CTC Trends*, 87.

[106] Jared Keller, "The Army's Beastly New Short-Range Air Defense Turret Is Moving Full Steam Ahead," *Task & Purpose*, 12 March 2019.

independent air defense battalions.[107] Not organizing these systems and units into maneuver forces will slow deployments, training, and familiarity of employment. The most effective organization of these SHORAD assets is within the division and assigned to division artillery.

Conclusion

In their current configurations, Russian ground forces hold considerable advantages over U.S. ground forces at the division and brigade levels. The number and types of weapon systems, electronic warfare assets, and target location systems provide Russian forces the ability to outrange, outgun, and fire more responsively than U.S. forces. The Russians have not achieved this overmatch through new or exotic technology, but rather through a focused modernization effort to upgrade systems and reorganize those assets into a more efficient structure. Other adversaries have watched Russia's operations in Syria and eastern Ukraine intently, learning and upgrading their own fires complexes. The U.S. Army can degrade and match Russia's current advantages by reequipping and reorganizing its own artillery forces. Reintroducing the division artillery structure, providing additional assets, and equipping the formation with new launchers and acquisition assets will provide U.S. ground forces at the division and brigade levels with organic systems capable of overmatching current adversary threats.

[107] Jen Judson, "It's Official: US Army Inks Iron Dome Deal," *Defense News*, 12 August 2019.

A Ready and Resilient Force

Applying Lessons from U.S. Military Resilience Programs to the U.S. Agency for International Development

By Erin N. Wroblewski, U.S. Agency for International Development[1]

> *I used to think that I was kind of hardened to suffering and misery. . . . You learn to deal with it and hold it at bay while you are working. It's when you're alone that it creeps up on you.*
>
> ~ Paul E. Arès[2]

In a 2015 article appearing in *The New York Times*, Rosalie Hughes writes, "An idyllic Mediterranean beach in Tunisia is not usually a place of high anxiety, but that's where I spent the worst day of my life. I hadn't slept in three nights and called in sick to work because I could no longer think. I felt I was losing my mind and spent the day as a zombie on the beach, feeling empty and alone on the sand."[3] Hughes describes a scene familiar to many aid workers who, like her, respond to manmade and natural disasters and work in situations of seemingly intractable conflict and poverty. Like members of the military, aid workers are affected by occupational stress and trauma. Unlike the U.S. Army or Marine Corps, however, the U.S. Agency for International Development (USAID) does not implement compulsory programs to promote individual resilience and well-being among employees. Instead, USAID's resilience programs are offered on request and often as a resource for those in distress. The consequences are similar for many people who have untreated or unmanaged stress and trauma: substance abuse, suicide, violence, and self-harm. The U.S. military has yet to perfect resilience programs, but the U.S. Department of Defense (DOD) has studied the issue and tried to inculcate resilience skills across the armed forces. USAID and other civilian agencies that require employees to face grave risk and consequences should also pursue resilience as a component of workforce readiness, supervisory support, and leadership. USAID would benefit from an approach to fostering resilience skills among all employees rather

[1] Ms. Wroblewski is a graduate of MCU's Command and Staff College. This paper was nominated for the LtGen John A. Lejeune Award for academic year 2019–20.

[2] Paul E. Arès, "Watching for the Signals," in *Sharing the Front Line and the Back Hills: Peacekeepers, Humanitarian Aid Workers and the Media in the Midst of Crisis*, ed. Yael Danieli (Amityville, NY: Baywood, 2002), 117.

[3] Rosalie Hughes, "A Crisis of Anxiety among Aid Workers," *New York Times*, 8 March 2015.

than using *resilience* as a term for the kind of support necessary to help employees in distress.

U.S. foreign policy professionals in the areas of defense, diplomacy, and development face professional stress and trauma in service of foreign policy goals. National security professionals, including military personnel, diplomats, and development workers, face prolonged separation from family and friends. They may also be targets of violence. Additionally, national security professionals are at risk of experiencing secondary trauma in working alongside people or populations who have experienced famine, war, violence, and loss. It is in the interest of both the nation and the individual to ensure that national security policy professionals can learn skills that will help buffer stress responses and help them recover from stress and trauma.

The term *resilience* has become an increasing part of the vocabulary of such government service organizations as the DOD, the U.S. Department of State (DOS), and USAID. While definitions vary and jargon abounds, there is an emerging set of practices that prepare individuals to manage stress and respond to it. The purpose of this chapter is to expand the findings from military resilience programs to USAID. USAID workers face stress and trauma, but the organization has not implemented institutional resilience programs similar to those that the U.S. military offers uniformed servicemembers. To understand the need for these types of programs, it is important to define resilience, which allows for exploring some practices that may foster it to move beyond jargon and establish a discourse within USAID that has positive outcomes for aid workers. An examination of U.S. Army and Marine Corps efforts to foster resilience performed here highlights the useful points of references they provide. Military examples can inform USAID resilience programming in terms of what may work and what has proven problematic in fostering resilience. Once the term resilience is unpacked and military examples are detailed, this chapter will offer recommendations about how this body of knowledge may be extended to diplomats and development professionals.

Defining Resilience

Resilience is a desirable attribute in national security professionals, yet literature and programs define it differently. Before USAID or any military program can pursue resilience, there must be a common understanding of the concept. The American Psychological Association offers a useful starting place and defines *resilience* as

> the process of adapting well in the face of adversity, trauma, tragedy, threats, or significant sources of stress—such as family and relationship problems, serious health problems, or workplace and financial stressors. As much as resilience involves "bouncing back" from these difficult experiences, it can also involve profound personal growth.

> . . . Being resilient doesn't mean that a person won't experience difficulty or distress. People who have suffered major adversity or trauma in their lives commonly experience emotional pain and stress. In fact, the road to resilience is likely to involve considerable emotional distress. . . . [Resilience] isn't necessarily a personality trait that only some people possess. On the contrary, resilience involves behaviors, thoughts, and actions that anyone can learn and develop. . . . [Research] has shown that resilience is ordinary, not extraordinary. One example is the response of many Americans to the September 11, 2001 terrorist attacks and individuals' efforts to rebuild their lives after tragedy.[4]

Resilience can be defined positively or negatively. Positive resilience includes learned behaviors, abilities, and characteristics, as well as a set of attributes that enable recovery, growth, or adaptation after exposure to stress or trauma. Negative resilience includes absences of post-traumatic stress, absences of symptoms of mental illness, or better-than-expected outcomes following stress or trauma. Positive and negative definitions of resilience are not mutually exclusive, and the absence of illness or injury may accompany the presence of positive behaviors and characteristics. For the purpose of crafting resilience among national security professionals who face stress and potential trauma in service of the United States, positively defining resilience as the presence of something rather than the absence of something else is more useful. Defining resilience as a set of skills allows for resilience to be both learned and taught. Positive definitions and skill-building create space for individual agency. The use of a positive definition allows an institution to take proactive measures to address stress and trauma rather than wait for stressful or traumatic events to occur. The U.S. military has accepted positive definitions of resilience and taken steps to teach those skills to soldiers and Marines rather than wait to treat signs of distress. Civilian agencies should pursue similar positive resilience programs.

Resilience can describe both individuals and groups. For the purpose of this analysis, defining group resilience is not a goal, though understanding how groups impact individuals is critical. Groups affect how individuals respond to traumatic or stressful stimuli and play a role in individual resilience. Positive resilience behaviors can become individual habits, and individual behaviors can impact group dynamics. For the purposes of this analysis, the important question is how professional units can reinforce individual resilience behaviors. For example, military programs emphasize the necessity for units to create positive command climates

[4] "Building Your Resilience," American Psychological Association, 1 January 2012.

in which leaders demonstrate and encourage resilience skills and peers reinforce those individual behaviors. The concept that the military refers to as a "positive command climate" is applicable to USAID and other civilian agencies. In this chapter, the individual, rather than the organization or institution, will remain the unit of analysis. The author will examine groups in the context of their influence on individuals.

The subsequent discussion of resilience will be individually focused and positive. The *Journal of Special Operations Medicine* offers a useful discussion about ways to define resilience for government agencies that aim to promote it among employees. The adapted definition of resilience used in this analysis is derived from this discussion: "A multidimensional psychological process that facilitates healthy functioning or psychological growth to cope with intense life-stressors."[5] This definition is useful because it considers the presence of skills and is focused on the psychological processes that can be employed against life stressors and trauma. This definition allows for the measurable presence of skills that may be employed prior to exposure to stress or trauma and lets resilience to develop as a preemptive measure rather than as a subsequent treatment. With this characterization in mind, it is necessary to examine resilience skills and the evidence of how they work for individuals.

Interventions to Promote Individual Resilience

Examining some of the component parts of resilience behaviors, to include physical, mental, and social resilience, will help overcome the jargon in literature and more clearly illustrate what positive resilience behaviors may include. Within these categories, the subsequent pages will describe practices and behaviors that can constitute resilience programs. It is useful to examine not only the skills that make up the resilience skill set but also data and findings from literature on how they may contribute to better individual outcomes. Developing an understanding of the granular components of resilience will make the discussion of military resilience programming clearer and provide a concrete set of ideas for conceptualizing resilience programs for USAID.

Physical Resilience

Resilience programs are best when they include multiple domains. Biological and physical aspects of resilience are important, but they function as part of a broad set of behaviors and skills. Learned stress factors can trigger reactions within the sympathetic nervous system. The sympathetic nervous system governs the human "fight or flight" response and activates heartbeat, respiration, and increased blood

[5] Kate Rocklein-Kemplin et al., "The Myth of Hyperresilience: Evolutionary Concept Analysis of Resilience in Special Operations Forces," *Journal of Special Operations Medicine* 18, no. 1 (Spring 2018): 56.

pressure. External stressors can induce the body to produce hormones, such as cortisol, that aid the body in responding to an external threat with extra energy. The biological stress response is a healthy part of how humans function, but harmful effects can emerge under chronic stress or perceived threats. Threat perception plays a role in physical stress. Individuals differ in how they recognize threats, and occupational training or conditioning such as military training may change the way an individual sees and responds to a stimulus. Activation of a stress response may be learned in one setting and applied in a different context. For example, military servicemembers may learn to recognize roadside obstructions as potential explosive devices in a conflict zone. When returning home to lower-threat environments, servicemembers may continue to perceive roadside obstructions as threats, which could contribute to prolonged stress responses.

Prolonged activation of stress responses can lead to inflammation, which is positively correlated with cardiovascular disease, depression, anxiety, and other conditions. While the complex investigation of neuroscience is beyond the scope of this chapter, it is critical to understand the links between external stress factors—both real or perceived—and overall health. One scientist accurately sums up the key message: "though psychological stress may often 'all be in our heads,' it can still have very real effects on physiology, and ultimately, health."[6]

Genetics also play a role in an individual's response to stress, though genetics are not a determining factor in their wellness. Efforts to screen a person for resilience on the basis of their genetics or biology are shortsighted and ignore the fact that these factors are influences on but not predictors of individual health. Some research has demonstrated that early-life stress factors can cause modifications to a person's DNA that change its transcription or expression. Epigenetics refers to the effect that nongenetic influences have on gene expression or transcription. Early-life stress can also change neural responses including increased cortisol production. While scientific literature demonstrates the effects that early-life stress can have on epigenetics, current research is not sufficiently advanced to predict behavior later in life.[7] Understanding epigenetics helps make the case that stress and trauma can leave lasting biological markers in human beings, but individuals still have the ability to learn and demonstrate resilience. Examining an individual's fitness for stressful circumstances in terms of their genetics misses the point that positive resilience is a teachable set of skills that can be applied regardless of any predispositions.

Positive coping skills are frequently studied in high-stress professions with potential for traumatic exposure, including the military, law enforcement, and first

[6] Keely A. Muscatell and Naomi I. Eisenberger, "A Social Neuroscience Perspective on Stress and Health," *Social and Personality Psychology Compass* 6, no. 12 (December 2012): 900, https://doi.org/10.1111/j.1751-9004.2012.00467.x.

[7] Elisabeth Conradt, "Using Principles of Behavioral Epigenetics to Advance Research on Early-Life Stress," *Child Development Perspectives* 11, no. 2 (June 2017): 110, https://doi.org/10.1111/cdep.12219.

responders. While resilience involves a set of behaviors and skills rather than any single practice, physical fitness is a common practice among many. Regular physical activity and associated physical attributes, such as cardiovascular and muscular strength and appropriate levels of fat and nutrition, are a common part of multifaceted resilience. The U.S. Army has found that high levels of physical activity and fitness are associated with reduced instances of anxiety and depression.[8] The Army goes further to conclude that the "higher the level of aerobic fitness, the greater the ability to tolerate high workloads and be minimally stressed by low ones."[9] Other literature emphasizes the point that physical activity can reduce the amount of stress hormones in the body and induce a feeling of calm that combats perceived stress and mental distress.[10] Pulse and respiration are measures of physical stress, and Army inquiries found that physical exercise is associated with appropriate cardiovascular function and lower levels of stress hormones in the body. Physical fitness is an element of overall resilience, but it is insufficient on its own.

The key takeaways here are that stress and trauma produce physical manifestations and that physical skills can contribute to an individual's ability to manage stress and trauma. The military has recognized this, and it is reflected in military resilience programs. USAID may also consider physical fitness as a teachable practice in fostering individual resilience.

Mental Resilience

Mental resilience is another common component of the resilience toolbox. It encompasses cognitive processes that help individuals cope with stress, trauma, or adversity. Some elements of mental resilience emerge in literature as skills that can be learned prior to traumatic exposure to prepare individuals to healthfully cope. The goal of teaching and learning these behaviors is not to prevent stress reactions or protect individuals from experiencing stress but to prepare people to recognize it and cope with it. Some of the skills that can be taught and learned for individuals in the Armed Services and other types of national security professions include systematic self-reflection, self-compassion, and mindfulness meditation. Like physical exercise, cognitive processes are teachable skills that are honed over time through practice and can promote healthy outcomes. Numerous cognitive processes and methods are documented in resilience literature, and a smaller set has been tested and applied with members of the military. The following skills and processes have been evaluated among military servicemembers or first responders. The purpose of detailing these practices here is to illustrate how mental resilience skills can be taught and learned to ensure that individuals are prepared to positively cope or

[8] Patricia A. Deuster and Marni N. Silverman, "Physical Fitness: A Pathway to Health and Resilience," *U.S. Army Medical Department Journal* (October/December 2013): 25.

[9] Deuster and Silverman, "Physical Fitness," 26.

[10] Jada Hudson, "Exercise Does More than You Think," *Fire Engineering* (September 2018): 12.

"rebound" rather than turn to negative coping mechanisms like substance abuse or violence.

Systematic self-reflection is "a process of self-inquiry [that] enables an individual to make decisions about what are effective and desirable behaviours in a given demanding situation."[11] Self-reflection is a pathway to self-efficacy, a consistent quality attributed to resilient individuals. In essence, individuals assess their own responses to past conflicts, stresses, or traumas and evaluate how they responded or coped. This process can be taught and learned as a way to prepare to confront future stressors. Self-reflection calls for individuals to first identify goals and values for preserving health or honoring honesty in confronting stress. Then, individuals learn to identify how they have used adaptive and maladaptive coping mechanisms in the past. Maladaptive mechanisms include harmful behaviors, such as substance abuse or violence. Adaptive coping mechanisms, such as talk therapy or physical exercise, are examples of positive coping. The purpose of self-reflection is to establish self-efficacy, or whereby an individual is able to "take responsibility for their actions and accept that they have abilities."[12] A study of military servicemembers in Australia found that "coping and emotion regulatory self-reflection may encourage the application of useful strategies and reinforce personal resilient capacities and coping self-efficacy."[13]

Self-compassion is another teachable practice associated with mental resilience. Like systematic self-reflection, individuals can learn and preemptively build this skill to help cope with stress or trauma. Self-compassion derives from Buddhist tradition and consists of attention toward suffering, intentionality regarding suffering, and motivation to alleviate suffering.[14] The practice of self-compassion emerged from psychological inquiry into positive coping and cognition. It presents an alternative approach to fostering self-esteem, which has been seen as "largely the outcome of doing well, not the cause of doing well."[15] Self-compassion, unlike self-esteem, involves recognizing difficulty. It starts with reflection and progresses toward accepting stress and trauma. Beyond accepting stress and trauma, individuals learn to address negative emotions with equanimity. Kristen Neff, a leading researcher of self-compassion, offers research-based evidence that "higher levels of self-compassion have been associated with greater life satisfaction, emotional intelligence, social connectedness, learning goals, wisdom, personal initiative, cu-

[11] Monique Crane and Danny Boga, "A Commentary: Rethinking Approaches to Resilience and Mental Health Training," *Journal of Military and Veterans' Health* 25, no. 1 (January 2017): 30.

[12] Hilda Loughran, *Understanding Crisis Therapies: An Integrative Approach to Crisis Intervention and Post Traumatic Stress* (London: Jessica Kingsley, 2011), 92.

[13] Monique F. Crane et al., "Military Police Investigator Perspectives of a New Self-Reflective Approach to Strengthening Resilience: A Qualitative Study," *Military Psychology* 31, no. 5 (August 2019): 384, https://doi.org/10.1080/08995605.2019.1645537.

[14] Regina Hiraoka et al., "Self-Compassion as a Prospective Predictor of PTSD Symptom Severity among Trauma-Exposed U.S. Iraq and Afghanistan War Veterans," *Journal of Traumatic Stress* 28, no. 2 (2015): 127–33, https://doi.org/10.1002/jts.21995.

[15] Krisen Neff, "The Space between Self-Esteem and Self-Compassion," YouTube video, 19:00, TEDx Talks, 6 February 2013.

riosity, happiness, optimism, and positive affect, as well as less self-criticism, depression, anxiety, fear of failure, thought suppression, perfectionism, performance goals, and disordered eating behaviors."[16] Within the U.S. military, one longitudinal study examined the practice of self-compassion and its effect on combat veterans. The study concluded that this skill "may influence the degree of chronicity of PTSD symptoms among Iraq and Afghanistan war veterans. As such, increasing self-compassion may be beneficial to some Iraq and Afghanistan war veterans who are struggling with PTSD symptoms."[17] Though there are therapeutic effects for post-traumatic stress, self-compassion can be inculcated in the absence of stress and trauma as a preemptive mechanism.

Mindfulness, related to self-compassion and self-reflection, is a cognitive process that contributes to individual resilience. Mindfulness occurs when an individual pays attention to the present moment without judgment. The practice emphasizes the agency of the individual and awareness of emotions to regulate them. Mindfulness can be taught and learned and have measurable effects on stress in the body. Developing the capacity for mindfulness has proven useful for members of the military. Mindfulness-based interventions have been the subject of scientific inquiry in the context of depression, anxiety, and post-traumatic stress disorder (PTSD). While the types of mindfulness-based interventions vary, there is consensus in the literature that "when patients are open to learning mindfulness meditation and committed to adopting it as a health behavior change, it can become a powerful self-care tool that encourages individuals to actively engage in enhancing their mental health."[18]

Social Resilience

In addition to physical fitness and mental health, interpersonal relationships and social networks influence individual resilience. Examining how groups and communities shape resilience is worthwhile, particularly in the military, in which unit function and cohesion are critical. Belonging to a cohesive community, family, faith-based group, or professional unit can promote individual ability to cope with stress and trauma. Social support plays a role in trauma recovery, and building social cohesion is a preemptive resilience-building measure. Social resilience is "the capacity to foster, engage in, and sustain positive relationships and to endure and recover from life stressors and social isolation."[19] It can lead to improved outcomes

[16] Neff, "The Space between Self-Esteem and Self-Compassion."

[17] Hiroaka et al., "Self-Compassion as a Prospective Predictor of PTSD Symptom Severity among Trauma-Exposed U.S. Iraq and Afghanistan War Veterans."

[18] Marina A. Khusid and Meena Vythilingam, "The Emerging Role of Mindfulness Meditation as Effective Self-Management Strategy, Part 1: Clinical Implications for Depression, Post-Traumatic Stress Disorder, and Anxiety," *Military Medicine* 181, no. 9 (September 2016): 967, https://doi.org/10.7205/MILMED-D-14-00677.

[19] John T. Cacioppo, Harry T. Reis, and Alex J. Zautra, "Social Resilience: The Value of Social Fitness with an Application to the Military," *American Psychologist* 66, no. 1 (January 2011): 44, https://doi.org/10.1037/a0021419.

for individuals facing stress or trauma and can be a positive alternative to maladaptive mechanisms.

A common theme in literature is the value that interpersonal relationships including friends, family, professional associations, and other social groups have on individual psychology. Social support questions are common features of diagnostic tools, such as the U.S. Army's Global Assessment Tool (GAT), that seek to identify an individual's risk and coping factors associated with a variety of mental health challenges. Social structures can contribute to an individual's sense of belonging, purpose, and self-worth. Social structures may function as a protective structure during stress and trauma or an outlet for sharing individual thoughts or feelings in response to perceived threats or stressors.[20] It is important to note that social structures can also contribute to harmful or negative coping. The presence or absence of social structures in an individual's life does not automatically equate to positive coping. The extent to which these systems can influence individual resilience depends on their characteristics. Efforts to promote resilience must not stop at fostering social connections alone. They must ensure that social relationships are characterized by the types of interaction that help individuals positively cope.

Supportive social structures can be both familial and nonfamilial relationships. The important quality of these structures is not the type or even frequency of interactions, but rather the prevailing dynamics within a group. Healthy social groups can support individual resilience in two ways: through appraisal support and emotional support. *Appraisal support* refers to social interactions that assist an individual in defining and understanding the stress or trauma that they may have experienced. Individuals who have relationships, either family or nonfamilial networks, to whom they can turn for appraisal support may be better prepared to manage stress and trauma or cope with a particular event. *Emotional support* refers to the sense of belonging that an individual may find in a social group. Emotional support contributes to self-worth, which may be degraded by a stressful or traumatic event.[21] The important consequence of this finding is that resilience programs should not focus on the type of social group or interaction, such as a family, professional unit, or faith community, but rather the characteristics of the group.

The theory of resilience and relational load (TRRL) is useful for understanding and assessing how intimate relationships impact individual resilience. TRRL asserts that external stressors influence close relationships. Maintaining intimate relationships can improve emotional capital between partners and guard against harmful effects of stress and trauma. Conversely, relationships that are neglected or lack

[20] R. H. S. van den Brink et al., "Prognostic Significance of Social Network, Social Support and Loneliness for Course of Major Depressive Disorder in Adulthood and Old Age," *Epidemiology and Psychiatric Sciences* 27, no. 3 (June 2018): 266–77, https://doi.org/10.1017/S2045796017000014.

[21] Magen A. Day, "The Role of Social Support During Post-Deployment Reintegration in the Army National Guard" (master's thesis, University of North Carolina at Charlotte, 2017), 14–15.

committed levels of positive maintenance may become sources of stress. TRRL advocates for individuals to practice regular interpersonal relationship maintenance through communication, supportive actions, and conflict resolution. Building positive patterns within relationships improves the ability of each individual in a relationship to cope with external stress and trauma in ways that lead to positive outcomes.[22] TRRL supports the assertion that merely having an intimate relationship is insufficient as a positive coping strategy. The character of intimate relationships is the critical factor in ensuring that they support individual resilience. The positive relationship maintenance descriptions in TRRL provides further evidence that social resilience skills can be taught, learned, practiced, and improved over time.

The family genogram is a tool that individuals can use for assessing kin relationships and understanding the extent to which those social relations foster positive connections. The genogram originated as a tool for examining the relationships between members of a family, but family therapists have adapted it in a number of ways to analyze relationships between members of an ethnic group or professional group. The family genogram is a graphic depiction of a family that shows links between generations and individuals and includes information related to lived experience, such as military service or domestic abuse. Clinicians use this tool to assess how family dynamics may affect an individual. It can also help identify risk factors for transmission of trauma through family members and protective factors within the family.[23] Clinicians and social workers who have used the genogram within military families highlight its utility: "From a solution-focused perspective, the clinician works in collaboration with clients, highlighting strengths that can enhance resilience and self-efficacy and therefore contribute to improved individual and family functioning and wellbeing."[24] Tools like the genogram require administration by professionally trained practitioners. Ultimately, these tools demonstrate that intentional examination of family networks is possible as a preemptive element of enhancing resilience and need not be used only as part of post-trauma or stress recovery.

The U.S. Army's Comprehensive Soldier Fitness (CSF) program draws on social resilience as one among many positive resilience skills. The program uses modules to enhance soldiers' awareness of their roles within a group, particularly their professional unit, and to allow them to view themselves as part of a cohesive whole. The function of spiritual resilience is partially rooted in social resilience. Faith-based groups can provide appraisal and emotional support to individuals who are part of their group. The GAT includes spiritual resilience among its battery of eval-

[22] Tamara D. Afifi, Anne F. Merrill, and Sharde Davis, "The Theory of Resilience and Relational Load," *Personal Relationships* 23, no. 4 (December 2016): 663–83, https://doi.org/10.1111/pere.12159.
[23] David R. Hodge, "Spiritual Ecograms: A New Assessment Instrument for Identifying Clients' Strengths in Space and Across Time," *Families in Society: The Journal of Contemporary Social Services* 86, no. 2 (April 2005): 291, https://doi.org/10.1606/1044-3894.2467.
[24] Eugenia L. Weiss et al., "The Military Genogram: A Solution-Focused Approach for Resiliency Building in Service Members and Their Families," *Family Journal* 18, no. 4 (October 2010): 405, https://doi.org/10.1177/1066480710378479.

uation questions. Evaluation of the program has found that "The point is made that soldiers are more likely to fight effectively and adapt to the hardships and challenges they will confront if they are more inclusive about those around them—their team—rather than simply considering themselves."[25]

In sum, a combination of physical, mental, and social skills and habits can prepare individuals to better respond to stress and trauma through increasing feelings of self-worth and belonging and reducing feelings of helplessness or loneliness. While biology plays a role, it is not a determinant of well-being. Resilience skills can be successfully taught and learned, and in the case of social support, interpersonal relationships can be examined or built to provide healthful coping mechanisms both to and through stress and trauma. Understanding the building blocks of resilience is a good starting place for understanding resilience programming.

