

History of US Army Operating Concepts and Implications for Multi-Domain Operations

A Monograph

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Abstract

History of US Army Operating Concepts and Implications for Multi-Domain Operations, by COL Grant S. Fawcett, US Army, 45 pages.

To prepare for the future, the US Army is pursuing Multi-Domain Operations (MDO). MDO is more than a natural and logical evolution of previous Army Operating Concepts (AOC); it represents a departure, principally in the definition of the period of competition and the intended role of land power during competition. This monograph argues that adopting MDO as the AOC will likely achieve a decisive comparative military advantage in the land domain during armed conflict, but may not be effective in deterring or denying adversaries from countering US hegemony during the period of competition. The US Army has a mature and established framework to develop future concepts and transform to meet the requirements of the future. However, until the Joint Force integrates the concept into a cohesive and holistic method for waging war, MDO may not produce a truly multi-domain solution. Additionally, the United States must come to grips with the realities of the current and future environment, and decide how best to protect national interests in competition with adversaries such as Russia and China.

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Acronyms

A2/AD	Anti-Access/Area Denial
ADP	Army Doctrine Publication
ACF	Army Concept Framework
AOC	Army Operating Concept
ARCIC	Army Capabilities Integration Center
CAM	Combined Arms Maneuver
CCJO	Capstone Concept for Joint Operations
DoD	Department of Defense
DOTMLPF	Doctrine, Organizations, Training, Material, Leadership and Education, Personnel, Facilities
EMS	Electro-Magnetic Spectrum
FCS	Future Combat System
FM	Field Manual
JCIC	Joint Concept for Integrated Campaigning
LSCO	Large-Scale Combat Operations
MDO	Multi-Domain Operations
MR	Military Revolution
NDS	National Defense Strategy
NSS	National Security Strategy
RMA	Revolution in Military Affairs
TRADOC	Training and Doctrine Command
ULO	Unified Land Operations
WAS	Wide Area Security

Introduction

Today, we are emerging from a period of strategic atrophy, aware that our competitive military advantage has been eroding. We are facing increased global disorder, characterized by decline in the long-standing rules-based international order—creating a security environment more complex and volatile than any we have experienced in recent memory. Inter-state strategic competition, not terrorism, is now the primary concern for US national security.

—United States of America, *National Defense Strategy*, 2018

Uncertainty is a defining characteristic of the future, and predictions about the future of war and the usefulness of armed conflict are fiction. This impediment to change is intractable, but not insurmountable. To overcome uncertainty, theory and concepts are vital to the armed forces of any nation. Future concepts represent a unifying vision or idea around which an organization can anticipate and adapt to new and emerging challenges, and prepare cognitively and physically to succeed. Since the Vietnam War, three distinct periods of uncertainty have confronted the US Army. In all cases, concept development served a prominent role in efforts to adapt, and seven Army Operating Concepts (AOCs) have codified the future concepts under consideration. Today, the world is experiencing an unprecedented pace of technological change, and disruptive technologies are just around the corner that will permanently change the character of warfare.¹ New technologies enable adversaries to oppose US hegemony with innovative methods that are economical and effective, and challenging to counter within current strategies for employment of military power. Terrorism has dominated foreign and military policy since the terrorist attacks of 2001. During this same period, Russia and China modernized conventional capabilities, and in the future will continue to compete for regional and global dominance. The armed forces of the United States, and the US Army in particular, anticipate a requirement to transform in order to

¹ In his treatise on war, Clausewitz describes the nature of war as those elements that are unchanging, including the ultimate purpose of war to serve a political end, and the role of violence, chance, force, and strength. Politics, society, technology, culture, and ethics shape the character of war, which therefore changes depending on time and place. See Carl Von Clausewitz, *On War*, ed. and trans. by Michael Howard and Peter Paret (Princeton: Princeton University Press, 1984).

maintain relevance in the future environment, or place US hegemony and the stability of the international order at risk.

To prepare for the future, the US Army is pursuing Multi-Domain Operations (MDO) and published the most recent version of the AOC on 27 November 2018, titled *The US Army in Multi-Domain Operations, 2028*.² MDO intends to achieve “rapid and continuous integration of all domains of warfare”³ to provide land forces with an advantage over adversaries during both competition and armed conflict. MDO is more than a natural and logical evolution of previous AOCs; it represents a departure from previous concepts, principally in the definition of the period of competition and the intended role of land power⁴ during competition. A clear distinction exists between historical Soviet and Western definitions of this period, and the difference between the definitions is relevant. For Soviet military theorists, war, or *voina*, included economic, diplomatic, ideological, scientific-technical, and other forms of struggle between nations, whereas armed conflict, or *vooruzhennaia bor’ba*, referred specifically to struggle between militaries on the battlefield.⁵ Conversely, Western nations traditionally equate war with armed conflict, and consider activities short of war the realm of diplomatic and economic elements of national power. MDO seeks to change this paradigm and enable military action in the period of competition.

Codifying MDO as the AOC signals that the US Army has decided MDO will provide a decisive advantage in the future, and an analysis of the feasibility and efficacy of the concept is useful. This monograph argues that adopting MDO as the future concept will achieve a decisive comparative military advantage over adversaries in the land domain during armed conflict, but

² US Department of the Army, *TRADOC Pamphlet (TP) 525-3-1, The US Army in Multi-Domain Operations, 2028* (Fort Eustis: US Army Training and Doctrine Command, 2018).

³ US Army, *TP 525-3-1, Multi-Domain Operations* (2018), iii.

⁴ The US Army defines land power as “the ability—by threat, force, or occupation—to gain, sustain, and exploit control over land, resources, and people.” See US Department of the Army, *Army Doctrine Publication (ADP) 1, The Army* (Washington, DC: Government Printing Office, 2012), 1-4.

⁵ David M. Glantz, *Soviet Military Operational Art: In Pursuit of Deep Battle* (London: Frank Cass and Company Limited, 1991), 5.

may not be effective during the period of competition. The most certain outcome of MDO is a modernization of ground forces resulting from the prioritization of research and development efforts through the six modernization priorities and the establishment of Futures Command.⁶ This modernization will greatly enhance the tactical and operational capability and preparedness of land forces during conventional large-scale combat operations (LSCO). However, it is unknown whether investment in land forces optimized for LSCO will effectively deter or deny adversaries from countering US hegemony during competition.

First, the monograph presents an overview of the Army Concept Framework (ACF) and explains the role of future concepts in driving change within the US Army. A discussion of past military transformations then provides context on how social, political, and technological factors influence employment of military force. The monograph reviews the seven official future concepts adopted by the US Army since the establishment of TRADOC in 1973. For each AOC, the monograph highlights the problem identified, the operational theory of victory, and the manifestation of the concept in doctrine, organization, equipment, or effectiveness on the battlefield. Finally, the monograph provides a detailed explanation of the MDO concept, followed by an analysis of the implications at the tactical, operational, and strategic levels of war.

History and Role of Future Concepts in the US Army

Concepts are and must be the first agreed upon part of any project. They must also be dynamic – changing as perceptions and circumstances change.

—GEN Donn A. Starry, *TRADOC Commander's Notes No. 3*

Any discussion of how the US Army develops operational concepts and formulates doctrine must acknowledge the foundational role of General (GEN) William E. DePuy and GEN

⁶ In 2017, Acting Secretary of the Army (SECARMY) Ryan D. McCarthy and Chief of Staff of the Army (CSA) Mark A. Milley acknowledged the competitive advantage of the US is being challenged in all domains, and established six modernization priorities, which are Long Range Precision Fires, Next Generation Combat Vehicle, Future of Vertical Lift, the Army Network, Air and Missile Defense, and Soldier Lethality. See Department of the Army Memorandum, “Modernization Priorities for the United States Army,” October 3, 2017, accessed March 5, 2019, <https://admin.govexec.com/media/untitled.pdf>.

Donn A. Starry. As the Vietnam War came to a close and national strategy shifted towards the threat of the Soviet Union in Europe, the Army recognized a need to transform. As a catalyst, Chief of Staff of the Army, GEN Creighton W. Abrams, directed the Steadfast reorganization in early 1973, a major restructuring that established the Training and Doctrine Command (TRADOC). This reorganization assigned a four-star commander responsibility to manage development, training, and teaching initiatives for the Army, to include formulation of tactical doctrine.⁷ GEN Abrams personally selected GEN DePuy as the first commander, and soon thereafter chose Lieutenant General (LTG) Starry as the Deputy Commander.⁸ Later, GEN Starry would replace GEN DePuy as the second commander of TRADOC. These dynamic and visionary leaders established the initial framework for analyzing future operating environments, and theorizing about the evolving role of land power.

Soon after taking the helm of TRADOC, GEN DePuy required a mechanism to gain broad understanding and consensus across the enterprise. Aligned with national emphasis shifting to the Cold War, GEN DePuy selected the European theater as an explicit conventional scenario to study and understand, and specifically identified the numerical superiority of Warsaw Pact forces over US and NATO forces as the operational problem to overcome. He directly supervised a team of planners to develop the ideas under consideration, and on 23 July 1974 published the “TRADOC Draft Concept Paper on Combat Operations.” The paper served as the basis to develop and synchronize doctrinal work, and establish priorities for research, development, and acquisition. GEN DePuy knew the concept needed to be incorporated into Army doctrine to be accepted by the operational force, and advocated for the concept through direct communications with senior Army leadership, direction to TRADOC organizations, and by hosting multiple “how

⁷ Anne W. Chapman, Carol J. Lilly, John L. Romjue, Susan Canedy, *Prepare the Army for War, A Historical Overview of the Army Training and Doctrine Command, 1973-1998* (Fort Monroe: US Army Training and Doctrine Command, 1998), 7-8.

