

Multi-Domain Operations: The Army's Future Operating Concept for Great Power Competition

A Monograph

by

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Abstract

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Enduring and emerging powers are reshaping the geopolitical landscape by heavily investing in military modernization programs to achieve domain overmatch, physical stand-off, and superiority in military power. The Department of Defense published the Defense Innovation Initiative in 2014 to identify and invest in innovative ways to sustain and advance America's military dominance for the twenty-first century. Through the initiative, the Department of Defense developed a third "offset" strategy to contend in great power competition and win during armed conflict. The US Army developed a new future operating concept called Multi-Domain Operations in order to support the new defense strategy, drive modernization, and prepare for the future fight. Multi-Domain Operations theory proposes three interrelated tenets that solves the problem of contested domains and Anti-Access/Aerial Denial threats presented by Chinese and Russian operations in conflict. Those tenets are calibrated force posture, multi-domain formations, and convergence. This monograph examines the efficacy of the three Multi-Domain tenets through the lens of a historical case study – Solomon Island Campaign during World War II. The case study will help drive discussion, analysis, and further refinement of the operating concept with military professionals.

Contents

Abstract	iii
Acknowledgments	v
Acronyms	vi
Illustrations	vii
Tables	vii
Introduction	1
Literature Review	5
Methodology	9
Multi-Domain Operations	11
Background	11
Contemporary Operational Security Environment	18
Defining the Tenets of MDO	21
Convergence	22
Calibrated Force Posture	24
Resilient Formations	26
Solomon Island Campaign	28
Background	28
Analysis	32
Convergence	32
Multi-Domain Formations	36
Calibrated Force Posture	39
Conclusion	41
Conclusion	42
Bibliography	47

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Acronyms

A2AD	Anti-Access/Aerial Denial
AOC	Army Operating Concept
EMS	Electromagnetic Spectrum
DII	Defense Innovation Initiative
DoD	Department of Defense
HVP	High-Velocity Projectile
IADS	Integrated Air Defense Systems
ISR	Intelligence, Surveillance, and Reconnaissance
JF	Joint Force
JOAC	Joint Operational Access Concept
LRPF	Long-Range Precision Fires
MDO	Multi-Domain Operations
MDTF	Multi-Domain Task Force
NATO	North Atlantic Treaty Organization
NDS	National Defense Strategy
NSS	National Security Strategy
TRADOC	Training and Doctrine Command
UW	Unconventional Warfare

Illustrations

Figure 1. Layered Stand-Off.....	19
Figure 2. Convergence	24
Figure 3. Extent of Japanese Control in August 1942.....	29
Figure 4. The Pacific Areas, August 1942	38

Tables

Table 1. Airland Battle and Multidomain Operations Theory Comparison.....	14
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Introduction

While we cannot predict the future, we can be certain that our Nation will continue to call on America's Army. Going forward, we will be an Army in transition. An Army that will apply the lessons learned in recent combat as we prepare for evolving threats.

— General Raymond T. Odierno, ADP 1 *The Army*, 2012

Is World War III cresting the horizon as international relations and competition between great powers lay in the balance of the global commons? As enmity between great powers such as the United States, China, and Russia begin to grow through competition for economic resources, geographic sovereignty, and military superiority all in the name of national interests; the US military faces complex and ill-defined challenges if pitted against a foreign conventional military with matched capability and strength. The fictional book, *Ghost Fleet* by P.W. Singer and August Cole conjures a terrifying and plausible future where the United States finds itself in a global war against a peer superpower. China, assisted by Russia, gain dominance in the western Pacific by leveraging a massive cyber-attack via malware in Chinese-made microchips that infects the Defense Intelligence Agency, subsequently rendering all US military command, control, communications, computers, and intelligence networks obsolete allowing for a bloody attack on Pearl Harbor and occupation of the Hawaiian Islands. In the twenty-first century version of the Cold War, US veterans organize into an insurgency called the North Shore Mujahedeen, teenage computer hackers battle in digital playgrounds, Silicon Valley billionaires mobilize for cyber-warfare in space to neutralize Chinese satellite warfare, and old warships from the navy reserve fleet forms a “Ghost Fleet” to fight the Chinese at sea.¹ Private commercial companies such as Walmart contribute to the war effort by establishing a supply chain using three-dimensional printing technology. North Atlantic Treaty Organization (NATO) collapses under the geopolitical pressure of China and Russia. The employment of rail gun technology doubles the lethality of

¹ “Ghost Fleet – A Novel of the Next World War,” New America, accessed October 24, 2018, <https://www.cia.gov/library/center-for-the-study-of-intelligence/csi-publications/csi-studies/studies/vol-60-no-1/ghost-fleet.html>.

naval firepower.² *Ghost Fleet* provides a high-tech geopolitical vision of future war and warfare. Admiral James Stavridis, United States Navy (Retired) Supreme Allied Commander of NATO said “*Ghost Fleet* is a startling blueprint for the wars of the future.”³ The Army’s future operating concept of multi-domain operations seeks to bridge the gap between reality and science fiction by providing a framework on how to fight and win in future wars.

The US Army faces new challenges as transformation begins across the US military to confront emerging global threats in an era of great power competition. Seventeen years of protracted conflict on two different fronts in Iraq and Afghanistan eroded the US comparative military advantage in great power competition and conflict.⁴ The US military grew comfortable with domain superiority against an asymmetric threat. Over the past several decades, potential adversaries closely studied the US military capabilities, doctrine, and culture to develop the means and ways to counter US domain overmatch. The revisionist powers of China and Russia demonstrate emerging and superior capabilities that deny access to theaters, challenge the unity of coalitions, and negate freedom of action at the operational and tactical level through multi-domain anti-access and aerial-denial (A2AD) systems. These great powers seek to aggressively compete below the threshold of armed conflict to indirectly achieve power and strength in the global commons. Peer adversaries will present multiple layers of stand-off from the strategic whole-of-government level down to the tactical level in order to hold US influence at a distance both in competition and in armed conflict, which is the root problem for the US military in future conflict. In recent conflicts, US Army ground forces operated with uncontested air, maritime, and

² P.W. Singer and August Cole, *Ghost Fleet* (New York, NY: Houghton Mifflin Harcourt Publishing Company, 2015), 124.

³ “Ghost Fleet Book Reviews,” 2015 Ghost Fleet Book, accessed January 16, 2019, <https://www.ghostfleetbook.com/reviews/>.

⁴ Martin Dempsey, *National Military Strategy* (Washington, DC: Office of the Chairman of the Joint Chiefs of Staff, 2015), i, accessed November 25, 2018, http://www.jcs.mil/Portals/36/Documents/Publications/2015_National_Military_Strategy.pdf.

space support with the land domain being the only contested domain. Looking to the future, the US military will potentially face an opposing force with similar military power and technology in all domains. In response to these emerging threats and the rising challenges in the strategic environment, the Army has developed a new operational concept that provides insight into how the US Army will conduct joint operations in future conflicts called multi-domain operations (MDO). The central theme of the new Army Operating Concept (AOC) is to open windows of advantage for other domains from the land domain. MDO is the Army's solution to layered stand-off from a whole-of-government approach to the tactical level.

US Army Training and Doctrine Command (TRADOC) published a document in December 2017 called *Multi-Domain Battle: Evolution of Combined Arms for the 21st Century 2025-2040*, which describes the future vision of the Army and how to fight in the land domain. More specifically, TRADOC explicitly offers a solution to the problem of facing contested domains. TRADOC claims the Joint Force (JF) and partners must operationalize “three components of the solution” in order to succeed in the future operating environment. The three components of the solution for MDO are force posture, resiliency, and convergence.⁵ A more recent TRADOC publication labeled these solutions as interrelated tenets of MDO.⁶ Army forces operationalize these connected components of the solution by calibrating force posture to prevent adversary *fait accompli* campaigns, employing resilient formations that can maneuver semi-independently on the expanded battle space, and converging capabilities to create windows of advantage to enable maneuver. According to the MDO concept, these tenets are applicable to military operations in both competition and armed conflict. This monograph examines MDO theory within armed conflict only. The purpose of assessing MDO theory is to facilitate

⁵ US Department of the Army, Training and Doctrine Command (TRADOC), *Multi-Domain Battle: Evolution of Combined Arms for the 21st Century 2025-2040* (Fort Eustis, VA: Government Printing Office, 2017), 23.

⁶ US Department of the Army, *Training and Doctrine Command (TRADOC) Pamphlet 525-3-1: The US Army in Multi-Domain Operations 2028* (Fort Eustis, VA: Government Printing Office, 2018), vii.

discussion among military professionals, generate formal and informal experimentation, create exploration for future development in the operating concept, and enable further evaluation of the theory to move closer to adaption.⁷ Subsequently, an accepted future operating concept will drive transformation in force planning requirements.

The research question this study explores is whether the tenets of MDO (convergence, force posture, and multi-domain formations) are critical components for achieving strategic objectives in future armed conflict against a near peer adversary. Examination of the MDO concept through the lens of a historical case study will benefit assessment of the applicability of MDO to the future operating security environment. The study investigates three hypotheses to support the thesis in order to conclude that MDO tenets are applicable to defeating a near peer adversary in future armed conflict. To do so, this study uses the Solomon Islands Campaign from August 1942 to January 1943 to examine how the US military conducted MDO concepts, albeit less domains than the US Army anticipates fighting in. The first hypothesis is the Allies' force posture within the Pacific Theater set conditions to prevent the Japanese from maintaining the initiative to achieve a *fait accompli* campaign. The second hypothesis considers the composition, capabilities, and resiliency of multi-domain formations that enhances semi-independent maneuver. The third hypothesis examines the Allies ability to conduct convergence by integrating capabilities to create windows of advantage while exercising mission command to maximize disciplined initiative. An historical analysis of the Solomon Island Campaign provides evidence that the Allies operationalized force posture to prevent the Japanese from achieving a *fait accompli* campaign in the Pacific theater of operations, employed resilient multi-domain formations to allow semi-independent maneuver, and achieved convergence to created windows of advantage for Allied forces that ultimately lead to the defeat of the Japanese Empire.

⁷ John F. Schmitt, "Practical Guide for Developing and Writing Military Concepts," Defense Adaptive Red Team Working Paper #02-4 (December 2002): 22.

The research presented in this monograph includes six sections to evaluate the efficacy of MDO tenets in the future operating security environment. The first section introduces the problem, research question, and thesis of the monograph. The second section consists of a literature review of both contemporary publications on MDO theory and historical literature on the Solomon Islands Campaign. The third section outlines the methodology in assessing the significance of MDO through the lens of the Solomon Islands case study. The fourth section explains the central idea of MDO and the problem MDO attempts to solve in conducting operations against a matched adversary. The fourth section also provides an understanding of the operational and strategic factors that drove the conception of the MDO concept and the requirement to create a future operating concept. The fourth section also defines the three tenets of MDO and other terminology critical to understanding the central idea of MDO in the context of armed conflict while providing a comparison to a previous AOC – AirLand Battle. The fifth section consists of the analysis of the Solomon Islands case study, assessment of the hypotheses, and answers to the research questions. The final section is a review of the findings, applicability to the future fight, recommendations for additional research, and final conclusions.

Literature Review

The whole purpose of the Third Offset Strategy is to identify the technologies, identify the operational and organizational constructs, the new operational concepts to fight our future adversaries.

— Deputy Secretary of Defense Robert J. Work, Speech at the Army War College

The purpose of this literature review is to provide a description of existing literature, identify any potential gaps in the current literature, and provide recommendations for further research and discoveries in MDO theory. The literature review consisted of two categories: contemporary literature on MDO theory and historical literature of the Solomon Island Campaign.