Resilience Programming in the U.S. Army and Marine Corps

Resilience in the U.S. Army

The U.S. military has developed and deployed multiple resilience building programs and tools. Some have been short-lived, including the curiously named U.S. Air Force program "One Shot One Kill: A Culturally Sensitive Program for the Warrior Culture."[26] Others have proven more enduring and productive. Resilience programs in the Army are noteworthy for their preemptive nature, focusing on building a multidimensional set of positive skills as opposed to developing resilience as a measure of care following distress or trauma. The Army programs are also inclusive of all soldiers, not only those at most risk of experiencing stress and trauma. The Army's CSF and associated Master Resilience Training (MRT) programs foster positive skills for managing stress and trauma among soldiers. These programs are interdisciplinary and do not promote a singularly biological or neurological approach to resilience. The Army's holistic approach includes physical fitness, social connectedness, spirituality, and emotional well-being, which are consistent with best practices. Other Army programs, such as "Battlemind" training, prepare units for combat. While Battlemind training is relevant to resilience, it focuses on combat readiness, whereas the CSF is Army-wide and available both in garrison and during deployment.

CSF was first designed in 2009 "to increase the resilience and enhance the performance of soldiers, their families, and Army civilians. The definition of resilience is the mental, physical, emotional, and behavioral ability to face and cope with adversity, adapt to change, recover, learn and grow from setbacks."[27] The program addresses all soldiers, regardless of whether they exhibit outward signs

[25] Cacioppo, Reis, and Zautra, "Social Resilience," 49.

[26] Travis K. Lunasco et al., "One Shot-One Kill: A Culturally Sensitive Program for the Warrior Culture," *Military Medicine* 175, no. 7 (July 2010): 509, https://doi.org/10.7205/MILMED-D-09-00182.

[27] "Comprehensive Soldier Fitness: Building Resilience and Enhancing Performance," U.S. Army, accessed December 2019.

of traumatic stress or distress. A key feature of the program is the GAT, which is a self-assessment of an individual's resilience in five areas: social, emotional, family, spiritual, and physical.[28] The Army requires soldiers to take the GAT annually. The GAT is designed to identify areas in which soldiers have strong resilience practices and beliefs. The tool also identifies soldiers who may need support to face challenges. Data collected from the GAT is available to individual commanders and aggregated by the Army. The program has been the subject of both praise and criticism. For example, an early iteration of the GAT included a battery of questions regarding spirituality that tended to identify nonreligious soldiers as being at risk or not resilient, regardless of their scores in other areas.[29] While imperfect, the GAT offers a baseline for the Army to evaluate force resilience and year-on-year trends.

MRT is a "train-the-trainers" program designed to help Army officers promote resilience within their units. The Army developed the seven-module MRT curriculum in conjunction with the Positive Psychology Center at the University of Pennsylvania. MRT complements the GAT and emphasizes mental and emotional skills. The curriculum includes mindfulness and social resilience by assessing and strengthening interpersonal skills. The Army has measured the outcomes of the MRT program relative to GAT scores by evaluating groups that received MRT-trained officers against a control group during 15 months in 2010–11. The GAT scores of eight randomly selected brigade combat teams (BCTs) were used to examine the MRT program. The conclusions of the assessment were generally positive about the outcomes of MRT interventions: "Four [BCTs] received MRT and four did not. Over the 15-month period, [GAT] scores of the four BCTs receiving the training were significantly higher than the others, irrespective of other variables, such as unit leadership and cohesion."[30] However, the assessment was inconclusive in determining which elements of MRT were most effective, and further inquiry is necessary to measure the impact of individual components of MRT.[31]

The Army has championed the CSF program as effective at promoting positive and preemptive resilience largely because of its multidisciplinary nature. Nevertheless, CSF has received criticism of its management and implementation as well as its effects. Assessments of the CSF and other resilience programs in the military are particularly useful when they include qualitative feedback from individual participants and implementers in addition to quantitative results. One soldier who experienced the program within their unit published a critique of its implementation stating:

[28] "Comprehensive Soldier Fitness."
[29] Annie Laurie Gaylor, "Flunking the Army's Spirituality Test," *Progressive* (May 2012): 27.
[30] David Vergun, "Studies Validate Master Resilience Training," *Infantry* 101, no. 1 (January/March 2012): 3.
[31] Paul B. Lester et al., *The Comprehensive Soldier Fitness Program Evaluation*, report no. 3, *Longitudinal Analysis of the Impact of Master Resilience Training on Self-Reported Resilience and Psychological Health Data* (Washington, DC: Department of the Army, 2011), 27.

> We assessed the MRT program, and it did not fully attain our objectives within the unit. It became just an additional duty. First, the MRT was not a billeted position. The first battalion MRT held the position for three weeks, and then the Army put him on orders for recruiter duty. Second, battalion leaders believed MRTs and resilience training assistants were doing what squad leaders should be doing in the first place.[32]

The soldier went on to pair their critique with praise for other outcomes of the program, including a heightened awareness of resilience and the ability of leaders to better discern risk factors among soldiers.[33]

Another critique of MRT centers on its content and outcomes. Stephanie Smith offers a perspective that the CSF program shifts responsibility for distress from the institution to the soldier. She writes:

> CSF's focus on correcting individual service members' coping skills and resilience, however, may deflect attention from alternate determinants of mental health outcomes, such as multiple redeployments and prolonged periods of combat related stress. This deflection could hinder a more robust understanding of how the current conflicts in the Middle East affect the health and functioning of U.S. service members.[34]

Smith goes on to caution Army implementers and clinicians to be aware of the consequences of the program and monitor individuals who may feel that distress on their part is attributable to personal failure to learn and abide by the strategies outlined in the program.

Resilience in the U.S. Marine Corps

Like the Army, the Marine Corps has made increasing mention of resilience during the past decades and introduced resilience training for Marines. Resilience research and practice have included predeployment training and post-deployment transitions. Marine Corps doctrine and publications address resilience, though use of the term and understanding of its utility diverges. Some Marines advocate for resilience as "a developed mindset" and seek to develop it among Marines.[35] Others

[32] LtCol Daniel S. Morgan, USA, and 1stSgt Vincent Simonetti, USA, "Comprehensive Soldier Fitness and Talent Management: Building Resilience for the Future," *Army* (January 2014): 52.
[33] Morgan and Simonetti, "Comprehensive Soldier Fitness and Talent Management," 53.
[34] Stephanie L. Smith, "Could Comprehensive Soldier Fitness Have Iatrogenic Consequences?: A Commentary," *Journal of Behavioral Health Services and Research* 40, no. 2 (April 2013): 244, https://doi.org/10.1007/s11414-012-9302-2.
[35] LtCol Michael Jernigan, "You Can't Get a Pearl without Grit," *Marine Corps Gazette* 98, no. 6 (June 2014): 45.

refer to resilience as a static quality that should be measured among aspiring Marine recruits. Marine Corps writers and publications champion elements of resilience, such as "grit" or "mental toughness," without providing a deeper definition of those qualities. While measuring resilience is a useful exercise for determining an individual's ability to thrive in the presence of stress, trauma, and adversity, it should not be used as a factor to determine the suitability of an individual for recruitment or a particular duty.

While the concept of resilience in the Marine Corps is nothing new, programs to purposefully foster resilience have emerged in the past two decades. Early mentions of resilience as a multidimensional process aimed at positively coping with stress and trauma date back to the 1980s and 1990s. Major Joseph J. McMenamin describes individual resilience as an element of force readiness in a 1991 *Marine Corps Gazette* article discussing the need to manage stress, develop meaningful social ties, and rely on trusted leadership: "During training, the soldier, and certainly the officer, can be given enough knowledge about human nature under the stresses of the battlefield that when it comes his time to go forward, he can make tactical use of what he knows in the same way that he applies what he has learned about his equipment."[36] This statement advances the notion that resilience is not a static skill, but rather is as teachable as equipment maintenance.

Recent and current programming illustrates how the Marine Corps understands resilience. In 1999, the DOD issued Directive 6490.5, which stated that "[Combat Stress Control] policies and programs shall be implemented throughout the Department of Defense to enhance readiness, contribute to combat effectiveness, enhance the physical and mental health of military personnel, and . . . prevent or minimize adverse effects of Combat Stress Reactions."[37] Marine Corps resilience programs developed in response to the directive refer to combat and operational stress (COS). The COS model differentiates between *combat stress* and *operational stress*, the latter being stress that is associated with life outside of combat. *Combat and Operational Stress Control*, Marine Corps Tactical Publication (MCTP) 3-30E, describes the approach to understanding and addressing COS.[38]

The COS doctrine is organized in five areas: strengthen, mitigate, identify, treat, and reintegrate. According to the doctrine, strengthening the ability of Marines to positively cope with stress is a leadership responsibility. It acknowledges the multidisciplinary nature of resilience and describes its physical, mental, spiritual, and social elements. While the doctrine emphasizes attributes such as willpower, self-confidence, and courage, it falls short of providing meaningful evidence-based pathways or resources for achieving those end states. It describes discipline, ethics,

[36] Maj Joseph J. McMenamin, "Developing a Continuous Operations Capability," *Marine Corps Gazette* 75, no. 2 (February 1991): 65.
[37] *Department of Defense Directive 6490.05, "Combat Stress Control (CSC) Programs"* (Washington, DC: Department of Defense, 1999), 2.
[38] *Combat and Operational Stress Control*, Marine Corps Tactical Publication 3-30E (Washington, DC: Headquarters Marine Corps, 2016).

and vision, but further programming is necessary to ensure that Marine leaders are equipped to effectively promote individual resilience among Marines.

COS doctrine discusses mitigation techniques that are consistent with evidence-based findings about positively coping with stress. Mitigation involves actions that both individual Marines and the larger Marine Corps itself can take. Individual actions for leaders include recognizing signs of maladaptive coping and addressing them, enabling a positive command climate, fostering peer support, and addressing family cohesion. At a higher level, the doctrine suggests institutional responsibilities such as minimizing the length of deployment or underway periods to reduce extended exposure to stress or trauma. While the doctrine is a sound basis for leaders, it offers little for individual Marines seeking to build positive resilience. A primary difference in the Army and Marine Corps approaches to resilience is agency. In the Army's CSF program, an individual soldier has agency in examining their own resilience. Marine Corps doctrine and programs, on the contrary, place the onus on leaders to inculcate resilience among Marines and recognize when additional assistance is necessary.

The Marine Corps Operational Stress Control and Readiness (OSCAR) program was established around the same time that the Army developed the CSF program. OSCAR embedded mental health providers with Marines and trained leaders to recognize signs of stress and refer Marines for care. A 2015 Rand Corporation study of the program determined that it improved health-seeking behavior among Marines, but the study did not recommend that the program continue due to the fact that it had no measurable impact on key mental health outcomes.[39] The Rand analysis aligns with the findings of other research that critique the Marine Corps' emphasis on identification and referral rather than a holistic approach. Frank Tortorello and William Marcellino write:

> Though there are worthwhile components of the U.S. Navy/Marine Corps [combat and operational stress] doctrine, we believe these are undermined by its emphasis on identifying stress symptoms, constructing command climates that support Marines asking for help, and providing professional medical treatment for distressed Marines.[40]

The Marine Corps now defunct Center for Advanced Operational Culture Learning (CAOCL) conducted a study of resilience in the Marine Corps in 2013, with the final report drawing similar conclusions regarding the utility of resilience as both pre-

[39] Gery W. Ryan et al., *A Program Manager's Guide for Program Improvement in Ongoing Psychological Health and Traumatic Brain Injury Programs* (Santa Monica, CA: Rand, 2014), 24, https://doi.org/10.7249/RR487.4.

[40] Kerry Fosher et al., "CAOCL-TECOM Resilience Research Project" (unpublished manuscript, Center for Advanced Operational Culture Learning, Marine Corps University, Quantico, VA, 2013).

emptive and multisectoral as opposed to a biological response subsequent to exposure to stress or trauma. This research is an informative basis for further analysis. The work responded to the Commandant of the Marine Corps' call for improving resilience and examined the subject from a social science perspective rather than something biological or neuroscientific. The CAOCL study found that while resilience is a multidimensional process with physiological, mental, spiritual and social dimensions, the Navy and Marine Corps "recognize stress primarily as a physical condition, measurable, for example, by the levels of the hormone cortisol in the pituitary and adrenal systems."[41] The researchers offer an alternative approach to fostering resilience that is consistent with an understanding of resilience as a set of positive skills rather than the absence of illness or injury. This approach is both useful for the Army and relevant to USAID.

Resilience in Foreign Aid and Development

Like military servicemembers, USAID employees are public servants who work within the national security architecture of the U.S. government. However, differences in organizational culture affect how lessons from the military can translate to resilience programming for civilians. USAID employees and military servicemembers face similar stresses. USAID professionals often work overseas where they are separated from social networks and face threats including violence, communicable disease, and vicarious trauma when they respond to others in distress. The United Nations Office for the Coordination of Humanitarian Affairs collects data on violence against aid workers and reported in 2019 that "2018 was the second worst year on record for aid worker security, with 405 aid workers affected by major violence in 226 separate attacks."[42] Violence against aid workers occurred in conflict settings such as Syria as well as public health emergencies such as the Ebola pandemic in the Democratic Republic of Congo. The heightened risk of experiencing stress and trauma calls for heightened measures to increase personal resilience.

USAID employees, especially those serving outside of the United States, face unique challenges. Unlike aid workers associated with politically neutral parties such as the International Committee of the Red Cross, USAID employees are sometimes viewed as instruments of U.S. national power or parties to a conflict. USAID's mission statement reflects that its work purposefully advances American interests, stating that "USAID is the world's premier international development agency and a catalytic actor driving development results. USAID's work advances U.S. national security and economic prosperity, demonstrates American generosity, and promotes a path to recipient self-reliance and resilience."[43]

[41] Fosher et al., "CAOCL-TECOM Resilience Research Project," 9.
[42] Abby Stoddard et al., *Speakable: Addressing Sexual Violence and Gender-Based Risk in Humanitarian Aid*, Aid Worker Security Report 2019 (Washington, DC: U.S. Agency for International Development, 2019), 2.
[43] "What We Do," U.S. Agency for International Development, accessed December 2019.

Contrary to nongovernmental aid organizations such as Médecins sans Frontières (Doctors without Borders), USAID efforts are always aligned with national policy and do not claim neutrality.[44] USAID implementing partners often cooperate with military forces and jointly serve stabilization or other objectives.[45] Outside of active conflict zones, USAID implementing partners can use armed security, which changes their profile from organizations that eschew weapons. As a result, USAID workers and partners have been treated as combatants, particularly by criminal or insurgent groups that disregard laws of armed conflict and diplomatic protections.

USAID foreign service officers and host nation employees have been deliberately targeted and killed. Some aid workers have suffered through trauma and distress as a result of their work. The death of a USAID foreign service officer in Afghanistan in 2012 alongside three U.S. soldiers illustrates the gravity of danger that aid workers face.[46] In 2010, insurgents in Afghanistan targeted USAID-funded implementers, killing four, injuring others, and leaving survivors with lasting PTSD.[47] Violence against aid and development workers is not limited to conflict zones. In 2016, religious extremists murdered USAID employee and gay rights activist Xulhaz Mannan in a machete attack in his home.[48]

While some elements of stress and trauma are similar for military servicemembers and USAID employees, there are important differences. A source of stress and trauma that USAID employees may be more likely to face than military servicemembers is vicarious trauma or secondary traumatic stress. People who serve traumatized beneficiaries including refugees, victims of violence, and victims of gender-based violence can experience secondary traumatic stress, which "occurs as a result of indirect exposure to trauma through a firsthand account or narrative of a traumatic event."[49] Secondary traumatic stress is also present in military populations, but programs such as the Army's CSF and the Marine Corps' OSCAR do not specifically address it.

Stress and trauma associated with real violence or the perceived threat of violence has health consequences including depression, anxiety, and post-traumatic stress. Operational stress, to borrow from the Marine Corps vocabulary, also affects USAID employees. Some organizations, such as the Headington Institute and Greenleaf Integrative, offer comprehensive mental health and behavioral health services that are tailored to the needs of international development professionals. The Headington Institute works with humanitarian organizations and other first

[44] *USAID Policy on Cooperation with the Department of Defense* (Washington, DC: U.S. Agency for International Development, 2015).
[45] *USAID Policy on Cooperation with the Department of Defense*, 8.
[46] Josh Rogin, "USAID Officer Killed in Afghanistan," *Foreign Policy*, 9 August 2012.
[47] Ivy Mungcal, "Taliban Attacks Target USAID Contractors in Afghanistan," Devex, 19 April 2010.
[48] Saad Hammadi and Aisha Gani, "Founder of Bangladesh's First and Only LGBT Magazine Killed," *Guardian*, 25 April 2016.
[49] Siddharth Ashvin Shah, Elizabeth Garland, and Craig Katz, "Secondary Traumatic Stress: Prevalence in Humanitarian Aid Workers in India," *Traumatology* 13, no. 1 (March 2007): 59, https://doi.org/10.1177/1534765607299910.

responders to support the long-term well-being of professionals in those fields.[50] The Greenleaf Integrative works with a range of clients in "highly demanding environments to protect the wellbeing and resiliency of their employees and organizations."[51] The presence of organizations such as these demonstrates that a host of humanitarian and development organizations need support and that there are professionals available to help.

USAID has the opportunity to learn from the U.S. military and better prepare its employees for stressful work. A 2019 article in the *European Journal of Psychotraumatology* makes a compelling case for the need to foster preemptive resilience among aid and development professionals:

> Organizations need to develop prevention policies and strategies to make their aid-workers feel more connected to their role at work, and the goals and vision of the organization, which eventually may benefit their wellbeing and health. Organizational policy makers need to realize that it is their responsibility to better equip aid-workers with the support needed to mitigate negative ramifications of trauma work on the physical and mental health, as well as the intimate relationships of aid-workers. Organizational support interventions are recommended to incorporate physical health as well as mental health strategies for aid-workers, since it is crucial, as an organizational pledge, to care for the caregivers to enhance their capacities in caring for the traumatized in humanitarian emergencies.[52]

While USAID recognizes the necessity for fostering positive resilience in the workforce and makes resources available for employees, there is room for growth. USAID's Office of Human Capital and Talent Management (HCTM) Staff Care section is responsible for implementing wellness programs. Staff Care offers resources for USAID personnel worldwide, which includes wellness coaching. Resources are available to staff by phone when they access a 24-hour hotline.[53] These programs are implemented by non-USAID staff who are based in the United States. USAID offers a global wellness questionnaire for all employees to take free of charge, though it requires individuals to use their own initiative to access it, unlike the GAT, which is a standardized tool for U.S. soldiers. USAID Staff Care programs are not imple-

[50] "Who We Serve," Headington Institute, accessed December 2019.
[51] "Our Services," Greenleaf Integrative, accessed December 2019.
[52] Niveen Rizkallaa and Steven P. Segal, "Trauma during Humanitarian Work: The Effects on Intimacy, Wellbeing and PTSD-Symptoms," *European Journal of Psychotraumatology* 10, no. 1 (2019): 10, https://doi.org/10.1080/20008198.2019.1679065.
[53] "Staff Care," U.S. Agency for International Development, accessed December 2019.

mented by USAID personnel but rather outsourced to non-USAID vendors and not tailored to the needs of aid workers. While the U.S. military uses programs such as OSCAR and MRT to bring care and support proximate to its servicemembers, USAID does not collect personal information for those who access services or track data on staff resilience. This lack of information is in direct contrast to the Army, which collects and analyzes year-on-year GAT data.

The DOS, as USAID's parent organization, provides some resilience resources that USAID employees can access.[54] DOS predeparture training is required for all overseas employees via the Foreign Affairs Counter Threat (FACT) program. The FACT program is administered by the DOS's Diplomatic Security Service (DSS) during five days of onsite training at a DSS-affiliated training center. Currently, the FACT program includes a one-hour module for all personnel entitled "Lifestyle Management," which encompasses certain aspects of resilience including physical fitness and mitigation of maladaptive coping mechanisms such as substance abuse.[55] The FACT program is the only mandatory training program for USAID employees that includes material on positive resilience.

The DOS's Foreign Service Institute (FSI) also offers resilience training to USAID employees in Washington, DC, via the FSI Transition Center. The suite of resilience courses available through the FSI include "Building Your Resilience," "Resilience Leadership," and "Encouraging Resilience in Your Foreign Affairs Child." These programs are optional and unavailable to USAID workers serving overseas.[56] Accessing the FSI resilience programs takes proactive efforts on the part of Washington-based employees and the consent of their supervisors, who may or may not be disposed to allow for required training programs.

While the case for fostering preemptive resilience among aid workers is strong, the methods and programs for doing so remain unclear. While examining military programs is a useful exercise, some differences should be noted up-front. The extent to which foreign service officers exercise individual autonomy is greater than the autonomy afforded to military servicemembers. The U.S. military restricts and governs the actions of its servicemembers within the boundaries of their professional responsibilities and in their lives outside of duty. Members of the military are accustomed to their professional leaders acting *in loco parentis*, governing their whereabouts, their physical appearance, their exercise, and their sleep habits and often counseling servicemembers about personal relationships and finances.

USAID employees enjoy greater autonomy than military servicemembers, though extremes in behavior, such as alcoholism or domestic violence, garner the

[54] The author is relying on their firsthand experiences as a foreign service officer as the basis for this material. The U.S. government programs listed here are not discussed in literature. The discussion is based on the author's own professional inquiry within the DOS and USAID.

[55] "Foreign Affairs Counter Threat," Federal Law Enforcement Training Centers, accessed December 2019.

[56] "Resources for Resilience during COVID-19 from the Foreign Service Institute," Department of State, accessed December 2019.

attention of their superiors. The prevalence of chaplains in the military, who often take on roles of significance to fostering resilience, are absent at USAID. While chaplains cannot fulfill the role of clinically trained mental health providers, they can serve as a safe entry point for military servicemembers seeking mental health care, both preemptively and *ex post facto*. For those who seek to foster spiritual practices as an element of resilience, chaplains can help. USAID employees lack a similar intermediary. Physical fitness also plays a prominent role in the military. While fitness is only one element of positive resilience, military servicemembers are compelled to be physically fit to perform their duties, which has a residual benefit for positive resilience. USAID employees are required to meet a minimum standard of medical fitness to serve overseas, but they are not governed by the same physical fitness standards as military servicemembers.

USAID workers represent a population distinct from the military, but they can benefit from learning some of the military's positive resilience behaviors and practices. The organizational differences between military and civilian institutions require different implementation modalities and points of entry. The military resilience-building programs, such as the Army's CSF, can be useful to USAID employees insofar as they take a multidisciplinary and preemptive approach to fostering resilience among all members of the profession, not only those who are distressed. USAID can and should approach positive resilience-building in a similar multidisciplinary manner, but it must be implemented within the cultural norms of the civilian institution. For example, while the Army can require soldiers to take the GAT and report their answers to their immediate leadership, USAID may make the use of such a tool voluntary and limit the information and resources for personal use. While the military places the onus on leadership to ensure the personal resilience of servicemembers, civilian culture is less invasive and must leave the initiative up to the individual while providing resources for those who wish to access them.

Recommendations for USAID

USAID has the ability to learn from the military and help employees foster positive resilience behaviors. To do this, USAID can take concrete steps to improve resilience. The fundamental change required is to proactively support employees in developing positive coping skills for stress and trauma. The current paradigm within USAID is that individuals must recognize their need for resilience support and take individual action to find and access resources for building resilience. On the contrary, the U.S. Army and Marine Corps have recognized that stress and trauma are risks of the working environment and resilience programs must not be driven by demand only from employees who are already experiencing distress. Like the military, USAID can and should take action to inculcate resilience skills for the entire workforce and restate the importance of resilience with regularity.

A USAID effort to promote resilience among employees should start with agency leadership. Supporting change requires the buy-in and advocacy of the agency administrator. The administrator and other key leaders, to include the Senate-confirmed heads of USAID's regional and function bureaus and the chief of the HCTM office, can become champions for resilience. An initial step for USAID would be to place resilience on the agenda of the Administrator's Leadership Council (ALC). One purpose of ALC meetings, which are chaired by the USAID administrator and attended by senior leaders, is to look at specific issues that require the attention of the leadership team. These senior USAID leaders are responsible for the safety, security, and well-being of all USAID employees. By adding resilience to the agenda of the ALC, USAID would demonstrate a cross-agency commitment to the well-being of its workforce. In the context of the ALC, USAID can devise a plan of action to ensure that a meaningful suite of resilience skill-building resources are made available to employees worldwide. Such a plan should start with the acknowledgment that resilience is not a treatment for individuals in distress, but rather a set of skills that will enhance the well-being of the workforce and influence the quality of work that USAID professionals deliver. The ALC should consider adopting a positive definition of resilience for individuals and plan for methods to make staff aware of what it means to be resilient. It would be useful for USAID to adapt the resilience definitions discussed in the *Journal of Special Operations Medicine* because they illustrate that resilience is positive, teachable, and preemptive. A conversation about preemptive resilience at the highest levels of an agency can set an agenda for change within the organization.

USAID can and should seek out champions throughout the organization that help provide resilience resources to individuals. USAID should recognize the role of subordinate leadership in fostering resilience and take these resources out of the exclusive domain of the Staff Care section and senior leaders in Washington, DC. The most important leaders for encouraging and enabling resilience skill-building are those who are proximate to individuals. As one U.S. soldier said in reference to the Army's MRT program, fostering resilience "is what squad leaders should be doing anyway." USAID should make efforts through overseas mission directors, deputy mission directors, or executive officers to ensure that staff members are aware of resources, have access to them, and make use of them before they are in distress. Identification of champions both overseas and in Washington who are close to their peers is critical for ensuring that resilience skills are part of the toolbox of every USAID employee, regardless of their duty station. Resilience champions should be those who are willing to learn about the skills that individuals need to enhance resilience, who are aware of the resources that USAID has available to promote resilience, and who are visible and approachable at missions overseas. For resilience efforts to succeed, USAID must foster a multilevel and multiparty network of champions who can reach out to staff and to whom USAID staff can turn.

A resilience agenda for USAID should carefully consider individual agency. Unlike the military, USAID does not mandate individual skill-building, such as physical fitness, or provide agency resources for social or spiritual matters. Though individuals in USAID are less subject to personal oversight than members of the military, the agency can and should seek institutional entry points to addressing resilience and create a network of champions who can promote a resilience agenda. While resilience skill-building should be voluntary for USAID employees, it can be encouraged by professionals at every level of the institution. Peers, supervisors, and leaders may not mandate resilience skill-building, but they can provide resources to employees and make the case for resilience as a part of professional growth. Entry points for encouragement and referral may include regular supervisory check-ins, predeparture consultations, or engagements at overseas posts through the community liaison officer. These occasions and milestones are regular enough to reinforce the message of positive coping and to help individuals build and reinforce skills.