⁸ Henry G. Gole, *General William E. DePuy, Preparing the Army for Modern War* (Lexington: The University Press of Kentucky, 2008), 237-240.

to fight” conferences to encourage debate. Ultimately, the effort constituted the first attempt to develop a unified conceptual statement about how the US Army intended to fight in the future, and served as the foundation for the 1976 version of *Field Manual (FM) 100-5, Operations*.⁹ Development of future concepts gained relevancy, and the prominent role of doctrine in guiding thought and action within the US Army was elevated.¹⁰

GEN Starry took command of TRADOC in 1977, and formalized the role of future concepts. On 20 February 1979, he released *TRADOC Commander’s Notes No. 3*, outlining his view of operational concepts and doctrine. He defined an operational concept as “a description of military combat, combat support and combat service support systems, organizations, tactical and training systems necessary to achieve a desired goal.” This definition codified the requirement for all war fighting functions to focus on a centrally approved idea about how to employ land power. GEN Starry identified three “general rules” for knowing when a new operational concept is required. Scenarios included recognition of a problem for which no doctrine exists, assignment of a mission for which no doctrine exists, or an unexploited advancement in technology with potential for military application. He envisioned concepts as the start point for doctrinal and capabilities development, but acknowledged, “concepts are not doctrine until tested, approved, and accepted.”¹¹

It is important to emphasize the difference between concepts and doctrine. Concepts propose a new approach to conducting military operations, or for employing technology within a military context, in a theoretical future environment. Contemporary operations, the surrounding cultural, economic, and political context, and competing predictions of theoretical futures, all are

⁹ Paul H Herbert, *Deciding What Has to Be Done: General William E. DePuy and the 1976 Edition of FM 100-5, Operations* (Fort Leavenworth: Combat Studies Institute Press, 1988), 45-46.

¹⁰ John L. Romjue, *From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1982* (Washington: US Government Printing Office, 1985), 4-5.

¹¹ Donn A. Starry, *Press On! Selected Works of General Donn A. Starry*, vol. 1, selected, edited, and annotated by Lewis Sorley (Fort Leavenworth: Combat Studies Institute Press, 2009), 338-339.

factors that shape the development of concepts. These ideas start with a problem that contemporary doctrine, organizations, training, material, leadership and education, personnel, and facilities (DOTMLPF) solutions cannot adequately manage, and propose a method to solve the problem. After significant evaluation and testing, the Army validates the concept and incorporates it into Army doctrine, or invalidates and discards the concept.¹² Although concepts enable military organizations to prepare for the future, they have a direct and immediate impact on tactical and operational formations. Doctrine is the “fundamental principles, with supporting tactics, techniques, procedures, and terms and symbols, used for the conduct of operations and which the operating force, and elements of the institutional Army that directly supports operations, guide their actions in support of national objectives.”¹³ Doctrine “presents principles for accomplishing the Army’s primary mission—*winning the land battle*,”¹⁴ and is the basis for training combat formations, shaping leader and professional development, and identifying required capabilities. Concepts theorize about how the Army may operate at a designated point in the future, whereas doctrine describes how the Army conducts operations today within the limits of current capabilities.¹⁵

Although the processes and organizational structure of TRADOC have evolved, the role of concepts in doctrinal and capabilities development has changed little since 1979. *TRADOC Regulation (TR) 71-20, Concept Development, Capabilities Determination, and Capabilities Integration*, states “concepts illustrate how future joint and Army forces may operate, describe capabilities required to carry out the range of military operations against adversaries in the

¹² US Department of the Army, *Army Doctrine Publication (ADP) 1-01, Doctrine Primer* (Washington, DC: Government Printing Office, 2014), 2-6.

¹³ US Army, *ADP 1-01, Doctrine Primer* (2014), 1-2.

¹⁴ US Department of the Army, *Field Manual (FM) 100-5, Operations* (Washington, DC: Government Printing Office, 1976), i.

¹⁵ GEN David G. Perkins, “Multi-Domain Battle, Driving Change to Win in the Future,” *Military Review*, 97, no. 4 (July-August 2017): 7.

expected operational environment, and explain how the commander, using military art and science, might employ these capabilities to achieve desired effects and objectives.”¹⁶ The Army Capabilities Integration Command (ARCIC) is the lead integrator for concept development, experimentation, modeling, and simulations, and for ensuring synchronization of efforts across the enterprise to prepare the Army for the future. ARCIC was recently assigned to Army Futures Command in July 2018 after establishment of the new 4-star command, and is responsible for managing the ACF, of which the AOC plays a critical role.¹⁷ Establishment of Army Futures Command places responsibility and oversight of the entire modernization strategy under one command. This includes describing the future environment and determining threats, developing concepts for employment of land power, determining necessary capabilities, and developing material solutions to outfit the force.¹⁸

Military planners assigned to develop future concepts must carefully consider two fundamental factors. First, concepts must remain grounded within a coherent foreign policy and national strategy. Although the National Security Strategy (NSS) issues direction to the elements of national power to attain strategic objectives,¹⁹ realities of the US system of democracy challenge the unity and continuity of action within a larger grand strategy. Periodic transitions of elected officials and societal changes in popular perceptions of war force planners to assume how the nation will employ its armed forces in a future environment. Second, concepts must remain

¹⁶ US Department of the Army, *TRADOC Regulation (TR) 71-20, Concept Development, Capabilities Determination, and Capabilities Integration* (Fort Eustis: US Army Training and Doctrine Command, 2013), 9.

¹⁷ *TR 71-20* assigns ARCIC the role of managing the ACF which includes the Army Capstone Concept (ACC) and the AOC, and the responsibility to direct, manage, and synchronize the development of subordinate Army Functional Concepts (AFCs) and concepts-based concept of operations (CONOPS) and white papers by force modernization proponents. See US Army, *TR 71-20, Concept Development* (2013), 16.

¹⁸ Daniel S. Roper and Jessica Grasseti, “Seizing the High Ground – United States Army Futures Command,” *ILW Spotlight* 18-4 (2018), accessed January 29, 2019, <https://www.ausa.org/sites/default/files/publications/SL-18-4-Seizing-the-High-Ground-United-States-Army-Futures-Command.pdf>.

¹⁹ Donald J. Trump, *National Security Strategy of the United States of America*, (Washington, DC: Government Printing Office, 2017).

compatible with the purpose and roles of land forces for the nation. The unique role of the US Army is to impose the will of the Nation on an enemy on the land domain. Current doctrine outlining employment of land power is Unified Land Operations (ULO).²⁰ Under ULO, the US Army sustains proficiency in the traditional core competencies of combined arms maneuver (CAM) and wide area security (WAS) during LSCO, and must be prepared to conduct other operations as directed.²¹ As long as land power remains a viable option to achieve objectives during future conflict, CAM and WAS in some form must remain central components.

Military Revolutions and Revolutions in Military Affairs

Change in the strategic landscape drives militaries to innovate and transform to remain relevant. Military historians Williamson Murray and MacGregor Knox wrote an influential history of military transformation, providing two classifications that enable greater understanding of the subject.²² “Military Revolution” (MR) is the first classification, and describes a period characterized by “systemic changes in politics and society.” MRs are “uncontrollable, unpredictable, and unforeseeable” and their impact “fundamentally changes the framework of war.”²³ MRs are rare, and alter the paradigms of society and military organizations as a tool for power within society.²⁴ History also suggests the existence of lesser transformations known as

²⁰ US Department of the Army, *Army Doctrine Publication (ADP) 3-0, Unified Land Operations* (Washington, DC: Government Printing Office, 2011), 1.

²¹ *ADP 1, The Army*, defines combined arms maneuver (CAM) as “the application of combat power to find, fix, close with, and destroy enemy forces on land, and then exploit opportunities created by the enemy’s defeat” and wide area security (WAS) as “the ability to secure and control populations, resources, and terrain.” See US Army, *ADP 1, The Army* (2012), 3-4.

²² There is no universally accepted definition for military revolution or revolution in military affairs. Definitions set forth by Murray and Knox are useful to assessing whether the future environment constitutes a fundamental change in the character of war or perhaps even the nature of war (as posited by the TRADOC analysis), or whether MDO and technologies under development will produce a comparative military advantage within the future environment.

²³ Williamson Murray and MacGregor Knox, “Thinking about Revolutions in Warfare,” *The Dynamics of Military Revolution 1300-2050*, (New York: Cambridge University Press, 2001), 6.

²⁴ Murray and Knox recognize five periods of history as military revolutions: the creation of the modern nation-state in the 17th Century, the *levée en masse* of the French Revolution in the 18th Century, the industrial revolution of the 19th Century which greatly enhanced lethality and mobility of armed forces, the first experience of a global and industrial war at the beginning of the 20th Century during WWI, and

“Revolutions in Military Affairs” (RMA), the second classification presented by Murray and Knox. RMAs involve “periods of innovation in which armed forces develop novel concepts involving changes in doctrine, tactics, procedures, and technology.”²⁵ Numerous examples of RMAs are evident throughout history.²⁶ RMAs provide the military organization that identifies and seizes the opportunity to transform an immediate and marked comparative advantage over adversaries, until the adversary either adapts to or adopts the new methods or means of warfare.