Multi-domain operations is a concept for future operations that provides a “system of fundamental beliefs” in the nature of war to describe how military practitioners should apply

military power to fight and win.⁸ The US Army Training and Doctrine Command was institutionally responsible for the development of concepts and doctrine until the recent establishment of Futures Command. TRADOC being the lead component in the development of the MDO concept introduced the concept in October 2017 called *Multi-Domain Battle: Evolution of Combined Arms for the Twenty-First Century* and two years later finalized the future operating concept in *The US Army in Multi-Domain Operations 2028*. The October 2017 version of *Field Manual (FM) 3-0 Operations* also briefly introduces MDO theory in the context of large-scale combat operations. Being that MDO is a new concept, published literature on this topic is drawn from defense journals, news articles, discussions from defense analysts, or papers from military professionals. The US Senior Army leadership has set out on a comprehensive communications campaign to advertise the new concept through multiple media platforms. For example, a video-recorded panel discussion at a contemporary forum sponsored by the Association of the United States Army in October 2018 provided a first-hand account from the senior leaders who led the concept development such as General Mark A. Milley, General Stephen J. Townsend, Lieutenant General Eric J. Wesley, and General Robert B. Brown.⁹ The National Defense University Press also provided many published articles with thorough academic analysis of MDO theory with numerous articles in the *Joint Force Quarterly*. General David A. Perkins, the TRADOC commander when MDO was developed, published numerous articles outlining the premise of multi-domain battle.¹⁰ Additionally, there are many videos posted on open-source media discussing the new theory. A potential gap in the research and literature of MDO is the

⁸ Schmitt, "Practical Guide for Developing and Writing Military Concepts," 13.

⁹ Panel discussion found at Defense Visual Information Distribution Service, "Association of The United States Army 2018 Contemporary Military Forum #8: Multi-Domain Operations," accessed November 16, 2018, <https://www.dvidshub.net/video/631836/ausa-2018-cmf-8-multi-domain-operationsv>.

¹⁰ For example, David G. Perkins, "Multi-Domain Battle: Driving Change to Win in the Future," *Military Review* 97, no. 4 (July 2017): 6, accessed February 16, 2019, https://www.armyupress.army.mil/Portals/7/military-review/Archives/English/MilitaryReview_20170831_PERKINS_Multi-domain_Battle.pdf. and David G. Perkins and James M. Holmes, "Multi-Domain Battle: Converging Concepts Toward a Joint Solution," *Joint Force Quarterly* 88 (1st Quarter, January 2018): 54-55.

collaboration between services. Other than a co-authored white paper between the Army and Marines published in January 2017, there is little multi-domain literature that illustrates collaboration between services, other than existing Joint doctrine. A future concept that emphasizes convergence across all domains should champion cooperation and partnership to ensure unity of effort. The cyber and space domain are relative new to the Department of Defense (DoD) resulting in a lack of literature. A literature shortfall is research dedicated to understanding the space and cyber domains that develop a greater understanding how military professionals can integrate these capabilities in the land domain. Like any new concept, as more experimentation, discussion, and analysis becomes available the concept will evolve and a greater body of literature will encapsulate the concept more in depth.

The second category of research focused on the historical content of the Solomon Island Campaign in which there is a plethora of publications. Historians have written hundreds of books on the Pacific theater. The official histories undertaken by the US military services remain valuable starting points. Authors such as Wesley Craven and James Cate for the Air Force, Samuel E. Morison from the Navy, and John Miller, Jr. for the Army provide volumes of detailed accounts of the operations during the Pacific Operations of World War II due to direct access to primary sources immediately following the end of the war. Each services official history presents bias towards their own service, but underlying themes in tactics, strategy, and logistics prevail. The gap in the official history is the inter-service relationships at the command level most likely to protect the professional character of the officers involved. The official histories acknowledges differences in proposed strategies from each service, but do not share details on specific interpersonal relationships and how their bias impacted operations. Each official history does illustrate the structure of command and generally concludes that cooperation among services was a key to strategic success, although a more extensive account of how the generals faced competing interests and overcame service parochialism would be helpful for future commanders in a highly domain federated environment. Another research gap is how US forces interacted with

multinational Allies and partners. Most historical narratives focus on the operations of the US forces and gloss over the contributions, participation, and results of the multinational partners.

There is a vast amount of publications in the general histories of the Pacific War during War World II that discusses the Solomon Island Campaign usually as a section or chapter of the overall history of the war. However, several authors have dedicated their entire work specifically to the Solomon Island Campaign like John Prados, Richard Frank, Joseph Wheelan, and William Bartsch. Richard Franks' book titled *Guadalcanal: The Definitive Account of the Landmark Battle* is an excellent source in quantitatively comparing the composition, disposition, and strength of each side before, during, and after the campaign.¹¹ John Prados argued in his book, *Island of Destiny*, that the Guadalcanal Campaign was the turning point in the Pacific war.¹² Joseph Wheelan's book *Midnight in the Pacific* published on the seventy-fifth anniversary of the battle provides a balanced coverage of all the services' contributions to the Guadalcanal Campaign.¹³ In 1997, Eugene I. Rasor published a historiography and annotated bibliography of over five hundred entries called *The Solomon Islands Campaign: Guadalcanal to Rabaul* that provides a comprehensive survey of the literature on the Solomon Islands Campaign and identifies gaps and areas for further research.¹⁴ While there is always more to be written, there is sufficient published material on the campaign to subject it to careful analysis.

¹¹ Richard B. Frank, *Guadalcanal: The Definitive Account of the Land Battle* (New York: Penguin Books, 1990), 610.

¹² John Prados, *Islands of Destiny: The Solomons Campaign and the Eclipse of the Rising Sun* (New York, NY: Penguin Group, 2013), 6.

¹³ Joseph Wheelan, *Midnight in the Pacific: Guadalcanal, The World War II Battle that Turned the Tide of War* (Boston, MA: Da Capo Press, 2017), 5.

¹⁴ Eugene L. Rasor, *The Solomon Islands Campaign, Guadalcanal to Rabaul: Historiography and Annotated Bibliography* (Westport, CT: Greenwood, 1997), 1.

Methodology

The military student does not seek to learn from history the minutiae of method and technique. In every age these are decisively influenced by the characteristics of weapons currently available and by means at hand for maneuvering, supplying, and controlling combat forces. But research does bring to light those fundamental principles and their combinations and applications, which in the past, have been productive of success. These principles have no limitation of time. Consequently, the army extends its analytical interest to the dust buried accounts of wars long past as well as to those still reeking with the scent of battle.

– General Douglas MacArthur, *Joint Military Operations Historical Collection*

The methodology applied to support the central argument is a historical case study of a multinational and joint operation during World War II in the Solomon Islands Campaign through the lens of MDO theory. The goal of this study is to provide a general assessment of how the tenets of MDO provide a solution to contested domains in relation to a historical case. The aim is to determine if the proposed tenets have historical relevance that leads to strategic success in the operational environment. The purpose of the research is to identify qualitative data that contributed to the success of the historical operations resembling MDO. The monograph then compares the findings of the research to the beliefs of MDO theory in order to test the hypotheses. Lawrence Freedman postulates in *The Future of War* that great powers must “stay alert and prepare properly for the upcoming tests,” but the whole character of war will not change dramatically making historical case studies useful in testing the theory of future operating concepts.¹⁵ Empirical evidence drawn from the Solomon Island Campaign illustrates parallels between the challenges the Army experienced when facing a near-peer and the potential challenges the Army will confront in the future.¹⁶ An analysis of the Solomon Island Campaign will help determine if the proposed solutions of multi-domain operations are applicable to achieve strategic success against a peer adversary in armed conflict. When comparing the strategic

¹⁵ Lawrence Freedman, *The Future of War* (New York: Hachette Book Group, 2017), 7.

¹⁶ Claudia P. Pena-Guzman, “Preparing for the Future, Looking to the Past: History, Theory, and Doctrine in the US Army,” (Masters monograph, School of Advanced Military Studies, US Army Command and General Staff College, 2013), 3-4.

context of 1942 to that of the present day, many notional similarities make the Solomon Islands case study applicable to the MDO concept. For example, the Allied Forces in the Pacific and the current US military faced budgetary limits and constraints in a fiscally sensitive environment. The Pacific operations were second in priority for national resources to the efforts of defeating the Germans in the European theater. Likewise, the US Army faces competition for financial and economic resources among other services in an era of declining military expenditures.¹⁷ In both eras, the Allies and today's military had to discover ways and means to achieve success with less than optimal resources. From a threat analysis perspective, comparing the Japanese Imperial Empire to the great powers of today, like China and Russia, there is resemblance in their hegemonic national strategies, similarities in their military conventional capabilities and capacity to contest or overmatch US military domains, and posed a serious threat to the national interest of the United States, allies, and partners. When attempting to identify causal relationships by comparing similar occurrences from the past to the future, no matter how sophisticated the methodology, there will be limits to the lessons learned for the future, which will inevitably be full of surprises.¹⁸ One major difference between the Solomon Islands Campaign and the MDO operating concept is the advancement in LRPF and the employment of ballistic missile defense systems. For example, the Japanese did not possess the capability to contest the air or maritime domain with highly precise and long-range missiles defense systems that could rapidly interdict and destroy aircraft or ships in depth from over the horizon. The Japanese possessed anti-aircraft flak munitions and direct fire weapons that required human skill to acquire and engage fast moving aircraft versus modern missiles and rockets with guidance systems that could track, lock, and engage a target from a distance of over one hundred miles using infrared/ultraviolet sensors.

¹⁷ Nan Tian, Aude Fleurant, Alexandra Kuimova, Pieter d. Wezeman, and Siemon T. Wezeman, "Trends in World Military Expenditure, 2017," Stockholm International Peace Research Institute, May 2018, accessed March 16, 2019, https://www.sipri.org/sites/default/files/2018-04/sipri_fs_1805_milex_2017.pdf

¹⁸ Freedman, *The Future of War*, 123.

As General Milley stated in the foreword of the MDO concept, emergent technologies are driving a fundamental change in the character of war and have the potential to revolutionize military affairs much like the integration of machine guns, tanks, and aviation in an era of combined arms conflict.¹⁹ The study of history cannot always lead to accurately predicting future events; however, the study of historical warfare in the context of the MDO model will help prepare military practitioners by expanding their breadth of experience and cognitive skills in applying multi-domain theory in modern warfare for the twenty-first century.²⁰

Multi-Domain Operations

Background

The development of the MDO concept stems from a conglomeration of previous operating concepts, the evolving operating security environment with great power competition, and the strategic vision of the US Army's civilian leadership on how to win militarily in future warfare. First, it is important to understand the meaning of an operational concept and the developmental process. Developing a practical future military operating concept is a daunting task, in that, the operational concept developer predicates the application of the concept based on future context. Consequently, predicting the future to a strong level of certainty is nearly impossible. A failed military concept will result in dire consequences of catastrophic proportions like losing a war or massive loss of life and resources. The essence of a concept is the description of a method. An operational concept is the method or scheme for employing specific military capabilities at the operational level of war in the achievement of a stated objective or aim. A future concept envisions how the practitioner will apply military power in some future context.²¹ A future operational concept shall undergo examination through experimentation, simulations,

¹⁹ US Army, *The US Army in Multi-Domain Operations 2028*, foreword.

²⁰ John Lewis Gaddis, *The Landscape of History: How Historians Map the Past* (New York: Oxford University Press, 2002), 11.