Incorporating resilience should happen in two ways. First, individuals should be equipped with a robust understanding of what resilience means. Second, they should have access to skill-building resources from USAID. Supervisory check-ins, for instance, are required through the performance management system. Including resilience as a voluntary part of performance management may be a useful way to highlight resilience alongside individual professional development. Like the Army's GAT tool, a USAID resilience tool could be part of the performance self-assessment, for individuals to use rather than a way of measuring performance. Supervisors can also use professional development check-ins to gauge employee interest in resilience and to express support for resilience skill-building. Providing a purpose as well as a means for individuals to act supports resilience skill-building without crossing the boundaries between professional and personal behavior that differ between civilian and military institutions.

USAID should also emphasize preemptive resilience as opposed to referral for care. As the military has demonstrated, treating someone who is ill or suffers a moral injury is costlier and more difficult than fostering positive coping in advance of stress or trauma. USAID should not only encourage staff to reach out for help in times of crisis or distress but also make resilience part of every employee's professional development plan or at least use supervisory check-ins to raise awareness about resources available before crisis and distress. Resilience is not a static set of skills, but instead can be built over time and practiced. The USAID skills matrices are the standards against which every USAID employee is measured. Among the skills on the matrix are promoting the skills and talents of subordinates. Incorporating encouraging messages for resilience-building into the skills matrices for all USAID supervisors can create an entry point that is both proximate to individuals and applicable to everyone, not only those in distress. To promote resilience, individuals and supervisors can draw on some of the extant physical, mental, and social

skill-building modules that are available from Staff Care and the FSI and direct all employees to them. While these modules should be voluntary rather than mandatory for USAID staff, ready training in Washington, DC, and at overseas posts would help individuals learn and grow and provide supervisors with the resources needed to reach out to employees before they show signs of distress.

USAID must also further invest in tailored resources for aid workers. Military programs such as CSF and OSCAR recognize that the U.S. military is a unique organization with its own culture. Like the military, USAID culture, particularly overseas, is different from domestic government employment. The existing resources available through Staff Care are of a general nature and do not account for the unique barriers that USAID staff may face, including cultural and language barriers, distance from supportive social networks, or physically challenging or threatening environments. Tailored tools for aid workers should seek to educate staff and increase awareness of primary as well as secondary trauma. Unique tools may be necessary for non-American foreign service national staff members who may be unable or less inclined to use English-language resources or resources that are developed for a primarily American audience. There are service providers that specialize in international humanitarian health and well-being, and USAID should consider engaging them to augment the more general resilience-building tools that it currently makes available to staff who request support. While private firms and nongovernmental organizations offer good resources for fostering resilience skills, USAID must be careful not to outsource the entire effort. Ownership and accountability for resilience-building must remain within the agency.

Further, resilience skill-building for USAID employees must be an ongoing process. Like physical fitness, resilience skills are perishable and an individual's needs will vary during different times in their career. Fostering resilience should not only take place during a discreet training but also must be conceived of and reinforced as a skill that requires maintenance. Like the variable entry points, there must be a consistent and prolonged series of milestones whereby USAID employees encounter resilience messaging. New employee training is a useful time to introduce the concept of resilience among employees and share how and why resilience behaviors can help employees cope with stress and trauma. Onboarding, however, is not enough. A lifecycle approach to resilience that mirrors other cycles would be useful. For instance, USAID foreign service officers receive checklists and other resources in advance of overseas posts. Including information in these packages about resilience resources such as groups and people who exercise regularly, meditation or yoga classes, religious institutions, counseling and support groups, and other self-guided resources may be helpful supplements to the "getting to post" checklist.

Finally, USAID must seek to make resilience a comprehensive skill set. Resilience resources must encompass physical, mental, and social elements in line with the best practices fostered by the U.S. Army. USAID must also take care that resilience

is described in secular terms and not exclude those without a professed religious faith. The essence of resilience is that it is a set of skills that can and should be reinforced and nurtured rather than a singular training that will help employees avert stress and distress.

Conclusion

Resilience is best defined as the presence of healthy skills, behaviors, and attributes that help a person cope with stress and trauma and rebound. USAID has the opportunity to adopt a positive definition of resilience and help employees build the skills they need to serve within the national security architecture of the United States. The U.S. military has undertaken resilience programming with mixed results, but it has proven that it is a teachable, learnable, and perishable set of skills and behaviors that is necessary for a strong and ready force.

Resilience involves physical, mental, and social elements and practices that can be taught and strengthened over time and through repetition. USAID has the opportunity to support employees by establishing tailored interventions informed by the military experience to make these skills and practices available to the workforce. The military has demonstrated that resilience programs are best when they are championed by peers and supervisors close to individuals. Resilience programs for USAID should be voluntary yet readily available to employees regardless of their duty stations. USAID can and should investigate resilience resources and programming to include non-American employees serving overseas. With advocacy from leadership and consistent messages about the availability of effective resources for physical fitness, mental health, and social support, USAID can strengthen the resilience of its global workforce.

While the U.S. military has made strides in this area, it can still improve. It should continue to study resilience programs and optimize programs based on operational learning performed over time. The Army and Marine Corps can continue to evolve and inform the discourse on resilience, which is critical to all people working in service of the United States.

Losing Good Wolves

By Major Richard W. Chapman, U.S. Marine Corps[1]

The preeminent focus of cultural indoctrination during entry-level training in the U.S. Marine Corps expresses to every member the idea that only "Marines" and "non-Marines" occupy the world.[2] The collective community of Marines, in the indoctrinated sense, receives an enormous amount of training on culture and what it means to be a Marine. Marines fight and win battles, defeating non-Marines as a result of their indomitable will, which is the essence of every Marine. When new Marines enter the Fleet following their training, non-Marines can more easily influence their behaviors, reducing the will of the organization and its members. Today's Marines, nearly 70 percent of whom are between the ages of 19 and 24, possess immediate access to information through the internet, meaning that they are no longer as insulated from non-Marines as previous generations of Marines.

Regardless, the Marine Corps has misplaced its essence with the requirement for efficient training instead of effective leadership. Simply telling Marines not to drink and drive reduces the value of the organization to a micromanaged, transactional leadership model in which Marines behave appropriately to avoid punishment. Incentivizing good or bad behaviors can only achieve temporary results, as Marines performing in a decentralized, operational environment require constant guidance in order to perform. Essentially, the leadership methods that are currently employed negate the organization's capacity to perform the principles of maneuver warfare.

The concept of a "culture of compliance" presents an existential threat to the Marine Corps, as it neglects the foundational principles of maneuver warfare and the willpower of Marines. When leaders require compliance in the authoritarian sense, it undermines the concept of effective subordinate leadership, both as an organization and for the members within the organization. The entire culture of the Marine Corps depends on the development of critical thinkers who are capable of employing their will and solving complex problems in a time-sensitive environment. Within the Marine Corps, the process for developing leaders exists, but it retains limitations where compliance is supreme. It is difficult to predict how long

[1] Maj Chapman is a distinguished graduate of MCU's Command and Staff College. This paper was nominated for the Col F. Brooke Nihart Award for academic year 2019–20.

[2] Robert Coram, *Brute: The Life of Victor Krulak, U.S. Marine* (New York: Back Bay Books, 2010), 347.

an organization can endure when its leaders direct it in contradiction to organizational principles.

Enforcing a culture of compliance negates the foundational principles of the Marine Corps because it limits opportunities for genuine growth and input from the members of the organization. The Marine Corps must embrace growth and input from its members, which includes implementing internal feedback, pursuing external feedback, and revising the current model for education and leadership development to reflect both sources.

The Marine Corps must develop training that supports the production of innovative Marines, while simultaneously maintaining the tremendous reputation on which the Marine Corps was built. Since 1922, according to Lieutenant General John A. Lejeune, the 13th Commandant of the Marine Corps, the prestige of the Marine Corps has required a sense of belonging inspired by its officers. This requirement for internal inspiration has not changed. The most devastating criticism of any leader in any organization is inaction in the presence of a problem. Requiring compliance defeats inspiration, especially from organizational leaders.

Every Marine should consistently strive to maintain the tremendous reputation of those who have served before them. The training curriculum of the Marine Corps must embrace that all people require time to genuinely develop, learn, and grow as individuals before they can become effective members of a team. Genuine, lasting growth, wrote Lejeune, requires coaching, teaching, and mentoring.[3] If every leader is first a teacher and every scholar a student, and the desired effect of the lesson is not achieved, then the method selected for communicating the lesson requires revision.

A less commercialized approach to education exists, and the Marine Corps should embrace modernizations. As members of a population that has always maintained immediate access to information, modern Marines proficiently recognize propaganda. Marines today desire meaning, which does not occur in large formations.[4] Holding formations to quickly calculate attendance is in ineffective approach to learning. If the Marine Corps desires effective learning, the entire model must evolve to only instruct groups of no more than 50 personnel.[5] Contradicting the foundational principles of maneuver, the centralization of education isolates Marines from their commands and one another and undermines the organization's identity.

The initial sections of this chapter present the historical failings of compliance and how the component parts of the human psyche relate to identity development.

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[3] MajGen John A. Lejeune, "Letter to the Officers of the Marine Corps," 19 September 1922, Marine Corps University, accessed 1 July 2022.

[4] K. C. Reid, "How the Network Generation Is Changing the Millennial Military," *War on the Rocks*, 20 March 2018.

[5] Scott Freeman et al., "Active Learning Increases Student Performance in Science, Engineering and Mathematics," *Proceedings of the National Academy of Sciences of the United States of America* 111, no. 23 (June 2014): 8410–15, https://doi.org/10.1073/pnas.1319030111.

Essentially, an individual or group identity only grows when it sacrifices what it was to become what it could be.[6] The next sections present how effective military organizations developed cohesion cultures as a result of evolution and pursuing interdependence, inclusivity, and growth. This analysis is followed by a discussion of the current methods employed for education within the Marine Corps and where the organization must change. While the Marine Corps performs adequately in many areas, it has not maximized the use of available educational methods. The final sections of this paper propose mechanisms for organizational growth within the Marine Corps, aligning the Marine Corps more closely with successful military, education, and individual resilience models.

Presently, many of the components essential for change already exist in the Marine Corps but have not been appropriately leveraged. The preeminent focus here is to identify areas where the organization can modernize in order to meet the needs of its population.

When Compliance Fails: The Vietnam War

> *Now this is the Law of the Jungle—as old and as true as the sky;*
> *And the Wolf that shall keep it may prosper, but the Wolf that shall break it must die.*
>
> ~ Rudyard Kipling[7]

According to clinical psychologist Carl G. Jung, conflict is necessary for identity development and growth within every individual and group.[8] While some groups develop an inherent comfort with conflict, others develop structures that respond to conflict in the absence of authentic leadership, resources, and time. Rigidly driven by policies and incentives, conflict-avoidant organizations desire obedience and expedience in comparison to growth and innovation. Organizations demanding compliance desire little from their members in terms of innovation or creativity and link success with historically accepted standards. If compliance with historically accepted standards becomes the expectation within an organization, the organization may lack the necessary flexibility to thrive in unfamiliar territory. Organizations leaning on historical achievements fail as a result of poor communication, egotism, and an inability to self-regulate.[9] Essentially, a lack of flexibility and artificial leadership can cause an organization to neglect opportunities or permanently damage its reputation.

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[6] Jordan B. Peterson, *12 Rules for Life: An Antidote to Chaos* (Toronto: Random House Canada, 2018), 169.
[7] Rudyard Kipling, *The Two Jungle Books* (Garden City, NY: Doubleday, Page, 1927), 113.
[8] Carl G. Jung, *The Collected Works of C. G. Jung*, vol. 16, *Practice of Psychotherapy: Essays on the Psychology of the Transference and Other Subjects*, 2d ed., ed. and trans. Gerhard Adler and R. F. C. Hull (Princeton, NJ: Princeton University Press, 1966), 13.
[9] Paul Hopkin, "Understanding the Causes of Corporate Failure," *Financial Management*, 1 February 2012.

Following World War II, the U.S. military fought in several conflicts in which focusing on previous achievements limited the creativity necessary for victory. During the first four years of American involvement in the Vietnam War (1965–68), the commander of all U.S. forces, U.S. Army general William C. Westmoreland, employed a historically accepted strategy that, according to author and historian Lewis S. Sorely III, "may have won a large scale war of attrition, but failed to address the threat at hand."[10] His strategy needlessly expended thousands of lives, and even worse, his culture of compliance initiated an identity crisis for the U.S. military establishment. Westmoreland enforced compliance within his ranks through micromanagement, where success against enemy forces was limited to body counts. When faced with a problem, he would simply request more ground troops. His reports to Washington contradicted many reports from his subordinate commanders, indicating "success against an inexperienced and unprepared enemy force." In December 1967, Westmoreland claimed that the enemy was "unable to launch a major offensive." Within a month, enemy forces launched the Tet Offensive, the "largest operation by either side at that point in the war," which wholly negated his strategic acumen. From Sorely's perspective, Westmoreland "is the primary reason that the U.S. military lost the war in Vietnam."[11]

The strategy on the ground "changed 15 minutes after General [Creighton W.] Abrams took command" from Westmoreland in 1968.[12] Recognizing the shortfalls of Westmoreland's strategy, his replacement made several changes to the U.S. strategy in Vietnam. Although the United States still lost the war, Abrams' efforts likely salvaged the reputation of the U.S. military. Pursuing pacification and denying the covert infrastructure within the villages of South Vietnam exemplifies what can occur when leaders willingly pursue feedback from within and outside of the organization. Abrams "made the villages of Vietnam the central focus of U.S. strategy," refusing to follow the previously accepted policy.[13] Had he merely complied with the accepted approach, concerns leading to pacification and an end to the war may have never been addressed. Employing a strategy of resilience, flexibility, and teamwork, Abrams' vision provided the framework for the "great military" that fought in Operation Desert Storm in 1991.[14]

As a result of the identity crisis that it experienced after the Vietnam War, the U.S. military grew into an organization that could "march a little further, carry a heavier load, and step into an uncertain darkness for the well-being of others."[15] While the failures that resulted from Westmoreland's strategy in Vietnam should not be understated, they provided Abrams, who possessed an unbound focus on

[10] Lewis S. Sorely III, "Westmoreland: The General Who Lost Vietnam," YouTube video, 1:28:34, 3 November 2011.
[11] Sorely, "Westmoreland: The General Who Lost Vietnam."
[12] Sorely, "Westmoreland: The General Who Lost Vietnam."
[13] Sorely, "Westmoreland: The General Who Lost Vietnam."
[14] Sorely, "Westmoreland: The General Who Lost Vietnam."
[15] Sorely, "Westmoreland: The General Who Lost Vietnam."

cohesion, with an opportunity to end the war. It was Abrams' ability to listen, seek feedback, and modify procedures that inspired trust from his subordinates. Maneuver warfare demands inspired trust. Echoing the wisdom of Jung, the conflict experienced as a result of the Vietnam War influenced the identity of every U.S. military Service. Similar to the leadership demonstrated by Abrams, the relevance of the Marine Corps today depends on trust inspired by the organization.

Identity

> *The Lair of the Wolf is his refuge, and where he has made him his home,*
> *Not even the Head Wolf may enter, not even the Council may come.*
>
> ~ Rudyard Kipling[16]

According to Jung, the human psyche has both an active and a passive participation mechanism, assisting the brain with establishing an understanding of *the self*, a term used to define an individual's identity. Jung argues that there are three interactive parts to the human psyche: the personal unconscious, collective unconscious, and ego. Within the personal unconscious, people collect events for later use, developing a kind of experience for recognizing suffering. The collective unconscious is a collection of ancestral memories that are crucial for survival. The unconscious parts of an individual's identity represent the portions of the self that cannot be influenced.[17]

The ego, however, can be manipulated. An individual's ego is responsible for every behavior emulated, good or bad, even if it is imitation. The *ego*, according to Jung, is an aggregate of a person's experiences, thoughts, and emotions and represents where experiences in the personal unconscious can influence human behavior. Past experiences and future aspirations combine to organize human behavior. Essentially, every action defines what a person aspires to be and represents their identity. Aspirations represent the primary reasoning behind human behavior.[18] Entry-level training in the Marine Corps masterfully subjugates the ego and the requirement for immediate commitment to the hierarchy.

Among many other aspirations, U.S. president Abraham Lincoln once wrote that "patriotism, ambition, love of adventure, and personal courage" provide insight into the decision to join the military.[19] Absent from Lincoln's explanations, the entire population of the Marine Corps joined to become Marines. As a transaction, someone succeeds at entry-level training in the Marine Corps through an "instant and willing obedience to all orders."[20] Developing obedience is the goal while mak-

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[16] Kipling, *The Two Jungle Books*, 114.
[17] Jung, *Practice of Psychotherapy*, 13 – 15.
[18] Jung, *Practice of Psychotherapy*, 13 – 15.
[19] Eliot A. Cohen, *Supreme Command: Soldiers, Statesmen, and Leadership in Wartime* (New York: Free Press, 2002), 22.
[20] Christopher Taylor, "The Achievements and Challenges of Military Leadership," in *Leadership: Succeeding in the Private, Public, and Not-for-Profit Sectors*, ed. Ronald R. Sims and Scott A. Quatro (Armonk, NY: M. E. Sharpe, 2005), 180.

ing Marines. The organization simultaneously and equally seeks to develop within every member an unrelenting determination in the pursuit of a task.

Within the process of developing Marines, compliance at the entry level implies that an individual possesses the capacity to follow orders while in a stressful environment, even under physical duress. The philosophy behind entry-level training in the Marine Corps is simple: Marines achieve victory in battle because they follow orders and never quit.[21]

Following the industrial production of Marines at boot camp, each Marine has additional experiences to leverage in the development of the self. In testament to their honor, courage, and commitment, new Marines receive their first Eagle, Globe, and Anchor, which is an incredible experience to witness.[22] Every Marine graduates from entry-level training with a revised set of behaviors, experiences, and identity. Alignment with the group identity sets Marines apart from others. Marines belong to the organization's elite history and receive a physical representation of their initiation as members. Undoubtedly, when Marines complete boot camp, they should leave with a feeling of self-actualization. New Marines belong because of their commitment to one another and to the larger Marine Corps. When someone belongs, they feel most protected, most optimized, and most valuable.[23]

Based on several sources of statistics, once Marines depart basic training, in comparison to servicemembers of the other U.S. Services, they struggle to maintain that sense of belonging and group identity. Following graduation, it is not their obedience but rather their proficiency and conduct that makes each Marine valuable.[24] If the Marine Corps does not possess proficient members, it will not "be ready when the nation is least ready," as its congressional mandate states.[25] Marines are supposed to learn how to think independently and solve problems in the operational forces. Although history shows that the process of making Marines is effective, centralized problem solving and a recent narrative expressing the continued need for compliance undermines the identity of the Marine Corps. Members of every organization require a consistent message, especially in organizations that emphasize integrity as a trait inherent to every leader. If the enforced narrative impedes the doctrinal culture of the organization, members can develop a lack of trust.

Awareness of individual identity, also known as self-consciousness, can present an interesting dilemma for many Marines. According to clinical psychologist Jordan B. Peterson, when "someone becomes conscious of the self, the person is

[21] Taylor, "The Achievements and Challenges of Military Leadership," 180.

[22] "Marine Corps Leadership: Values, Ethics, and Qualities," Marine Corps University Research Library, last updated 26 March 2022.

[23] Maj William R. Norcott, RM, "Brothers in Arms: The Role of Belongingness in Military Suicide Prevention," in *The Breckinridge Papers: Selected Studies from the Marine Corps University*, vol. 2 (Quantico, VA: Marine Corps University Press, 2017), 244.

[24] *Warfighting*, Marine Corps Doctrinal Publication (MCDP) 1 (Washington, DC: Headquarters Marine Corps, 1997), 4–15.

[25] "Fixing the Personnel Strength of the United States Marine Corps, Adding the Commandant of the Marine Corps as a Member of the Joint Chiefs of Staff," H. R. Rep. 666, 82d Cong., 1st Sess. (1951), 6.

capable of experiencing, and developing an understanding of, suffering within the world."[26] As the world continues to move toward individuality, it is more difficult to sustain an identity as part of a group. Peterson notes, "Where inconsistencies are made evident in an undeveloped, yet self-conscious, person, the individual can become more willing to act on impulse, taking little note of the effect that compulsion can have on the group."[27] In an organization in which the majority of members are between 19 and 24 years old, a range of ages that modern science considers incompletely developed, the Marine Corps is developing a culture of compliance, generating an inconsistent message for a relatively educated populace.

A recent U.S. Department of Defense (DOD) survey analyzing the men and women who serve in the Marine Corps shows that 99 percent possess a high school diploma (or equivalent) or higher degree.[28] It is therefore reasonable to assume that all members of the Marine Corps had other options prior to joining the Service. As a special organization with an elite history of victory in battle, the ranks of the Marine Corps are filled with people who sacrifice who they were in order to grow into what they may become. Essentially, people join the Marine Corps to establish an identity of a Marine, but a narrative of compliance defeats the culture that many joined to find.

Understanding the Audience

> *The Lair of the Wolf is his refuge, but where he has digged it too plain,*
> *The Council shall send him a message, and so he shall change it again.*
>
> ~ Rudyard Kipling[29]

Once a Marine graduates from boot camp and assumes the identity of a Marine, many of their interests shift away from the Marine Corps' advertised "core values."[30] When Marines depart the constant indoctrination and supervision experienced during entry-level training and enter the operational forces, that learned sense of belonging can taper.[31] A large percentage of Marines today are no longer seeking to only behave as "good" Marines should behave. As a result of their experience in an interconnected world, many Marines now aspire to develop identities as good people, not good Marines.[32] Discounting feedback generates mistrust, prolonging an ineffective strategy and undermining the principles of maneuver warfare.

Today's Marines can sense when they are being sold an agenda or especially propaganda. As a result, many quickly dismiss information dispatched in large for-

[26] Peterson, *12 Rules for Life*, 169.
[27] Peterson, *12 Rules for Life*, 166.
[28] *The Marine Corps Demographics Update* (Washington, DC: Headquarters Marine Corps, 2017), 25.
[29] Kipling, *The Two Jungle Books*, 114.
[30] Reid, "How the Network Generation Is Changing the Millennial Military."
[31] Coram, *Brute*, 350.
[32] Reid, "How the Network Generation Is Changing the Millennial Military."

mations and consciously prioritize character development and authenticity over the Marine Corps' core values.[33] Trends in the behaviors of groups assist in establishing patterns for the group as a whole. As a group, some of the patterns exhibited by Marines are alarming. Within the realm of suicide, the Marine Corps has seen the highest percentage of suicides per 100,000 members than any other U.S. Service during the past three years. A warning exists within the internal feedback mechanisms employed by the leaders in the Marine Corps, and as with several of the failed internal feedback mechanisms displayed during the Vietnam War, leaders are not adapting quickly enough.

The desire to develop as good people is common among today's Marines. If the methods chosen to educate the Service's population are perceived as propaganda, then the organization should make changes based on patterns and feedback.[34] In seeking to control through fear and prioritizing efficiency over all else, many of the behaviors observed within the members of the Marine Corps reveal a population resisting the culture of compliance.[35] When Marines show up for annual training through mass briefing, evidence of leadership through compliance exists, in which minimum effort appears to be the standard expectation. How the Marine Corps currently educates the general population does not inspire trust, and maneuver warfare requires trust.

Introspection

> *The Jackal may follow the Tiger, but Cub, when thy whiskers are grown,*
> *Remember the Wolf is a hunter—go forth and get food of thine own.*
>
> ~ Rudyard Kipling[36]

Command and Control, Marine Corps Doctrinal Publication (MCDP) 6, is one of the many doctrinal publications employed by the Marine Corps to educate Marines on successful practices for decentralized execution in combat.[37] Effective command and control requires unity of command, which achieves combat effectiveness through mutual trust, understanding, and professional respect and is not a product of compliance enforced from above. As an organization that thrives when subordinates are free to operate within the commander's intent, the Marine Corps currently employs a model for annual training that centralizes information, education, and self-regulation.[38] But there is not trust, and without trust, maneuver warfare cannot occur successfully.

[33] Reid, "How the Network Generation Is Changing the Millennial Military."
[34] Reid, "How the Network Generation Is Changing the Millennial Military."
[35] David Brooks, *The Second Mountain: The Quest for a Moral Life* (New York: Random House, 2019), 43.
[36] Kipling, *The Two Jungle Books*, 114.
[37] *Command and Control*, MCDP 6 (Washington, DC: Headquarters Marine Corps, 1996), 79.
[38] *Command and Control*, 79.

If people fall to their level of training, and the Marine Corps is not in compliance with its own doctrine of decentralized execution, then it becomes easier to understand how the current population of the Marine Corps has evolved to reject this propaganda. While it is difficult to speculate how many Marines have read *Command and Control*, the Marine Corps has developed doctrine that it does not enforce in every aspect of training. While rejecting compliance may be perceived by higher-ranking members as disrespectful or self-centered, requiring compliance does not allow for self-regulation and disrupts cohesion from within the organization.[39] The behavior emulated by the younger members of the Marine Corps today was actually predicted by one of the Marine Corps' foundational publications, and holistically it is ignored.

According to distinguished psychologist and Holocaust survivor Viktor E. Frankl, the "process of self-regulation requires the rejection of all things self-centered" and movement toward "something greater than the self."[40] Because many important messages have been reduced to advertising, the current generation has a difficult time accepting that some advertising is relevant, important, and applicable.[41] As Brené Brown explains in *Dare to Lead: Brave Work, Tough Conversations, Whole Hearts*, a leader "takes responsibility for finding the potential in people and processes" and "has the courage to develop that potential."[42] As the current process isolates Marines from their leaders, it does not meet the organization's publicized standards. The process requires revision, and if that modification cannot come from within, then it must happen externally. The lives of Marines could depend on it.