To achieve an RMA fully, a military organization requires a significant amount of time to develop the concept, the ability to conduct extensive testing and experimentation, and a culture that allows for innovation and debate. RMAs “appear susceptible to human direction, and in fostering them, military institutions that are intellectually alert can gain significant advantage.” War is a crucible that can illuminate problems, spur innovation, and drive consensus to enact change, and Williamson and Knox recognize two peacetime challenges common to RMAs. First, RMAs take considerable effort and time to develop and implement. In peacetime, it may take decades to achieve an RMA. Second, military organizations confront immense obstacles to change.²⁷ Political acceptance and funding are required to allow a military organization to turn theory into practice, and capitalize on the opportunities that come from innovation and technological advancement. Similar to future concepts, RMAs are likely to fail if not driven primarily by a coherent national strategy.²⁸

finally the demonstration of nuclear weapons during WWII and the emergence of mutually assured destruction. See Murray and Knox, “Thinking about Revolutions in Warfare,” 8-12.

²⁵ Williamson Murray and MacGregor Knox, “The Future Behind Us,” *The Dynamics of Military Revolution 1300-2050*, (New York: Cambridge University Press, 2001), 179.

²⁶ An example of an RMA is the triumph of concepts, doctrine, and technology that enabled the US Army to defeat the Iraqi Army soundly in the Gulf War. The US Army identified and addressed discrete problems that surfaced in Vietnam and during the Arab-Israeli War of 1973, and developed operational concepts and doctrine to solve the problems and generate a comparative military advantage. See Murray and Knox, “The Future Behind Us,” page 189.

²⁷ Murray and Knox, “Thinking about Revolutions in Warfare,” 12-14.

²⁸ Murray and Knox, “The Future Behind Us,” 180.

In 1999, the National Defense Research Institute published a study on past RMAs, proposing several critical factors that either facilitate or hinder military organizations from achieving the full potential of an RMA. Of great importance is the existence of both a fertile set of enabling technologies and unmet military challenges. Both of these exist within the current environment. Next, the study noted that at some point during the development of an RMA, it is necessary to challenge the core competency of a dominant military organization. The RMA either renders the core competency obsolete or, at a minimum, makes it less effective as a tool to achieve military objectives. Finally, the study noted the organization requires a climate receptive to change, mechanisms for experimentation, and the ability to adapt to successful or unsuccessful experimentation. Outcomes of experimentation either validate or invalidate doctrine, and pursue force structure modifications and acquisition priorities.²⁹

Review of Past US Army Operating Concepts

Three distinct periods of uncertainty are evident in the post-Vietnam era, and a review of future concept development within TRADOC is valuable to understanding how this works in practice. During the first of these periods, the United States benefitted from the strategic clarity of the Cold War, and singularly focused on deterrence of the nuclear and conventional threat of the Soviet Union in central Europe. The collapse of the Soviet Union ushered in the second period, and as the United States suddenly became the sole global super power, strategic ambiguity characterized the future. With no clearly defined adversary, the US Army focused on technological solutions to accessing and leveraging ubiquitous information. After the turn of the century, extremist ideologies and rapid technological advancement resulted in an era of strategic complexity, where many adversaries are relevant in global power struggles. During each of these

²⁹ Richard O. Hundley, *Past Revolutions, Future Transformations: What can the History of Revolutions in Military Affairs tell us about Transforming the U.S. Military?* (Santa Monica: National Defense Research Institute, RAND, 1999), 59-60.

periods, TRADOC developed and published AOCs to define the problem, describe a new concept for employment of land forces, and shape development of DOTMLPF solutions.

Strategic Clarity and the Cold War

It is in the nature of our democracy and its geographic location that Army Forces sent overseas at the beginning of any war will almost certainly be outnumbered in men and outweighed in material and weapons. Furthermore, the quality of the weapons we can expect to face will be roughly equal to the quality of our own. This means that success in those early critical engagements will depend mostly on the courage of our soldiers, the quality of our leaders and the excellence of our techniques and tactics.³⁰

—GEN William E. DePuy, *TRADOC Draft Concept Paper Combat Operations*

Through the 1970s and the 1980s, Cold War tensions between the United States and the Soviet Union and an increase in the lethality of battlefield weaponry marked a significant period of strategic reorientation. Military planners envisioned two potential war scenarios in the early 1970s, a mechanized war in Europe against the Warsaw Pact, or a light infantry war in another area of the world. Although national leadership recognized land war in Europe as unlikely, it represented the most significant danger to national security and a known threat around which the US Army focused concept development.³¹ As noted by GEN DePuy, the problem facing the Army was overcoming the numerical superiority of Soviet forces who would own the strategic and operational initiative at the outset of conflict. Additionally, the Arab-Israeli War of 1973 demonstrated a lethality, effectiveness, and numerical quality of modern weaponry on the battlefield that enabled a discernible increase in the destructive potential of ground and air forces. Soviet-equipped Arab forces greatly outnumbered the Israelis, and the effectiveness of the Soviet equipment was roughly comparable to the US equipment used by Israeli forces. This provided a real-world laboratory for study and comparison to the problem facing the US Army in Europe. In a letter to GEN Abrams in 1974, GEN DePuy outlined lessons learned from the 1973 conflict,

³⁰ GEN William E. DePuy, *Selected Papers of General William E. DePuy*, compiled by Colonel Richard M. Swain (Fort Leavenworth: Combat Studies Institute Press, 1994), 122.

³¹ Robert A. Doughty, *The Evolution of US Army Tactical Doctrine, 1946-1976* (Fort Leavenworth: Combat Studies Institute Press, 2001), 40.

and highlighted the domination and mobility of tank forces under conditions of air superiority as the main reason the Israeli forces were able to defeat a numerically superior force.³²

GEN DePuy and his team applied lessons to the European battlefield, and forward defense with combined arms teams became central to conceptualizing future doctrine. GEN DePuy identified four tenets for operating on the modern battlefield in the concept he termed the “Active Defense.” Tenets included concentration of combat power at the decisive point, effective command and control, CAM with an emphasis on cover, concealment, and suppression, and maximizing the use of all available weapons systems.³³ The central idea of Active Defense was to use forward defensive positions to gain information on enemy intentions, shape enemy maneuver, and then use strong, mobile combined arms teams, supported by air power in depth to gain a positional advantage and defeat the enemy. Active Defense emphasized firepower, suppression, and movement to attack the enemy center of gravity and buy time for a larger counterattack. Planners recognized the “need for a good tank, an infantry fighting vehicle, self-propelled artillery, and effective mobility for the air defense systems.”³⁴ The “Big Five” modernization programs originated from these studies, consisting of the Abrams Main Battle Tank, the Bradley Fighting Vehicle, the Black Hawk and Apache helicopters, and the Patriot air defense missile system.³⁵ Although significantly upgraded, these systems remain the central combat systems of US Army mechanized formations up through the writing of this monograph.

Active Defense was immediately controversial and subjected to significant criticism for several reasons. Perceptions that the manual was tactically focused, defensive in nature, and designed only to counter the Soviet threat in Europe were pervasive. After leaving his position as

³² DePuy, *Selected Papers*, 70.

³³ Benjamin M. Jensen, *Forging the Sword: Doctrinal Development in the US Army* (Stanford: Stanford University Press, 2016), 39-45.

³⁴ *Ibid.*, 51-53.

³⁵ Del Stewart, *Victory Starts Here: A Short 45-year History of the US Army Training and Doctrine Command* (Fort Leavenworth: Combat Studies Institute Press, 2018), 39.

the Deputy Commander of TRADOC, LTG Starry commanded V Corps in Europe from 1975 to 1977, where he observed employment of the new doctrine during field during exercises.³⁶ Many criticisms of Active Defense were apparent. Most significantly, the concept overly focused on the first battle and the threat of classic armored breakthrough, and discounted the employment of ground forces in echelon that characterized Soviet doctrine. Even if US and NATO forces halted the first wave of a Soviet attack, the superior mass of the second echelon would ultimately overwhelm and penetrate the defense. More simply, the doctrine allowed for tactical initiative, but failed to provide a theory of victory at the operational level to defeat Soviet forces. The doctrine also did not account for the simultaneous doctrinal evolution underway in the Soviet Union. Vulnerabilities of tanks and infantry fighting vehicles to anti-tank weapons force compelled a shift away from mass as the decisive element of the offense towards the use of multi-prong attacks and meeting engagements.³⁷

In 1977, GEN Starry returned to TRADOC, and began developing the “central battle” and the “extended battlefield” concepts for the next evolution of doctrine. Central battle was defined as the “critical arena on the battlefield” where tactics, organizations, weapons, and training “join together to cause a decision.”³⁸ To facilitate decision-making in the central battle, GEN Starry theorized that with an in-depth understanding of enemy doctrine and capabilities, and analysis of measurable variables through “battle calculus,” a commander and staff could characterize the actions of the enemy and identify targets for attack.³⁹ Central battle was essentially a larger operational plan designed to counter the initiative of the attacking force, and disrupt momentum to allow for marshalling additional US and NATO forces into the fight. Central battle provided the link between the role of strategy and the employment of tactics, and

³⁶ Romjue, *From Active Defense*, 25.

³⁷ *Ibid.*, 15-16.

³⁸ Starry, *Press On!*, 312.