²¹ Schmitt, "Practical Guide for Developing and Writing Military Concepts," 3.

and arduous debate by military professionals to evolve the concept from an untested hypothesis to a more assertive conclusion in order to validate with reasonable confidence.²² Once the future operating concept is widely accepted by the institution, the implementation process initiates transformation in force planning, the requirements process, and revisions to doctrine. Future operating concepts are critical for shaping conditions within the force structure to be ready and able to win in the future fight.

The operational framework of MDO derives from previous and current operational concepts. Colonel (Retired) Richard Sinnreich described MDO as, “Old wine in a new bottle.”²³ There is a clear evolutionary link to previous concepts such as *Airland Battle*, *Army after Next*, *Capstone Concept for Joint Operations*, and the *2014 Army Operating Concept*.²⁴ The common denominator of these previous concepts are the domains of land, sea, and air fought at the echelon of Corps or below, forward postured in a prepared defense, targeting a single pacing threat during armed conflict to engage throughout the depth of the battlefield in order to defeat the enemy’s second echelon. MDO incorporates the new domains of space and cyber, fought at the theater and below echelon with inter-agency and multinational partners targeting multiple threats across the operating environment to defeat A2AD systems via offensive actions through strategic and operational maneuver in both armed conflict and competition (See Table 1). Multi-Domain theory reflects similar theories found in the Joint Operational Access Concept (JOAC) of 2012 and the AOC of 2014 titled *Win in a Complex Environment*. The central thesis of the JOAC is cross-domain synergy, which is the “complementary vice merely additive employment of capabilities in different domains such that each enhances the effectiveness and compensates for the

²² Ibid., 4.

²³ Richard H. Sinnreich, “Multi-Domain Battle: Old Wine in a New Bottle?,” *The Law Constitution*, accessed October 31, 2018, <https://www.swoknews.com/misc-columns/multi-domain-battle-old-wine-new-bottle>.

²⁴ Kelly McCoy, “The Road to Multi-Domain Battle: An Origin Story,” *Modern War Institute*, accessed October 30, 2018, <https://mwi.usma.edu/road-multi-domain-battle-origin-story/>.

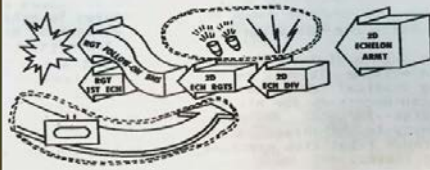
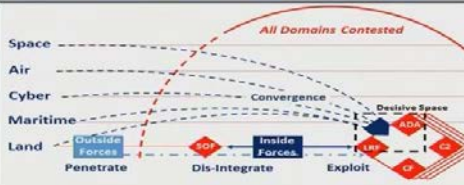
vulnerabilities of others to establish superiority in some combination of domains that will provide the freedom of action required by the mission.”²⁵ The central idea of MDO closely resembles and nests with the definition of cross-domain synergy. Furthermore, the Army’s 2014 AOC provides descriptive guidance in that the future US Army force must create multiple options for the JF to challenge the enemy with multiple dilemmas while operating across multiple domains with multiple partners.²⁶ Logically, the original name of the AOC was Multi-Domain Battle derived from the repetitive use of the word “multiple.” However, on May 22, 2018, General Stephen J. Townsend changed the name from Multi-Domain Battle to Multi-Domain Operations. General Townsend along with feedback from the DoD and US State Department agreed that the word “battle” possessed tactical connotations applied only in armed conflict; as opposed to the word, “operations” which is strategic in nature taking into account both competition and conflict. Additionally, operations better describes military activities in conjunction with interagency and non-governmental organizations.²⁷ For instance, the National Security Agency or Central Intelligence Agency does not necessarily participate in direct “battle” with the enemy. Thus, the MDO concept differentiates itself from previous and current operating concepts by being more offensive in nature, inclusive of all domains, expands to the inter-agency and theater level of echelon, targets systems vice formations, and addresses multiple threats across the operating environment.

²⁵ US Department of Defense, Joint Staff, *Joint Operational Access Concept (JOAC)* (Washington, DC: Government Printing Office, 2012), ii.

²⁶ US Department of the Army, Training and Doctrine Command (TRADOC), *Pamphlet 525-3-1 The US Army Operating Concept: Win in a Complex World* (Fort Eustis, VA: Government Printing Office, 2014), iii–iv.

²⁷ “Multi-Domain Battle gets a New Operational Name,” Association of The United States Army, accessed October 31, 2018, <https://www.ausa.org/news/multi-domain-battle-gets-new-operational-name>.

Table 1. AirLand Battle and Multi-Domain Operations Theory Comparison

<i>AirLand Battle and Multi-Domain Operations: What is the Difference?</i>		
Element	AirLand Battle	Multi-Domain Operations
Operational Environment	Single Pacing Threat (Soviet Union)	Multiple Threats across the OE with similar operation approaches (near-peers)
Focus	Formations (Second Echelon)	Systems (Anti-Access and Area Denial Systems)
Operational Context	Forward postured force in prepared defense	CONUS-based force executing offensive action through strategic and operational maneuver
Central Idea	Engage throughout the depth of the battlefield; defeat the Second Echelon	Compete in all domains; when necessary, penetrate and dis-integrate enemy anti-access and area denial systems and exploit the resultant freedom of maneuver to achieve strategic objectives (win) and force a return to competition
Domains	Land, Air (synchronization)	Land, Air, Maritime, Space, Cyber (synergy)
Echelon	Corps/Division and below	Inter-Agency, Theater and below
Phases	Phased operations in armed conflict	Across competition continuum
Concept		

Source: Defense Visual Information Distribution Service, Association of The United States Army 2018 Contemporary Military Forum #8: Multi-Domain Operations, accessed November 16, 2018, <https://www.dvidshub.net/video/631836/ausa-2018-cmf-8-multi-domain-operationsv>.

The strategic vision of the US military's civilian leadership on how to win militarily in future wars and warfare directly led to the development of a future operating concept for the Army. On November 15, 2014, Secretary of Defense Chuck Hagel unveiled the new Defense Innovation Initiative (DII) at the Ronald Reagan Presidential Library in Simi Valley, California to explore and develop new operational concepts, new approaches to warfighting, and how to balance Department of Defense's (DoD) investments between platforms and payloads with declining US defense expenditures. In his address, he acknowledged Russia and China's investments in

military modernization programs to gain a competitive advantage over the US military.²⁸ Secretary Hagel's announcement of the DII would initiate a third "offset strategy" to seek asymmetrical means to compensate for disadvantages in military capabilities, technologies, and competition. Similarly, to the first offset strategy in the 1950s, when President Eisenhower successfully offset the Soviet Union's conventional superiority through his "New Look." And much like the second offset strategy of the 1970s when Secretary of Defense Harold Brown established a Long-Range Research and Development Planning Program that helped develop and field revolutionary new systems, such as extended range precision-guided munitions, stealth aircraft, and new intelligence, surveillance, and reconnaissance platforms.²⁹ Hagel directed Deputy Secretary of Defense Bob Work to oversee the efforts for developing the third offset strategy.³⁰ On April 8, 2015, Deputy Secretary Work delivered his vision at the US Army War College Strategy Conference.³¹ During his speech, he made three assumptions on how future ground combat would materialize. First, there would be technological advancements in the proliferation of guided munitions and advanced weaponry called G-RAMM (guided rockets, artillery, mortars, and missiles) with Global Positioning System and laser guidance, infrared homing, anti-radiation weapons and fire-and-forget anti-armor weapons. The second assumption of future ground combat is the presence of "informationalized warfare," which is the combination of cyber, electronic warfare, information operations, deception, and denial to disrupt command and control to give the enemy an advantage in the decision cycle. Lastly, he claimed that guided munitions coupled with informationalized warfare would span across all types of ground combat

²⁸ Chuck Hagel, Secretary of Defense Speech at Ronald Reagan Presidential Library, Simi Valley, CA on November 15, 2014. US Department of Defense Website, accessed November 23, 2018, [https://dod.defense.gov/News/Speeches/Speech-View/Article/606635/Secretary of Defense](https://dod.defense.gov/News/Speeches/Speech-View/Article/606635/Secretary%20of%20Defense).

²⁹ Ibid.

³⁰ Chuck Hagel, "The Defense Innovation Initiative Memorandum," US Department of Defense Website, accessed November 23, 2018, <http://archive.defense.gov/pubs/osd013411-14.pdf>.

³¹ Robert Work, Deputy Secretary of Defense speech at the US Army War College Strategy Conference, Carlisle Barracks, PA, April 8, 2015, US Department of Defense Website, accessed November 23, 2018, <https://dod.defense.gov/News/Speeches/Speech-View/Article/606661/>.

and therefore the foundation for ground force excellence is going to be combined arms operational skill. He challenged the Army leadership to develop a new operating concept that would find multiple different attacks against opponents across all domains to prevent their ability to adapt to the rapidly changing conditions on the battlefield. He said the competitor who can demonstrate the ability to defeat the guided munitions salvo competition would have a unique advantage at the operational level of war.³² Hagel and Work's strategic vision laid the foundation for all services to develop a conceptual approach to solving the problem of facing evolving threats in contested domains during a time of fiscal limitations.

MDO is a response to evolving threats in great power competition in the strategic security environment. The *National Security Strategy* (NSS) of 2017 provides an authoritarian assessment of the current geopolitical landscape. President Donald Trump's 2017 NSS marks a shift in US foreign policy from President Obama's approach to international relations. President Trump's NSS builds on the theoretical framework of realism, in which, rational state actors seek national power to pursue their vital interests and continued existence.³³ More specifically, President Trump labels his strategy "principled" realism founded on US principles where peace, security, and prosperity depend on strong sovereign nations that respect their citizens at home and cooperate to advance peace abroad.³⁴ President Trump seeks to improve the underpinnings of US power and enhance the United States' relative position of strength to maintain a competitive

³² Robert Work, speech at the US Army War College Strategy Conference, Carlisle Barracks, PA, April 8, 2015, accessed November 23, 2018, <https://dod.defense.gov/News/Speeches/Speech-View/Article/606661/>.

³³ Daniel W. Drezner, *Theories of International Politics and Zombies* (Princeton, NJ: Princeton University Press, 2011), 33.

³⁴ Donald Trump, *National Security Strategy* (Washington, DC: The White House, 2017), 1, accessed November 25, 2018, <https://www.whitehouse.gov/wp-content/uploads/2017/12/NSS-Final-12-18-2017-0905.pdf>.

advantage against Russian, China, Iran, North Korea, and other non-state actors.³⁵ The third pillar of the *NSS* identifies the three main set of challengers who actively compete against the United States and their allies and partners. These emerging threats are the revisionist powers of China and Russia, the rogue states of Iran and North Korea, and transnational threat organizations.³⁶ China seeks regional hegemonic power in the Indo-Pacific region to expand its state-driven economic model at the expense of the sovereignty of others. Through military modernization and economic expansion, China is continuing to grow its nuclear arsenal and a highly capable and well-funded military to increase power and influence in the global commons. China leverages an authoritarian system to collect data, steal intellectual property, and exploit other nations through surveillance and cyber capabilities. Russia seeks to weaken US influence by fracturing alliances and partnerships and expanding its influence in Eastern Europe and the Middle East. Russia perceives NATO and the European Union as threats.³⁷ Russia remains the most significant existential threat to the United States due to their new military capabilities and nuclear systems. Russia interferes with domestic political affairs in countries all over the world with destabilizing cyber capabilities and subversive tactics.³⁸ These strategic competitors are synthesizing technologies with their analysis of military doctrine and operations to deploy capabilities to fight the United States through multiple layers of stand-off in all domains – space, cyber, air, sea, and land. Stand-off is the strategic and operational effect Russia, China, and their surrogates are attempting to achieve against the United States and adversaries. Russia and China achieve stand-off with both political and military capabilities. Stand-off is the political, temporal, spatial, and functional separation that enables freedom of action in any, some, or all domains, the

³⁵ Zalmay Khalilzad, “A Realist National Security Strategy,” *The National Interest*, February 19, 2018, accessed November 20, 2018, <https://nationalinterest.org/print/feature/realist-national-security-strategy-24555>.