A Proxy for Loneliness

> *If ye kill before midnight, be silent, and wake not the woods with your bay,*
> *Lest ye frighten the deer from the crops, and your brothers go empty away.*
>
> ~ Rudyard Kipling[43]

Between 2006 and 2016, the suicide rate of people in the United States between the ages of 10 and 17 increased nearly 70 percent. From 2008 to 2018, the aggregate suicide rate rose 30 percent since the previous decade measured. Today, nearly 45,000 people in the United States die by suicide annually.[44] While analyzing these statistics in *The Second Mountain: The Quest for a Moral Life*, David Brooks asserts that people commit suicide as a "proxy for loneliness."[45] The world struggles with suicide as a result of loneliness or isolation. Although the world today is more interconnected

[39] *Command and Control*, 79.
[40] Viktor Frankl, *Man's Search for Meaning* (New York: Beacon Press, 1984).
[41] Reid, "How the Network Generation Is Changing the Millennial Military."
[42] Brené Brown, *Dare to Lead: Brave Work, Tough Conversations, Whole Hearts* (New York: Random House, 2018), 5.
[43] Kipling, *The Two Jungle Books*, 114.
[44] Brooks, *The Second Mountain*, 33.
[45] Brooks, *The Second Mountain*, 32.

through technology than ever before in history, the data on suicides in the United States represent a far more disconnected society.

During the past three years, the Marine Corps has had the highest suicide rate of any active military Service of the United States. Fifty-eight Marines died by suicide in 2019, which accounts for 0.0316 percent of the Service's 184,000 members. As an independent population, the Marine Corps doubles the annual suicide rate when compared to the aggregate rate within the population of the United States as a whole.[46] While the overall suicide rate for the entire U.S. military increased from 18.5 per 100,000 people in 2013 to 24.8 per 100,000 in 2018, the rate in the Marine Corps was 31 per 100,000 in 2018, the highest rate of all Services.[47] When it comes to suicide, the Marine Corps has not improved, and that is not acceptable.

Isolation may be a primary cause for suicides in the Marine Corps. With nearly 500,000 total personnel in the Army, compared to just 184,000 in the Marine Corps, how does the Army see nearly 7 fewer suicides per year than the Marine Corps? The Air Force, meanwhile, with 100,000 more members than the Marine Corps, had nearly half the suicide rate of the Marine Corps in 2018.[48] Both the Army and Air Force have different annual training curricula than the Marine Corps for suicide prevention and awareness. What are the differences?

Major William R. Norcott of the British Royal Marines compiled data from 2017 on military suicides in the United States, providing insight into psychologist Thomas E. Joiner's interpersonal-psychological theory of suicide. Joiner expressed the cause of suicide as an equation. In this equation, the capacity for suicide arrives when three factors meet. First, someone's isolation from a community simultaneously meets with the need for care from that community. Once the capacity to "enact lethal self-harm" is realized, the equation is complete.[49] Essentially, someone combatting suicide should either pursue belonging or genuine care to prevent feelings of isolation from developing.

Building off the Joiner equation, Norcott provides insight into the different suicide prevention programs throughout the DOD and argues that the Air Force's model produces the best results.[50] Through 2019, the Air Force continues to meet the lowest suicide rate of the U.S. Services. Nevertheless, even the Air Force expresses that it still wants "to get this thing turned around" in reference to the number of its servicemembers lost.[51]

Since 2013, the Air Force sees nearly the same rates of suicide (16.2 per 100,000 people) as the general population of the United States (15.1 per 100,000). The Air Force is the only branch of the U.S. military that consistently generates suicide rates

[46] Patricia Kime, "Military Suicides Reach Highest Rate Since Record-Keeping Began after 9/11," Military.com, 1 August 2019.
[47] *Annual Suicide Report* (Washington, DC: Department of Defense, 2018), 32–34.
[48] *Annual Suicide Report*, 33.
[49] Norcott, "Brothers in Arms," 244–45.
[50] Norcott, "Brothers in Arms," 252.
[51] Jennifer H. Svan, "Air Force Units Will Pause Operations to Address Alarming Suicide Rate," *Stars and Stripes*, 2 August 2019.

below 20 per 100,000.[52] The organization's annual training curriculum starts at the organizational level, defining the group as a whole, and eventually shifts to the importance of each individual servicemember.[53] The Air Force's model for education with respect to suicide prevention inculcates the importance of inclusion, which no doubt helps achieve the desired results. The Marine Corps could benefit from developing curricula that also aims toward inclusivity. The Air Force training model for suicide prevention promotes an inclusive approach to members at risk of suicide, and it is the consistency between this training and approach that likely defeats feelings of isolation.

The Marine Corps' model for suicide prevention identifies that helping others is the duty of every Marine.[54] The problem exists in the language chosen for suicide training. As made evident within Joiner's equation for suicide, isolation is dangerous and can lead to suicide. The Marine Corps' model requires separation by escorting the individual who may be contemplating suicide to a mental health professional. Nowhere in the Air Force's 11-step process for suicide prevention does the individual depart from the community. As a leading expert in the field of suicide and its effects, Joiner imparts the importance of continued belonging.[55] Renowned sociologist Robert A. Nesbit claims that isolation occurs when the mind deems the social order as fraudulent.[56]

When Marines develop suicidal ideations and become one of the "others" identified within the Marine Corps curricula, does that cost them their identity as a Marine? If entry-level training delineates the world into Marines and non-Marines, then the training for suicide prevention in the Marine Corps closely resembles steps for handling enemy prisoners of war.[57] The feeling of isolation, as it is described, is almost certain.

To maintain a sense of belonging and inclusion, Marines should never depart the group or consider their identity to be fraudulent. As a result of the language used for its suicide prevention training, the Marine Corps fails to reach an entire population of Marines developing feelings of isolation. If the problem with suicide exists as a result of isolation, or someone's identity leading them to feel isolated, then the Marine Corps must educate Marines through genuine care or inculcating a sense of genuine belonging. As an organization, the Marine Corps must generate an educational model for instruction that more comprehensively rehabilitates from within.

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[52] *Annual Suicide Report*, 32–34; and Brooks, *The Second Mountain*, 32.
[53] Norcott, "Brothers in Arms," 252.
[54] Norcott, "Brothers in Arms," 253.
[55] Norcott, "Brothers in Arms," 244 – 47.
[56] Brooks, *The Second Mountain*, 33.
[57] *Detainee Handling* (Quantico, VA: Marine Corps Training Command, 2007), 5.

How People Learn

When ye fight with a Wolf of the Pack, ye must fight him alone and afar,
Lest others take part in the quarrel, and the Pack be diminished by war.

~ Rudyard Kipling[58]

While the inclusive language of the suicide prevention training for the Marine Corps is necessary to negate feelings of isolation, the high suicide rate in the Service could also represent a failure in the design for message transferal to the general population. In 2014, a group of researchers conducted an analysis of the effects of "lecture learning" compared to "active learning."[59] To provide some context, there was no discernable increase in scores between groups who received conventional lectures versus lectures driven by PowerPoint. Active learning requires preparatory material before a class, like homework or reading, which transforms the function of the lecture into a mechanism for feedback on the material. While analyzing 225 students, active learning displayed a marginal increase in the exam scores of the population but achieved a large increase in the overall pass rates.[60]

Class size also played a significant role in determining the retention of material. Active learning achieved the best effect in class sizes of fewer than 50 students. Imagine a classroom for annual military training where a platoon commander, a leader in charge of fewer than 50 Marines, instructed the material and optimized every minute with the members of their platoon. If size dictates the effectiveness of the material taught, as this study suggests, why does the Marine Corps have battalion- and squadron-level safety briefs and annual training stand-downs? According to this study, lecture groups with more than 50 students revealed a 55-percent increase in Ds, Fs, and withdrawals, when compared to classrooms of 50 or fewer students that spent 10 percent of the time in class solving problems relevant to the material.[61]

Based on the information provided, the Marine Corps should require active learning for all annual training and develop platoon commands that can instruct the material. During large lectures in which an entire Marine company or battalion congregates, 55 percent of the population is statistically less likely to retain the material presented.[62] Consequently, the Marine Corps allows a model that, based on the statistics identified within this research, leads to failure. Refusing compliance with the requirement for efficient training in large lecture settings, or the "historically accepted standard," may increase that likelihood of remembering the mate-

[58] Kipling, *The Two Jungle Books*, 114.
[59] Freeman et al., "Active Learning Increases Student Performance in Science, Engineering and Mathematics."
[60] Freeman et al., "Active Learning Increases Student Performance in Science, Engineering and Mathematics."
[61] Freeman et al., "Active Learning Increases Student Performance in Science, Engineering and Mathematics."
[62] Freeman et al., "Active Learning Increases Student Performance in Science, Engineering and Mathematics."

rial. Considering the Marine Corps is already structured to achieve the model for a more successful educational method, it should be a simple transition.

Ductus Exemplo

> *For the strength of the Pack is the Wolf, and the strength of the Wolf is the Pack.*
>
> ~ Rudyard Kipling[63]

If the maximum potential for growth occurs in groups of 50 or less, then the Marine Corps as an organization must trust and empower platoon commanders to reach Marines. When the Marine Corps continues to default to the battalion- or company-size platform, it clearly displays a value of control and efficiency over feedback and results. By using the current model for training, the Service neglects several foundational principles of maneuver warfare and potentially interrupts cohesion.

Without maneuver warfare and the foundational principles identified within *Warfighting*, the Marine Corps does not have a relevant group identity. If the common Marine identity is lost, then the Marine Corps is lost as well. According to the late General Victor H. Krulak, the Marine Corps only endures because the "high, almost spiritual standards" of the Service remain the preeminent focus for every Marine.[64] *Warfighting* states that all "peacetime activities should focus on achieving combat readiness."[65] More than an aggregate of special skills and intense training, the Marine Corps must continually infuse the organization's "singular identity," and observe every training opportunity as one to preserve maneuver warfare.[66]

Course Corrections

> *When Pack meets with Pack in the Jungle, and neither will go from the trail,*
> *Lie down till the leaders have spoken—it may be fair words shall prevail.*
>
> ~ Rudyard Kipling[67]

As a military organization, the Marine Corps is well known for, and potentially preserved by, its history. From winning the Battle of Iwo Jima in 1945 to accomplishing the impossible at Inchon, South Korea, in 1950, Marines have achieved victory time and time again through the individual Marine's indomitable will. As a testament to the quality of entry-level training for Marines, the past two decades of war shifted the entire Service's focus from expeditionary operations within a naval campaign to a ground-based counterinsurgency fight in Iraq and Afghanistan. Rarely was

[63] Kipling, *The Two Jungle Books*, 113.
[64] Coram, *Brute*, 347.
[65] *Warfighting*, 53.
[66] Morris Janowitz, *The Professional Soldier* (New York: Free Press, 1971), 6.
[67] Kipling, *The Two Jungle Books*, 114.

there an officer in an infantry regiment who did not have a copy of David Kilcullen's "Twenty-Eight Articles: Fundamentals of Company-Level of Counterinsurgency" or *The Bear Went Over the Mountain: Soviet Combat Tactics in Afghanistan*. The flexibility of the Marine Corps became an identifiable strength. For more than a decade, Marines based their identity on ground-centric combat experiences. As a result, Marines working within the operational forces drifted away from their historical roles as "warriors of the sea." Marines, while departing from historical norms, performed extremely well in the face of unfamiliar, uncertain, and relatively uncharted territory, proving that Marines thrive in any environment.

According to Anthony Pollman, the culture of the Marine Corps, as with any organization, is determined at the enterprise level, linking the identity of every member to the organization's expectations. If culture changes in response to internal and external pressures, then the Marine Corps is either not receiving — or ignoring — the pressures from within.[68] Though effective at preparing for combat, the Marine Corps in peacetime misses opportunities to train toward trust. To grow trust for an organization, the organization must inspire trust from its population. Embracing the recommended changes for educating Marines is only the first step.

As organizations, each U.S. military Service imparts expectations on its members, or "principles of conduct that provide the moral framework within which military activities take place."[69] The mission statement of the Air Force requires "excellence in all we do," a trait inherent to every Airman.[70] In 1961, the Army defined "leadership traits," and "leadership principles" in *Military Leadership*, Field Manual 22-100.[71] The Marine Corps has not developed new expectations for its leaders since 1961, when it merely adopted them from the Army.

In an organization filled with individuals who seek, respect, and admire authenticity, the Marine Corps must consider additional revisions in what it expects from its leaders. Authenticity enables genuine understanding and defines, at least in the eyes of today's Marines, credibility. Moreover, Marines serving today do not respect leaders who enthusiastically proselytize or blindly comply with the organization, as they do not take the rank at face value.[72] If successful maneuver warfare only occurs at the "speed of trust," as retired General James N. Mattis and Francis J. "Bing" West argue in *Call Sign Chaos*, then the Marine Corps must develop leaders that inspire trust in every Marine.[73] The organization must inspire feedback through an active pursuit of a dialogue and recognize the identity of every individual serving in the ranks of the Marine Corps.

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[68] Maj Anthony Pollman, USMC (Ret), "Framing Marine Corps Culture," U.S. Naval Institute *Proceedings* 144, no. 6 (June 2018).
[69] *Leadership and Force Development*, Air Force Doctrine Document 1-1 (Washington, DC: Department of the Air Force, 2006), vi.
[70] *Leadership and Force Development*, 7.
[71] *Military Leadership*, Field Manual 22-100 (Washington, DC: Department of the Army, 1961).
[72] Reid, "How the Network Generation Is Changing the Millennial Military."
[73] Jim Mattis and Bing West, *Call Sign Chaos* (New York: Random House, 2019), 17.

As recently as 2017, the Air Force added "inclusion," to their leadership traits.[74] In 1983, the Army included "respect" as a foundational character trait of every soldier, identifying the requirement to treat all people with dignity.[75] With improved principles, an organization promotes discipline, social development, and psychological maturity. Some changes to the Marine Corps' leadership traits are necessary to improve cohesion and prevent disciplinary failures among the current generation of Marines. Change to leadership traits only stands to improve the organization's reputation.

Words Inspire, Actions Lead

> *Because of his age and his cunning, because of his gripe and his paw,*
> *In all that the Law leaveth open, the word of your Head Wolf is Law.*
>
> ~ Rudyard Kipling[76]

In *Dare to Lead*, Brené Brown proposes that if the reputation of an organization is defined by control, leaders will use fear to generate actions within the organization.[77] Since the Marine Corps is not an organization that leads by fear, it must remove the control focus. In *Call Sign Chaos*, Mattis and West claim feedback to be superior to control, which proved to be an unexpected, and necessary, shift in the organizational narrative.[78] Universally embracing feedback and decentralizing control is another area that the Marine Corps must improve.

According to author Daniel H. Pink, individuals thrive most when self-directed toward something that has meaning and is more important than themselves. In addition to refining existing skills, the most successful leaders optimize their members through inspiring autonomy, mastery, and purpose.[79] Generally speaking, micromanagement, or an overemphasis on control, appears when chaos occurs where order belongs, refusing individual mastery. Managers accomplish tasks, while leaders maximize the potential of every individual in their charge.[80] Leaders empathize with the led, not simply through shared experiences, but through the connection of the emotion associated with experiences.[81] No matter where the Marine Corps goes as an organization, it must embrace the concept of developing genuine leaders.

Cultures of cohesion are not limited by the walls established in the organization. Through feedback mechanisms, leaders can determine necessary actions. External feedback mechanisms, although not always beneficial, can provide insight

[74] "Core Values," U.S. Air Force, accessed 1 July 2022.
[75] "The Army Values," U.S. Army, accessed 1 July 2022.
[76] Kipling, *The Two Jungle Books*, 116.
[77] Brown, *Dare to Lead*, 262.
[78] Mattis and West, *Call Sign Chaos*, 17.
[79] Daniel H. Pink, *Drive: The Surprising Truth about What Motivates Us* (New York: Riverhead Books, 2009), 162.
[80] Brown, *Dare to Lead*, 5.
[81] Brown, *Dare to Lead*, 273.

into the public perception of the organization. Internally, the leaders of the Marine Corps must embrace a more cohesive approach to training Marines. If the Marine Corps is going to survive as an organization, it must dissociate itself from the concept of compliance and embrace a more modern approach to education, training, and development. By embracing a relentless pursuit of cohesion and rejecting the historically accepted standard, the Marine Corps can grow into the organization it was always meant to be.

Implications and Conclusions

Recognizing the impact of instruction in smaller groups, modern solutions exist that remedy the identified shortfalls within the Marine Corps. If leaders are teachers and coaches first, then those who are being led must be more than simply a number in formation receiving a brief. While classes will consume more time for subordinate leaders, they will also provide young lieutenants with an opportunity to succeed, or fail, earlier in their careers. Trusting junior leaders to teach courses does not mean employing a "fire and forget" model, because leaders must still supervise. The Marine Corps must empower junior leaders to educate their Marines in groups of no more than 50 and record the data. Within each unit, smaller class sizes gives subordinate leaders a better understanding of the individuals in their charge, which promotes, or reduces, trust.[82] Trust, according to Mattis and West, determines speed in maneuver warfare.[83] As *Warfighting* states, speed, relative to the adversary, is an advantage in combat.[84]

Enabling trust and speed are not new concepts in leadership and maneuver warfare. After receiving the Marine Corps' Lieutenant Colonel William G. Leftwich Jr. Trophy in 2012 for outstanding combat arms leadership, then-Captain Benjamin M. Middendorf claimed that "leadership is trust." He believed that "trust, like leadership development, requires tough training, time together, and competence." An outstanding mentor, coach, and teacher, Middendorf's consistent narrative for trust inspired cohesion within a company of Marines, yielding a unit of "smart, tough, disciplined professionals."[85] This reciprocal trust translated to speed on the ground in combat, enabling decentralized execution during operations in Afghanistan. The legacy of the Marine Corps depends on the kind of cohesion that only trust achieves, and leaders with the will and competence to create such an environment.

It is not blind kindness that produces trust, but rather the development of an understanding of the importance of trust "from the moment [a leader steps] on the first rung of the leadership ladder."[86] Trust takes time and effort, and it cannot be

[82] Brown, *Dare to Lead*, 273.
[83] Mattis and West, *Call Sign Chaos*, 17.
[84] *Warfighting*, 40–41.
[85] "Interview with Capt. Benjamin Middendorf, Recipient of the 2012 Leftwich Trophy," YouTube video, 9:03, 30 April 2013.
[86] Col David H. Hackworth, USA (Ret), and Julie Sherman, *About Face: The Odyssey of an American Warrior* (New York: Simon and Schuster, 1989), 832.

forced. Trust recognizes the need for feedback. The Marine Corps must implement a strategy that generates trust from within through a sustained, authentic approach to education and leadership development in the Fleet Marine Forces.

As Abraham Lincoln once said, "The dogmas of the quiet past are inadequate in the stormy present."[87] While generating a more inclusive, yet decentralized, approach to education, the Marine Corps preserves the principles of maneuver warfare and recognizes the impact that every Marine has on the organization. Sacrificing the previously accepted approach, the Marine Corps can heal as a community and stop losing good wolves.

[87] Gene Griessman, *The Words Lincoln Lived By: 52 Timeless Principles to Light Your Path* (New York: Fireside, 1997), 39.

Birthing a Cultural Change

Pregnancy and Marine Corps Policy

By Major Emily L. Barton, U.S. Marine Corps[1]

U.S. Marine Corps orders and policies for pregnant and postpartum Marines are incomplete and arbitrary, forcing Marines and their leadership to determine a Marine's role while pregnant. Instead of pregnancy and recovery after childbirth being treated as a natural part of a Marine's life, they are treated as an illness or injury, creating an unintentional bias against pregnant and postpartum Marines. In 1995, U.S. Secretary of the Navy John H. Dalton told reporters that "Navy leadership recognize[s] that pregnancy is a natural event that can occur in the lives of Navy servicewomen . . . and is not a presumption of medical incapacity."[2] Almost 25 years later, however, the Marine Corps has not yet figured out how to effectively integrate pregnancy within its ranks. Rather, it treats pregnancy as a malady and a liability. Moreover, the pregnancy-related orders for Marines are not written with all Marines in mind. In 2018, there were 16,008 women in the Marine Corps, of whom 983 were pregnant; 906 of those Marines were enlisted.[3] These orders focus primarily on commanding officers; yet, junior Marines, their direct supervisors, and subordinate leaders all rely on them to understand what the Marine Corps expects from pregnant Marines. These written policies need to be simple and direct so all Marines can understand a pregnant Marine's role in the Marine Corps. By creating a more detailed and deliberate pregnancy order, integrating a program specific to pregnancy and postpartum recovery into the fitness order, and providing pregnancy-focused education, the Marine Corps can aid in a more effective recovery for Marines and create a culture where pregnancy is normalized and women are welcome professionally and culturally during all phases of their careers.

Background

The first female Marine, Opha May Johnson, enlisted in the Marine Corps in 1918, when the United States was engaged in World War I.[4] During the First and Second World Wars, women filled clerical duties in the Marine Corps with the motto "Free

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[2] Stephanie Gutmann, "Sex and the Soldier," *New Republic* 216, no. 8 (24 February 1997): 21.

[3] "USMC Female Strength 2018-12-26," U.S. Marine Corps Manpower and Reserve Affairs, 26 December 2018.

[4] "History of the Women Marines," Women Marines Association, accessed 10 March 2019.

a Man to Fight." Once a Marine became pregnant, however, they were forced to leave the Service. As early as 1949, Rear Admiral Clifford A. Swanson, chief of the U.S. Navy's Bureau of Medicine and Surgery, argued to retain pregnant Marines and sailors:

> Inasmuch as pregnancy is a normal biological phenomena in women in the military age group it must be assumed that the possibility that women entering regular military service become pregnant was recognized by Congress. . . . There would appear to this Bureau to be no reason for terminating the service of personnel who are pregnant but physically able to perform their duties.[5]

In 1971, regulations changed to allow women to remain on active duty while pregnant.[6] Although women could now serve while pregnant and after giving birth, the Marine Corps required a waiver—its default action was still to separate a Marine for pregnancy. During the next 40 years, women who remained in the Marine Corps proved capable of serving, some as mothers, in all military occupational specialties (MOSs) except those defined as direct combat MOSs. That changed on 24 January 2013, when U.S. Secretary of Defense Leon E. Panetta rescinded the 1994 Direct Ground Combat Definition and Assignment Rule which excluded women from combat roles. Women now can serve in every MOS in the Marine Corps, and yet pregnancy, "a normal biological phenomena in women in the military age group," is still stigmatized in the Service.

With the nationwide ban on women in ground combat lifted, the Marine Corps published *Fragmentary Order 4 (Implementation) to Marine Corps Force Integration Campaign Plan* (hereafter Integration Order) in 2015, directing the integration of female Marines into all remaining combat MOSs and units.[7] The order was not simply a means of integrating women into all MOSs, but a catalyst to examine Marine Corps culture toward women, as it ordered a substantive review of all orders pertaining to women. This mandated review is integral to looking at how the Marine Corps addresses women as an institution. Integrating women into combat MOSs is not enough to eliminate the disenfranchisement experienced by female Marines. According to the *Culture General Guidebook for Military Professionals*, published by the Marine Corps' now defunct Center for Advanced Operational Culture Learning, "culture is not an unchanging set of rules and beliefs that controls every aspect of people's behavior," but rather how people get through the day and function within

[5] Col Mary V. Stremlow, USMCR, *A History of Women Marines, 1946–1977* (Washington, DC: History and Museums Division, Headquarters Marine Corps, 1986), 154.
[6] Stremlow, *A History of Women Marines*, 152.
[7] *Fragmentary Order 4 (Implementation) to Marine Corps Force Integration Campaign Plan* (Washington, DC: Headquarters Marine Corps, 2016), 3, hereafter Integration Order.

a society.[8] In order to completely incorporate women into the Marine Corps, the Service's culture can adapt to incorporate all aspects of women, to include pregnancy.

The Marine Corps recognizes that a cultural shift may be required to integrate women into ground combat MOSs and units, arguing in the Integration Order that "the primary factor in developing cohesion is the ability of all members of the team to perform assigned mission essential tasks effectively."[9] However, a pregnant Marine cannot always perform assigned mission-essential tasks effectively. Clearly defining what a Marine's limitations and capabilities are while pregnant removes some of the confusion and stigma surrounding pregnancy and allows the Marine to still contribute as effectively as possible.

The Integration Order states that gender-neutral standards will mitigate the loss of combat effectiveness despite the integration of women.[10] This idea does not mean that the Marine Corps needs to be gender-neutral as an institution. Women can be embraced as women while being held to the standards of the Marine Corps in general and in their MOSs specifically. Through changes in policy and incorporating female-specific education, the Marine Corps can normalize all aspects of womanhood. Sociologists Orna Sasson-Levy and Sarit Amram-Katz state, "In order to give gender integration a chance to succeed, a policy of gender integration must take the cultural schemas seriously."[11] To fully integrate women, the Marine Corps has to look at the culture surrounding women, not just the physical act of placing women in ground combat MOSs. Within the Service, women cannot simply be treated like weak men. Gender-neutral policies and practices do not translate to gender equality. Since childbearing is a reality for many women, pretending that it is an illness or liability does not serve the Marine Corps in any way. Creating a culture that normalizes pregnancy begins by incorporating it into Marine Corps life through orders and policies.

Institutionalized Bias

Much of the bias against pregnancy in the Marine Corps stems from the current *Marine Corps Order (MCO) 5000.12E, Marine Corps Policy Concerning Pregnancy and Parenthood* (hereafter Pregnancy Order).[12] This order is more than a decade old, last published in 2004. The institutional bias against pregnant Marines begins from the moment a pregnant Marine or their supervisor reads the Pregnancy Order. A preg-

[8] Kerry Fosher et al., *Culture General Guidebook for Military Professionals* (Quantico, VA: Center for Advanced Operational Culture Learning, 2017), 12.
[9] Integration Order, 2.
[10] Integration Order, 2.
[11] Orna Sasson-Levy and Sarit Amram-Katz, "Gender Integration in Israeli Officer Training: Degendering and Regendering the Military," *Signs: Journal of Women in Culture & Society* 33, no. 1 (September 2007): 129, https://doi.org/10.1086/518262.
[12] *Marine Corps Order (MCO) 5000.12E, Marine Corps Policy Concerning Pregnancy and Parenthood*, (Washington, DC: Headquarters Marine Corps, 2004), hereafter Pregnancy Order.

nant Marine is not referred to as a "Marine" in the order but as a "servicewoman," which semantically separates the pregnant Marine from their fellow Marines. This subtle word exchange sets the tone for the rest of the order: that a pregnant Marine is not a Marine. As this is a Marine Corps order, it should address the pregnant Marine as "Marine" rather than "servicewoman."