³⁹ Romjue, *From Active Defense*, 24.

introduced the operational level of war within US Army doctrine for the first time.⁴⁰ Starry also developed the “extended battlefield” to capitalize on technological advancement in target acquisition, real-time communications, and long-range strike capabilities, which provided a solution to the operational problem by attacking the enemy in depth, and interdicting second echelon forces to shape the central battle. As a joint land and air endeavor, the aim of battlefield interdiction was to strike early and strike deep to disrupt, delay, or destroy enemy second echelon forces.⁴¹ Planners understood nuclear and chemical weapons, and specifically tactical nuclear weapons, were a capability present on all contemporary and future battlefields. Therefore, a modified concept named the “integrated battlefield” accounted for the full integration of air and land forces with nuclear and chemical capabilities.⁴²

On 25 March 1981, TRADOC published the first official AOC in *TRADOC Pamphlet (TP) 525-5, The AirLand Battle and Corps 86*. The central idea of AirLand Battle was “extending the battlefield and integrating conventional, nuclear, chemical, and electronic means” and attacking the enemy “to the full depth of his formations.”⁴³ AirLand Battle spurred organizational changes to combat formations and innovation of targeting systems to enable synchronization of air and land forces, deep attack, and interdiction. Headquarters at all echelons, brigade and above, gained fire coordination elements to analyze information, conduct battlefield calculus, and target enemy vulnerabilities to influence enemy maneuver.⁴⁴ Capabilities development focused on facilitating rapid targeting cycles and gaining air superiority, and initiated programs for laser-guided cannon projectiles, enhanced radars, tactical fire direction systems, and improved ground

⁴⁰ Jensen, *Forging the Sword*, 68-78.

⁴¹ Romjue, *From Active Defense*, 34-37.

⁴² Jensen, *Forging the Sword*, 73.

⁴³ US Department of the Army, *TRADOC Pamphlet (TP) 525-5, AirLand Battle* (Fort Monroe: US Army Training and Doctrine Command, 1981), 2.

⁴⁴ *Ibid.*, 21.

and man portable air defense systems.⁴⁵ Additionally, the Integrated Target Acquisition and Strike System (ITASS) program resulted in enhanced coordination of precision-guided long-range munitions to enable deep attack.⁴⁶

The doctrinal revolution of the 1970s spurred innovation and initiated a significant cognitive, organizational, and material transformation of the US Army. Both the 1982 and 1986 versions of *FM 100-5* codified AirLand Battle into doctrine. The US Army transformed from a hollow force after the Vietnam War into the effective conventional land power that defeated the Iraqi Army in the Gulf War in 1991. Overwhelming success by US land forces was the result of deliberate conceptual and doctrinal evolution, and the significant effort applied to training the force and experimentation.⁴⁷ Where AirLand Battle failed was the lack of prediction of the colossal strategic change resulting from the collapse of the Soviet Union and advancement in technology. AirLand Battle produced a narrowly-focused Army that deterred the Warsaw Pact, and performed well in an unexpected, conventional land war against an inferior enemy in the Gulf War. Modernization from Active Defense and AirLand Battle provided doctrine and combat systems suitable for large-scale combat; however, the doctrine was not sufficient to meet the expansion of roles for the post-Cold War era.

Strategic Ambiguity and the Information Age

It describes an operational environment where the acquisition, processing, and rapid sharing of information revolutionizes the conduct and tempo of operations.

—GEN Frederick M. Franks, *Force XXI Operations*

The end of the Cold War in 1989 and changing geopolitical, domestic, and economic factors lead to a period of downsizing and strategic reorientation.⁴⁸ Ambiguity characterized

⁴⁵ Herbert, *Deciding What Has to Be Done*, 99-102.

⁴⁶ Jensen, *Forging the Sword*, 73.

⁴⁷ Murray and Knox, “The Future Behind Us,” 189.

⁴⁸ Chapman, et. al., *Prepare the Army for War*, 18.

national security threats, resulting in debate over the future of warfare and the uses and effectiveness of land power. The Goldwater-Nichols Act of 1986 compelled the US Army to enhance cooperation and reliance on the other services. GEN John W. Foss took command of TRADOC in 1989 and oversaw the next evolution of AirLand Battle. AirLand Battle became AirLand Operations, and TRADOC published a revised *TP 525-5* on 1 August 1991, entitled *A Concept for the Evolution of AirLand Battle for the Strategic Army of the 1990s and Beyond*. AirLand Operations acknowledged the need to prepare for “operations across the operational continuum,” and emphasized, “power projection, decisive advantage, and joint and combined operations.”⁴⁹ The concept retained the central idea and the fundamental tenets of AirLand Battle, establishing the “One Extended Battlefield” framework to better coordinate and synchronize the employment of land power as part of a unified, joint, and combined action. This framework focused on the operational level of war, and recognized a non-linear modern battlefield with integrated and mutually supporting activities occurring separately in space and time.⁵⁰ Outside of warfighting, AirLand Operations recognized the expanding strategic roles of the US Army, including sustaining forward presence forces, maintaining forces for power projection, participating in interagency operations, providing support to civil authority, and contributing to regional stability through support to allies.⁵¹ Historically, the US Army had conducted many of these roles in conflict or post-war areas, but previous doctrine did not designate these activities as core missions.

In the early 1990s, US Army doctrine remained rooted in Cold War era problems, and after taking command of TRADOC in 1991 GEN Frederick M. Franks, Jr. made revision of *FM 100-5* a top priority. His recent operational experience as the VII Corps Commander during

⁴⁹ US Department of the Army, *TRADOC Pamphlet (TP) 525-5, AirLand Operations* (Fort Monroe: US Army Training and Doctrine Command, 1991), 1.

⁵⁰ *Ibid.*, 15.

⁵¹ *Ibid.*, 5-6.

Operation Desert Storm and understanding of the impacts of advanced technologies on warfare brought a unique perspective to future concept development. In 1993, the revised doctrine codified the concepts developed under GEN Foss, and shifted the US Army to a force projection approach for a broad range of strategic missions, requiring a “new versatility to meet the deployment challenges of the new era.”⁵² Although GEN Franks chose to revise doctrine first, TRADOC experimented with the integration of technological advancement to meet the realities of the information age and theories about 21st century conflict. Shortly before leaving TRADOC, GEN Franks approved the 1 August 1994 version of *TP 525-5, Force XXI Operations*. Force XXI envisioned a dynamic world characterized by complexity and change, and identified the advent of the information age as a driving force that rendered traditional means of warfare inadequate. As a result, the AOC expanded on the operational continuum first presented in *AirLand Operations*, and intended to prepare the Army for the full dimension of operations encountered in war, conflict, or peace. Army capabilities for the 21st century needed to be relevant in general war, low intensity conflicts, and operations other than war, encompassing a wide range of potential missions.

The central idea of Force XXI is that “in future joint land operations, force coherence and thus application of combat power can be achieved through shared knowledge of battlefield conditions versus traditional physical control means such as graphic control measures or geographical demarcation of areas of operations.”⁵³ Force XXI remained consistent with previously accepted fundamentals of land warfare, but viewed knowledge-based solutions as a decisive element on the battlefield to prevail over enemies in future conflict. To manage the ambiguity, TRADOC created battle laboratories as a means to test ideas against future potential operating environments. Battle laboratories enhanced the experimentation efforts of TRADOC

⁵² Chapman, et. al., *Prepare the Army for War*, 63.

⁵³ US Department of the Army, *TRADOC Pamphlet (TP) 525-5, Force XXI Operations* (Fort Monroe: US Army Training and Doctrine Command, 1994), 3-3.

through the extensive use of simulations, technology, prototypes, and live soldiers and units to analyze specific problems and military approaches. Experimentation expanded, and soon the 4th Infantry Division was designated the Force XXI test bed from 1994 to 1998, and advanced warfighting experiments regarding the emerging digitization concept were conducted.⁵⁴ During this period, processes and capabilities to conduct rigorous testing and experimentation matured significantly, and promoted a culture of change within TRADOC.

The US Army established organizational restructuring and force modernization priorities to build a force that was “rapidly tailorable, rapidly expandable, strategically deployable, and effectively employable as part of a joint and multinational team.”⁵⁵ The importance of battle command⁵⁶ and information or knowledge-based warfare was a fundamental component to employing land power under Force XXI. Doctrine throughout the Cold War was necessarily more prescriptive as it focused on defeating a known and predictable enemy. Force XXI expected commanders to apply principles of war, fundamentals of doctrine, and operational or strategic guidance to situations and scenarios, and exercise battle command to decide on an optimal military solution. This was a significant departure from previous US Army doctrine. Battle command in the new environment placed a different demand on commanders than the relatively prescriptive and known scenarios of the Cold War. Advances in information management and dissemination opened the possibility for non-hierarchical dissemination of intelligence, targeting, and other data at all levels, enabling a new way of managing forces that would alter, if not replace, traditional, hierarchical command structures. Force XXI anticipated the need to change force organizations, command procedures, and staff systems to optimize the movement of information throughout formations and the ability to process information rapidly to enable decisions. The Army Battle Command System was an information-age technological solution to

⁵⁴ Stewart, *Victory Starts Here*, 35.

⁵⁵ US Army, *TP 525-5, Force XXI* (1994), 3-1.

⁵⁶ *Ibid.*, 2-8.

provide a common digital operating picture of a unit's battlespace and provide a shared and real-time situational understanding that empowers independent action.⁵⁷

In late 1999, the "Objective Force," a larger transformation enacted by GEN Eric K. Shinseki, expanded the Force XXI concept to transform the Army and build a more "responsive, deployable, agile, versatile, lethal, survivable, and sustainable" force.⁵⁸ The Objective Force initiative became the Future Combat System (FCS) program, to "revolutionize the way the Army fights and replace existing combat units with interconnected, integrated assets linked by a central communications network."⁵⁹ Although the US Army ultimately cancelled the program in 2009, it led to the acquisition of the Stryker combat vehicle and modernization of battle command systems to facilitate maneuver of tactical formations. The modernization of major combat systems and communications equipment spurred by Force XXI greatly improved the equipment employed during the invasion of Iraq in 2003 and during combat operations in Iraq and Afghanistan. Force XXI resulted in a complete revision of the 1993 version of *FM 100-5*, the capstone doctrinal manual for the Army. In order to signify the paradigm shift, TRADOC adopted the joint publication numbering system and in June 2001 published *FM 3-0, Operations*.⁶⁰

Strategic Complexity and the Proliferation of Technology

The environment the Army will operate in is unknown. The enemy is unknown, the location is unknown, and the coalitions involved are unknown.