³⁶ Trump, *National Security Strategy*, 1.

³⁷ *Ibid.*, 25.

³⁸ *Ibid.*, 26.

electromagnetic spectrum (EMS), and the information environment to achieve strategic and operational objectives before an adversary can adequately respond.³⁹ China and Russia's emerging technologies and highly lethal military capabilities increase the risk for miscalculation that could result in violent conflict and an unstable strategic security environment. President Trump seeks to renew the US competitive advantage by strengthening instruments of power to deter or defeat aggression against US interests and preserve the peace.⁴⁰ As a result, the US military has begun to transform its way of war to evolve and adapt to the new strategic environment and the complex challenges in the future. MDO provides a doctrinal framework on how the US Army will operate and win in support of national strategy and interests.

Contemporary Operational Security Environment

Understanding the growing problem in the contemporary operating environment is critical when analyzing the application and efficacy of multi-domain operations. The *NDS* and emerging threats drive transformation across the Doctrine, Organization, Training, Material, Leadership, Personnel, Facilities, and Policy (DOTMLPFP) continuum to deter, defeat, and win against future opponents. Although there are many emerging threats in the operational environment, this monograph in conformity with the MDO concept focuses on two great powers – Russian and China. Even though Russia and China possess different armies with unique capabilities, they both developed their warfighting systems collectively to achieve layered stand-off. Political scientist, Stephen Biddle provides insight into what happens when two equally lethal conventional forces confront each other on the battlefield in the land domain. He states a dominant technological fact of the modern battlefield has been increasing lethality in firepower. As a result, any mass movement of forces across an open area is suicidal.⁴¹ From a historical

³⁹ Army, *TRADOC Pamphlet 525-3-1*, vi.

⁴⁰ Trump, *National Security Strategy*, 26.

⁴¹ Stephen Biddle, *Military Power: Explaining Victory and Defeat in the Modern Battle* (Princeton, NJ: Princeton University Press, 2004), 3.

perspective, the French and Germany armies proved this concept during the World War I trench stalemate costing both belligerents enormous loss of blood and treasure without a decisive victory. China and Russia recognize militaries will suffer enormous loss when faced against an opponent with overmatched capabilities and capacity. For this reason, great powers will seek an indirect approach to warfare by possessing superior long-range precision fires (LRPF), integrated air defense systems (IADS), and unconventional warfare (UW) to avoid high-intensity conflict and ensure the strategic initiative.⁴² Russia and China will seek to achieve strategic aims, short of conflict, by the use of layered stand-off in the political, military, and economic realms to separate the United States from alliances and partners and degrade global legitimacy and influence. Figure 1 illustrates how great powers employ layered stand-off to attack functions rather than formations below the level of armed conflict.

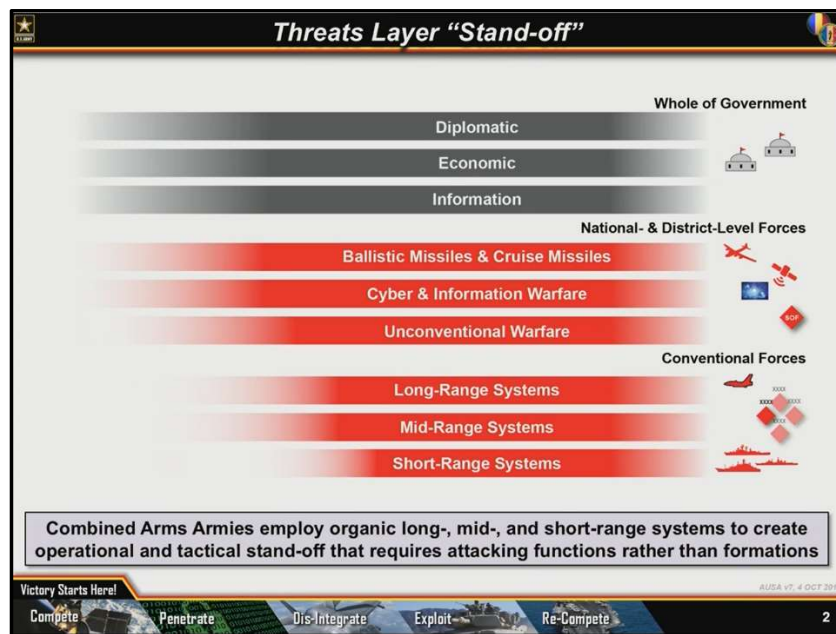


Figure 1. Threats of Layered Stand-off. Defense Visual Information Distribution Service, “Association of the United States Army 2018 Contemporary Military Forum #8: Multi-Domain Operations,” accessed November 16, 2018, <https://www.dvidshub.net/video/631836/ausa-2018-cmf-8-multi-domain-operationsv>.

⁴² Roger McDermott, “Gerasimov Appeals for Military Science to Forge New Forms of Combat,” The Jamestown Foundation, March 12, 2019, accessed March 18, 2019, <https://jamestown.org/program/gerasimov-appeals-for-military-science-to-forge-new-forms-of-combat/>.

During conflict, revisionist powers will employ multiple layers of physical stand-off in all domains with A2AD to deny strategic depth preventing the JF operational advantage and offensive military capability.⁴³ The physical stand-off employs layers of A2AD systems designed to rapidly inflict catastrophic losses on US and partner military forces to achieve campaign objectives within days preventing any effective response. China and Russia procured advanced technologies and more lethal means to systematically fracture AirLand Battle doctrine by countering the JF's predictable and episodic synchronization of time-phased and domain-federated operational approaches in armed conflict. US Army authorities have argued that since the Gulf War, Russia and China identified three critical lessons about countering AirLand Battle. First, they identified that the strength of US military operations lies within gaining theater access and establishing a foothold in the area of operations via aerial or seaport of debarkation. Territorial access provides an operational advantage to project combat and extend operational reach to establish conditions for overwhelming logistics, firepower, and command and control support. The second lesson is fracturing the operational framework and interdependency between the air and land domain. China and Russia will attempt to isolate the air domain from the land domain to defeat air and land forces sequentially. Lastly, China and Russia recognize the US advantage lies within the ability to maneuver forces through all the elements of combat power to include mission command. Therefore, China and Russia will use overwhelming firepower to fix maneuver forces.⁴⁴ Peer adversaries designed and enhanced their A2AD system with significant integrated air defense capabilities, long-range fires, sophisticated intelligence, surveillance, reconnaissance, offensive and defensive information, electronic warfare, and cyber capabilities to counter US military operational strengths and capabilities.⁴⁵ China's militarization in the South

⁴³ US Army, *TRADOC Pamphlet 525-3-1*, vii.

⁴⁴ David G. Perkins and James M. Holmes, "Multi-Domain Battle: Converging Concepts Toward a Joint Solution," *Joint Force Quarterly* 88 (1st Quarter, January 2018): 54-55.

⁴⁵ *Ibid.*, 55.

China Sea is a representation of the A2AD system and how the capability can directly threaten US interests in the Western Pacific.⁴⁶

Defining the Tenets of MDO

This section will define the intended meanings of the MDO tenets in the context of the military application and explain the relationship between components. First, understanding the development of the MDO tenets is crucial to understanding their importance in future war.

TRADOC Pamphlet 525-3-1, The US Army in Multi-Domain Operations 2028 explicitly states that the tenets of MDO originate from the first line of effort found in the *2018 National Defense Strategy* (NDS) – build a more lethal force. More specifically, there are two objectives underneath the “build a more lethal force” goal that directly correlate with the tenets: “Forward force maneuver and posture resilience” and “develop a lethal, agile, and resilient force posture and employment.”⁴⁷ Under the “Forward force maneuver and posture resilience” objective, the NDS calls for military services to make investments to allow transition from large, centralized, unhardened infrastructure to smaller, dispersed, resilient, adaptive basing that include active and passive defenses.⁴⁸ Under the “Develop a lethal, agile, and resilient force posture and employment,” the NDS calls for change in the force employment models and posture to a Dynamic Force Employment and Global Operating Model. Dynamic Force Employment will prioritize maintaining the capacity and capabilities for major combat while providing options for proactive and scalable employment of the JF. The Global Operating Model describes how the DoD will posture and employ the JF to achieve both competition and wartime missions.⁴⁹ Overall

⁴⁶ Stephen Biddle and Ivan Oelrich, “Future Warfare in the Western Pacific: Chinese Antiaccess/Area Denial, US AirSea Battle, and Command of the Commons in East Asia,” *International Security* 41, no. 1 (July 2016): 7-14.

⁴⁷ James Mattis, *National Defense Strategy* (Washington, DC: The White House, 2017), 6-7, accessed November 25, 2018, <https://www.whitehouse.gov/wp-content/uploads/2017/12/NSS-Final-12-18-2017-0905.pdf>.

⁴⁸ *Ibid.*, 6.

⁴⁹ *Ibid.*, 7.

the DoD seeks to provide a more tailored, dispersed, and dynamic JF that possesses the capability to rapidly concentrate in time and space via the tenets of MDO. Deputy Secretary Bob Work said, “we are aiming for what famed British naval historian Sir Julian Corbett called elastic cohesion, a term he used to describe a fleet that could be widely disbursed but quickly concentrated in time.”⁵⁰ The US Army believes the tenets of MDO when operationalized will support the NDS goals and objectives in contributing to future warfare.

Convergence

Understanding the meaning of convergence in the military context is essential in gaining insight into how the concept offers a solution to the problems Russia and China present.

Convergence is a polysemous word that represents multiple meanings and broad applications found in many fields of study to include science, technology, mathematics, computing, biology, art, music, and literature. Webster’s dictionary defines convergence, as moving toward a union or uniformity and the merging of distinct technologies, industries, or devices into a unified whole.⁵¹ The definition applies neatly in a merging of military services, domains, information, and capabilities to create a synchronized JF operating to achieve given objectives. Convergence theory is “a systems warfare methodology intended to exploit the interconnectedness and expansiveness of a system-of-systems, which identifies critical nodes and pathways of subordinate systems that, when targeted, weaken the larger system. Convergence is the act of applying multi-domain effects or a combination of fully integrated capabilities in depth to create physical, virtual, and cognitive windows of superiority at decisive points faster than the enemy

⁵⁰ Cheryl Pellerin, “Work: DoD Transforms Global Posture for Future Needs,” *Department of Defense News*, September 30, 2014, accessed January 22, 2019, <https://dod.defense.gov/News/Article/Article/603350/work-dod-transforms-global-posture-for-future-needs/>.

⁵¹ Merriam-Webster, “Convergence,” On-line Dictionary, accessed January 7, 2019, <https://www.merriam-webster.com/dictionary/convergence>.

can react.”⁵² What exactly does “windows of superiority” mean? MDO theory provides examples of possible windows of superiority in competition and armed conflict. Examples include territorial access (physical), authorities (physical, virtual, and/or cognitive), popular or government support (cognitive), expanded partner capacity (physical), and reconnaissance posture and intelligence sharing (physical, virtual, and cognitive).⁵³ These windows of superiority enable the JF to conduct cross-domain synergy and semi-independent maneuver.⁵⁴ *TRADOC Pamphlet 525-3-1* provides a more specific definition of convergence, “a rapid and continuous integration of capabilities in all domains, the EMS, and information environment that optimizes effects to overmatch the enemy through cross-domain synergy and multiple forms of attack all enabled by mission command and disciplined initiative across time and space.”⁵⁵ See Figure 2 for a graphical representation of convergence.