As orders can take years to update, Marine Administrative Messages (MARADMINS) update orders until they are officially revised. The Pregnancy Order is no exception. However, there are active MARADMINS that send conflicting messages in regards to pregnancy and the postpartum period (nine months after the date of the birth event). *MARADMIN 657/18*, *Interim Guidance Regarding Fitness Reports for Pregnant Marines*, states, "In support of the Marine Corps effort to overhaul its official documents and publications to be more gender neutral, PREG will no longer be used to indicate a pregnant or postpartum Marines exemption from the Marine Corps body composition standards."[13] This masks a symptom but not the problem. Instead of normalizing women in the Marine Corps and the natural life cycle of womanhood, the Marine Corps identifies pregnancy as an injury or temporary status, not a natural and reoccurring event. Making personal records gender-neutral implies that it is wrong to be female in the Marine Corps, as the dominant gender in the Service is male. Each Marine's Official Military Personnel File (OMPF) includes a picture of them that, by uniform alone, indicates gender. Consequently, this attempt to gender-neutralize a personal document is not only pointless but arguably proliferates the idea that the identifications of "female" and "Marine" are incompatible.

MARADMIN 657/18 is not just for pregnant Marines, but also for "Marine[s] diagnosed with a new or worsening medical condition or therapy which is unexpectedly leading to weight gain."[14] Pregnancy is not a medical condition. It is a biological condition where weight is expectedly gained and lost. Putting pregnant Marines in the same category as a Marine with a medical condition implies that pregnancy is an injury, malady, or disorder rather than a natural and temporary part of life for a Marine. Each time a Marine has a child, they are likely to have two to three exempt codes during their pregnancy and postpartum period for fitness assessments. Because the promotion board does not know whether the Marine is pregnant or malingering, the Marine has to clarify this in a letter to the board explaining that they were pregnant—an additional step that could be eliminated with a "PREG" code—to prove that they are healthy and not someone who is constantly injured. Once again, a Marine's gender is revealed in their explanation of the "injury or sickness."

While *MARADMIN 657/18* seeks to gender-neutralize fitness reports, *MARADMIN 548/16*, *Official Military Personnel File (OMPF) Photograph Guidance*,

[13] *Marine Administrative Message (MARADMIN) 657/18, Interim Guidance Regarding Fitness Reports for Pregnant Marines* (Washington, DC: Headquarters Marine Corps, 2018).
[14] *Interim Guidance Regarding Fitness Reports for Pregnant Marines*.

magnifies the fact that a Marine is in the postpartum period by requiring the Marine to put the date of the end of their postpartum period on their picture.[15] Since the Marine Corps has no program in place to assist a Marine in their postpartum recovery, there should be no requirement to put an end date of the period on their picture. A Marine is either in standards or not.

Marine Corps Policy Concerning Pregnancy and Parenthood

The policies explained in the Pregnancy Order are often vague, forcing both the individual Marine and their leaders to interpret what the Marine can and cannot do. For example, under the individual responsibilities section of the order, the Marine is "responsible for performing military duties within the limits established by her pregnancy."[16] However, there are only five limitations listed in the Pregnancy Order: routine physical training and physical fitness tests; exposure to chemical or toxic agents and environmental hazards; standing at parade rest or attention for longer than 15 minutes; certain immunizations; and participation in weapons training, swimming qualifications, and drown-proofing.[17] Of these limitations, two are arguably unnecessary: routine physical training and standing at parade rest or attention for longer than 15 minutes. These two limitations physically separate a pregnant Marine from their fellow Marines the minute they notify the command of their pregnancy, regardless of the stage of pregnancy. Physical training, in addition to emphasizing the Marine Corps' value of fitness, is a tool for building esprit de corps. Formations, meanwhile, serve not only as a military function but more importantly as a symbol of martial tradition and a physical manifestation of the unit and its members. Excluding pregnant Marines from these two activities prematurely isolates them from activities they can participate in, thereby creating a social stigma against pregnant Marines and furthering unintentional bias. While the intent of the Pregnancy Order was likely to protect pregnant Marines, it actually causes more harm than good. This physical separation of pregnant Marines from the rest of the unit subtly reinforces to leadership that pregnancy is a problem.

A pregnant Marine and their supervisors require further guidance from professional sources on the capabilities and limitations of pregnancy. The Pregnancy Order should be prescriptive, not restrictive. The current order simply lists what a pregnant Marine should not do rather than offering a more solutions-based, holistic explanation of what activities are doable throughout the pregnancy. The order states that a pregnant Marine is "responsible for complying with . . . recommen-

[15] *MARADMIN 548/16, Official Military Personnel File (OMPF) Photograph Guidance* (Washington, DC: Headquarters Marine Corps, 2016).
[16] Pregnancy Order, 3.
[17] Pregnancy Order, 8–9.

dations made by appropriate occupational health professionals."[18] Yet the Marine Corps, unlike the U.S. Army and Air Force, does not require an occupational health consultation.[19] The Navy and Marine Corps Public Health Center Technical Manual NMCPHC-TM-OEM 6260.01C, *Reproductive and Developmental Hazards: A Guide for Occupational Health Professionals*, provides the exact information that a pregnant Marine and their supervisors require. A perfect example of how the current Pregnancy Order is more restrictive than necessary is in the limitation of standing at parade rest or attention for longer than 15 minutes. *Reproductive and Developmental Hazards* allows for prolonged standing up to 4 hours until 24 weeks into the pregnancy.[20] This 15-minute limitation as stated in the Pregnancy Order is arbitrarily restrictive and therefore unnecessary.

While the Pregnancy Order is overly specific on restrictions in some areas, it is notably silent on other routine aspects of military life, such a climbing ladders, lifting weight, and riding in tactical vehicles. *Reproductive and Developmental Hazards* provides a detailed chart of the "American Medical Association Guidelines for Continuation of Various Levels of Work During Pregnancy," which would aid in defining a pregnant Marine's limitations and capabilities.[21] Some limitations, which vary depending on the stage of pregnancy, include prolonged standing, lifting, climbing, and stooping. While the Pregnancy Order does list *Reproductive and Developmental Hazards* as a reference, it appears in the "Assignment" section rather than the "General Limitations" or "Specific Limitations" sections. *Reproductive and Developmental Hazards* should be referenced in both of these limitations sections so that a pregnant Marine can outline a plan of activities for the duration of their pregnancy. Marine Corps orders need to be explicit so any Marine can understand and follow it. If a pregnant Marine requires more restrictions due to complications, they can work with their supervisor or obtain a medical chit. An order should not impede a Marine arbitrarily or unnecessarily. This limitation not only distinguishes a Marine from their peers but can also impede unit effectiveness.

The Marine Corps' vague and restrictive pregnancy policies stand out even more when compared to the policies of other U.S. Services and civilian practices. The Army specifically dictates what its pregnant servicemembers can do during pregnancy. *Standards of Medical Fitness*, Army Regulation 40-501, clearly defines what a soldier can and cannot do at any stage of pregnancy. For example, a soldier can still participate in formations until reaching 20 weeks in their pregnancy, and part of their workday includes one hour of physical training. These, of course, are two

[18] Pregnancy Order, 3.

[19] Leslie A. MacDonald et al., "Clinical Guidelines for Occupational Lifting in Pregnancy: Evidence Summary and Provisional Recommendations," *American Journal of Obstetrics and Gynecology* 209, no. 2 (August 2013): 80–88, https://doi.org/10.1016/j.ajog.2013.02.047.

[20] *Reproductive and Developmental Hazards: A Guide for Occupational Health Professionals*, Navy and Marine Corps Public Health Center Technical Manual TM-OEM 6260.01C (Portsmouth, VA: Navy and Marine Corps Public Health Center, 2010), 91.

[21] *Reproductive and Developmental Hazards*, 91.

activities that a pregnant Marine is limited from participating in.[22] Civilian medical organizations also provide more specific guidance on occupational limits during pregnancy. The American Medical Association's (AMA) Council on Scientific Affairs published guidance on the effects of pregnancy on work performance in 1984, which were reaffirmed in an article published in the *American Journal of Obstetrics and Gynecology* in 2013: "The AMA's guidelines apply to repetitive lifting beginning in the 24th week or intermittent lifting beginning in the 30th week of pregnancy, permitting up to 51 pounds. The AMA's recommended weight allowance drops in the final week of pregnancy to less than 24 pounds for repetitive and less than 31 pounds for intermittent lifting."[23]

The Marine Corps, with its emphasis on the chain of command, exists as a high-power distance institution. James W. Neuliep defines power distance as "the extent to which the less powerful members of institutions . . . expect and accept that power is distributed unequally."[24] A junior Marine is trained to follow orders and respect the chain-of-command. Part of the Marine Corps ethos is to follow orders. Since the Pregnancy Order as written demands that the Marine dictates to their supervisor what they can and cannot do, this demands violating the traditional Marine Corps power distance relationship. A motivated Marine may not want to say "no" or admit their limitations. Moreover, a Marine may put themselves and/or their child in danger because of a real or perceived expectation to continue work as normal. A leader may also unwittingly place a Marine and/or their child in danger because, after referring to this order, they see only a few limitations. Conversely, a pregnant Marine may opt out of less desired duties or responsibilities, creating an unnecessary isolation of pregnant Marines—a needless rift in unit cohesion and a reduction in unit effectiveness. This is one more reason why the Pregnancy Order needs to be more detailed and go beyond limitations, like *Reproductive and Developmental Hazards* and guidance on the effects of pregnancy on work performance do. If a Marine feels that they require more limitations, they can collaborate with their supervisor on their pregnancy activity plan, receive a medical chit from their health care provider, or request an occupational health consultation, preserving the chain of command and high-power distance culture of the Marine Corps.

Physical Fitness for the Pregnant and Postpartum Marine

Routine physical training has been proven to be beneficial to pregnant women. Guidelines from the American College of Obstetricians and Gynecologists (ACOG) state, "Women with uncomplicated pregnancies should be encouraged to engage in aerobic and strength-conditioning exercises before, during, and after pregnan-

[22] *Standards of Medical Fitness*, Army Regulation 40–501 (Washington, DC: Department of the Army, 2007), 82.
[23] MacDonald et al., "Clinical Guidelines for Occupational Lifting in Pregnancy," 80–88.
[24] James W. Neuliep, *Intercultural Communication: A Contextual Approach*, 3d ed. (Thousand Oaks, CA: Sage, 2006), 76.

cy."[25] While the Marine Corps' Pregnancy Order dictates that a pregnant Marine "will participate in an exercise program approved by her OB [obstetrician] healthcare provider," the onus is on the Marine themselves to find a fitness program and get it approved at a time when they are working full time, may be feeling the physical effects of pregnancy (such as fatigue or morning sickness) and trying to make arrangements for one of life's major stressors.

After a Marine becomes pregnant, they are exempt from physical training and must actively pursue approval from a health care provider to participate in a physical fitness program.[26] Health care providers, however, are not fitness consultants. The fact that Marines are immediately exempt from routine physical fitness after finding out that they are pregnant implies that it is dangerous to exercise during pregnancy, and it prevents an uninformed leader from encouraging a pregnant Marine to exercise during normal physical training times, even if they are not participating in unit physical training. The default action for an obstetrician (OB) provider should simply be to approve a Marine for training, not approve a training plan. As Jeffrey K. Kawaguchi and Robin K. Pickering, athletic therapists for the National Collegiate Athletic Association (NCAA), state, "The NCAA supports the position that high-level activity is generally safe up to 14 weeks of gestation, with professional healthcare monitoring."[27] A Marine cannot neglect their physical fitness during pregnancy and the postpartum period. It is their obligation as a Marine to remain fit, and it is the Marine Corps' obligation to provide the means for maintaining fitness during pregnancy. Physical training during pregnancy and the postpartum period is no different from physical training for the Marine Corps in general, as the responsibility for fitness lies on both the individual Marine and the larger Marine Corps.

MCO 6100.13A, Marine Corps Physical Fitness and Combat Fitness Tests (hereafter PFT/CFT Order), and *MCO 6100.14, Marine Corps Physical Fitness Program* (hereafter MCPFP Order), do not mention pregnancy at all. This is understandable in the case of the PFT/CFT Order, which only discusses fitness assessments. However, the PFT/CFT Order states in its "Responsibilities" section, "Every Marine must be physically fit, regardless of age, grade, or duty assignment."[28] Although a Marine is not assessed during pregnancy nor during the postpartum period, this situation does not mean that the Marine is not obligated to remain fit during this period. A Marine's responsibility to remain fit should be explicitly stated in the Pregnancy Order. The MCPFP Order should incorporate a program that holds pregnant Marines account-

[25] "Physical Activity and Exercise during Pregnancy and the Postpartum Period," American College of Obstetricians and Gynecologists, December 2015.
[26] Pregnancy Order, 8.
[27] Jeffrey K. Kawaguchi and Robin K. Pickering, "The Pregnant Athlete, Part 2: Exercise Recommendations," *Athletic Therapy Today* 15, no. 3 (May 2010): 38, https://doi.org/10.1123/att.15.3.38.
[28] *MCO 6100.13A, Marine Corps Physical Fitness and Combat Fitness Tests (PFT/CFT)* (Washington, DC: Headquarters Marine Corps, 2018), 1–2.

able for fitness via supervision. Fitness during pregnancy should be normalized and exemptions should require medical approval. Since pregnancy causes physiological changes, pregnant Marines need to be educated on how to physically train safely.

A mandatory and supervised fitness program geared toward pregnant and postpartum Marines treats pregnancy as a biological condition versus a medical condition, incorporates fitness as part of pregnancy and postpartum recovery, holds pregnant and postpartum Marines accountable during pregnancy, and ensures that Marines effectively and safely recover from pregnancy. While the Pregnancy Order does not emphasize fitness during pregnancy, it is more specific about postpartum fitness. It states, "After delivery, servicewomen will participate in an exercise program, as soon as medically authorized, to prepare for the physical fitness test (PFT)."[29] This simple statement begs the question: What exercise program? Currently, the Marine Corps does not sanction any postpartum fitness program. If a postpartum Marine heads to the Marine Corps' "Semper Fit" website for amplification of fitness guidance, they are directed to a link to the Army's P3T program workouts. Furthermore, once a Marine is medically authorized to train for the physical fitness test, there is no medical follow-up to ensure that they are not injuring themselves or that they are training appropriately. A pregnancy and postpartum fitness program developed and supervised by professional subject matter experts could prevent injury and maximize effectiveness. This fitness program and its participation requirements should be addressed in the MCPFP Order, not the Pregnancy Order, because fitness is required of all Marines and fitness during pregnancy is no exception.

Postpartum Physical Fitness and Combat Fitness Tests

While the PFT/CFT Order does not discuss pregnancy, it does address when a Marine should have their fitness evaluation after pregnancy. The PFT/CFT Order states, "The Marine has to be prepared to take the PFT/CFT, no earlier than six months after being returned to full duty by the Privileged Health Care Provider (PHCP)."[30] This six-month period was updated to nine months after the birth event by MARADMIN 570/18, *Clarification to MARADMIN 331-18: Changes to Parental Leave Policy*.[31]

MARADMIN 570/18 is indicative of how the Marine Corps treats pregnancy—as an afterthought. Nowhere in the title of *MARADMIN 570/18* is the physical fitness test or combat fitness test mentioned. This ignorance is significant because this change to the PFT/CFT Order is nearly impossible to find. The PFT/CFT Order was updated in 2018, leading a Marine, their leaders, and their unit's operations section to reasonably believe that this is the most current information. However,

[29] Pregnancy Order, 3.
[30] *Marine Corps Physical Fitness and Combat Fitness Tests*, 1–6.
[31] *MARADMIN 570/18, Clarification to MARADMIN 331-18, Changes to Parental Leave Policy* (Washington, DC: Headquarters Marine Corps, 2018).

a search on the Marines.mil website in the "MARADMINS" section using the keywords "PFT" and "CFT" does not pull up *MARADMIN 570/18*. A Marine looking for updated information on the PFT/CFT Order would not find this change via the MARADMIN search function. To complicate matters further, physical fitness and combat fitness tests are functions of a unit's operations section, while the Parental Leave Policy, which indicates when a Marine returns to duty after childbirth, is a function of its administrative section. An operations Marine would not likely read through this MARADMIN unless it personally related to them, as it is not within their scope of responsibility. A pregnant Marine and her supervisors should not have to hunt down the regulations. The physical fitness and combat fitness tests are completely unrelated to the Parental Leave Policy and should not have been combined in the same MARADMIN. All policies regarding pregnancy and parenthood should be addressed in the Pregnancy Order, and all policies relating to fitness should be discussed in the PFT/CFT Order and *MCO 6100.12*, *Marine Corps Physical Fitness Test and Body Composition Program Manual* (hereafter Fitness Test Order).

Furthermore, the target date for a fitness evaluation of 9 to 12 months should be set for both the Marine and their leadership instead of "until at least nine months after the date of the birth event."[32] If a Marine gives birth in March, they would have to run the combat fitness test in December. But if a Marine gives birth in April, they could potentially not have to run a physical fitness test until the following June. This example shows how one Marine can gain a five-month advantage over another Marine in training for the physical fitness test or combat fitness test. Conversely, if a postpartum Marine chose not to remain fit during their pregnancy and was not held accountable to a fitness program postpartum, the additional five months without a fitness assessment could prove detrimental to both the individual Marine and the Marine Corps.

Under current Marine Corps policy, a birthparent could not be held accountable for maintaining their fitness for up to 23 months, which is almost half an enlistment period. The Marine Corps needs to specify and clarify when a Marine who has given birth has to take a physical fitness test or combat fitness test. Additionally, fitness assessments are not the only way in which to hold Marines accountable for fitness. A mandatory, supervised fitness program for pregnant and postpartum Marines would hold them accountable during the time they are unable to take a physical fitness test or combat fitness test.

Parental Leave Policy

The current Parental Leave Policy, while clarifying the difference between the physical recovery of the birth parent and the care required for a new addition to the family, still raises questions about a postpartum Marine's recovery. More than two

[32] *Clarification to MARADMIN 331-18, Changes to Parental Leave Policy.*

years after the Pregnancy Order was ordered to be revised, the only official change to the Pregnancy Order is the addition of caregiver leave via *MARADMINS 102/16*, *331/18*, and *570/18*. *MARADMIN 102/16*, *Marine Corps Maternity and Convalescent Leave Policy Update*, establishes maternity leave at 12 weeks and dictates, "No member should be disadvantaged in her career . . . solely because she has taken maternity leave."[33] This simple statement allows a Marine to take care of themselves and their baby without fear of causing detriment to their career and dictates to leaders that a Marine should not be pressured to opt out of maternity leave. *MARADMIN 331/18*, *Changes to Parental Leave Policy*, distinguishes between convalescent leave and caregiver leave, highlighting both the physical (postpartum) recovery of the birthparent and the care required for the infant. However, if a healthcare provider determines that a Marine requires more convalescent leave, it is deducted from caregiver leave. This blurs the line between postpartum recovery and caregiver leave. The Marine Corps should not reduce caregiver leave if the birth parent requires more time to physically recover.

Breastfeeding

Once a Marine has given birth to their child, current regulations are inadequate for basic child-raising functions after the Marine returns to duty. Breastfeeding is not only beneficial to the child but also to the Marine. Studies have shown the benefits of breastfeeding, such as accelerated weight loss for the mother, less time lost at work due to a healthier child, and cost effectiveness, as stated in *Reproductive and Developmental Hazards*.[34] Furthermore, the ACOG argues, "Enabling women to breastfeed is a public health priority because, on the population level, interruption of lactation is associated with adverse health outcomes for the women and her child, including higher risks of breast cancer, ovarian cancer, diabetes, hypertension, and heart disease, and greater infant risks of infectious disease, sudden infant death syndrome, and metabolic disease."[35] Per the Pregnancy Order, Marines "who desire to continue breastfeeding" must notify their command as soon as possible to allow the command to determine how best to support them.[36] The word "desires" implies that breastfeeding is a luxury for the new mother rather than a benefit to all parties.

The Pregnancy Order mentions nothing about the benefits of breastfeeding. Yet, *Reproductive and Developmental Hazards* specifically states, "Breastfeeding should be encouraged under most circumstances despite the presence of trace amounts of en-

[33] *MARADMIN 102/16, Marine Corps Maternity and Convalescent Leave Policy Update* (Washington, DC: Headquarters Marine Corps, 2016).
[34] *Reproductive and Developmental Hazards*, 24.
[35] "Optimizing Support for Breastfeeding as Part of Obstetric Practice," American College of Obstetricians and Gynecologists, October 2018.
[36] Pregnancy Order, 11.

vironmental toxins."[37] A simple statement in the Pregnancy Order recommending breastfeeding would normalize it in the workplace. Such a statement would make it clear to both Marines and their supervisors that is acceptable for a Marine to take time to pump, and that it is not a burden on the command.

To breastfeed their child, a Marine needs a location and time to express milk. The Pregnancy Order states that "when possible, the servicewoman who continues to provide breast milk to her infant upon return to duty shall be, at a minimum, afforded the availability of a clean, secluded space . . . for the purpose of pumping breast milk."[38] While the location requirement is clearly defined, the Pregnancy Order is ambiguous in terms of the time required to express milk. The order states, "The time required for breast milk expression varies and is highly dependent upon several factors. . . . Supervisors and lactating servicewomen will collaborate to keep to a minimum the amount of time required for milk expressions."[39] Women typically pump every two to three hours for 15 to 20 minutes, taking less than one hour of an eight-hour workday.[40] This fact should be stated in the Pregnancy Order, as lactation consultants and studies have already determined this process. Since the current Pregnancy Order implies that breastfeeding is a burden on the unit, including typical pump times in the order can help manage expectations. If a Marine requires more than 20 minutes to pump, they can communicate this to their supervisor and get a medical chit from a lactation consultant if necessary. The verbiage "to keep to a minimum" adds undue pressure to a new mother who cannot accelerate the time for milk expression. Formalized education during pregnancy about breastfeeding and milk expression would help all Marines understand the benefits of breastfeeding, the mechanics of pumping, and techniques that could minimize time away from the workplace. If such a course was made available to all Marines, supervisors and commanding officers could better educate themselves on what their Marines require during the postpartum phase. Clear requirements and expectations outlined in an order, along with education, can eliminate stress for new parents and manage the expectations of both birthparents and their supervisors.

Recommendations

Changes in an organizational culture can be daunting. Nevertheless, simple changes in policy can help affect culture. Human resources expert Horace McCormick argues that structures help reduce unconscious bias in the workplace by deliberately slowing the brain down and aid in decision making. According to McCormick,

[37] *Reproductive and Developmental Hazards*, 24.
[38] Pregnancy Order, 11.
[39] Pregnancy Order, 11.
[40] Wendelin M. Slusser et al., "Breast Milk Expression in the Workplace: A Look at Frequency and Time," *Journal of Human Lactation* 20, no. 2 (2004): 168, https://doi.org/10.1177/0890334404263731.

> Unconscious bias is the result of the brain's lightning speed in taking in, tagging, and sorting information. To slow the brain down, [human resources] and talent management professionals can, in conjunction with other senior leaders, create structures for activities like decision making. . . . These structures will allow for more deliberative actions.[41]

In the Marine Corps, these structures take the form of orders. While the academic world uses the term *unconscious bias*, the Marine Corps uses the term *unintentional bias*. Unintentional bias towards pregnancy is created by the language and tone in these structures. Through changes in language and tone in Marine Corps orders and policies, some of this bias can be removed. Additionally, introducing practical and clear changes to the Pregnancy Order, incorporating a pregnancy and postpartum fitness program into the MCPFP Order, and creating a pregnancy-focused MarineNet class that any Marine can access should remove some of the bias against pregnant Marines. The following recommendations focus on changing the culture surrounding pregnancy.

The following changes are recommended for the Pregnancy Order:

1. Replace "servicewoman" with "Marine" throughout the document. This reiterates to the pregnant Marine and their supervisor that they are still a Marine while pregnant.
2. Under the "Individual Responsibilities" heading (4.a), include, "The Marine is responsible for maintaining fitness throughout her pregnancy once cleared by her OB healthcare provider. Pregnancy does not exempt the Marine from physical training, although the Marine may be exempt from unit physical training. The pregnant Marine is responsible for communicating with her healthcare provider any concerns or questions about her fitness routine or program during routine visits." This ensures that the pregnant Marine and their direct supervisor, not just their commanding officer, understand that the Marine needs to remain fit throughout their pregnancy even if they cannot participate in unit physical fitness.
3. In the "Individual Responsibilities" section (4.a.6), rewrite to state, "After delivery, *Marines* will participate in a *mandated* exercise program, as soon as medically authorized, to prepare for the physical fitness test (PFT) *and combat fitness test (CFT)*. *No earlier than 9 months and no later than 12 months after being returned to full duty*, the *Marine* is required to take the PFT *or CFT, dependent on the time of year*." Italics indicate the recommended change to the order. This change reflects the intent of *MARADMIN 570/18*, allowing the Marine ade-

[41] Horace McCormick, *The Real Effects of Unconscious Bias in the Workplace* (Chapel Hill: University of North Carolina, 2016), 8.

quate time for recovery. It also provides a window in which to conduct the physical fitness test or combat fitness test and holds the Marine accountable to fitness and height/weight standards in an appropriate amount of time.

4. Under the "Education of Marines" heading (4.c), include, "Supervisor will educate their pregnant Marine(s) on the contents of this order." As there are fewer than 1,000 pregnant Marines in the Marine Corps each year, supervisors and the pregnant Marines themselves may be unfamiliar with the order. If the supervisor is required to educate the pregnant Marine on the order, both parties will understand what the Marine's capabilities, limitations, and responsibilities are. This is also a means of educating the Marine Corps from both the top down and bottom up.
5. Due to the age of the Pregnancy Order, the "Reporting Requirements" (6) section is obsolete. However, this section should reflect that pregnancy is the reason that a Marine is exempt from the physical fitness test, combat fitness test, and height/weight standards. This change from *MARADMIN 657/18* clarifies that a Marine is not injured but pregnant. It also normalizes pregnancy as something to be accepted rather than hidden. Practically, it allows the Marine Corps to easily track statistics on physical fitness test/combat fitness test performance post-pregnancy to determine whether there needs to be a change to a pregnancy and postpartum fitness program.
6. The "General Limitations" (9) and "Specific Limitations" (10) sections need to be completely updated to be more specific. This revision will ensure that a unit can operate at maximum effectiveness and clarify a Marine's actual limitations rather than unnecessarily isolating a pregnant Marine from their fellow Marines. The Pregnancy Order should not be more restrictive than the guidelines outlined in *Reproductive and Developmental Hazards*. This author recommends that an OB and occupational healthcare provider give more detailed input for this section.
7. Under the "Convalescent Leave" heading (14), in addition to updating the new policy outlined in *MARADMINS 102/16, 331/18*, and *570/18*, include, "No member shall be disadvantaged in her career, including limitations in her assignments (except in the case where she voluntarily agrees to accept an assignment limitation), performance appraisals, or selection for professional military education or training, solely because she has taken maternity leave."[42] This line is directly from *MARADMIN 102/16* and acts as a reminder to the Marine and their supervisor that taking maternity leave should not hurt their career.
8. In the "Support of Servicewomen with Nursing Infants," section (15.a), reword this paragraph to read, "*Marines* who *plan* to continue breastfeeding

[42] *Marine Corps Maternity and Convalescent Leave Policy Update*.

upon return to duty will notify their chain of command at the earliest possible time to allow the command to determine how best to support them and facilitate the prompt evaluation of the workplace for potential hazards." Italics indicate the recommended change to the order.