—GEN David G. Perkins, *Win in a Complex World*

The attacks of 11 September 2001 forced the military and the US Army to focus on the immediate problem of protecting the homeland from terrorism. The Global War on Terror began,

⁵⁷ US Army, *TP 525-5, Force XXI* (1994), 3-4.

⁵⁸ Stewart, *Victory Starts Here*, 35.

⁵⁹ Christopher G. Pernin, Elliot Axelband, Jeffrey A. Drezner, Brian B. Dille, John Gordon IV, Bruce J. Held, K. Scott McMahon, Walter L. Perry, Christopher Rizzi, Akhil R. Shah, Peter A. Wilson, Jerry M. Sollinger, "Lessons from the Army's Future Combat Systems Program," Monograph (Santa Monica: RAND Arroyo Center, 2012), 1.

⁶⁰ Stewart, *Victory Starts Here*, 52.

and military forces deployed overseas to a variety of locations to provide forward capabilities and fight abroad as a means to prevent another attack on US soil. In 2005, Secretary of Defense Donald H. Rumsfeld designated stability operations as a core mission equal to combat operations, and commitments to strengthen alliances and build capacity of partners and allies overseas expanded.⁶¹ Experiences in Afghanistan and Iraq reinforced the need to prepare for a broad range of environments and enemies that possess a wide variety of capabilities. As military commitments continued, a weariness and skepticism for war crept into the political landscape and the attitudes of the US population. Although a general war with another state remained an unlikely scenario, Russian activities challenging the sovereignty of former Soviet bloc countries in the first decade of the 21st century marked the beginning of an alarming trend of Russia acting outside of global norms.

Outside of terrorism, anticipated security challenges facing the US Army involved adversaries attempting to counter US strengths by attacking and exploiting perceived weaknesses, in particular dependence on the networked systems approach to managing warfare.⁶² As the United States remained embroiled in conflict in Afghanistan and Iraq, adversaries continued to develop capabilities to exploit vulnerabilities. To counter US overmatch, adversaries increasingly adopted hybrid approaches to warfare. The most dangerous wartime scenario involved adversaries employing a combination of conventional and unconventional military means with the effects of weapons of mass destruction and disruptive technologies to negate existing advantages in key operational domains, requiring the US Army to prepare for the full range of

⁶¹ Department of Defense Directive (DoDD) 3000.05, dated November 28, 2005 defines stability operations as those “military and civilian activities conducted across the spectrum from peace to conflict to establish or maintain order in States and regions.”

⁶² The US Army began to develop a network-centric approach to managing land forces following Force XXI concept development, but VADM Arthur Cebrowski championed the idea at the end of the 20th Century. VADM Cebrowski envisioned network-centric warfare enabling a shift from attrition-style warfare to a much faster and more effective warfighting style characterized by speed of command and self-synchronization. See VADM Arthur K. Cebrowski and John J. Garstka, “Network-Centric Warfare: Its Origins and Future,” *Proceedings Magazine* 124, no. 1 (January 1998): 139.

military operations during armed conflict.⁶³ On 2 October 2006, TRADOC published *TP 525-3-1, The US Army Operating Concept for Operational Maneuver, 2015-2024* in response to the increasing roles assigned to land forces within the Department of Defense (DoD).

The central idea of *Operational Maneuver* is operational adaptability and full-spectrum operations to meet the broad challenges of the new century. In a general war, the AOC placed a heavy emphasis on modularity of Army forces and conducting operational maneuver to engage decisive points and attack enemy centers of gravity. Simultaneous, distributed operations by air-ground maneuver elements within a controlled and high operational tempo campaign would overwhelm and defeat enemy forces.⁶⁴ The 2006 AOC focused on the nexus between strategy and tactics, and retained CAM as the central core competency. The AOC advanced the concept of knowledge-based warfare from Force XXI, and established a requirement for network-enabled battle command to enhance situational understanding, self-synchronizing, and rapid decision making to employ combat power effectively.⁶⁵ This concept first recognized the problem of adversary diplomatic, technological, and military anti-access measures designed to limit or deny US involvement in a regional crisis, and envisioned a combination of maneuver and strike forces under a joint umbrella to enable entry.⁶⁶

In 2010, after nine years of fighting counter-insurgency, Army leadership recognized a diffusion of clarity in the purpose of the US Army. GEN Martin E. Dempsey as TRADOC Commander attempted to solve the problem of increasing complexity through a refocus on the basics of warfighting. TRADOC published the 2010 version of the AOC, *TP 525-3-1, The United States Army Operating Concept, 2016-2028*, which focused heavily on tactical maneuver. The

⁶³ US Department of the Army, *TRADOC Pamphlet (TP) 525-3-1, The US Army Operating Concept for Operational Maneuver, 2015-2024* (Fort Eustis: US Army Training and Doctrine Command, 2006), 7.

⁶⁴ US Army, *TP 525-3-1, Operational Maneuver* (2006), 17.

⁶⁵ *Ibid.*, 11.

⁶⁶ *Ibid.*, 5.

central idea was to provide Army forces “capable of combined arms maneuver and wide area security within the context of joint, interagency, intergovernmental, and multinational efforts.”⁶⁷ Although the 2010 AOC continued to view violent extremism as the most likely threat to national security, the concept signaled an acknowledgement of the erosion of traditional warfighting skills and a shift towards greater emphasis on conventional armed conflict. The AOC identified the most dangerous threat as a nation-state possessing both conventional capabilities and weapons of mass destruction attempting to deny access to key regions through comprehensive anti-access campaigns involving physical and cyber attacks, enabled by information warfare, to defeat forced entry operations.⁶⁸ The AOC anticipated environments where adversaries increasingly contest and deny superiority in land, air, space, maritime, and cyber domains.⁶⁹

GEN David G. Perkins took command of TRADOC in March 2014 and immediately began work on revising the AOC. His view was that “not only is the future unknown, but it is unknowable.”⁷⁰ On 7 October 2014, TRADOC published *TP 525-3-1, Win in a Complex World*. The central idea of the AOC was that “globally responsive combined arms teams maneuver from multiple locations and domains to present multiple dilemmas to the enemy, limit enemy options, avoid enemy strengths, and attack enemy weaknesses.”⁷¹ This AOC retained the two core competencies of CAM and WAS from the 2010 AOC, and included additional roles of shaping the security environment, setting the theater, projecting national power, and cyberspace

⁶⁷ US Department of the Army, *TRADOC Pamphlet (TP) 525-3-1, The US Army Operating Concept, 2016-2028* (Fort Eustis: US Army Training and Doctrine Command, 2010), 11.

⁶⁸ US Army, *TP 525-3-1, Army Operating Concept* (2010), 10.

⁶⁹ Cyber activities and information operations are distinctly different. Cyber activities involve attacking the interdependent networks of information technology infrastructures and resident data within the global cyberspace domain. Information operations are the integrated employment of information-related capabilities to support lines of effort. See US Army, *ADP 3-0, Operations* (2011), 1-7 and 2-26.

⁷⁰ GEN David G. Perkins, “2014 Green Book: The Army Operating Concept,” The Official Homepage of the US Army, September 30, 2014, accessed December 12, 2018, https://www.army.mil/article/134900/2014_green_book_the_army_operating_concept.

⁷¹ US Department of the Army, *TRADOC Pamphlet (TP) 525-3-1, Win in a Complex World* (Fort Eustis: US Army Training and Doctrine Command, 2014), 15.

operations in the land domain. The concept emphasizes forward positioning of land forces as power projection and regional engagement platforms, the ability to project land power rapidly and globally from home bases, and conducting “joint combined arms maneuver” against elusive and capable enemies. The 2014 AOC viewed joint CAM as an expansion of previous descriptions of CAM, and foreshadowed the current conceptualization of MDO.

Win in a Complex World acknowledged land operations cannot be successful without support from the Joint Force, to include land, air, maritime, space, and cyberspace, and therefore are inherently cross-domain.⁷² However, it did not articulate a definitive answer to how the US Army will wage armed conflict in future environments. Instead, it describes how the Army may provide foundational capabilities to the Joint Force and civil authorities to enable joint operations.⁷³ It is the first AOC that accounts for all three levels of war. However, MDO focuses at the strategic level by highlighting the broad roles of the US Army in an unknown and constantly changing world. It acknowledges the changing character of war and the necessity to alter roles of land power to meet the realities of the multi-domain environment,⁷⁴ a shift that began with Force XXI in 1993 and continues to expand with each successive AOC.

GEN Perkins recognized Army doctrine focused on the current fight, consisting of low-intensity conflict and hybrid warfare, but did not adequately address major combat operations against a peer or near-peer adversary.⁷⁵ He directed TRADOC to simultaneously revise *FM 3-0* and begin work on a concept paper for operating in a multi-domain environment. The revision to *FM 3-0* intended to wrest the Army out of a culture established over more than a decade of

⁷² US Army, *TP 525-3-1, Win in a Complex World* (2014), iv.

⁷³ *Ibid.*, 22.