⁵² US Department of the Army, *The US Army Concept for Multi-Domain Combined Arms Operations at Echelons Above Brigade 2025-2045* (Fort Eustis, VA: Government Printing Office, 2018), 19.

⁵³ US Army, *Multi-Domain Battle*, 25.

⁵⁴ The definition of semi-independent maneuver is “operating dispersed for extended periods without continuous [or contiguous] support from higher echelons with the ability to concentrate combat power rapidly at decisive points, and in spaces(domains) to achieve operational objectives within the intent of the theater campaign.” US Army, *The US Army Concept for Multi-Domain Combined Arms Operations*, 89.

⁵⁵ US Army, *The US Army in Multi-Domain Operations 2028*, vii.

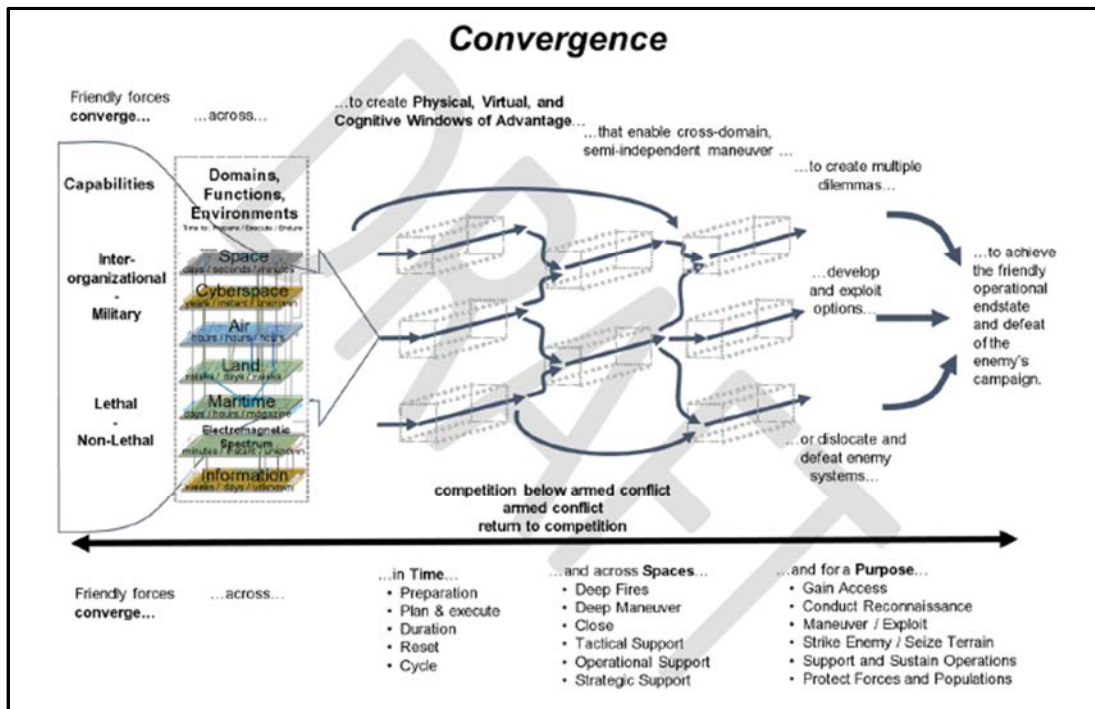


Figure 2. Convergence. *Multi-Domain Battle: Evolution of Combined Arms for the 21st Century 2025-2045*, (Fort Eustis, VA: Government Printing Office, 2018), 27.

Furthermore, MDO says that convergence optimizes the employment of capabilities across all domains to stimulate, see, and strike the enemy complicating any attempts to conceal and defend its long- and mid-range systems by providing the JF with multiple options for attacking vulnerabilities.⁵⁶ More specifically, MDO concept calls for Army forces to converge LRPF to penetrate and disintegrate enemy A2AD systems, which allows for JF freedom of strategic and operational maneuver.⁵⁷

Calibrated Force Posture

Comprehension of force posture in the context of MDO is critical to understanding how to operationalize the concept. MDO discusses three types of force posture that are mutually supporting and play a vital role in the future operating environment; forward presences forces, expeditionary forces, and partner forces. The MDO concept intentionally uses the adjective

⁵⁶ Ibid., ix.

⁵⁷ US Army, *The US Army in Multi-Domain Operations 2028*, 25.

“calibrated” to describe force posture multiple times indicating the requirement to adjust the force precisely for a certain function. Calibrated force posture is the combination of global position both home and abroad, and task organization to maneuver across strategic distances. MDO requires a dynamic mix of calibrated force posture to deter an adversary and, if required, to defeat its plan within days and not months. The speed and scale of projecting combat power are critical for MDO operations. In 2016, a RAND study conducted extensive wargaming with a variety of subject matter experts concluded that Russian forces could seize major Baltic port cities of Riga and Tallinn within sixty hours with approximate of twenty-two battalions leaving NATO with a limited number of options.⁵⁸ Therefore, MDO requires a forward presence forces along with partners to defeat or deter the adversary’s unconventional and informational warfare efforts and prevent *fait accompli* campaigns by posturing inside the adversary’s anti-access systems to immediately turn denied spaces into contested space by attacking or threatening the enemy’s critical vulnerabilities. The forward presence forces will set conditions for expeditionary forces, to include strategic attack capabilities to rapidly deploy from home station or other theaters of operation within days, not months, to reinforce the forward presence. The AOC defines expeditionary as the ability to deploy task-organized forces on short notice to austere locations, capable of conducting operations immediately upon arrival.⁵⁹ Lastly, MDO force posture includes partner forces integrated with the JF to provide additional capacity, unique capabilities, and key terrain needed to defeat enemy systems in competition and armed conflict.⁶⁰ The purpose of the Partner forces is to delay the attacking adversary conventional forces with enhanced counter-A2AD and conventional ground maneuver capabilities and capacities to gain time for friendly forces. The combination of forward presence forces, expeditionary forces, and partner forces

⁵⁸ David A. Shlapak and Michael W. Johnson, *Reinforcing Deterrence on NATO’s Eastern Flank: Wargaming the Defense of the Baltics* (Santa Monica, CA: RAND, 2016), 4, accessed February 6, 2019, https://www.rand.org/pubs/research_reports/RR1253.html.

⁵⁹ US Army, *The US Army Operating Concept: Win in a Complex World 2020-2040*, 46.

⁶⁰ US Army, *Multi-Domain Battle*, 24.

allow for a rapid build of combat power to establish a foothold in a theater of operations to project combat power deeper in enemy territory.

Resilient Formations

The third tenant of MDO is resilient multi-domain formations that possess the capacity, capability, and endurance necessary to operate across multiple domains in contested spaces against a near-peer adversary. The absence of access and domain superiority in an expanded and noncontiguous battles space will cause friendly forces to face contact from varying directions and domains. MDO formations must demonstrate the ability to avoid detection and survive contact with the enemy when virtually isolated while maneuvering without continuous supply lines or secured flanks.⁶¹ The *US Army Concept for Multi-Domain Combined Arms at Echelons Above Brigade, 2025-2045* calls for “formations that are able to integrate, synchronize, and converge all elements of combat power across all domains, the EMS, and the information environment to execute cross-domain maneuver; provide essential linkage to the expanded instruments of national power; and operate ubiquitously with joint, interagency, and multinational partners to overmatch any threat in any future environment.”⁶² Due to the complexity of the future security environment that consists of ill-defined problems that arise from the proliferation of cheap and effective technology, growing populations, urbanization, increased network dependence, and emerging weapons and communication platforms has led to an emphasis on mission command philosophy. MDO diverges from Airland Battle and Unified Land operations, in that, current doctrine seeks a battle of attrition through combined-arms maneuver in land and air domains by massing firepower on a single point in time to achieve the desired effect. As opposed to MDO, which seeks to win the battle of cognition by providing the enemy with multi-dilemmas through episodic integration of capabilities across all domains. The multi-domain formations will require

⁶¹ Ibid., 24.

⁶² US Army, *The US Army Concept for Multi-Domain Combined Arms Operations*, 21-22.

creative and critical thinkers who can solve ill-defined problems operating with more autonomy at the tactical level in disaggregated operations. With an increase in enemy firepower and lethality, MDO formations will operate more dispersed demanding emphasis on mission command versus command and control found in highly synchronized and phased unified land operations concept.⁶³ Commanders and staffs will need to focus more on conceptual planning versus detailed planning to identify ways and means to integrate capabilities across the formation to create windows of advantage. Episodic integration will require a paradigm shift in a military staffs approach to conducting large-scale combat operations. Instead, commanders and staffs will need to seek integration of multi-domains to allow freedom of maneuver for autonomously smaller multi-domain formations. Although synchronization will always be a key element to the successful execution of joint operations; the future battlefield will be a cognitive fight on how to best adapt and employ new technology with existing capabilities to counter the opponent's overmatched capabilities and capacity. The US Army has begun experimentation with these concepts through the Multi-Domain Task Force Pilot Program. The US Army selected the 17th Field Artillery Brigade to act as a Multi-Domain Task Force (MDTF) to test the theory of MDO in virtual and physical spaces. In July 2018, the MDTF participated in one of the largest multinational maritime exercises in the world called Rim of the Pacific. The MDTF participated in the first sinking exercise by employing long-range artillery, air attacks, and land-based missiles to target a decommissioned ship in the Pacific Ocean. The US Army designed the MDTF to provide the JF Commander additional capability to target maritime threats. Admiral Harry Harris, former Commander of US Pacific Command said, "The Army's got to be able to sink ships, neutralize satellites, shoot down missiles and deny the enemy the ability to command and control

⁶³ David Smith, "Mission Command in Multi-Domain Operations," Over the Horizon Website, October 30, 2017, accessed December 14, 2019, <https://othjournal.com/2017/10/30/mission-command-in-multi-domain-operations/>.

its forces.”⁶⁴ The MDTF was successful in linking domains to fire long-range artillery, air attacks, and land-based missiles to sink a naval vessel.⁶⁵ MDO formations must be able to rapidly tailor and scale forces for specific missions and threats, and adapt to fluid environments along the conflict continuum.

Solomon Island Campaign

The successes of the South Pacific Force were not the achievements of separate services or individuals but the result of whole-hearted subordination of self-interests by all in order that one successful ‘fighting team’ could be created.

– Admiral William F. Halsey, Jr., *Guadalcanal: The First Offensive*

Background

To understand how the application of the tenets of MDO led to the Allies successfully achieving their strategic objective, it is important to understand the historical context in the Pacific Theater from 1942-1943. On December 8, 1941, the United States Congress declared war on the Japanese Empire after the surprise attack at Pearl Harbor. As President Franklin D. Roosevelt characterized the attack, “a date that will live in infamy,” would generate one of the greatest generations in US history. The Pearl Harbor attack galvanized the will of the American people to initiate the first offensive campaign against the Japanese Empire in the Pacific Theater. The complexity of conducting warfare in the vast Pacific area, the overmatched military power of the Japanese Empire, and the pending large-scale offensive in the European theater presented a wicked problem for the United States. In the face of overwhelming circumstances, the Allied operations in the Pacific Theater would become a spectacular orchestration of joint operations that ultimately led to the fall of the Japanese Empire.