9. In this same section, "Support of Servicewomen with Nursing Infants," (15), add, "Breastfeeding provides significant benefits to both mother and infant. Babies who are fed breast milk have fewer illnesses, and there may be a better "bond" established between the mother and baby. Breastfeeding is more cost-effective than formula feeding and can be a major benefit in helping the mother lose weight gained during pregnancy."[43] By including this statement from *Reproductive and Developmental Hazards*, Marines and their supervisors understand that breastfeeding is not an inconvenience or burden but rather something that benefits the Marine, the child, and the unit.
10. In this same section, "Support of Servicewomen with Nursing Infants" (15.c), rewrite to state, "The recommended time required for expressing milk is 15 to 20 minutes, every two to three hours. This time does not include travel time to pump location and the setup and cleaning of equipment. Lactating Marines will communicate to their supervisors if they are not able to meet their milk expression requirements in the allotted time. If a Marine requires assistance with breastfeeding or milk expression, lactation consultants are available at the MTF to assist in this endeavor." This defines how breastfeeding will affect the workday of a lactating Marine. The supervisor and Marine understand the time requirement, and there is no undue pressure to speed milk expression.
11. Under the "Action" heading (21.a.3), rewrite to state, "Commanding officers will ensure that supervisors understand the contents of this order and confirm that supervisors brief their pregnant Marines on the contents of this order." This moves the responsibility for briefing the pregnant Marine from the Marine's commanding officer to their supervisor. This is critical for normalizing pregnancy for multiple reasons. The Marine Corps operates within the constraints and restraints of the chain of command. If a commanding officer counsels each pregnant Marine, the chain of command is breached, sending the message that a pregnant Marine operates outside of the chain of command. Pregnancy needs to be a part of Marine Corps life, not an exception. Additionally, if the commanding officer counsels each pregnant Marine, the supervisor is not held accountable for understanding and counseling on the contents of the Pregnancy Order. This can inhibit open communication between a pregnant Marine and her supervisor.

[43] *Reproductive and Developmental Hazards*, 24.

The Marine Corps' fitness orders require a policy overhaul to incorporate pregnancy, as both orders currently omit pregnancy. A comprehensive fitness program for pregnancy and the postpartum period should be incorporated into the Fitness Test Order.[44] By incorporating such a program into the Fitness Test Order rather than the Pregnancy Order, the Marine Corps demonstrates that all Marines, including pregnant Marines, are required to uphold the standards of fitness. Further, this sends the message that pregnant Marines are part of the larger Marine Corps community and not separated in their own program. This program would hold Marines accountable to fitness throughout pregnancy and the postpartum period. The Army has implemented such a program called the Pregnancy/Postpartum Physical Training Program (PPPT). The PPPT is "designed to maintain the health and fitness levels of pregnant soldiers and successfully integrate postpartum soldiers back into unit physical fitness training programs with emphasis on achieving the Army physical fitness training standards and meeting height/weight requirements."[45] Soldiers reported that benefits of PPPT program, "included healthier baby, weight gain/loss, fitness sustainment, injury prevention, improved psychological well-being, and ease of birthing process."[46] A similar program developed for the Marine Corps could have comparable benefits. This program should be broken into two components: 1) education on the anatomy and physiology of pregnancy; and 2) fitness during pregnancy and the postpartum period.

The first component of the fitness program should incorporate anatomy and physiology education. Education is critical because it informs athletes on how to safely continue to train throughout pregnancy, identifies when it is harmful to train, distinguishes when an athlete should seek medical care, and dispels the myth that fitness is incompatible with pregnancy. Kawaguchi and Pickering identify seven anatomic and physiological changes that affect pregnant athletes: the endocrine system, gestational weight gain, postural changes, musculoskeletal system, cardiovascular changes, respiratory changes, and nutritional changes.[47] Each of these transformations affects a pregnant Marine's body and should be included in the education. The better a Marine understands the changes that their body undergoes, the better they can train. Furthermore, the ACOG has also published guidelines for fitness during pregnancy that include which sports to avoid and warning signs to discontinue exercise during pregnancy.[48] This component of the program should be made available to all Marines via MarineNet so that operations Marines, supervisors, and commanding officers can also understand the anatomy and physiology of their pregnant Marines.

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[44] *MCO 6100.14, Marine Corps Physical Fitness Program (MCPFP)* (Washington, DC: Headquarters Marine Corps, 2018).

[45] Laurie A. Kwoiek, Cristóbal S. Berry-Cabán, and Sean F. Thomas, "Pregnant Soldiers' Participation in Physical Training: A Descriptive Study," *Military Medicine* 176, no. 8 (August 2011): 926–31, https://doi.org/10.7205/milmed-d-10-00231.

[46] Kwoiek, Berry-Cabán, and Thomas, "Pregnant Soldiers' Participation in Physical Training."

[47] Kawaguchi and Pickering, "The Pregnant Athlete, Part 1," 39–43.

[48] "Physical Activity and Exercise during Pregnancy and the Postpartum Period."

The second component of a pregnancy and postpartum fitness program should be exercise-related. The Marine Corps could execute this part of the program through classes at designated times or remotely. If executed remotely, a Marine would be held accountable for physical fitness by their command and could check in with a qualified physical trainer with any questions or concerns. Additionally, a Marine should be required to discuss fitness with their healthcare provider at each pregnancy-related appointment. During the first trimester, a Marine can exercise as usual. The ACOG states, "Pregnant women who were sedentary before pregnancy should follow a more gradual progression of exercise. Although an upper level of safe exercise intensity has not been established, women who were regular exercisers before pregnancy and who have uncomplicated, healthy pregnancies should be able to engage in high-intensity exercise programs, such as jogging and aerobics, with no adverse effects."[49] The ACOG recommends "that low-risk pregnant women participate in physical activity for 30 minutes or more on most, if not all, days of the week."[50] During the second and third trimesters, changes may have to be made to the exercise routine, which should be discussed with a healthcare provider or qualified physical trainer. However, the Marine should still be held accountable for fitness through an established fitness program, even if they cannot participate in unit physical training. After a Marine has their child, and even after their convalescent period, they cannot simply resume a normal fitness routine. Several concerns include abdominal separation, pelvic floor damage, and increased joint laxity.[51] Proper training during the postpartum period is critical to avoid injury and gain strength and endurance. Further studies are recommended to determine the best way to incorporate a pregnancy and postpartum fitness program into the MCPFP Order.

In addition to anatomy and physiology education, pregnant Marines and their supervisors should have access to a breastfeeding class through MarineNet. This class, separate from the anatomy and physiology education, should include the benefits of breastfeeding, the average time and frequency required to express milk, safe breastmilk handling procedures, and best breastfeeding and pumping practices. The breastfeeding and pumping practice can give practical information on how to maintain a milk supply and how to save time while expressing milk. Since the Marine Corps has such a low percentage of women, and an even smaller percentage of whom are mothers, there are not always mentors available to lactating Marines. A MarineNet course that educates pregnant Marines and their leadership about breastfeeding benefits the individual Marine and the Marine Corps, as well as normalizes breastfeeding in the Marine Corps.

[49] "Physical Activity and Exercise during Pregnancy and the Postpartum Period."
[50] "Physical Activity and Exercise during Pregnancy and the Postpartum Period."
[51] Katherine E. Carlson, "Things Don't Just Go Back to Normal: The Implications of Antenatal and Postpartum Physiology and Morphology for the Resumption of Fitness Testing" (master's thesis, Marine Corps University, 2015), 16–22.

Conclusion

Women are part of the Marine Corps and have been for more than 100 years. With the inclusion of women into ground combat MOSs, women are now a part of every aspect of the Marine Corps. Yet, there is still a culture of disenfranchisement among female Marines. The current policies for pregnancy and gender neutralization create biases in the minds of both female and male Marines that it is problematic to be a woman in the Marine Corps.

By normalizing pregnancy, postpartum recovery, and breastfeeding, the Marine Corps can better help to integrate women into the Service. Pregnancy is a natural part of many women's lives and should be acknowledged as such in policy rather than being treated as a temporary malady. From notification of pregnancy to postpartum recovery, having a child consumes approximately 18 months of a Marine's physical life. This interval is more than one-third of an enlistment period. This time cannot be ignored but should instead be accepted as a natural part of a Marine's life. Ultimately, indoctrinating the care for a Marine during this period of their life helps preserve a lethal force while retaining the talent that women bring to the Corps.

The All-Volunteer Force Contribution to the Civil-Military Gap and the Rise of an American Military Caste

By Major Josef H. Wiese, U.S. Marine Corps[1]

> *A standing force, therefore, is a dangerous, at the same time that it may be a necessary, provision. On the smallest scale it has its inconveniences. On an extensive scale its consequences may be fatal. On any scale it is an object of laudable circumspection and precaution.*
>
> ~ James Madison[2]

James Madison, an American founding father and architect of the Constitution of the United States, understood the necessity of a military in preserving the nation's security as well as the threat that this same military represents to the institutions of government. A constant tension exists between the power that resides in the military and the state that exercises control over that military. This relationship is especially important in a republic that holds the application of liberal values and personal freedom as integral to the relationship between society and those who govern them. Madison's remarks remain prescient today, when American militarism threatens to eclipse the system of checks and balances that keep military power subordinate to the state, and when the critique of that growth is silent, indifferent, or ineffective.

Madison's view about the relationship of military institutions to civilian control is echoed in the writings of Prussian military theorist Carl von Clausewitz, who reasoned, "The subordination of the political point of view to the military would be contrary to common sense, for the policy has declared the War; it is the intelligent faculty, War only the instrument, not the reverse. The subordination of the military point of view to the political is, therefore, the only thing which is possible."[3] Today,

[1] Maj Wiese is a distinguished graduate of MCU's Command and Staff College. This paper received the Col Bevan G. Cass Award, first place, for academic year 2018 – 19.

[2] Alexander Hamilton, James Madison, and John Jay, *The Federalist Papers*, ed. Clinton Rossiter (New York: New American Library, 2003), 254.

[3] Michael C. Desch, *Civilian Control of the Military: The Changing Security Environment* (Baltimore, MD: Johns Hopkins University Press, 1999), 6.

the balance that keeps the military instrument of power subordinate to the political instrument of power is threatened. For the past 18 years, the United States has been in a protracted state of war, and the gap between those who serve and those they serve continues to grow. Amid this increasing chasm, Americans exercise less participation in the military and therefore have a diminishing personal investment in the decision to employ military force. When force is employed, Americans compensate for their guilt from lack of participation by elevating servicemembers to heroic status in society. This status is part of a reinforcing loop that generates elevated trust in military elites, which in turn leads to deference to military viewpoints and decision making. As public sentiment for the military eclipses the trust in public institutions, the military's influence grows, and the foundational principles of republican government erode.

This reinforcing feedback loop begins with an understanding of the growing civil-military gap. Thomas E. Ricks states in *Making the Corps* that "the idea of a gap between the military and American Society is hardly new."[4] Though his comment was written more than two decades ago in 1997, it resonates after the addition of a protracted state of war such as the one that has embroiled the United States for the past 18 years. The U.S. military has been an all-volunteer force since the termination of the draft in 1973. Military service is no longer an obligation for all citizens but a duty for the few who self-select. With today's reliance on technological sophistication and specialized training, the vast armies of the past have given way to forces that no longer require mass mobilization of citizen soldiers to meet the needs of the nation. Reductions in manpower requirements inversely coincide with greater capability and capacity in the hands of fewer warfighters. This professionalization of the force has enabled the United States to achieve unparalleled success on the battlefield, yet increased capability has also come with hidden costs as the military has become the default tool for achieving national interests abroad.

The Evolution Toward the All-Volunteer Force

In George Washington's "Sentiments on a Peace Establishment," he captures a dichotomy that has faced American democracy from its foundation to the present day: "a large standing Army in time of Peace hath ever been considered dangerous to the liberties of a Country, yet a few Troops, under certain circumstances, are not only safe, but indispensably necessary."[5] The relationship between freedom and liberty stands in contrast with the need for national security and the military that guarantees it. It was Washington who established the tradition of civilian control over the military in the fledgling republic when he intervened in a plot by many of his officers to strong-arm the Continental Congress in Newburgh, New York, to en-

[4] Thomas E. Ricks, *Making the Corps* (New York: Touchstone, 1998), 274.

[5] George Washington, "Washington's Sentiments on a Peace Establishment, 1 May 1783," Founders Online, National Archives and Records Administration, last modified 13 June 2018.

sure the payment of debts to Army personnel in 1783.[6] He again manifested the republican virtues that the new nation attempted to represent when he turned down the opportunity to assume the powers of a monarch and demonstrated the peaceful passage of power from one elected president to another. Washington's many precedents laid the groundwork for how a new experiment in government should work. Since this firm foundation, the United States has built and disbanded armies as needs arose and maintained forces only to fulfill the security interests that required them. The constant rebalance of needs and awareness of the dangers in achieving that equilibrium was carried forward by future presidents who understood the inherent danger of a militarized state to democratic institutions.

One of the chief grievances that the colonies of America had maintained with Great Britain was the presence of a standing army.[7] Such an army represented the oppression and subjugation of the people at the hand of an otherwise neglectful government. This professional army was an extension of the state's power over the people. In contrast, the militia present in all the colonies reversed this distinction. A militia represented the people giving power to the state. With this understanding, the political leadership must have a convincing cause that meets a threshold for citizens to give up their primary trades and enter military service. Absent of a cause that would elicit volunteerism, there must be a legitimate threat to sanction compelled service in the militia forces. This arrangement represented the ideal of republican values: subordination of the individual to the needs of the whole. The militia fulfilled the needs of the colonies throughout their existence and were variously called on to fight Native Americans, quell uprisings, and augment British regulars during protracted campaigns when necessary. This organization of part-time soldiering was sufficient to fight the small wars that spilled over into the Americas as European powers quarreled over territorial ambitions and aspirations. During the American Revolutionary War, popular enthusiasm for the "rage militare" movement that engulfed the Americans following engagements at Lexington and Concord, Massachusetts, which had initiated hostilities between colonial subjects and British rule, served to augment the rank-and-file. As historians James Kirby Martin and Mark Edward Lender point out, this popular enthusiasm quickly waned, and the militia forces that were once satisfactory to counter the threats facing the colonies required a different form. George Washington and the Continental Congress responded by creating a standing army of regular soldiers. The Continental Army was pivotal in sustaining a war that surpassed the initial enthusiasms of part-time patriots and continued through years of struggle.[8]

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[6] James Kirby Martin and Mark Edward Lender, *A Respectable Army: The Military Origins of the Republic, 1763–1789* (Arlington Heights, IL: Harlan Davidson, 1982), 192–93.

[7] "The Declaration of Independence: A Transcription," National Archives and Records Administration, last reviewed 8 June 2022.

[8] Martin and Lender, *A Respectable Army*, 30–45.

These two concepts — the professional soldier and the militia — remain dual traditions in the relationship that Americans maintain with military service, principally regarding the values that each of these institutions represent. A nation founded on individual freedoms and consent of the governed is diametrically different from the strict, obedient, disciplined, and collective nature of military service. The citizen-soldier as a construct is no longer the ideal with the adoption of an all-volunteer force. Americans who took pride in their own defense and believed in the "minutemen" premise of a universal call to arms have been replaced by the all-volunteer force. Rather than demonstrating a universal obligation of all citizens, the all-volunteer force represents less than 1 percent of the population in the United States. As a compromise to the social unrest that erupted in the face of the Vietnam War, the United States discontinued compulsory service and ended the draft in 1973. This action successfully allowed for increases in military recruitment standards and removed a principal grievance that the people had with the government in compelling them to engage in unproductive wars abroad. An unintended consequence of this act, however, has been the breakdown between society and the military. In effect, the creation of an all-volunteer force divorces citizenship from military obligation. The result of this disunion is a highly capable military establishment under the direction of political leadership that faces reduced political costs in the decision to use military force. Society has become indifferent to the employment of the military because these decisions no longer directly influence the lives of most citizens. This rift becomes even more troubling when coupled with the growth of military power as the dominant instrument of national power. This trend is also compounded by extended conflicts and the social phenomenon of military adoration.

The draft was not a social equalizer, as many political theorists portend. Conscription that compels citizens to fight on behalf of national interests also serves to motivate the citizenry to critique frivolous wars that waste lives and material. But this is only true when the manpower necessity requires leveraging citizens to serve in great numbers and when the source of that manpower is shared equally among those that wield influence in government. In the case of the Vietnam War, the draft did not serve this requirement and failed to compel participation by all socioeconomic backgrounds, particularly by those who became political elites later in life. The all-volunteer force became essential in repairing the damage that the draft had on the military and society, and it enabled the United States to repair that societal rift which had been created by an enduring limited war. However, this victory is overshadowed by the apparent divorce that has occurred between the nation's political masters and the society they serve in the decision to go to war as well as the execution of conflict. In a strange paradox, Americans love their military, hate their politicians, and have become apathetic to long-term wars. If war is a clash of wills and the common perception about Vietnam is that the United States lost because

it did not have the will to succeed, then politicians have created a new paradigm with an all-volunteer force in which the will of the people is no longer relevant to prosecute a war, use force, or even declare war.

Cause for Concern

The existing theories of civil-military relations begin with Carl von Clausewitz and hinge around his statement that "war is merely the continuation of policy by other means."[9] This linkage between political objectives and the conduct of war offers a foundation in understanding the relationship between a military and the government it serves. Clausewitz goes on to develop the idea of a trinity: the people; the army; and the government.[10] The Clausewitz trinity depicts three primary relationships: the relationship the military has with the people; the relationship the people have with the government; and the relationship the government has with the military. Each element exhibits tension relative to the others with a balance achieved that reflects the strength and influence of each element within the nation. As government institutions fall in the perception of society while military institutions grow in esteem, the careful balance of power and influence in the state shifts from the government to the military. These conditions create opportunities to circumvent government institutions and expand military control, as seen in the example of Germany during World War I.

During World War I, Imperial German Army general Paul von Hindenburg and his chief of staff, Erich von Ludendorff, successfully wrested control of the German government away from civilian leadership and established a military dictatorship. Their control of the government allowed them a free hand in making strategic decisions on policy issues deemed intrinsic to the war effort, including unrestricted submarine warfare, policies on the eastern front regarding Poland, and annexation of territories from the receding Ottoman and Austro-Hungarian empires. Each of these decisions ran counter to civilian authorities and from the perspective of hindsight had deleterious effect on the outcome of the war for Germany, directly contributing to its subsequent defeat.[11] This case does not illustrate the foregone conclusion that military leaders are unsuitable for government. Instead, it illustrates a system of checks and balances that the overwhelming influence of a military establishment corrupted. A failure of civilian control is apparent when the military dominates decisions and civilians consistently defer or are overridden in strategic decision making.[12]

As American military might has grown to meet a global security environment with broad national interests, the relationship between the state and its military

[9] Carl von Clausewitz, *On War*, ed. Michael Eliot Howard and Peter Paret (Princeton, NJ: Princeton University Press, 2008), 87.
[10] Clausewitz, *On War*, 89.
[11] Desch, *Civilian Control of the Military*, 77.
[12] Desch, *Civilian Control of the Military*, 4.

is no longer one that can be settled through disbanding the force or retracting foreign missions. The United States must instead embrace a standing military and simultaneously fight to sustain control over this body in the face of the dominant and forceful exertions of a military establishment. This reality presents a new set of problems. In John Shy's chapter in *Makers of Modern Strategy: From Machiavelli to the Nuclear Age*, he makes the following statement: "Conservatives no less than liberals feared a military so professionalized that it would be alienated from state and society, and the military in turn sought means to avoid external controls that these fears might impose."[13] This passage describes the perennial conflict between the forces of government and the military. Though Shy refers to Napoleon Bonaparte's military coup to seize power in France in 1799, his words remain relevant to the current discussion of civil-military relations. Regardless of partisan divisions on key policy decisions, an unchecked military establishment is predisposed to seek insulation from attempts to reign it in and direct its actions, as was seen in the example of Germany's usurping militarism during World War I.

Participation Gap

Since 11 September 2001, the United States has been fighting terrorism in Afghanistan, Iraq, and Syria with a track record, respectively, of failure, near success, and unknown results. As of this writing, only one of these wars has been ended with the ensuing peace of Iraq crumbling into the rise of the Islamic State of Iraq and Syria (ISIS) necessitating further armed conflict. Amid this backdrop, Americans actively thank those who serve, offer discounts on services and goods, and celebrate the military as an organization in high esteem.[14] This relationship presents a fundamental problem. American support for warfighters is superficial and does not coincide with a sense of obligation to serve themselves. This conundrum is the result of a Faustian bargain that succeeded in separating the obligation of military service from citizenship with the rise of an all-volunteer force.[15]

While discontent with the outcome of these wars, society engages in a form of adoration for those that volunteer to fight on their behalf. This public sentiment does not extend to the act of service itself. Former U.S. secretary of defense Robert M. Gates captured this sentiment when he remarked, "For a growing number of Americans, service in the military, no matter how laudable, has become something for other people to do."[16] Being a citizen of the United States does not require mili-

[13] John Shy, "Jomini," in *Makers of Modern Strategy: From Machiavelli to the Nuclear Age*, ed. Peter Paret (Princeton, NJ: Princeton University Press, 1986), 161.

[14] Rosa Brooks, "Civil-Military Paradoxes," in *Warriors & Citizens: American Views of Our Military*, ed. Kori Schake and Jim Mattis (Stanford, CA: Hoover Institution Press, 2016), 22.

[15] Faust is a literary protagonist created by Johann Wolfgang von Goethe who makes a deal with the devil offering his soul in exchange for temporary satisfactions. In this context, the short-term gains of an all-volunteer force are outweighed by the long-term impacts of this decision in disrupting the republican ideals of an army composed of citizens.

[16] Brooks, "Civil-Military Paradoxes," 23.

tary service. In fact, the United States no longer needs as many citizens to serve in the armed forces as technology and the changing character of modern warfare reduce manpower requirements. Most Americans enjoy private lives unburdened by a need to defend or participate in the government or its many manifestations. Aside from the nuisance of jury duty there is a detachment from the need to be active in or serve the community at large. Payment of taxes funds services that others will perform.

Understanding the gap that has grown between civilian elites and military elites can be done in the context of changing demographics regarding who serves within the military. In World War II, 453 graduates of Harvard University died, compared to 488 graduates of the U.S. Military Academy at West Point.[17] These figures represent a shared burden between primary institutions of higher learning for political elites and military elites. According to West-Point.org, an alumni connections page for the academy, more than 100 graduates have been killed in the Global War on Terrorism since 11 September 2001.[18] According to the Harvard Veterans History Project, only two graduates lost their lives in these same conflicts.[19] The disparity and contrast between these two sets of figures is stark. Harvard is not the only elite institution in the United States, but the marked difference in shared sacrifice speaks to the societal gap between those that serve and those that do not. This disengagement, as noted civil-military relations theorist Andrew J. Bacevich puts it, corresponds to a loss of public outcry in decisions to go to war or the conduct of those wars by the body of citizens best placed to provide necessary critique and political influence: the political elites. Bacevich argues, "As an immediate consequence, Washington's penchant for war has appreciably increased, without, however, any corresponding improvement in the ability of political and military leaders to conclude its wars either promptly or successfully."[20] Indifference has forfeited the consent of the people in matters of military affairs, and the forcing function of shared sacrifice has removed chief motivations for dissent.

The primary arguments against the all-volunteer force have several themes. First, the all-volunteer force divorces citizens from military affairs, including decisions in war and when to go to war. Protest and critique of military affairs remains, but it is marginalized by the lack of public outcry that was seen in other unpopular conflicts such as the Vietnam War, during which there were wide demonstrations and acts of civil unrest as youths and activists pushed back against government policies that were undergirded by compulsory service. The second theme of the all-volunteer force critics centers around the idea that military service builds a bet-

[17] Andrew J. Bacevich, *Breach of Trust: How Americans Failed Their Soldiers and Their Country* (New York: Henry Holt and Company, 2013), 21.
[18] "In Memoriam — 9/11: West Point Graduates Who were Lost as a Result of the War on Terror since 9 – 11," West-Point.org, accessed 22 March 2019.
[19] "Harvard Veterans History Project," Harvard Veterans Alumni Organization, accessed 22 March 2019.
[20] Bacevich, *Breach of Trust*, 41.

ter citizen. These arguments look to the military to impart republican values on the citizenry. A republican in this context is someone committed to the idea of liberty and rule of law. Historian Bernard Bailyn describes the republican ideal embodied in the nation's founding as faith "that a better world than any that had ever been known could be built where authority was distrusted and held in constant scrutiny; where the status of men flowed from their personal qualities, not from distinctions ascribed to them by birth; and where the use of power over the lives of men was jealously guarded and severely restricted."[21] In other words, Bailyn describes a model citizen and a government that is judicious in the application of violence. The "school of the nation" theme appears widely and can be linked to perceptions of cultural degradation or corruption in greater American society. From this perspective, the creation of the all-volunteer force has eliminated the principal democratizing characteristic of the military in building invested citizens by limiting participation in the primary institution that imparts these civic virtues.