⁷⁴ As it focuses primarily on the strategic roles of the Army, *Win in a Complex World* relies on the tactical and operational concept of ULO described in the 2011 version of *ADP 3-0* and the 2017 version of *FM 3-0*.

⁷⁵ GEN David G. Perkins, “Preparing for the Fight Tonight, Multi-Domain Battle and Field Manual 3-0,” *Military Review* 97, no. 5 (September-October 2017): 8.

counterinsurgency operations and improve Army readiness.⁷⁶ TRADOC planners began to theorize about the effects of the addition of the cyber and space domains on the employment of land power and published a concept on multi-domain battle in December 2017. At the same time, TRADOC established modernization priorities, consisting of long-range precision/cross-domain fires, next-generation combat vehicles, future vertical lift, the network, soldier lethality, and organizational design. Modernization priorities seek to increase the effectiveness of land forces within the multi-domain environment, and improve readiness relative to the advancing capabilities of near-peer adversaries such as Russia and China.⁷⁷

Understanding Multi-Domain Operations

As the threat from Russia and China in the cyber and space domains increased, coupled with overt employment of military forces in the physical domains, the US Army acknowledged the need to revise the AOC. The 2018 NDS codified the shift, explicitly stating great power competition had supplanted terrorism as the top national security concern, and identify Russia and China as the most capable and determined adversaries to US interests.⁷⁸ For technical and tactical purposes, MDO focuses on the Russian threat, providing military planners with a known and coherent adversary to study.⁷⁹ This reduces uncertainty of the conventional threat, but does not account for the increased complexity of new means and methods of conflict in the expanding cyber and space domains. A lack of global norms and legal precedent exists for activities within these domains, and there are no longer boundaries to traditional battlefields.

Additionally, the impact of rapidly emerging technologies on future warfare remains theoretical and uncertain. TRADOC intelligence analysts identify areas of drastic technological

⁷⁶ LTG Michael Lundy and COL Richard Creed, “The Return of US Army Field Manual 3-0, Operations,” *Military Review* 97, no. 6 (November-December 2017): 15.

⁷⁷ GEN David G. Perkins, “Multi-Domain Battle: The Advent of Twenty-First Century War,” *Military Review* 97, no. 6 (November-December 2017): 11-12.

⁷⁸ US Department of Defense, *National Defense Strategy* (2018), 1.

⁷⁹ US Army, *TP 525-3-1, Multi-Domain Operations* (2018), 6-7.

advancement that will be connected and intersecting, and are likely to be equally disruptive and unpredictable, to include biology and bio-engineering, optimizing human performance, neurologic enhancement, nanotechnology, advanced material sciences, quantum computing, artificial intelligence, robotics, and additive manufacturing.⁸⁰ TRADOC describes two future periods for use by military planners within which to conceptualize MDO. The first period is the *Era of Accelerated Human Progress* and is from now through 2035. During this period, actors can take advantage of technological advancement and proliferation and increasingly challenge US military forces in all domains. Although not explicit, the environment described suggests an opportunity exists for a military organization to realize an RMA during this initial period. The second period is the *Era of Contested Equality*, from 2035 through 2050. TRADOC analysts expect epic breakthroughs in technology that will lead to significant change in the character of warfare and have dramatic and “almost revolutionary” changes that could “challenge the very nature of warfare itself.”⁸¹ There are obvious unknowns, but the potential for an MR during this second period is a possibility.

The MDO concept identifies multiple problems within the future environment, providing a focus for experimentation, testing, and capabilities design. The two most significant challenges are the ability of adversaries to achieve objectives short of armed conflict, and the employment of “layered standoff” to prevent the United States from countering their activities. During competition, layered standoff includes diplomatic, economic, and information activities to politically discourage or prevent action, and separate the United States from partners and allies. Adversaries benefit from US constraints in gaining access and permission from nation states to

⁸⁰ Advances in technology are occurring from breakthroughs in science and technology, and will blur the differences between the art and science of war. Artificial intelligence and quantum computing may constitute the most disruptive technology of the era, and bestow a military advantage, at least temporarily, on the first to achieve the technology. See US Department of the Army, *The Operational Environment and the Changing Character of Future Warfare* (Fort Eustis, VA: US Army Training and Doctrine Command, 2017), 7.

⁸¹ US Army, *The Operational Environment* (2017), 2.

conduct activities, and the nebulous nature of authorities in the cyber and space domains. Specifically, Russia and China seek to gain strategic and operational space and time to achieve objectives while avoiding direct confrontation. During armed conflict, adversaries create standoff by actively separating the Joint Force physically and functionally, through the deterrent value of national level military capabilities, through the conduct of cyber, information, and unconventional warfare, and through the demonstration and positioning of conventional forces.⁸²

In response to the focus of the US Army over the last few decades on globally responsive and deployable land power, both Russia and China have invested heavily in advanced anti-access/area-denial (A2/AD) systems to deny strategic and operational maneuver from the continental United States to potential regional theaters.⁸³ Operationally, the most significant military problem is gaining entry into a theater of armed conflict without sustaining an unacceptable loss of combat power. Specifically, penetration and dis-integration of A2/AD capabilities is necessary to gain freedom of maneuver for operational and tactical maneuver. Adversaries capitalize on the global reach of cyber and space effects to hamper the US ability to project power in the physical domains. Joint forces must neutralize enemy intelligence capabilities, long-range A2/AD systems, and maneuver forces to penetrate the theater, and subsequently destroy or defeat those adversary capabilities to dis-integrate the system.⁸⁴ Next, US Army forces exploit the resulting freedom of maneuver to defeat the armed forces of the adversary, and return to competition on terms favorable to US interests.⁸⁵ At this early stage, a

⁸² US Army, *TP 525-3-1, Multi-Domain Operations* (2018), 9-13.

⁸³ A2/AD includes the conventional force structures or strategies that provide an adversary the ability to prevent US forces from entering a battle space (land, sea, or air), or at minimum, provide an operational barrier that requires time and resources to breach. A2/AD capabilities include integrated use of ballistic and cruise missiles, fighter aircraft, air and missile defense systems, cyber and electronic warfare, and diplomatic means to deny operations within a geographic area. See US Army, *The Operational Environment* (2018), 6.

⁸⁴ US Army, *TP 525-3-1, Multi-Domain Operations* (2018), 32-42.

⁸⁵ *Ibid.*, 15-16.

viable solution to the military problem remains theoretical and elusive, but as concept development matures, one will undoubtedly emerge.

The central idea of MDO is that “Army forces, as an element of the Joint Force, conduct MDO to prevail in competition; when necessary, Army forces 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 on favorable terms.”⁸⁶ This is a fundamental departure from previous AOCs and from the traditional Western view that military forces achieve national objectives in decisive LSCO through attrition of enemy forces or the destruction of the enemy center of gravity. MDO identifies a continuum of conflict that includes the period of competition, a period of armed conflict, and a return to competition. Since the 1993 version of *FM 100-5*, every capstone operations manual for the US Army depicts peace and war at opposite ends of the conflict continuum, and identifies the range of military operations war that are potential options across the continuum. The period of competition replaces peace to describe the relationship of the United States with adversaries. This aligns with the *Joint Concept for Integrated Campaigning* (JCIC), which states the Joint Force must “eliminate institutional remnants of the obsolete peace/war binary conception of the operating environment.”⁸⁷

Under MDO, the military achieves national objectives through employment of military power during the period of competition, without having to resort to armed conflict. MDO aligns under the joint guidance from the JCIC, which acknowledges the “complex and rapidly changing operating environment will require a construct for employing the Joint Force in competition below armed conflict.”⁸⁸ Critical objectives during competition include deterring conflict on favorable terms, countering the efforts of an adversary to expand competitive space below the

⁸⁶ US Army, *TP 525-3-1, Multi-Domain Operations* (2018), 17.

⁸⁷ US Joint Chiefs of Staff, *Joint Concept for Integrated Campaigning* (Washington, DC: Joint Staff, 2018), 4.

⁸⁸ *Ibid.*, 5.

threshold of armed conflict, and enabling rapid transition to armed conflict. To accomplish these objectives, US Army forces must remain continuously and actively engaged at multiple echelons and across all domains. Should deterrence fail and armed conflict become necessary, “forward presence and expeditionary forces enable the rapid defeat of aggression through a combination of calibrated force posture, multi-domain formations, and convergence to immediately contest an enemy attack in depth.”⁸⁹ After defeat of the enemy, US Army forces produce and retain sustainable outcomes, consolidate gains favorable to the United States, and adapt to the new environment.

Three tenets support the US Army in the conduct of MDO. The first is calibrated force posture, which is the “capacity, capability, position, and the ability to maneuver across strategic distances.”⁹⁰ This requires forward presence of higher echelon forces during the period of competition, with permissions and authorities to act that previously have been constrained by civilian leadership for political and cultural reasons. Standing theater and field armies facilitate calibration of the posture of Army forces for Combatant Commanders (CCMDs) and conduct military activities during competition to achieve campaign plan objectives. Corps and smaller tactical formations are expeditionary and deploy to fill requirements for the field army. The second tenet is the existence of multi-domain formations that have the “capacity, capability, and endurance which generates the resiliency necessary to operate across multiple domains.”⁹¹ US Army formations will organize and modernize to possess multi-domain capabilities at echelon.

Convergence is the final tenet, and is the “rapid and continuous integration of capabilities in all domains, the electro-magnetic spectrum (EMS), and the information environment that optimizes effects to overmatch the enemy through cross-domain synergy and multiple forms of

⁸⁹ US Army, *TP 525-3-1, Multi-Domain Operations* (2018), 25-28.