⁶⁴ Albert Palazzo and David P. McLain, III, “Multi-Domain Battle: A New Concept for Land Forces,” *War on the Rocks*, September 15, 2016, accessed February 28, 2019, <https://warontherocks.com/2016/09/multi-domain-battle-a-new-concept-for-land-forces/>.

⁶⁵ Todd South, “Not Just for the Navy: Army uses RIMPAC to give this new task force its first real-world tryout,” *ArmyTimes*, August 7, 2018, accessed March 13, 2019, <https://www.armytimes.com/news/your-army/2018/08/07/not-just-for-the-navy-army-uses-rimpac-to-give-this-new-task-force-its-first-real-world-tryout/>.

Before June 1942, the Japanese Empire achieved great success in consolidating gains within the Pacific Theater with the most powerful navy in the world by controlling territory from Manchuria in the north to central China and French Indochina into Malaya and Burma in the southwest running eastward through the islands from Sumatra to the strong point of Rabaul. Heading northward from Truk to Kuriles, the Imperial Navy and Army secured one of the largest empires in the history of humanity.⁶⁶ Figure 3 illustrates the extent of Japanese control in August 1942 denoted within the red outline.



Figure 3. The extent of Japanese Control in August 1942. *World War II: Pacific, Geography & Island Hopping*, accessed December 16, 2018, <http://pacificww2.blogspot.com/2011/02/geography-island-hopping.html>.

⁶⁶ Jonathan Parshall and Anthony Tully, *Shattered Sword: The Untold Story of the Battle of Midway* (Dulles, VA: Potomac Books, 2005), xxi.

The Japanese offensive defeated the European colonial powers in the region and seized critical strategic energy and mineral resources in the East Indies required for the continuing growth of the Japanese Pacific Empire.⁶⁷ The Japanese began to strengthen their defensive perimeter through a series of air and sea basing in each island group. By the middle of 1942, the Japanese military controlled the majority of land and sea territory in the South Pacific and began posturing to take the offensive into Australia.⁶⁸ Originally, the Japanese had no intentions to invade Australia; however, Rear Admiral Yano perceived the accumulation and flow of US war material to the Allied country as a powerful counter-offensive base. Therefore, the Imperial Navy insisted that Japan pursue active measures to strengthen strategic defensive positions and sever the sea line of communication between Pearl Harbor and Brisbane, Australia.⁶⁹ The Imperial Japanese Navy headquartered the Southeastern Fleet in a strongpoint at Rabaul, which would become the main objective for the US forces in the Pacific. Rabaul provided a strategic advantage because of the strategic location in relation to other large island groups and possessed a large harbor to house naval assets and suitable terrain for multiple airfields. Rabaul allowed the Japanese to posture military forces southward with the cover of land-based bombers toward the New Guinea coast only 440 nautical miles to the southwest and Guadalcanal only 565 nautical miles to the southeast.

Additionally, the Japanese built airstrips along their southern approach to maximize the fighter-plane range.⁷⁰ The Japanese began constructing an airfield (later to be named Henderson Airfield) on Guadalcanal in the Solomon Islands providing the range for enemy land-based

⁶⁷ Parshall and Tully, *Shattered Sword*, 22.

⁶⁸ Charles R. Anderson, *Guadalcanal: The US Army Campaigns of World War II* (Washington, DC: Government Printing Office, 2003), 5.

⁶⁹ Douglas MacArthur, *Reports of General Douglas MacArthur*, vol. 2, *Japanese Operations in the Southwest Pacific Area* (Washington DC: Government Printing Office, 1966), 132-34.

⁷⁰ John Miller, Jr., *CARTWHEEL: The Reduction of Rabaul* (Washington, DC: Government Printing Office, 1959), 2.

aircraft to directly threaten the South Pacific ferry route to Australia.⁷¹ From a strategic perspective, the Solomon Islands were decisive terrain in the Pacific theater because the Japanese Empire could project combat power to disrupt valuable sea and air lines of communication between Pearl Harbor and Australia.⁷² The Japanese air threat at Guadalcanal would become the immediate priority for the Allied offensive strategy in the Pacific Theater and ultimately a foothold for the penetration of the Japanese defensive belt.

In response to the Japanese build up at Guadalcanal and two successful US naval battles at Midway and the Coral Sea, the Allies sought to maintain the initiative by developing a multinational joint operation focused on the seizure of Guadalcanal and the surrounding Solomon Islands called Operation Watchtower. Operation Watchtower would provide critical insight into the complexities of joint operations and serve as a model for future warfare.⁷³ Operation Watchtower was stage one of the Joint Chief's Pacific strategy to protect Australia and New Zealand air and sea lines of communication and block Japan's movement south from Rabaul.⁷⁴ This strategy nested with President Franklin D. Roosevelt and Prime Minister Winston S. Churchill's decision to defeat Germany first and then mass in the Pacific to defeat the Japanese nation.⁷⁵ Operation Watchtower was a shaping operation for the Solomon Islands Campaign called Operation Cartwheel. Operation Cartwheel was a US-led effort, supported by forces from Australia, New Zealand, and the Netherlands that sought to neutralize the major Japanese base at Rabaul by advancing from two main axes of advance: from the west along the northeast coast of New Guinea and from the east through the Solomon Islands.

⁷¹ Kevin M. Woods and Thomas C. Greenwood, "Multidomain Battle: Time for a Campaign of Joint Experimentation," *Joint Force Quarterly* 88 (1st Quarter, January 2018): 17.

⁷² James Holmes, "Three Strategic Takeaways from the Guadalcanal Campaign," *The National Interest*, accessed October 18, 2018, <https://nationalinterest.org/feature/3-strategic-takeaways-the-guadalcanal-campaign-22987>.

⁷³ Wheelan, *Midnight in the Pacific*, 5.

⁷⁴ *Ibid.*, 296.

⁷⁵ Miller, *CARTWHEEL: The Reduction of Rabaul*, 1.

Through the lens of military theory, the Allies and Japanese diverge on maritime strategy. The Allies applied theories aligned with Julian Corbett's maritime strategy. For instance, Corbett felt that protecting lines of communication was much more difficult to enforce at sea than on land which aligns with Operation Cartwheel's overall "island hopping" strategy of securing basing and conducting a series of battles to gain a tactical advantage.⁷⁶ On the contrary, the Imperial Navy operations deeply rooted in doctrine focused on achieving a decisive victory as illustrated in Alfred T. Mahan's theory that the object of the fleet is to destroy the enemy fleet.⁷⁷ The two-pronged penetration of the Japanese area defense network commanded by General Douglas MacArthur in the Southwest Pacific Area and Admiral Chester Nimitz in the Pacific Ocean Area to the east would become a historical joint operation that leads to the successful isolation of the Rabaul strongpoint and set conditions for the culmination of the Japanese Imperial Empire. There is empirical evidence throughout the Solomon Islands Campaign of MDO identified in the next section.

Analysis

Convergence

The third hypothesis examines the Allies ability to conduct convergence by integrating capabilities to create windows of advantage to enable the JF to conduct cross-domain synergy and semi-independent maneuver while exercising mission command to maximize disciplined initiative. The examples of convergence outlined in MDO theory that contributed most to the strategic success of the Solomon Island Campaign are reconnaissance posture, intelligence sharing, and territorial access.⁷⁸ The complimentary integration of critical capabilities in

⁷⁶ Julian Corbett, "Some Principles of Maritime Strategy," in *Roots of Strategy*: Book Four, ed. David Jablonsky (Mechanicsburg, PA: Stackpole Books, 1999), Part II.

⁷⁷ Alfred T. Mahan, "The Influence of Sea Power Upon History," in *Roots of Strategy*: Book Four, ed. David Jablonsky (Mechanicsburg, PA: Stackpole Books, 1999), Part II.

⁷⁸ Examples of windows of advantage are found in US Army, *Multi-Domain Battle*, 25.

technological innovations such as radar, naval attack aircraft, signal intelligence, and carrier task groups played a key role in achieving multi-domain effects that created physical windows of advantage for the Allied forces. These compiling multi-domain effects presented the Japanese with multiple dilemmas faster than the enemy could react which ceded initiative to the Allies and increased operational tempo resulting in semi-independent maneuver ahead of projected timelines. The aggregation of these effects allowed the Allies to strike decisively at a time and place that exploited an overmatched peer adversary.

The emergent electromagnetic technology of the radar proved to be a critical capability that created advantages across the domains for the Allied forces in the Pacific theater. The technological developments of the radar resulted in a plethora of capabilities for the Allies which included an early warning of enemy movements, facilitated navigation, guided gunners to orient weapon systems, made night fighting practical in the air and on the sea, and fighter interdiction.⁷⁹ Many of the historical literature on the Pacific conflict mention the significance the radar had on the overall success of the war. At the beginning of the war, the Japanese's aircraft, ships, and combat night tactics were superior to those of the Allies; however, their failure to adapt radar technology quickly shifted the advantage to an inferior Allied force. Allied commanders reluctant to adopt the newly developed and unproven technology incurred catastrophic losses at sea and in the air.⁸⁰ The innovative adaptation of the air-to-surface radar in the Black Cat squadrons of the South Pacific transformed a slow and obsolete patrol flying boat (Catalina PBY-6A) into one of the most deadly and proficient weapons of the war, in that, it provided early detection and interdiction at night of Japanese attacks through the Savo Sound, anti-submarine warfare, night attacks, disrupted the enemy supply lines also known as the Toyko Express, and provided search

⁷⁹ Prados, *Islands of Destiny*, 355.

⁸⁰ Frank, *Guadalcanal*, 603.

and rescue capabilities at sea.⁸¹ The integration of the radar capability with the air component provided the Navy time and space to maneuver to a position of advantage to locate and destroy Japanese ships and aircraft. The Allies used ground base radar as a passive defense measure at island airfields that help direct Allied anti-aircraft fire and enhanced force protection and survivability for the Marines and Soldiers guarding the airfields. Radar improved carrier defense measures in survivability and naval aircraft delivering catastrophic effects to enemy battleships. Radar technology provides several lessons related to MDO theory. First, the radar on the Catalina demonstrates how the US military modified old or existing technology with new technology to created windows of advantage when faced with fiscal constraints and limitations. The radar is a critical component in the modern A2AD system, in which advancements in the range, accuracy, and size have improved significantly since WWII.

In modern warfare, emergent and enhancing technologies in radar, Theater High Altitude Area Defense, inter-continental ballistic missiles, long-range precision fires, artificial intelligence, quantum computing, and nanotechnologies increase the overall complexity and uncertainty for military practitioners generating a reluctance to change. A deeper understanding by commanders and staffs of these emerging capabilities will be crucial in identifying vulnerabilities in enemy systems, as well as, exploiting the friendly capability to gain advantages. Lieutenant General Eric J. Wesley mentioned during a senior leader MDO panel that technology matures at an accelerating rate and the US Army ability to find innovative ways to adapt tactics and operations to these technologies should be our strength in cognitively defeating the enemy.⁸² The radar was not the single determinating factor in achieving strategic success in the Pacific Theater during WWII, but the convergence of the radar capability made a significant impact in

⁸¹ Paul Van Cozens, "The Role of Radar in the Pacific Theater during World War II: Deployment, Acceptance and Effect" (Master's thesis, San Jose State University, 1993), 167.