Service is not the exclusive monopoly of the armed forces. Citizens can also serve the state as firemen, police officers, and civil servants who administer the government, make legislation, and support the rule of law. Private citizens fulfill the needs of building and expanding the economic base of the country and are thereby justified in their pursuits. The military, by virtue of its profession, accepts great risk and hardship in the execution of foreign policy, but today this seemingly unjust demand for sacrifice is not levied on the individual without a precluding acceptance of this risk. The all-volunteer force serves to nullify the argument of unequal burden or bearing of the costs of pursuing national interests abroad. In return for such service, the nation offers competitive salaries, education opportunities, training, health benefits, and retirement benefits. To solicit volunteers requires competition with the civilian sector for both pay and benefits. The vision of open squad bays, meager pay, and involuntary sacrifice has given way to a new military that puts primacy on family readiness, individual privacy, and personal development. The dominant virtues of a military lifestyle such as stoicism, self-sacrifice, discipline, and courage remain integral to the profession, but they are modified by an all-volunteer force that must adapt to compete with the private sector to attract recruits or maintain talent.[22]

Geography and Familiarity Gaps

The civil-military gap between society and those who serve is also reflected in the separation that exists geographically. The military is an insular community. Servicemembers largely live in remote communities with separate housing on military installations with limited public access and their own hospitals and medical facil-

[21] Martin and Lender, *A Respectable Army*, 31.

[22] Morris Janowitz, *The Professional Soldier: A Social and Political Portrait* (New York: Free Press, 1971).

ities, schools, and grocery stores. These provide adaptive and flexible capabilities to the unique needs of military families and subsidize quality of life. They also act as a barrier between military families and the greater society at large. By and large, U.S. military servicemembers and their families are concentrated aboard a base or within a short distance of it. Base realignment and closure initiatives further aggravate this geographic separation, as communities of military families that were once spread across multiple states and regions are increasingly centralized into common locations. The result of this is that the inconvenience of military affairs such as deployments, continuous permanent change of station moves, and other facets unique to military life are not played out in the intimate settings of everyday citizens. This lack of direct exposure makes the prospect of war and its many costs a hidden or easily overlooked expense to most American citizens, who are only subjected to indirect exposures through media. War in this context is an abstraction rather than a cold reality. Gold Star parents and spouses are not neighbors or friends—they are statistics and acquaintances through Facebook feeds or public interest stories that do not register as immediate or alarming. This gap is designed to distance citizens from the cost of exercising power abroad and serves to limit dissent when these expeditions prove to be poorly conceived or executed.

The other aspect of this perceived divide is seen in the interaction between civilian elites in government and the military. A lack of understanding of the military among this population creates a barrier in communication and understanding. Jim Golby, Lindsay P. Cohn, and Peter Feaver refer to this phenomenon as the "familiarity gap."[23] As an example of the cultural differences that inhibit communications, codified definitions are found in military publications that outline the exact and objective nature of a task or phrase. This has application in the military realm. To contrast this, civilian political elites consider words and statements as subjective and open to interpretation.[24] This speaks to the nature of their discourse when operating a realm of compromise. It would seem that these fundamental differences could be resolved through dialogue, and indeed they form the nucleus of interactions between military and civilian leadership. What compounds this, however, is a lack of familiarity with military processes, capabilities, or limitations. A staffer in the White House reaching out to a peer at the Pentagon does not necessarily appreciate the strict hierarchy and chain of command that exists there or the depth and degree of what a simple request may entail. If the staffer had this appreciation, then they would perhaps have more realistic timelines for response or be more precise in making requests.

[23] Jim Golby, Lindsay P. Cohn, and Peter Feaver, "Thanks for Your Service: Civilian and Veteran Attitudes after Fifteen Years of War," in *Warriors & Citizens*, 97 – 141.
[24] Brooks, "Civil-Military Paradoxes," 40.

Elevation of the Armed Forces in Social Status and Military Deference

The idea of an elevated military caste in society is not new. It reflects a sense of superiority among those who serve over those they serve. With service comes a sense of entitlement and moral elevation over those who fail to hold this same sense of duty. Society reinforces this flawed identity by granting additional liberties and status to those who serve relative to those that do not. Precedence in seating on airplanes, discounts at local home improvement centers, and genuflecting toward veterans at the start of sporting events all serve to develop the construct that military servicemembers are better than average citizens and thereby rate more appreciation and cultural deference as a caste apart from the rest of society endowed with greater virtues.[25]

For the most part, those who participate in the all-volunteer force enjoy their status as symbols of patriotism and champions of freedom. It is akin to being a member of a champion high school football team: gawked at from afar, jealously regarded, and worshipped by a rabid fan base. This arrangement appears to work to the mutual benefit of the nation and those who serve. If society and the body of men and women who choose to serve are satisfied with this arrangement, then no problem exists in the current construct of civil-military relations, at least in the sphere of civil-military relations that is focused on society at large and the military. The issue instead stems from the other relationships that exist in Clausewitz's trinity: the relationship that society has with its politicians and government and the relationship that the military has with the government. As trust in the military climbs relative to government institutions, the military exudes greater influence over political leadership. The ability of the government to reign in this influence through punishment mechanisms is thereby diminished, disrupting civilian control.

In an essay titled "Thanks for Your Service," Golby, Cohn, and Feaver analyzed the results of a 2014 survey conducted by YouGov to empirically measure the attitudes of four populations: military elites, civilian elites, veteran masses, and nonveteran masses. One of the authors' key findings is a high degree of deference by civilians toward the military and a growing sense of entitlement among military members. The public's confidence in military officers showed that military judgment was given greater consideration than the judgment of civilian leaders. Furthermore, this phenomenon incentivized partisan leaders to use military leaders as salespeople for their own political goals.[26] The result of this trend is the disruption of the military's attempts to remain apolitical and an increasing sense that uniformed servicemembers are more trustworthy than civilians in issues of national security. This phenomenon was further explored in another essay by Jim Golby,

[25] Bacevich, *Breach of Trust*, 4.

[26] Golby, Cohn, and Feaver, "Thanks for Your Service," 134.

Kyle Dropp, and Peter Feaver published by the Center for a New American Security. This article analyzed survey data that demonstrated that military elites hold significant influence over public opinion regarding the use of force, and that this political leverage can become either a powerful aid or hindrance to policymakers.[27] Essentially, the authors identify a public trend of special trust and confidence granted to military elites that can be politicized. This trend was put on display after the election of Donald J. Trump to the U.S. presidency and his selection of key cabinet members for his administration.

Diminished Civilian Control

In 2016, President Trump selected numerous military general officers, both active duty and retired, to serve in key cabinet positions. Retired U.S. Marine Corps general James N. Mattis served as secretary of defense; retired U.S. Marine Corps general John F. Kelly as secretary of Homeland Security and later White House chief of staff; and U.S. Army lieutenant general H. R. McMaster and retired U.S. Army lieutenant general Michael T. Flynn as national security advisors. Their presence in a presidential cabinet, even in the capacity as retired officers, should be questioned by all Americans. This mass entry of military elites into the executive branch of government is a possible harbinger of praetorian militarism, the assertion of the military establishment over domestic policies and affiliation of the military establishment with a single political party. The president and his press secretary consistently referred to these men as generals despite their current positions and titles that took precedence. This action is a symptom of a society that exhibits a trust bias toward military leadership in matters of the state.

The selection of former military leaders as a means of galvanizing credibility and respect for the administration also stands in contrast to the lack of military records of those elected to office. Of the last four presidents of the United States, none have served on active duty in the U.S. armed forces. President William J. "Bill" Clinton avoided the draft during the Vietnam War through educational exemptions and went on to defeat President George H. W. Bush and Senator Robert J. "Bob" Dole, both veterans of World War II, in the presidential elections of 1992 and 1996. President George W. Bush avoided military service in Vietnam by serving as a pilot in the Texas Air National Guard; he defeated Vice President Albert G. "Al" Gore Jr. and Senator John F. Kerry, both veterans of the Vietnam War, in 2000 and 2004. President Barrack H. Obama never served in the military and defeated noted Vietnam War veteran and former prisoner of war Senator John S. McCain III in 2008. Finally, President Trump received a medical deferment for bone spurs during the Viet-

[27] Jim Golby, Kyle Dropp and Peter Feaver, *Listening to the Generals: How Military Advice Affects Public Support for the Use of Force* (Washington, DC: Center for a New American Security, 2013), 21.

nam War and avoided any service in the armed forces.[28] Each of these presidents represents different manifestations of political elites achieving positions of power in government. In triumphing over those with military credentials, it appears that civilian control of political office is retained within the executive branch. However, the participation and familiarity gaps that exist between these presidents and the political elites who comprise their cabinets become artifacts of a growing gulf between the military establishment and policymakers. Veteran status may not be necessary to win popular support in an election, but the veterans recruited into the election winner's administration disrupt the opportunity for political opponents to leverage dissent due to a presumption of apolitical competence in affairs of state that cloud public sentiment.

Military credibility with the American public was exploited on 20 October 2017 when White House press secretary Sarah E. Sanders shut down a question about comments made by President Trump's chief of staff, John F. Kelly. Sanders stated, "If you want to get into a debate with a four-star Marine general, I think that that's something highly inappropriate."[29] The context of this rebuke to a reporter is not nearly as important as its implications for the relationship between civilians and military leaders. In this instance, deference to a military leader was not simply implied—it was stated outright as a matter of fact. Kelly was fulfilling a civilian role in government, and it is the duty of an engaged media and civil society to critically assess his actions. Sanders' attempt to extinguish debate and invoke both infallibility and deference to military leaders in matters of the state signaled an alarming inertia. First, it undermined the principle of civilian control and indicated clearly that militarism has infected the highest office of the United States. Second, the overwhelming presence of military officers in key staff positions removed the veil of an apolitical military. Third, it suggested that the military stands apart from regular citizens as a class above, a new "estate" that recalled the hierarchical class divisions of prerevolutionary France.[30]

Samuel P. Huntington describes the professional military ethic in *The Soldier and the State: The Theory and Politics of Civil-Military Relations* and goes on to develop what has come to be referred to as the "normal" theory of civil-military relations, which advocates objective civilian control. Since this formative work, many other theorists have debated this idea and countered the notion that there exists a pure division between politics and warfighting. What is common to all these theories is that they attempt to identify problems in the decision and execution of war and the ability of the state to establish effective policy and achieve intended outcomes.

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[28] Steve Eder and Dave Philipps, "Donald Trump's Draft Deferments: Four for College, One for Bad Feet," *New York Times*, 1 August 2016.

[29] Jennifer Rubin, "Let's Not Staff a White House with Generals Ever Again," *Washington Post*, 23 October 2017.

[30] French class systems included the first estate, composed of clergy; the second estate, composed of nobility; and the third estate, composed of free peasants and workers. In this context, the military appears to exist on plain with a new form of social order that grants additional privilege of this new estate over regular citizens.

Huntington's theory emphasizing autonomous military professionalism and objective civilian control advocates for a clear division between politics and the military profession. In the case of Kelly, it can be assumed that he was fulfilling the role of a civil servant vice military officer as a continuation of his sense of duty and obligation to the republic. This assumption neglects his extensive military background and ties that continue to bind him to the military community as a veteran in a position of power and influence in the president's cabinet. What is also alarming is that Sanders continued to identify him as a general and remark that his status as a general makes him above reproach. Huntington argues that a "garrison state requires the centralization of power in the hands of the few."[31] In this case, the few would be the military elites composing the cabinet of the president. This incident speaks clearly to an overly powerful military exerting indirect control over political decisions and an institutionally ingrained disdain for attempts at accountability by the society it is supposed to serve.

Huntington also argues that military professionals who get involved in politics abandon a pure military mindset and adapt a more liberal viewpoint. He states, "The popularity of the military professionals depended on the extent to which they became men of the people rather than men of the military."[32] This presumption is true only when the means for achieving accountability over these military veterans-turned-politicians act against the conservative bias that served them in their former profession. In the absence of control mechanisms, such as public outcry or opportunity for debate, these shaping forces fail to convert the military mindset to a civilian one. In effect, without the gauntlet of public pressure or accountability mechanisms, military elites can remain representatives of the military establishment despite their new role as civilian leaders.

This case resembles Harold Lasswell's concept of the "garrison state." In 1937, while studying the Second Sino-Japanese War, Lasswell developed the construct of the garrison state and warned of an inherent danger to the state when engaged in perpetual war. He was particularly concerned with "a world in which the specialists on violence are the most powerful group in society."[33] As this military perspective grows, it usurps civilian institutions and control mechanisms. Essentially, there is a competition between the civilian-controlled state and the military-controlled state, which impacts the freedoms and liberties of society and threatens democratically held ideals of governance. The idea of a militarized state seems incompatible with republican values and American democracy today. The concept seems to apply more to the totalitarian regimes of Nazi Germany or the Soviet Union, both of which

[31] Samuel P. Huntington, *The Soldier and the State: The Theory and Politics of Civil-Military Relations* (Cambridge, MA: Belknap Press of Harvard University Press, 1957), 349.
[32] Huntington, *The Soldier and the State*, 159.
[33] Harold Lasswell, *Essays on the Garrison State*, ed. Jay Stanley (New Brunswick, NJ: Transaction Publishers, 1997), 56.

failed and are relegated to the past. However, this construct remains relevant in analyzing the United States after 18 years of conflict in the Global War on Terrorism.

The influx of military elites into civilian roles within government is not a new phenomenon. Huntington points out that from 1946 to 1948 there was a large transition of former military personnel into the government.[34] Congress refused three of these appointments to President Harry S. Truman's administration, and heated debate revolved around the fear of a loss of civilian control. Since then, the size of the U.S. military has dramatically decreased, and the nature of service has gone from compulsory to the all-volunteer force. In contrast to this previous period, President Trump appropriated the overwhelmingly positive public opinion of the military through his political appointments of popular and well-regarded generals. Congress even went so far as to waive requirements of extended military separation for James N. Mattis to assume the post of secretary of defense, an action that achieved bipartisan support.

Growing Leverage of the Military in Key Policy Decisions

Michael C. Desch provides empirical evidence of this growing deference to military opinion and decision making by analyzing major U.S. civil-military conflicts over key policy decisions on the use of force. As Desch states, "The best indicator of the state of civilian control is who prevails when civilian and military preferences diverge."[35] From 1989 to 1999, the author qualifies a series of 12 issues in which the president and their administration were in contest with military elites. Resolution is categorized by who prevailed in each case. During this period, the military viewpoint prevailed over civilian leaders on seven occasions, the civilian viewpoint prevailed on four occasions, and only a single incident received mixed support from both sides. This offers a sharp contrast to the same categorization of issues that occurred from 1950 to 1989. During this period, 30 issues were raised, with civilian positions prevailing in all but three cases, one of which had mixed support from the military.[36] Since 1990, the military viewpoint has shown a marked trend in eclipsing the views of civilian leadership, indicating the growing dissent over civilian control within the military organization.

Absent from Desch's original study are the policies and decisions from 2000 to the present day, during the Bush, Obama, and Trump administrations. However, Thomas Donnelly provides insight into the civil-military conflicts of the Bush and Obama administrations in his essay "Testing the 'Flournoy Hypothesis'." Donnelly characterizes a contentious relationship between President Bush's first secretary of defense, Donald H. Rumsfeld, and the Joint Chiefs of Staff over strategy in Iraq and Afghanistan. Donnelly further describes Rumsfeld's successor, Robert M. Gates,

[34] Huntington, *The Soldier and the State*, 360.
[35] Desch, *Civilian Control of the Military*, 4.
[36] Desch, *Civilian Control of the Military*, 136 – 39.

"browbeat[ing] the Pentagon into supporting the war effort more fully."[37] This clash between civilian control and military obedience demonstrates an unwillingness of the military elite to submit to objective control. Even as U.S. Army general Tommy R. Franks agreed to the heavy-handed conditions of the 2003 invasion of Iraq as dictated by Rumsfeld, the military community provided sharp dissent. The chief of staff of the U.S. Army, General Eric K. Shinseki, testified before Congress on the inadequacy of prescribed troop strengths.[38] In addition, numerous retired generals and admirals openly spoke out against the policy positions of the president's administration, representing a powerful lobby of military veterans who could be enlisted to influence civilian control over military matters.[39] Donnelly further analyzes President Obama's approach to civilian control and the military's response when he describes the military "jamming" or "boxing in" the president by leaking its preferred proposals to the press to undercut the administration in matters of policy and strategy.[40]

In *The New American Militarism: How Americans Are Seduced by War*, Andrew Bacevich echoes fears put forward by Laswell when he remarks that "those citizens who prefer an American republic to an American empire ought to view the changes under way in the U.S. armed forces as worrisome."[41] An all-volunteer force, he argues, does not reflect society and enables an imperialist foreign policy akin to Victorian-era Great Britain as opposed to the republican ideals that the United States espouses.[42] These policies are enabled through the indifference of civilian elites who currently fail to sufficiently critique or check a president's decisions on the use of force or employment of forces abroad. The author does not, however, advocate for a return to conscription, acknowledging that such a choice is unrealistic politically and likely a nonstarter.

Instead, Bacevich recommends incentivizing military service through free college education or loan forgiveness to entice all Americans to serve across all classes of society rather than just the underprivileged currently targeted for "voluntary" recruitment. This broader base of participants would serve to infiltrate the current divide between the citizen elites through wider appeal and thereby create a society better situated to weigh in on issues of military employment or budgetary decisions.[43] Bacevich also advocates reexamining the roles of the National Guard and the Service's Reserve components as well as reconciling the U.S. military profession to American society. In summary, existing institutions must dissolve the artificial constructs that separate the military establishment from civilian institutions and

[37] Thomas Donnelly, "Testing the 'Flournoy Hypothesis': Civil-Military Relations in the Post-9/11 Era," in *Warriors & Citizens*, 203.
[38] Bacevich, *Breach of Trust*, 97–99.
[39] Martin L. Cook, "Revolt of the Generals: A Case Study in Professional Ethics," *Parameters* 38, no. 1 (Spring, 2008): 4 – 15.
[40] Donnelly, "Testing the 'Flournoy Hypothesis'," 205.
[41] Andrew J. Bacevich, *The New American Militarism: How Americans Are Seduced by War* (New York: Oxford University Press, 2013), 219.
[42] Bacevich, *The New American Militarism*, 218.
[43] Bacevich, *The New American Militarism*, 220.

recruit a broader range of participants in the military system across all socioeconomic backgrounds. Quota systems that focus on socioeconomic diversity in recruiting could rectify this gap.

Regardless of which model of change is chosen, the fact is that change must occur to effectively align civilians with their military counterparts in government. Continued deference, worship, and abdication of responsibility by civilian elites fails to adequately meet the objectives put forth by the nation and will only continue the trend of protracted warfare with imperfect outcomes. A cross-pollination of the 1 percent who serve the nation and the 1 percent who exert political influence and intellectual direction is the only hope for arresting the trend toward militarism that currently plagues the United States.

On 20 December 2018, Secretary of Defense James N. Mattis tendered his resignation to President Trump, writing that "you have the right to have a Secretary of Defense whose views are better aligned with yours."[44] His action followed an announcement by the president that the United States would be withdrawing from Syria and pursuing plans for a complete withdrawal from Afghanistan. What is clear is that Mattis did not agree with these decisions and could no longer serve the Trump administration in good conscience. In so doing, he fulfilled the longstanding principle of the United States' republican traditions and subordinated the control of the military to civilian authority. Even as a civilian secretary, Mattis carried the legacy of his military service, and the Trump administration still referred to him by his rank as a former general officer in the U.S. Marine Corps on numerous occasions. His resignation as a civilian undergirds a separate identity from his military status and bodes well only if the Pentagon falls in line with his successor in abiding with the president's decree to leave Syria.

Mattis's statement represents a central element of the principles governing civil-military relations and the longstanding traditions of military subordination to civilian control that have become a hallmark in American democracy from the inception of the United States. From the Newburgh crisis in 1783 to today, the republican virtues of the American political system have firmly held to this precept. Mattis's departure effectively made him the last of the once-full stable of former and acting general officers to leave President Trump's administration. It can be said that the president surrounded himself with military officers to give credibility to his administration, but it can also be said that once those military officers were members of the team, they clashed with his worldviews and style of communication that effectively bypassed the normal channels of policy discourse and discussion and instead floated in the ether of the cloud through tweets and social media declarations. At the heart of this discussion is not the decisions of the president but the character of conflict between the military and civilian leadership that it represents.

[44] Vivian Salama, "Exit of Mattis, Last of Trump's 'Generals,' Removes Voice of Moderation," *Wall Street Journal*, 20 December 2018.

Conclusion

Americans scoff at the notion of a military coup as unlikely, as it is incompatible with democratic values and the republican virtues that are embodied in the military and upheld through a tradition of professionalism and obedience. This friction is the dilemma that currently faces the United States in the wake of wars that have lasted nearly two decades with outcomes that have been deemed less than victorious. Influence, power, and control are all similar terms and important to understand in the context of American civil-military relations. Control remains divided between the president and Congress. Power rests in the great capability and strength of the military with personnel and equipment. Influence exists in business, politics, lobbyists, and personalities. A growing military establishment uses these channels of influence to diminish and marginalize civilian control. The longstanding tradition of military subordination to civilian control that has existed since Washington's Continental Army is threatened by this growth.

There is a gap in civil-military relations in the United States. Perceptions of this fissure may not yet be a threat to national security, but it does exist and continues to grow. This gap does not manifest itself only between the population of the United States and the military servicemembers and veterans drawn from their ranks. It also exists between political and military/veteran elites. This divergence manifests itself in the formulation of foreign policy and debate over defense issues. It competes with a longstanding tradition of military subordination to civil control. As this gap widens, so too does the propensity for the United States to make policy decisions that damage the long-term geopolitical liberal order that has dominated international relations since the end of World War II.

Operational Art

The Conduct of Operation Desert Storm, 1990–91

By Major Justin M. Noone, U.S. Marine Corps[1]

During the 1980s, two battles were heating up in the world. One saw escalating tension between Iraq and its neighbors due to economic and ideological disputes about oil production and territory. The other, in the United States, was the question of how the U.S. military would fight and win in future conflicts using operational art and maneuver warfare versus attrition warfare. That these two conflicts would be thrust together into the international spotlight was far from evident at the outset of the decade. Operational art, as a means of linking the strategic goals of a nation to achievable tactical objectives and concentrating on winning a battle by focusing on enemies' weaknesses, was a highly debated topic in the years before the 1991 Gulf War. Iraq, ruled by Saddam Hussein and plagued by the remnants of the Iran-Iraq War (1980–88), was forced into economic austerity due to the influence of Kuwait and Saudi Arabia on the global oil markets. On 2 August 1990, Iraq invaded Kuwait, an ally of the United States, to gain economic authority in the region. This invasion demanded a response from the global community, which came even more quickly as Saddam threatened another U.S. partner, Saudi Arabia, with further aggression after securing Kuwait. The United States would have to plan for Saddam's removal from the region and entangle itself against one of the largest militaries known in 1990.

This chapter will argue that U.S. Central Command (CENTCOM) used the concept of operational art stemming from the military renaissance of the 1980s to translate national goals into operational objectives during Operation Desert Storm.

The year 1990 proved to be pivotal for both Iraq and the United States. Iraq suffered a national debt of nearly $65 billion owed to Kuwait for the execution of the Iran-Iraq War. Kuwait and other members of the Organization of the Petroleum Exporting Countries (OPEC) continued to depress oil prices through production rates to suit their own economies, causing financial harm to Iraq's economy.[2] The volatile mixture of debt and lack of income, combined with Iraq's desire for a seaport,

[1] Maj Noone is a distinguished graduate of MCU's Command and Staff College. This paper was nominated for the American, British, Canadian, Australian, and New Zealand (ABCAZ) Staff College Award for academic year 2018–19.

[2] Alberto Bin, Richard Hill, and Archer Jones, *Desert Storm: A Forgotten War* (Westport, CT: Praeger, 1999), 18.

exploded when Iraq, under questionable leadership, invaded Kuwait.[3] This action set off a chain reaction in the United States. The newly created CENTCOM, with U.S. Army general H. Norman Schwarzkopf Jr. as commander, undertook the most sophisticated military problem for the United States since the Korean War.[4] U.S. president George H. W. Bush immediately decided that the United States and concerned nations needed to form a coalition that garnered international support and used the United Nations (UN) and its articles to declare Iraq's actions illegal. The Coalition found the support of the UN Security Council.[5] The United States and its allies, mainly Saudi Arabia, understood that Iraq's actions would threaten peace in the Middle East, undermine the world economy, and extend the tyranny of power that Hussein was spreading. Specifically, Iraqi forces threatened Saudi Arabia's borders—an incursion by these forces could give Iraq control of the majority of the oil-producing Middle East. Going into the conflict, the assumption was that Iraq had a powerful position against its neighbors and one of the most capable militaries in the world.

The United States had a complex military problem to solve. The conflict in the Persian Gulf would put to the test the modern tenets of operational maneuver warfare that had become part of U.S. military doctrine during a defense awakening in the 1980s. The concept of operational art defined a new way of linking the strategic goals of the United States with tactical objectives on the battlefield. This new level of war provided for the division of planning efforts between staffs and goals and unity of effort absent from conflicts such as the Vietnam War. The U.S. Army led much of the effort to publish the meaning of the modern operational level of war, as well as the art that connected it to the other layers of warfare and planners, in the 1986 iteration of *Operations*, Field Manual (FM) 100-5. This document, crucial to the planning and execution of the operations in the Persian Gulf, described *operational art* as "translating the goals of policies into effective military operations and campaigns."[6] The operational level of war and the art of employing it allowed planners to take strategy from the president and combatant commanders and place that strategy against the available means to fight and the analyzed enemy center of gravity. A key component of this was the conduct of high-paced maneuver warfare against the enemy's perceived weaknesses and center of gravity to bring about a decisive victory.

The move away from the employment of science and attrition-style warfare to one based on the analysis of key components of enemies' capabilities and will

[3] Bruce W. Watson and Bruce W. Watson Jr., "The Iraqi Invasion of Kuwait," in *Military Lessons of the Gulf War*, ed. Bruce W. Watson et al. (London: Greenhill Books, 1993), 17.
[4] Williamson Murray and MGen Robert H. Scales Jr., USA, *The Iraq War: A Military History* (Cambridge, MA: Belknap Press of Harvard University Press, 2003), 13.
[5] Bin, Hill, and Jones, *Desert Storm*, 31–32.
[6] Richard M. Swain, "Filling the Void: The Operational Art and the U.S. Army," in *The Operational Art: Developments in the Theories of War*, ed. B. J. C. McKercher and Michael A. Hennessy (Westport, CT: Praeger, 1996), 165.

to fight, which was grounded in operational art, critical thinking, and economy of friendly forces, developed throughout the 1980s and was inculcated into key leaders by 1990. The U.S. Marine Corps, as with other U.S. Services, fought an internal battle against pure tactical analysis, system lethality obsession, and the removal of some of the science of protracted air and land campaigns against critical enemy strongpoints.[7] This move to the analysis of the operational level of war and applying art to the enemy's ability to maintain tempo and will, achieved by using available resources and campaign tempos against the enemy force over the entire breadth of their available capabilities decision-making cycle, revolutionized the planning process in the Gulf War.