⁹⁰ *Ibid.*, 17.

⁹¹ *Ibid.*, 19.

attack all enabled by mission command and disciplined initiative.”⁹² Convergence requires that a commander can “see” in all domains, and act or direct action in all domains to “stimulate” or “strike” an adversary. Cross-domain synergy is an element of “globally integrated operations” in the *Capstone Concept for Joint Operations* (CCJO), and is the “complementary vice merely additive employment of capabilities across domains in time and space.”⁹³ Convergence and cross-domain synergy expands on the traditional options in the physical domains available to a ground force commander, enabling forces to seize opportunities in all domains, impose additional complexity, and target vulnerabilities of an adversary. Similar to the approach adopted by AirLand Battle, MDO divides responsibility for convergence against adversary capabilities and formations at echelon.

Analysis

Three fundamental characteristics of the emerging multi-domain environment separate MDO from previous doctrine. First, MDO argues traditional concepts of CAM and synchronization are inadequate to manage the application of land power within 21st century conflict. Prior to the 20th century, land, air, and sea were the only domains available and relevant to warfare. Therefore, comparing campaigns and battles of previous wars that highlight employment of ground, air, and naval forces in the physical domains is relevant, but not complete or sufficient to analyze the multi-domain environment. Traditional CAM synchronizes military forces on a physical battlefield that a tactical commander can directly observe or plot on a map. Cross-domain synergy is an evolution of CAM, and requires the ability to recognize in real-time the level of dominance each side holds in all domains, understand friendly and enemy capabilities, and seize the initiative during windows of opportunities as they appear. Likewise,

⁹² US Army, *TP 525-3-1, Multi-Domain Operations* (2018), 20.

⁹³ Globally Integrated Operations is the concept for how the Joint Force should prepare for the security environment, and requires a globally postured Joint Force to combine capabilities quickly with itself and mission partners across domains, echelons, geographic boundaries, and organizational affiliations. See US Joint Chiefs of Staff, *Capstone Concept for Joint Operations: Joint Force 2020* (Washington, DC: Joint Staff, 2012), 4-7.

convergence replaces synchronization to describe the rapid and continuous integration of activities across all domains and the EMS. The operational theory of victory of MDO is that superior cross-domain understanding and rapid decision-making leads to action and control of domains, overwhelming the ability of the adversary to act effectively. Recent statements and efforts of senior leaders to enact a transformation of the US Army indicate a recognition that current bureaucratic and hierarchical structures require a massive overhaul to overcome the inevitable challenges that will surface in the pursuit of convergence and cross-domain synergy.

The second fundamental difference is that a defined battlefield or theater of war no longer exists, and domains increasingly are interconnected and dependent. Effective range of missiles and rockets will continue to increase and proliferate, enabling states and non-state actors to project lethal power over vast distances.⁹⁴ Cross-domain lethal fires from the land, air, or sea are increasingly able to exert limited control over other physical domains, or at least are able to deny an adversary from exerting control. The reach of the cyber domain and the information environment are effectively global, and effects are virtually immediate. Time and distance are increasingly irrelevant in modern warfare.⁹⁵ No service can operate without capabilities that rely on all other domains, and therefore cannot ignore activities in any domain. Blending of domain boundaries allows adversaries to achieve layered standoff. Joint operations synchronize the distinct domain-oriented services, and could prove inadequate in the multi-domain environment.

Third, an expanded role for land forces during the period of competition, prior to a declaration of war or commencement of hostilities with an adversary, differs from previous concepts for the use of military force. MDO seeks to achieve national objectives during the period of competition without resorting to armed conflict, and success relies on changing a traditional

⁹⁴ Albert Palazzo, “When Joint is Not Enough, is Multi-Domain the Answer?” *Small Wars Journal* (October 7, 2016), accessed January 14, 2019, <https://smallwarsjournal.com/jrnl/art/when-joint-is-not-enough-is-multi-domain-the-answer>.

⁹⁵ Ibid.

paradigm for the use of military power. Competition is a period where the other elements of national power traditionally lead efforts, and political and cultural factors normally restrain military activities. Under MDO, civilian leaders must enable land forces with an unprecedented level of authority, permission, and autonomy to counter activities of adversaries during the competition period. Activities envisioned within the competition period include maintaining forward presence to assure allies, proactive engagement in the information space, and acting in the intelligence, cyber, and EMS arenas.⁹⁶

Tactical and Operational Implications

It is likely that pursuing MDO will deliver an increase in comparative military advantage during LSCO at the tactical and operational level. Modernization resulting from the establishment of Futures Command and the cross-functional teams (CFT) will yield technological solutions that enable convergence and cross-domain synergy, and at a minimum enhance the ability of tactical forces conducting CAM. Experimentation and testing will optimize force structures for MDO, and tactical and operational forces will modify leader development and unit training programs to gain proficiency in execution of MDO. US Army Pacific (USARPAC), for example, is experimenting with tactical force structures, and the second phase of a pilot program for a Multi-Domain Task Force (MDTF) will begin this year.⁹⁷ However, this advantage will not materialize for quite some time and will not persist. Adversaries will continue to adapt, develop, and imitate US successes, and will respond using asymmetric and hybrid approaches to counter the advantage. Concepts and technology naturally proliferate in the modern global environment, and adversaries can and will replicate MDO. China and Russia also hold an advantage in critical areas of technological advancement and at present do not conform to any normative or legal reluctance

⁹⁶ US Army, *TP 525-3-1, Multi-Domain Operations* (2018), 31.

⁹⁷ Jen Judson, "Multidomain Operations Task Force cuts teeth in Pacific," *Defense News*, August 28, 2018, accessed January 14, 2019, <https://www.defensenews.com/land/2018/08/28/multidomain-operations-task-force-cuts-teeth-in-pacific/>.

to acting in an adversarial manner during the competition period. As a result, civilian and internal pressures exist for the US Army to implement MDO now rather than wait for technological advancement, validation, and acceptance of the concept.⁹⁸ During this initial phase, tactical units attempting to understand and implement MDO face significant challenges until experimentation validates the concept, modernization priorities produce enabling technologies, and budget cycles deliver technologies into the hands of the warfighter.

Command and control of the Joint Force and attaining the ability to control effects within all domains will pose a significant challenge. Tactical and operational commanders must possess offensive and defensive capabilities in all domains, or at a minimum authority or control to mobilize other services or national capabilities immediately. Current organic capabilities in tactical formations do not enable commanders and staffs to see in all domains, and rely on higher echelon or national assets for support from cyber and space domains. This limitation prevents formations from rapid and continuous integration, and modernizing the Army Network is perhaps the most critical priority for MDO. The focus for the Army Network is to provide a common operating picture, consolidate multiple battle command systems into one, unify data transport architecture, enhance mobility and survivability from enterprise to tactical level, and increase joint and coalition interoperability.⁹⁹ Additionally, procedures and processes linking action of tactical units all the way up to the national command authority require reforms to effectively enable MDO. An additional question for exploration involves the operations process and mission command, and whether the deliberate, hierarchical, and detailed methods staffs traditionally have used for planning will be sufficient to meet a rapid and continuously changing environment.¹⁰⁰

⁹⁸ Stephen Townsend, “Accelerating Multi-Domain Operations: Evolution of an Idea,” Modern War Institute, July 23, 2018, accessed January 14, 2019, <https://mwi.usma.edu/accelerating-multi-domain-operations-evolution-idea/>.

⁹⁹ Bruce T. Crawford, “Network modernization: Innovation in a time of unprecedented opportunity,” The US Army, August 31, 2018, accessed February 8, 2019, https://www.army.mil/article/210104/network_modernization_innovation_in_a_time_of_unprecedented_opportunity.

¹⁰⁰ The Army’s framework for exercising mission command is the operations process – the major mission command activities performed during operations: planning, preparing, executing, and continuously

For decades, the US Army has placed substantial emphasis on studying and teaching mission command, but a lack of any substantive change in bureaucratic process and structure has prevented a true culture of mission command from materializing across the force. Creativity, innovation, and decentralized action is a critical requirement for MDO, and is a cultural shortcoming for the US Army that will limit achievement of MDO if not adequately addressed.

The US Army appears to have surged ahead of other services in development of MDO, which will most likely result in a land-centric and tactical solution to the problems of the future environment. Without true joint advocacy, this effort will likely not produce a truly multi-domain theory of victory at the operational level. Service cultures and organizations naturally optimize concepts and capabilities for a specific domain, and plan for effects from other domains to support operations. Communications and battle command systems for naval, air, and land platforms are not fully compatible, and rely on liaison or “plug in” technologies for synchronization and coordination.¹⁰¹ MDO requires development and acquisition of cross-service capabilities, and a battle command system that provides a common operating picture and enables all service access and control within all domains. The Joint Requirements Oversight Council (JROC) and the Joint Capabilities and Integration and Development System (JCIDS) assess and prioritize the development of joint capabilities, but until there is a truly joint effort to develop MDO and identify joint capabilities common to all services, there is a risk of acquiring domain-specific capabilities.¹⁰² Services remain the most powerful institutions within the national security apparatus, reducing the ability of DoD, congress, or the administration to influence service

assessing the operation. See US Department of the Army, *Army Doctrine Publication (ADP) 5-0, The Operations Process* (Washington, DC: Government Printing Office, 2012), 1.

¹⁰¹ A. J. Shattuck, “The Pipe Dream of (Effective) Multi-Domain Battle,” Modern War Institute, March 28, 2017, accessed February 20, 2019, <https://mwi.usma.edu/pipe-dream-effective-multi-domain-battle/>.