⁸² Panel discussion found at Defense Visual Information Distribution Service, "Association of The United States Army 2018 Contemporary Military Forum #8: Multi-Domain Operations," accessed November 16, 2018, <https://www.dvidshub.net/video/631836/ausa-2018-cmf-8-multi-domain-operationsv>.

the overall campaign in shifting air and sea superiority to the Allies.⁸³

An operational example of convergence that endorsed territorial access was the transition from a battleship battle line to the carrier task group. Sea battles would be fought in the air from far over the horizon vice lines of battleships at twenty thousand yards exchanging direct fires.⁸⁴ As a result of these changes in tactics and operations, campaign planners could extend operational reach through careful analysis of effective aircraft range and base locations. In carrier battle, the best defense was to bomb the enemy carrier's deck to prevent the enemy aircraft from taking to the sky. If the aircraft could not reach the enemy carrier, then the next best method was to destroy the attacking enemy planes before they reach their target.⁸⁵ This is another example of convergence between the air, sea, and ground domains. The air would create windows of advantage by targeting enemy carriers, which allowed the Allied carriers to maneuver to locations that could support ground operations on the Islands with naval gunfire. The naval gunfire would support ground forces on raids to conduct amphibious assaults to secure airfields on the islands. The ground forces would enable air operations by securing the airfields from Japanese assault. The integration of capabilities among air, sea, and land domains created a cross-domain synergy effect allowing the establishment of basing which lead to semi-independent maneuver which continually caught the Japanese by surprise and unable to mass significant combat power and win a decisive victory. The greater maneuverability of the carrier task groups gave US naval strategists extraordinary freedom to plan wide-ranging operations extending overall operational reach, while conversely throwing Japanese leaders continually off balance or surprised. Time and again, Japanese planners had to cancel attacks because an Allied assault fell from an unexpected

⁸³ Samuel E. Morison, *The Two-Ocean War: A Short History of the United States Navy in the Second World War* (Boston, MA: Little, Brown and Company, 1963), 579.

⁸⁴ John A. Adams, *If Mahan Ran the Great Pacific War: Analysis of World War II Naval Strategy* (Bloomington, IN: Indiana University Press, 2008), 17.

⁸⁵ Samuel E. Morison, *History of United States Naval Operations in War II*, vol. 5, *The Struggle for Guadalcanal, August 1942-February 1943* (Boston, MA: Little, Brown and Company, 1984), 211.

direction.⁸⁶ Furthermore, as result of the cross-domain operations in carrier task groups set conditions for the establishment of ground and sea basing in the Solomon Islands creating secure lines of communication to effectively resupply forces and extend operational reach. The combination of basing and operational reach allowed the Allies to maintain an operational tempo that rapidly created multi dilemmas for the Japanese forces.

Multi-Domain Formations

This section tests the second hypothesis, which considers the composition, capabilities, and resiliency of multi-domain formations that enhances semi-independent maneuver. The First and Fifth Marines demonstrated endurance and resiliency after conducting an amphibious assault at Guadalcanal to capture Henderson Airfield in August 1942. After one of the US Navy's worst defeats at the Battle of Savo Island, the US Marines watched Vice Admiral Frank Jack Fletcher move his carrier task force and all their supplies out to sea to protect the ships from further Japanese air attacks. The abandoned Marines secured the airfield without adequate supplies and no naval gun support. The Marines endured harsh conditions on Guadalcanal through relentless air attacks and naval bombardment in extreme heat, mangrove swamps, torrential rains, and swarms of malarial *Anopheles* mosquitoes.⁸⁷ The Marines suffered from fatigue, weakness, and heat exhaustion due to malaria, dysentery, and dengue fever. After three months of tropical jungle combat, their undergarments rotted and fell off their bodies. Mold grew on clothing and equipment. A Marine on average lost thirty-five pounds while living on captured rice or oatmeal, eating only twice daily. Marines even begin to grow crops on the island to supplement food shortages. Lieutenant Colonel Merrill Twining, the division assistant operations officer, estimated that malaria infected at least ninety percent of the landing force. Despite the horrible conditions,

⁸⁶ Malcolm Muir, Jr., "The United States Navy in World War II: An Assessment," in *Reevaluating Major Naval Combatants of World War II*, ed. James J. Sadkovich (Westport, CT: Greenwood Press, 1990), 17.

⁸⁷ Wheelan, *Midnight in the Pacific*, 99.

the Marines continued to defend the perimeter of Henderson Airfield and conducted daily patrols and offensive counter-attacks to push Japanese artillery position out of range of the airfield.⁸⁸ The resiliency and endurance of the First and Fifth Marines were critical to defending Henderson Airfield and repelling waves of Japanese attacks, which had strategic implications in allowing Allied air and naval forces to continue the offensive to Rabaul.

Another critical component of MDO theory is mission command of multidomain formations. The US Army today seeks to make a fundamental shift in mission command philosophy. An evaluation of mission command during the Solomon Island Campaign provides valuable lessons for the future fight. Most official histories, contemporary historians, and even the service component commanders during the Solomon Islands Campaign recognize that teamwork and cooperation among the different services was a main reason for Allied success in the Pacific War. The planning of the initial offensive drive to Rabaul provides interesting insight to the challenges the US military may face in MDO. MacArthur and his staff proposed a plan for a full-scale assault against New Britain and New Ireland to gain control of Rabaul and the strategic Bismarck Archipelago. MacArthur requested two carriers and an additional trained amphibious division to his already existing three divisions to rapidly carry out his bold offensive assault on Rabaul.⁸⁹ The Army and Navy planners in Washington supported MacArthur's plan and request for the aircraft carrier and Marine division. The heated debate became the crucial question of command. Admiral Ernest King, Chief of Naval Operations, argued that the operations in the Solomon Islands were primarily amphibious and naval in character and therefore should be under naval control. Both the Army and Navy agreed the success of the operation depended on the speed and unity of command. MacArthur declared the operational objectives fell in his area of operations and therefore should be under his command and the Navy argued the position that

⁸⁸ Wheelan, *Midnight in the Pacific*, 204-7.

⁸⁹ Louis Morton, *Strategy and Command: the First Two Years, US Army in World War II: The War in the Pacific* (Washington, DC: Government Printing Office, 2000), 294-5.

amphibious operations should be under naval command.⁹⁰ The debate ensued for over a month with multiple proposals on how to prosecute the campaign against Rabaul. The unseen benefit in the discourse of command would generate a new operational approach that would lead to the success of the Allied assault to Rabaul. On July 2, 1942, Admiral King and General Marshall compromised on a plan that General MacArthur would command the South Pacific Area and lead the western axis of advance along New Guinea and Admiral Nimitz would command the eastern axis of advance in the eastern Pacific Area to Rabaul, while the two mobile air forces consisting of heavy bombers position at the end of each line of communication in Hawaii and Australia.⁹¹ The silver lining of the compromise shaped a two-pronged advance on Rabaul creating multi dilemmas for the Japanese and greater flexibility for both MacArthur and Nimitz's commands to achieve strategic success. See Figure 4 for the Pacific Areas in August 1942 for the initial invasion of the Solomon Islands.

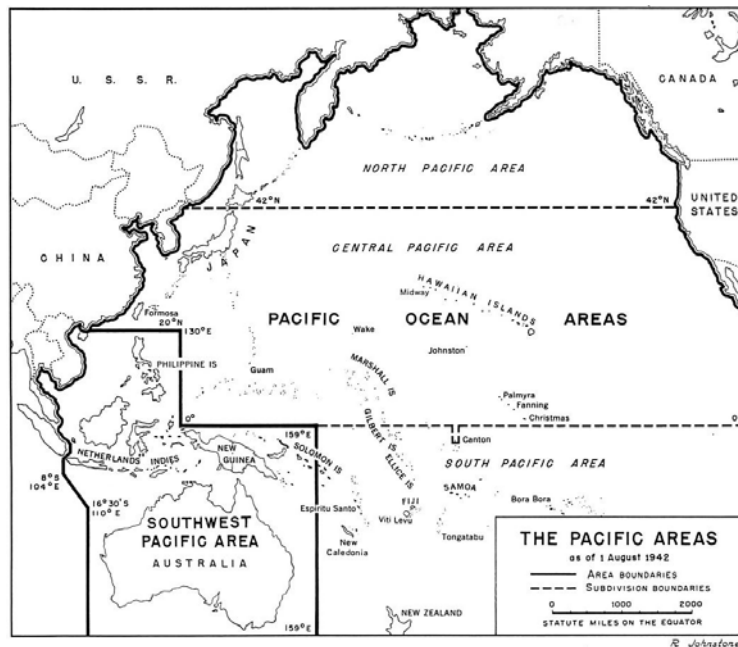


Figure 4. The Pacific Areas, August 1942. John Miller, Jr., *CARTWHEEL: The Reduction of Rabaul* (Washington, DC: Government Printing Office, 1959), Map No. 1.

⁹⁰ Morton, *Strategy and Command*, 296-97.

⁹¹ *Ibid.*, 303.

Calibrated Force Posture

The third hypothesis this study seeks to test is the Allies' calibrated force posture within the Pacific Theater set conditions to prevent the Japanese from maintaining the initiative to achieve a *fait accompli* campaign.⁹² Calibrated force posture in the context of MDO theory is the balance of capabilities across the total force of forward presence forces and expeditionary forces able to deploy within strategically relevant time periods. As US ground forces redeployed stateside at the conclusion of the Cold and First Gulf Wars, US defense planners faced a planning problem similar to that faced by joint planners in the Pacific during World War II. US forces would now have to win the sea and air battles, just to reach the exterior boundaries of the theater, before they could even engage in the land battle. Rather than defending with forward forces, as in the Cold War, they would now have to race to relieve beleaguered garrisons or, as MacArthur would do in the years ahead, marshal sufficient combat power to forcibly reenter the theater. Between January and March of 1942, a "blunt" force of over eighty thousand troops quickly sailed for Australia to form the nucleus of what would grow into an Allied Army Group capable of conducting a counteroffensive.⁹³

By December 1941, the US Army strength was equal to 1,640,000 troops of which 165,000 resided outside the continental US dispersed across the globe. The US Army could only equip seven of the thirty-four divisions for immediate deployment to the Pacific theater of operations.⁹⁴ The forward presence forward in December 1941 was inadequate to deter Japanese expansion, which left the United States vulnerable resulting in the loss of the Philippines and the

⁹² TRADOC Pamphlet 525-3-1 defines calibrated force posture as the combination of position and the ability to maneuver across strategic distances. US Army, *The US Army in Multi-Domain Operations 2028*, 25.

⁹³ Morton, *Strategy and Command*, 224.

⁹⁴ Center of Military History, *Logistics in World War II: Final Report of the Army Services Forces* (Washington, DC: Government Printing Office, 1993), 10.

attack on Pearl Harbor.⁹⁵ The Allied expeditionary force conducted the first major amphibious land-based assault six months after the United States declared war on Japan at Guadalcanal in August 1942. Thus, the transition to armed-conflict did not happen within weeks as the MDO concept stipulates. However, the Allied Forces compensated for the lack of forward forces with the expeditionary force deployed in the Solomon Island Campaign in exercising operational art. Allied strategic success during World War II in the Pacific Theater stemmed from applying the concept of basing, which *Joint Publication 5-0, Joint Planning* claims is an “indispensable” part of operational art.⁹⁶ The employment of basing can sustain operational reach in time and space, which is crucial in gaining a position of relative advantage against an overmatched adversary.⁹⁷ The Allies strategically selected key locations for air and sea basing that increased protection for air and naval assets, maintain sea lines of communication for consistent sustainment of supplies, and extended the range and flexibility of aviation.⁹⁸ These factors lengthened operational reach that consistently surprised the Japanese forces. The practice of operational art, specifically basing, directly contributed to the Allies’ ability to project and sustain military power in the Pacific Theater.