Planning for a new operational level of war proved to be a major success of the conflict. Translating the strategic goals of the United States and its Coalition partners into operational campaigns executable by ground forces was the job of the U.S. and Coalition planners. Certainly, Hussein had allotted enough time and space to these planners, since he did not initiate actions against the United States and allowed enough bad blood to build between Iraq and Saudi Arabia to guarantee that long-term operational hubs in the latter country would go uncontested for six months before Desert Storm began.[8] As CENTCOM was the lead agency bridging strategy and tactics, General Schwarzkopf had little time to waste in creating the first operational goal. President Bush requested CENTCOM to protect the Saudi border with Kuwait and Iraq against Saddam's aggression, and so Operation Desert Shield was born in 1990.[9]

Later that year, the president outlined a new strategic goal to push Iraq out of Kuwait using a military coalition on the offense and asked CENTCOM to come up with an estimate of required strength and plan for the defeat of the Iraqi forces.[10] CENTCOM expressed these strategic goals as to free Kuwait, to prevent Iraq from maintaining a military that could threaten peace in the region, to destroy Hussein's arsenal of chemical and biological weapons, and to neutralize Iraq's nuclear weapons research projects. No goal of the Coalition was to occupy Iraq and displace Hussein's regime in Baghdad. U.S. Air Force planners began breaking out objectives for forces available, targeting objectives and the operational military-political goals of ensuring that any ground combat campaign would be brief. They intended to fully support a ground maneuver plan that sought decisive victory over Hussein's armored forces.[11]

CENTCOM established three strategic phases and one operational campaign phase. Air was to execute the majority of the president's strategic goals, while the

[7] Fideleon Damian, "The Road to FMFM 1: The United States Marine Corps and Maneuver Warfare Doctrine, 1979–1989" (master's thesis, Kansas State University, 2008), 7 – 8, 27 – 41, 95 – 112.
[8] Jeffrey Record, *Hollow Victory: A Contrary View of the Gulf War* (Washington, DC: Brassey's, 1993), 144.
[9] Lester H. Brune, *America and the Iraqi Crisis, 1990 – 1992: Origins and Aftermath* (Claremont, CA: Regina Books, 1993), 58.
[10] Brune, *America and the Iraqi Crisis*, 61.
[11] Buster C. Glosson, *War with Iraq: Critical Lessons* (Charlotte, NC: Glosson Family Foundation, 2003), 20 – 21.

operational campaign would be a fast-paced maneuver to defeat all remaining Iraqi ground forces.[12] This operational phase involved maneuver and air from every force in the coalition. The final strategic goal of defeating Iraq's ground forces translated to Coalition commanders at the operational level as a series of sweeping offensives aimed at the weaknesses in Iraq's defenses, as well as deceptions in the form of amphibious assaults and feints, all tied together at Service- and corps-level commands under the command of CENTCOM. After U.S. Navy and Air Force capabilities had met many of their operational-level objectives, they would shift to participate in support of the close, deep fight of the ground forces. CENTCOM used combined operations centers and high-speed communication systems with Joint force commanders to overwhelm the Iraqis and provided mission-style command and control of forces.[13]

The Navy played as vital a role as the other coalition air powers. The Navy was able to analyze the strategic goals and operational objectives of CENTCOM and place itself in support of all Coalition requirements. It was also able to entirely execute the naval blockades and sea control points necessary to sanction and isolate Iraq economically. Naval forces moved vast amounts of resources and air capabilities into the region to support the ground campaign. Somewhat less conspicuous was the Navy's successful isolation and destruction of Iraq's small near-shore navy in the days leading up to the land campaign, supporting Kuwaiti freedom and reinforcing military deception plans to feint an amphibious assault from the sea. From the destruction of the Iraqi Navy, to launching aircraft from carriers, to transporting and supporting an entire Marine expeditionary brigade (MEB), and to demining the Iraqi mines emplaced all along the Kuwaiti coast, the U.S. Navy understood and executed the clear operational objectives and translation of strategic goals that enabled the other Coalition forces to maintain momentum.[14]

The U.S. Marine Corps also played a vital, if complicated, role in the operational objectives of the Gulf War. As part of both the air and the ground phases of Desert Storm, the Marine Corps saw its traditional and technologically advanced capabilities used in equal fashion for the first time since the Korean War. Both the 1st and 2d Marine Divisions were placed under the umbrella of I Marine Expeditionary Force (I MEF). The Marine Corps' mission was to fulfill portions of all the operational goals in some capacity. These goals translated to an operational campaign that used deception and conspicuous use of combat power. I MEF began the ground campaign against Hussein by tying most of the Iraqi combat power to southern Kuwait, allowing liberating forces to the west to sweep into the less well-defended areas using speed and the tenets of maneuver warfare. The Marine Corps executed one of the largest feints in American history by moving an entire division from the

[12] Glosson, *War with Iraq*, 21 – 22.
[13] Peter Tsouras et al., "The Ground War," in *Military Lessons of the Gulf War*, 89 – 93.
[14] B. L. Cyr et al., "Naval Operations," in *Military Lessons of the Gulf War*, 127.

Kuwaiti coast to a position inland to attack in an unexpected direction, which went unnoticed by the Iraqis. The Marine Corps attacked 11 Iraqi divisions, applying the unofficial operational objective of speed. Where the Iraqis did fight, pace of forces and coordination of assets quickly forced them to cease.

The traditional capability that the Marine Corps was tasked to exercise was the amphibious assault. Although it was never used in practice during Desert Storm, the deception plan that CENTCOM executed included the formation of an MEB with 15,000 Marines off the coast of Kuwait to entice Iraq to commit a large amount of its combat power to defend Kuwaiti coasts early in the conflict.[15] The demonstration proved effective, and Marine amphibious power once again confirmed its value on the modern battlefield by creating a complex operational problem set for the enemy to navigate. During the Gulf War, the Marine Corps validated its tenets of maneuver warfare, operational art in the execution of fast-paced land campaigns, and the cornerstone capability of amphibious forces from the sea, all within six months.

The clear execution of strategic goals translated into operational objectives appeared to have been an incredible success for the U.S. military and its Coalition partners. There was debate during and after the war as to whether these operational objectives translated the strategic goals effectively. Indeed, a clearer strategic picture of goals and operational requirements were present in the Gulf War than in previous conflicts such as Vietnam, where a lack of strategy and operational links led to campaigns without distinct channels to victory. CENTCOM had options on how to execute the operation. U.S. and Coalition planners could have executed an air-only campaign and hope that economic sanctions combined with military pressure would place Iraq in a forced position to withdraw. The air-only plan, however, was not the decisive option on the table. The apparent problem did not involve the planning of the operation itself but rather the assessment of the tactical actions on the ground and the coordinating of ground forces.

While the war was a Joint success, the individual Services, achieving their operational objectives, nevertheless created tactical mistakes. The Marine Corps moved much faster in executing its maneuver war than the Army forces to its west, allowing Iraqi forces to flee. This tactical mistake led to the partial failure of the prescribed operational objectives—namely, to defeat Hussein's combat capability and leave him without an offensive military capability. Moreover, clear operational-level objectives did not mean flexibility once the conflict began. The successful air campaign destroyed much of the Iraqi will to fight, but it did not eject Iraqi forces from Kuwait despite achieving its other operational objectives. The main territorial dispute between Iraq and Kuwait, and a significant cause of Iraq's invasion, was the Kuwaiti Rumaila oil fields near the Iraq-Kuwait border. The oil fields were to be secured by Coalition forces at the outset of Desert Storm, securing both the

[15] Cyr et al., "Naval Operations," 131.

borders and economy of Kuwait, but in the fog of war and the pace of the conflict, they were left unsecured.[16] Another important point is that the complete defeat of the Iraqi Republic Guard, nearly completely deployed in Kuwait, may have led to the weakening, if not full collapse of, Hussein's regime. These missed opportunities cast doubt on the long-term success of Desert Storm and opened the door for Saddam to take an operational pause before beginning his expansionist rhetoric again. The Coalition planners and operational art laid out the objectives of the campaign to the leaders on the ground, leaving them room to maneuver to success, but in an unseen turn of events, those leaders did not time and control tactical objectives in a manner that would lead to the lasting success of strategic goals. This situation was the complete opposite of previous conflicts such as Vietnam, where successful tactics did not transcend to strategic victories in campaigns.

During the Gulf War, the United States faced one of the most complex military situations since the Korean and Vietnam Wars. Ensuring that the U.S. armed forces would not make the same mistakes as in Vietnam and avoid the operational complexity of Korea was a military renaissance in the 1980s, which linked strategic and operational objectives through a level of warfare and planning to create concrete operational objectives for task forces and Services to execute through actions at the tactical level. During the Gulf War, the United States translated and executed these operational objectives successfully. As often happens, history introduces new analysis and critique of the long-term success of these operational objectives, but in the political atmosphere of the time and the fog of war, planners reasonably set the conditions for tactical victories of the day and strategic achievements for the United States and its Coalition partners.

[16] Murray and Scales, *The Iraq War*, 12.

The Revival of the U.S. Military in the Post–Vietnam War Era

By Major Maia Baker, New Zealand Army[1]

Throughout the Cold War, the U.S. military establishment was caught in a state of tension between two political forces. On one hand, the United States sought to challenge the military dominance of the Soviet Union, defend its allies in Europe and Asia, and underwrite a liberal rules-based international order. On the other hand, successive U.S. presidential administrations were under constant pressure to reduce military spending. Meanwhile, the United States' unpopular and unsuccessful intervention in South Vietnam had a corrosive effect on the military and its position in the esteem of the American people. By the 1970s, the armed forces of the United States were overcommitted and ill-equipped to meet the likely contingencies of the Cold War. However, this did not become apparent until U.S. military leaders realized the implications of the Egyptian-Syrian attack on Israel in the Yom Kippur War (1973), which illustrated to the United States that its armed forces were unprepared for conventional war with the Soviet Union. Each of the U.S. military Services subsequently underwent a renaissance in doctrine, organization, and capabilities that came to fruition against Iraq during the Gulf War (1990–91). The most important aspects of the U.S. military's reformations were the Army's adoption of the AirLand Battle doctrine and procurement of the "Big Five" weapons and platforms (the M1A1 Abrams main battle tank, the Bradley Fighting Vehicle, the MIM-104 Patriot surface-to-air missile defense system, the Boeing AH-64 Apache attack helicopter, and the Sikorsky UH-60 Black Hawk utility helicopter), the development of maneuver warfare theory, and the Air Force's improvements in air interdiction and support to ground forces.[2]

The U.S. military establishment emerged from the Vietnam War in a poor state of operational capability, when measured in terms of morale, manning, equipment, readiness, and doctrine. Under the leadership of President Lyndon B. Johnson, Sec-

[1] Maj Baker is a distinguished graduate of MCU's Command and Staff College, where his paper "New Zealand's Strategic Challenge" received the Brig A. W. Hammett Award. This paper was nominated for the LtGen John A. Lejeune Award for academic year 2019–20.

[2] For more on the Army's adoption of the AirLand Battle doctrine, see John L. Romjue, *From Active Defense to AirLand Battle: The Development of Army Doctrine, 1973–1982* (Fort Monroe, VA: Historical Office, U.S. Army Training and Doctrine Command, 1984).

retary of Defense Robert S. McNamara, and Army general William C. Westmoreland, the United States pursued a strategy of attrition in Vietnam based on bombing campaigns and ground combat operations whose success or failure were measured in numbers of enemy killed. Having won all of the major engagements and battles, the U.S. military nevertheless lost the war. This failure to translate tactical success into strategic victory highlighted the need for a more intellectually robust and operational approach to war.[3] Set against a social revolution, the Vietnam War divided American society and became deeply unpopular with the expansion of conscription, the human cost to the people of Vietnam, and the revelation of atrocities such as the My Lai massacre. As a result, the U.S. military was greatly diminished in the esteem of the American people, and the Services struggled to recruit the quality of personnel it needed to fight a modern war against a powerful and sophisticated enemy. The ranks of the Army were underpaid, poorly disciplined, and rife with gangs and drug abuse.[4] The Navy did not fare much better, and the poor treatment of Black sailors especially led to a number of shipboard riots and disturbances.[5]

The U.S. military establishment, then at its lowest ebb since World War II, was to be jolted into reformation by an unexpected source. It underwent a process of revitalization following the Yom Kippur War, which was fought between Israel and an Egyptian-Syrian coalition. Seeking to force a diplomatic resolution to Israel's occupation of the Sinai Peninsula, Egyptian president Anwar Sadat ordered a surprise attack with the limited objective of seizing the eastern bank of the Suez Canal. Egypt's initial success was in large part due to its innovative plan, the element of surprise, and the air defense umbrella provided by Soviet surface-to-air missile (SAM) technology.[6] The SAM capability in particular negated the technological overmatch provided by the Israeli Air Force, which traditionally played the decisive role within the Israeli order of battle. It typically established air superiority and providing battlefield interdiction and close air support to the Israeli Army's armored columns. Tensions between the United States and Soviet Union escalated sharply during the conflict. The U.S. Navy's Sixth Fleet and the Soviet Navy's Mediterranean Squadron expanded in size and maneuvered aggressively in preparation for a conventional conflict. U.S. Navy admiral Daniel J. Murphy, commander of the Sixth Fleet, believed the situation was so volatile that a relatively minor incident could escalate to large-scale conflict before he could confer with his political mas-

[3] Jeffrey Record, "Vietnam in Retrospect: Could We Have Won?," *Parameters* 26, no. 4 (Winter 1996): 52, https://doi.org/10.55540/0031-1723.1804.

[4] BGen Robert H. Scales Jr., USA, *Certain Victory: The U.S. Army in the Gulf War* (Washington, DC: Office of the Chief of Staff, U.S. Army, 1993), 6 – 7.

[5] Joseph T. Stanik, "Twilight of the Cold War: Contraction, Reform, and Revival," in *America, Sea Power, and the World*, ed. James C. Bradford (West Sussex, UK: John Wiley & Sons, 2016), 305 – 22.

[6] George W. Gawrych, *The 1973 Arab-Israeli War: The Albatross of Decisive Victory*, Leavenworth Papers no. 21 (Fort Leavenworth, KS: Combat Studies Institute, U.S. Army Command and General Staff College, 1996), 1 – 82.

ters.[7] Following Israel's successful counterattack and encirclement of the Egyptian forces, the Soviet Union signaled its intent to conduct a unilateral intervention to relieve Egypt. The United States responded by raising its nuclear posture to defense readiness condition III and threatening massive retaliation should the Soviets involve themselves in the conflict directly.[8] The Yom Kippur War thereby demonstrated that the United States may be drawn into war with the Soviet Union through a conflict between proxies, that tensions could erupt into full-scale war without the opportunity for political consideration or military preparations, and that a surprise attack supported by modern Soviet military equipment could have catastrophic results.

The Yom Kippur War brought a new sense of immediacy to the U.S. Army's mission in Europe. It became apparent that an escalation in Soviet-American tensions, brought about by proxy conflicts elsewhere in the world, could lead to a rapid and decisive Soviet offensive in Europe. The U.S. Army in Europe lacked the mass, equipment, and quality of personnel it needed to block the Soviet echelons or even delay them for a significant period of time. The commander of the U.S. Army's Training and Doctrine Command, General William E. DuPuy, responded in part by sponsoring the development of a new warfighting doctrine: *Operations*, Field Manual (FM) 100-5. The initial doctrine was defensively oriented and paid particular attention to the capabilities of the weapon systems and equipment arrayed along both sides of the Iron Curtain in Europe.[9] This publication was criticized as too static and technical in focus, but it represented an early attempt to address the Soviet Union's conventional overmatch through a modernized intellectual approach to warfighting.[10] *Operations* was updated in 1982 and again in 1986. Grounded in the philosophy of maneuver warfare, the new doctrine defined an operational approach to warfare that was more aggressive in character, even in defense. Air interdiction would be used to create gaps deep within the Soviet echelons, which highly mobile ground forces would then exploit. The doctrine delineated the roles of division and corps troops and mandated greater integration between the U.S. Army and Air Force. At a time when Army units rarely trained at the division level, the AirLand Battle doctrine generated a requirement to develop operational competence at both the division and corps levels. This proficiency was achieved through the establishment of the Combat Training Center, which supported realistic and challenging large-scale

[7] Abraham Rabinovich, "The Little-Known US-Soviet Confrontation during Yom Kippur War," *GlobalPost*, 26 October 2012.
[8] William Burr, ed., "The October War and U.S. Policy," National Security Archive, 7 October 2003.
[9] Richard M. Swain, "Filling the Void: The Operational Art and the U.S. Army," in *The Operational Art: Developments in the Theories of War*, ed. B. J. C. McKercher and Michael A. Hennessy (Westport, CT: Praeger, 1996), 151.
[10] Maj Paul H. Herbert, USA, *Deciding What Has to be Done: General William E. DePuy and the 1976 Edition of FM 100-5, Operations*, Leavenworth Papers no. 16 (Fort Leavenworth, KS: Combat Studies Institute, U.S. Army Command and General Staff College, 1988), 96.

exercises, and the development of computer simulation systems to practice command and control at the division and corps levels.[11]

The Army also refocused its efforts on five key weapon systems, which became the foundation of its force development, doctrine, and training. By the 1970s, military procurement in the United States had become disjointed, with a multitude of procurement programs that were largely disjointed and defended by parochial interests. Army Chief of Staff general Creighton W. Abrams Jr. focused the Army's procurement on the "Big Five" weapon systems, which came to dominate land combat through the 1990s and the early twenty-first century.[12] These were the M1 Abrams main battle tank, the Boeing AH-64 Apache attack helicopter gunship, the Sikorsky UH-60 Black Hawk utility helicopter, the Bradley Fighting Vehicle, and the MIM-104 Patriot missile system. These platforms and weapon systems gave the United States a qualitative advantage over its adversaries and were crucial for enabling the Army to fight in the manner prescribed by AirLand Battle doctrine. In particular, they allowed the Army to gain fires superiority and to maneuver heavy, mechanized, and air assault infantry forces around the modern battlefield.

U.S. Air Force colonel John R. Boyd played a key role in the development of maneuver warfare theory, especially within the U.S. Marine Corps. Boyd served as a fighter pilot in the Korean War, during which American fighter pilots proved to be far more successful than their Soviet counterparts. Boyd analyzed the difference between the American and Soviet air forces in terms of their training, culture, orientation, platforms, and operational processes. He then developed a concept that was applied to the tactical, operational, and strategic levels of command. This idea was known as the "OODA loop," which describes military decision-making as a repeating and interlinked pattern of cycles of observation, orientation, decision, and action. Boyd theorized that the commander who is able to progress through the Boyd cycle more quickly than their adversary will have a decisive advantage in combat.[13] The concept had a wide-ranging application—not only was it the guiding philosophy behind the design, cockpit layout, and tactical employment of the General Dynamics F-16 Fighting Falcon fighter aircraft, but it was also a key concept for the development of maneuver warfare theory in the Marine Corps. Military theorists expanded the initial conception of maneuver warfare to encompass more than just gaining a decision by achieving positional advantage over the enemy. The Boyd cycle was incorporated into maneuver warfare theory to emphasize the importance of gaining decision superiority over the enemy. Robust intelligence, surveillance, and reconnaissance systems; effective command and control; and the adoption of a mission command philosophy would enable commanders to achieve a faster deci-

[11] Scales, *Certain Victory*, 21.
[12] Scales, *Certain Victory*, 25.
[13] Fideleon Damian, "The Road to FMFM 1: The United States Marine Corps and Maneuver Warfare Doctrine, 1979–1989" (master's thesis, Kansas State University, 2008), 28.

sion cycle than their adversaries. Success ultimately depends on bringing about the systemic defeat of the adversary's decision-making apparatus, thereby defeating their will to fight.[14]

Aside from Boyd's contribution to maneuver warfare theory, the Air Force underwent a transformation in the way it approached combat operations in a contested air environment. During the Vietnam War, Air Force pilots had attempted to avoid the Vietnamese SAM threat by flying beneath their radar coverage. This action brought the aircraft within range of the enemy's antiaircraft artillery (AAA), which accounted for more than 90 percent of combat losses.[15] Through the 1980s, Air Force general Wilbur L. Creech, commander of the Tactical Air Command, adopted a more deliberate doctrine by which the enemy's air defenses would be "rolled back" during the initial stages of an air campaign. SAM sites would be suppressed by electronic means and selectively destroyed with standoff fires.[16] This action would allow pilots to fly above the enemy's protective AAA umbrella, reducing combat losses and allowing them to focus their subsequent efforts on a deliberate air interdiction campaign. The focus of air interdiction shifted toward enemy leadership and command and control, thereby contributing to a broader aim of achieving decision superiority over the enemy. Creech recognized the need to achieve greater integration between the Air Force and Army as well as the role that air interdiction would play in the Army's emerging AirLand Battle doctrine.[17] While a number of leading airmen pushed back against a perceived attempt by the Army to gain undue influence over air operations, Creech continued to encourage Air Force commanders to pursue a close and cooperative relationship with their Army counterparts.

Although the Cold War never escalated into a large-scale conventional conflict between the United States and the Soviet Union, the efficacy of the U.S. military's revival was demonstrated during the Gulf War. Following Iraq's annexation of Kuwait and the subsequent request by Saudi Arabia for foreign assistance, the United States conducted a theater buildup of airborne and then heavy troops in line with the *deter – delay – defend – attack* military strategy. U.S. Army general H. Norman Schwarzkopf Jr.'s staff developed a plan for the liberation of Kuwait, Operation Desert Storm, that incorporated elements of operational art. An extensive air campaign significantly degraded key Iraqi capabilities and command and control at the operational and strategic levels.[18] In a large-scale deception plan, the Navy and Marine Corps conducted a series of naval and amphibious feints to convince the Iraqis that

[14] William S. Lind, "Defining Maneuver Warfare for the Marine Corps," *Marine Corps Gazette* 64, no. 3 (March 1980): 57.
[15] Of 1,543 aircraft shot down by ground fire during the Vietnam War, 1,433 were brought down by AAA and 110 by SAM. See LtCol James C. Slife, USAF, *Creech Blue: Gen Bill Creech and the Reformation of the Tactical Air Forces, 1978 – 1984* (Maxwell Air Force Base, AL: Air University Press, 2004), 28.
[16] Slife, *Creech Blue*, 30.
[17] Slife, *Creech Blue*, 36.
[18] Williamson Murray and MGen Robert H. Scales Jr., USA, *The Iraq War: A Military History* (Cambridge, MA: Belknap Press of Harvard University Press, 2003), 12.

the main attack would come from the sea. Coalition forces from the United Kingdom, France, Egypt, Syria, and Saudi Arabia were employed within their respective capacities to support the main U.S. advance. The decisive element of the land campaign was a large-scale single envelopment that bypassed the Iraqi defenses and threatened to cut off the withdrawal route of retreating Iraqi forces. The campaign was competently planned and well synchronized. Objectives were clearly delineated, and forces were employed in such a way as to maximize their capabilities.

Desert Storm had the distinction of being one of the few military campaigns in history to run according to plan. It did not represent a complete validation of the United States' Cold War military revival, as it was not fought in a time-poor scenario against a global superpower fielding superior conventional forces. However, the U.S. military demonstrated an operational approach and a suite of capabilities that would come to be associated with the American way of war.[19] Political and military leadership pulled together a broad coalition and gained access to the Islamic holy land as an operational staging area.[20] The use of computer simulation to repeatedly test and refine the Coalition's scheme of maneuver enabled the appropriate employment and close coordination of battlefield systems.[21] The early establishment of air dominance and the subsequent air interdiction campaign blinded the Iraqi's strategic surveillance capabilities and paralyzed the operational level command. Amphibious demonstrations and a feint along the Wadi al-Batin River drew 20 percent of the Iraqi combat power away from the main coalition effort. The ability to rapidly deploy and mass an overwhelming weight of artillery fire allowed U.S. artillery units to not only neutralize but annihilate Iraqi fires in support of the ground advance. The M1 Abrams tank and Bradley Fighting Vehicle proved vastly superior to the Soviet equipment fielded by the Iraqis. Communications suites and GPS devices allowed the Americans to maintain a cohesive advance along a front hundreds of miles wide.[22] Night vision equipment allowed U.S. forces to fight effectively by night, providing a decisive overmatch against Iraqi armor, as seen at the Battle of 73 Easting, during which an U.S. cavalry troop defeated an Iraqi armored brigade without suffering any losses.[23]

Emerging from the Vietnam War, the U.S. military suffered from poor morale, outdated equipment, and intellectual stagnation. The military had lost the support of the American people, while the external challenge the United States faced from the Soviet Union continued to grow. This challenge became only too clear during the Yom Kippur War, during which both the Egyptian and Israeli forces demonstrated a

[19] BGen John S. Brown, USA, "The Maturation of Operational Art: Operations Desert Shield and Desert Storm," in *Historical Perspectives of the Operational Art*, ed. Michael D. Krause and R. Cody Phillips (Washington, DC: Center of Military History, U.S. Army, 2005), 439 – 82.
[20] Slife, *Creech Blue*, 31.
[21] Brown, "The Maturation of Operational Art," 442.
[22] Brown, "The Maturation of Operational Art," 456.
[23] H. R. McMaster, "Eagle Troop at the Battle of 73 Easting," *Strategy Bridge*, 26 February 2016.

dynamic and maneuver-centric approach to war, Soviet air defense systems briefly neutralized Israeli air superiority, and U.S. military leaders realized that they may quickly be drawn into war with the Soviet Union despite the intentions of their political leadership via a conflict between proxies. The doctrine of AirLand Battle was developed as a way to counter the Soviet Union's conventional overmatch by creating gaps and maneuvering against them in depth. Each of the U.S. military Services rose to the challenge of the Soviet menace by reinvigorating their thought, personnel, equipment, and approach to warfighting. This period of revitalization came to fruition in the Gulf War. While the Iraqi Army fell far short of the Soviet Union's conventional military might, Operation Desert Storm was short, decisive, and completely one-sided, and it showcased the new suite of capabilities that the U.S. military could bring to bear against a post-Cold War adversary. Maneuver warfare, AirLand Battle doctrine, closer integration between the Air Force and Army, competent planning at the operational level of war, and the technological overmatch provided by the Army's "Big Five" capabilities allowed the U.S.-led coalition to fight one of the most one-sided and decisive military campaigns in modern history.

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