Another element of operational art implemented by the Allied Forces during Operation Cartwheel was lines of operations.⁹⁹ Throughout history, smaller and skillfully lead forces

⁹⁵ Ray S. Cline, *Washington Command Post: The Operations Division, US Army in World War II: The War Department* (Washington, DC: Government Printing Office, 1990), 75.

⁹⁶ US Department of Defense, Joint Staff, *Joint Publication (JP) 5-0, Joint Planning* (Washington, DC: Government Printing Office, 2017), IV-35.

⁹⁷ US Department of the Army, *Field Manual (FM) 3-0, Operations* (Washington, DC: Government Printing Office, 2008), 1-18.

⁹⁸ John M. Rentz, “Bougainville and the Northern Solomons” (USMC historical Monograph, Quantico, VA, 1946) accessed October 23, 2018, <http://www.ibiblio.org/hyperwar/USMC/USMC-M-NSols/USMC-M-NSol-1.html>.

⁹⁹ ADRP 3-0 defines Lines of Operations as a line that defines the directional orientation of a force in time and space in relation to the enemy and links the force with its base of operations and objectives. Lines of operations of operations connect a series of decisive points that lead to control of geographic or force oriented objective consisting of a series of actions aka island hopping. US Department of the Army, *Army Doctrine Reference Publication 3-0, Operations* (Washington, DC: Government Printing Office, October 2017), 2-6.

overcame significant odds through careful analysis and the effective timing of force employment.¹⁰⁰ The Allies identified the Japanese base at Rabaul to be a critical intermediate strategic objective — decisive point. The Allies developed two lines of operations in a series of battles around the Solomon Islands and eastern coast of New Guinea to draw Japanese forces from Rabaul. The Japanese remained in a defensive posture and waited for the Allies to attack. As a result of the Allies' successful execution of the two lines of operations and a month ahead of schedule, Admiral Nimitz and General MacArthur decided to instead isolated Rabaul using a naval blockade which ultimately neutralized a large Japanese force on the New Britain Island.¹⁰¹ The Allies' ability to exercise operational art through a series of tactical battles over time and space through lines of operations facilitated an operational tempo puzzling Japanese planners which relinquished the initiative to Allied Forces.

Conclusion

Operation Cartwheel shows a narrow portion of the overall conflict in the Pacific Theater, yet a clear distinction of MDO theory emerges. The Allied commanders and staffs ability to exercise joint operations in the Pacific theater by employing indispensable basing, lines of operations, and enhanced operational reach through technological advances in warfare set conditions for the convergence of multiple domains that lead to the culmination at Rabaul and achieving strategic objectives in the Pacific Theater. Although the Solomon Islands Campaign precedes the MDO concept, the campaign provides an excellent historical example of what now defines MDO and can be used by commanders and operational planners as a model for future warfare and operational design.

A valuable lesson drawn from the case study in great power conflict is the conduct of the

¹⁰⁰ David G. Chandler, "Napoleon, Operational Art, and the Jena Campaign," in *Historical Perspectives of the Operational Art*, ed. Michael D. Krause and R. Cody Phillips (Washington, DC: US Army Center of Military History, 2005), 27.

¹⁰¹ Adams, *If Mahan Ran the Great Pacific War*, 14.

Japanese leadership in ignoring strategy and seeking a decisive victory through reflexive striking at the opponent. Yamamoto emphasis on will-power and being the first to strike will lead to victory in war.¹⁰² The MDO concept acknowledges that conflict with a near-peer will not be quick or decisive and most likely become a costly and protracted war.¹⁰³ Military practitioners of MDO must learn from the mistakes of the Japanese unchecked aggression in rushing into operations without an analytical approach to warfare. Allowing commanders and staffs adaptive space to discover innovative techniques and ideas will foster optimization of convergence resulting in rapid integration of capabilities to create windows of advantage. However, future commanders and staffs should strike a balance between operational tempo and patience, to prevent costly mistakes when rushing into battle without situational awareness of the enemy's location and intentions.

The history of failure in war can almost be summed up in two words. Too late. Too late in comprehending the deadly purpose of a potential enemy. Too late in realizing the mortal danger. Too late in preparedness. Too late in uniting all possible forces for resistance. Too late in standing with one's friends. Victors in war results from no mysterious alchemy or wizardry but depends entirely upon the concentration of superior force at all critical points of combat.

– General Douglas MacArthur, Statement on aid to Great Britain in response to a request from William Allen White, Chairman of the Committee to defend America by aiding the Allies

Conclusion

The current AOC does not adequately address the emerging problems of the future operating environment in 2028 and does not include the space and cyber domains. The infusion of technological developments, the introduction of the cyber and space domains, and the emerging threats of an era of great power competition will change the character of warfare, but the nature of war will remain the same. Thus, the US Army requires a new future operating concept that

¹⁰² S.C. M. Paine, "The Japanese Way of War," in *Strategy in Asia: The Past, Present, and Future of Regional Security*, ed. Thomas G. Mahnken and Dan Blumenthal, (Stanford, CA: Stanford University Press), 134.

¹⁰³ US Army, *The US Army in Multi-Domain Operations 2028*, 24.

creates a physical, virtual, cognitive framework to fight and win in future conflict. MDO is the Army's solution to future conflict. Fictional scenarios of the future like *Ghost Fleet* are becoming more plausible because of technological proliferation and a highly competitive geopolitical environment. Colin Gray warns against assuming peace will continue indefinitely among great powers and we should not become overly enchanted with new types of war that we forget about the classical war.¹⁰⁴ Although the tenets of MDO did contribute to strategic success during the Solomon Island Campaign, the tenets were not the main reason for success. The Pacific War in 1942 reveals evidence of the tenets of the MDO concept, but to a small degree in comparison to the more classical elements of warfare. For example, the elements of operational art greatly contributed to the success in the Solomon Islands Campaign like basing, operational reach, decisive points, and lines of operation. The Solomon Islands were a battle for geographic decisive points that were suitable for constructing airfields and ports. Tactical and operational strength grew from an interior position established on a network of airfields and ports that developed a robust logistical supply chain, extending aircraft ranges and strike capability, and establishing secure lines of communication and tempo that would extend operational reach to the doorstep of the Japanese mainland. The penetration of Japan's strategic defensive barrier began at the Solomon Islands and set conditions for the Allied Forces to maneuver from a position of superiority in all domains. John F. Schmitt claims a future operating concept should reflect an awareness of military history to maintain credibility.¹⁰⁵ The words "operational art" cannot be found in TRADOC Pamphlet 525-3-1. The elements of operational art have been a common thread throughout military history. Concept developers should consider and explain how the elements of operational art are either compatible or non-compatible with MDO theory to enhance the creditability of the future concept.

¹⁰⁴ Colin S. Gray, *Another Bloody Century: Future Warfare* (London: Weidenfeld & Nicholson, 2005), 391.

¹⁰⁵ Schmitt, "Practical Guide for Developing and Writing Military Concepts," 12.

The lethality of modern weapons will highly restrict joint maneuver in great power conflict. The A2AD umbrella will become the new “no man’s land” of World War I. Hypersonic weapons, rail guns, high-velocity projectiles, precision-guided missiles, and intelligence, surveillance, reconnaissance capabilities will limit joint maneuver in the A2AD umbrella. Just as the small-bore rifle, machine gun, and quick-firing artillery caused the bloody stalemate in World War I.¹⁰⁶ Technological advancements will continue to increase the lethality of firepower and will be a constant characteristic of warfare eroding the strength of the JF ability to maneuver in the land domain forcing formations to operate more autonomously and disaggregated. MDO will shift the paradigm from a battle of attrition to a battle of cognition.¹⁰⁷ The military that learns to adapt capabilities more quickly than the opponent to achieve operational advantages will win the future fight, similar to the Allies in the Pacific with the radar, carrier task group, and acting on sound intelligence. Suffering from victory fever at the beginning of the war, the Japanese failed to adapt their tactics, strategy, and technology as the war progressed which led to defeat. Another historical example of “in-stride adaption” is the Meuse-Argonne campaign of World War I, where V Corps overcame the challenges of “no man’s land” by integrating new technologies while modifying existing doctrine.¹⁰⁸

The US Army must tailor and scale MDO formations to meet the unique challenges specific to a theater of operations. There are distinct differences between the geography in Europe compared to the Pacific. Thus, the US Army must be able to scale and task organize capabilities specific to the geography of the operating environment similar to how the Allies did in the Pacific

¹⁰⁶ Robert H. Scales, “Tactical Art in Future Wars,” *War on the Rocks*, March 14, 2019 accessed March 28, 2019, <https://warontherocks.com/2019/03/tactical-art-in-future-wars/>.

¹⁰⁷ Quote from General Stephen J. Townsend, TRADOC Commander, during MDO Panel at Defense Visual Information Distribution Service, “Association of The United States Army 2018 Contemporary Military Forum #8: Multi-Domain Operations,” accessed November 16, 2018, <https://www.dvidshub.net/video/631836/ausa-2018-cmf-8-multi-domain-operationsv>.

¹⁰⁸ John M. Nimmons, “Escaping No Man’s Land: Combined Arms Adaption in the Meuse-Argonne,” in *Bringing Order to Chaos: Historical Case Studies of Combined Arms Maneuver in Large-Scale Combat*, ed. Peter J. Schifferle (Fort Leavenworth, KS: Army University Press, 2018), 75.

with command structures across domains. The employment of a specialized task force to target specific nodes or vulnerabilities in the enemy system will create windows of superiority. For example, the S400 surface-to-air-missile system provides a significant threat to air superiority. A task force developed and resourced with capabilities specifically to target anti-aircraft systems will more likely succeed than a general force. A specialized task force will allow for optimal convergence in multi-domain operations.

Finally, a war against a great power opponent will be a whole nation approach. The United States has never achieved simultaneous victories against two opponents when fighting on two different fronts. The only exception is World War II in the Pacific and Europe. Historians attribute the success of the US military on two fronts to the ability to out produce and out think the Japanese and the Germans. The huge industrial capacity of the United States turned commerce into a war machine providing the Allies numerical superiority in all facets of force structure across all the services. Talented engineers developed innovative technologies that improved existing weaponry, aircraft, and naval fleets with overmatch capability to gain advantages.¹⁰⁹ The US government appropriated budgetary funding to support the war efforts goals. The same whole nation approach will be required to fight in great power competition. Just like in *Ghost Fleet*, the United States may face a China-Russia alliance in a future conflict. Zbigniew Brzezinski, one of America's leading twentieth-century strategic thinkers, said, "the most dangerous scenario," he warned, would be "a grand coalition of China and Russia...united not by ideology but by complementary grievances."¹¹⁰ To be successful in great power competition and conflict, the nation must be ready to take a whole-of-government approach to war and warfare similar to the success of fighting on two fronts during World War II.

¹⁰⁹ Prados, *Islands of Destiny*, 355.

¹¹⁰ Graham Allison, "China and Russia: A Strategic Alliance in the Making," *The National Interest*, December 14, 2018, accessed March 31, 2019, <https://nationalinterest.org/feature/china-and-russia-strategic-alliance-making-38727>.

In a world of perpetual and increasing uncertainty and complexity, a military force cannot prepare for all possible contingency scenarios. The linchpin to success in future warfare will be “speed.” The great power competitor that acts as a learning and adaptive organization that can rapidly transition in being faster in posturing for the fight, producing overmatch capacity, rapidly converging capabilities, adapting to technology and tactics, maneuvering before being detected, and firing further with precision against an opponent will cumulatively gain the superiority in all domains. The great power competitor that can seize superiority in the domains will be more likely to win the war.

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