¹⁰² US Joint Chiefs of Staff, *CJCSI 5123.01H. Charter of the Joint Requirements Oversight Council (JROC) and Implementation of the Joint Capabilities Integration and Development System (JCIDS)* (Washington, DC: Joint Staff, 2018).

strategies to prepare for the future.¹⁰³ Specifically, the DoD lacks mechanisms and oversight to effectively organize and coordinate efforts to prepare for the future environment.

Strategic Implications

At the strategic level, the efficacy of MDO is less certain, in particular during the period of competition. Russia and China challenge the concept of sovereignty within the international order, and test the boundaries of what is reasonable and acceptable in the emerging domains. However, the United States will likely maintain a skeptical view of using military power during this period. Grand strategy since the end of WWII has attempted to expand the number of states participating in the US-led international order, the foundation of which is interaction and cooperation between nation states. Competition between states is characteristic within the system. Established rules and mechanisms guide competition to remain within non-military elements of national power, and are generally successful at maintaining peace. As lesser powers, Russian and Chinese actions do not codify global norms. As the hegemon, certain actions during competition could reduce US credibility with nations that participate in the international order, legitimize the actions of other actors, and produce unintended consequences. US actions must reinforce the international order, and therefore the restraint of civilian leadership in delegating permissions and authorities to land forces during competition will limit the viability of MDO. A reality of political control is the requirement for interaction and oversight, and continual scrutiny of permissions and authorities is necessary prior to and during armed conflict.

Concepts of deterrence, escalation, and the thresholds for war are changing and evolving within the new environment, as they have since the end of WWII. After the advent of nuclear weapons, nations believed all war would automatically involve a nuclear exchange, diminishing the relevance of conventional forces. As the destructive power and existential threat to both sides

¹⁰³ Carl H. Builder, *The Masks of War: American Military Styles in Strategy and Analysis* (Baltimore: The Johns Hopkins University Press, 1989), 3.

from nuclear war surfaced, the usefulness of nuclear weapons narrowed to a small set of highly unlikely scenarios. The deterrence value of conventional forces returned, and the relevance of nuclear forces decreased. Despite increased relevance, conventional deterrence is viewed as “less rigorous, far more context dependent, and, ultimately, far more unreliable as a guide to strategy.”¹⁰⁴ Today, global political and economic inter-dependence and the increased lethality and costliness of conventional war diminish both the impact of nuclear and conventional deterrence, and the threshold for armed conflict has increased.¹⁰⁵ Deterrence of aggression and war should remain the centerpiece of US security strategy, and cost of a great power conflict renders even a successful war against a great power a massive policy failure.¹⁰⁶ Multiple perspectives are relevant when assessing the impact of MDO on deterrence. As the hegemon, the United States acts from a position of relative strength, and MDO seeks to sustain this advantage. Adversaries understand this, and understand the capability to defeat the United States in a conventional conflict is not necessary to deter US action. To date, no Russian or Chinese cyber activities, information operations, irregular warfare activities, or use of conventional military forces have triggered a conventional US military response. Actions of adversaries place the decision to go to war in the hands of the US administration, and these adversaries benefit from geographic, diplomatic, and other buffers that compel a decision against war. Therefore conventional military superiority may not prove effective in deterrence of activities during competition, and a cohesive strategy combining conventional deterrence with other military and national means is necessary. An unintended consequence of MDO and the resultant increase in conventional lethality and widening of the comparative military advantage over adversaries could

¹⁰⁴ Robert P. Haffa Jr., “The Future of Conventional Deterrence: Strategies for Great Power Competition,” *Strategic Studies Quarterly* 12, no. 4 (2018): 99.

¹⁰⁵ Robert Peters, Justin Anderson, and Harrison Menke, “Deterrence in the 21st Century: Integrating Nuclear and Conventional Force,” *Strategic Studies Quarterly* 12, no. 4 (2018): 18-20.

¹⁰⁶ Karl P. Mueller, “Conventional Deterrence Redux: Avoiding Great Power Conflict in the 21st Century,” *Strategic Studies Quarterly* 12, no. 4 (2018): 77.

raise the threshold for war even higher, potentially opening more space for adversaries to act short of armed conflict.

The strategic effect of acting militarily within new domains during the period of competition is undetermined. During attrition-based warfare and decisive battle, casualties and destruction of conventional capabilities measure cost and effect on an enemy. For cyber activities, information warfare, and other forms of competition, defining cost and effect is entirely different. Cyber power in particular has proven tactical value in armed conflict, and likely will prove to be most effective as an enabler to joint military operations; but has yet to demonstrate whether it holds strategic value.¹⁰⁷ Generally, cyber activities cause a degradation to other components of national power, rather than to the military component. Short of armed conflict, it is challenging to determine the effectiveness of using military power, or assigning the military as lead, in the cyber and information spaces. Delineation of roles within the new domains requires substantial study within the context of 21st Century conflict. Continued emphasis on increasing capacity of the other elements of national power will more effectively counter adversaries over the long term. Recent history indicates this to be an unlikely scenario.

The US Army will not achieve the full potential of MDO for many years, which by itself poses a risk to the concept. Historically, military transformations are difficult during war, and during peace can take decades if they are successful at all. Some technologies required for MDO remain theoretical and the budget will not align with new programs and priorities for several years. Futures Command should accelerate the process, but is in the early stages of establishment. The US Army has generated institutional momentum towards MDO and senior leaders are committed. Achieving MDO requires sustaining this momentum. MDO aligns with the return to great power competition, and over time the nature of US democracy could pose a threat to the full

¹⁰⁷ Colin S. Gray, *Making Strategic Sense of Cyber Power: Why the Sky is Not Falling* Monograph (Strategic Studies Institute, Carlisle Barracks, PA: US Army War College Press, 2013), x.

realization of the concept. The current administration appears ready to support a military transformation to achieve MDO; however, support may decline in future administrations and a skeptical congress may limit funding. The public remains generally detached and uninformed of the scope and scale of US military commitments abroad, and domestic inclination to employ US land power to solve global problems appears to be waning.¹⁰⁸ As a result, President Barack Obama imposed restraint during the initial stages of the counter-Islamic State of Iraq and Syria (ISIS) campaign by placing indigenous forces in the lead, rather than US forces in combat roles. More recently, statements from President Donald Trump on reduction of forces in Afghanistan and Syria show increasing bi-partisan opposition to overseas military commitments with unclear ends. To be effective, MDO requires a paradigm shift in the use of military force, and must overcome a diminishing acceptance of US military force employed during activities short of armed conflict.

Conclusion

The AirLand Concept is not a futuristic dream to remain on the shelf until all new systems are fielded. For instance, with minor adjustments, corps and divisions can and must begin to learn and practice fighting the AirLand Battle now--during 1981.

—US Army, *TRADOC Pamphlet 525-5, AirLand Battle*

Just as in 1981 with AirLand Battle, MDO is not a concept for the future. Fighting in all domains simultaneously is a reality today, and therefore operational and tactical formations must understand the implications of MDO within the operational environment. Russia has already experienced a real-world test of a multi-domain engagement on a conventional battlefield in the Donbass region of Ukraine; and the operation was efficient and its effects were devastating. On 11 July 2014, the Russian Army employed unmanned aerial vehicles (UAV), cyber attacks against command, control, and communications systems, and short-range multiple launch rocket

¹⁰⁸ Polling suggests a wide bipartisan majority that seeks an American foreign policy of realism and restraint. See James Carden, “A New Poll Shows the Public is Overwhelmingly Opposed to Endless US Military Interventions,” *The Nation*, accessed February 26, 2019, <https://www.thenation.com/article/new-poll-shows-public-overwhelmingly-opposed-to-endless-US-military-interventions/>.

systems (MLRS) against Ukrainian forces, overwhelming them within minutes and rendering them combat ineffective.¹⁰⁹ US forces have also gained experience in battles against Islamic State in Iraq and Syria (ISIS). Rather than calling an immediate strike on ISIS command posts after identification, the coalition seized opportunities to stimulate the command posts through cyber attacks to induce a reaction, leading to identification and destruction of other critical command posts and senior ISIS leadership. Although the planning for these operations often took weeks, the overall effect was a more rapid defeat of enemy defenses.¹¹⁰ Although these examples do not involve great power conflict, they demonstrate the contemporary environment is multi-domain, presenting several concerns for the current conventional force structure in the event of conflict. First and foremost, MDO remains conceptual and most of the enabling technologies are theoretical and years away, even though MDO is beginning to materialize in US Army and joint doctrine. Tactical units must understand the tenets of MDO, but also understand the impact of organizational and capabilities shortfalls.

Historical review of future concept development within TRADOC reveals a mature organization and framework that is prepared to tackle the problems of the future. The US Army exhibits the characteristics necessary of a future-oriented military organization, possessing a “productive paranoia” regarding the future. This enables a culture that mitigates the challenge of innovation during periods of peace, and renewed concentration on armed conflict with Russia and China is productive and useful to military planners. Additionally, military organizations need a process to refine the vision continuously on how war may change, engage in vigorous debate, and have mechanisms for innovation and experimentation. Finally, senior leaders must be willing to

¹⁰⁹ Liam Collins and Harrison Morgan, “King of Battle: Russia Breaks Out the Big Guns,” Association of the United States Army, accessed January 31, 2019, <https://www.ausa.org/articles/king-battle-russia-breaks-out-big-guns>.

¹¹⁰ Matthew Cox, “US, Coalition Forces Used Cyberattacks to Hunt Down ISIS Command Posts,” DoD Buzz, accessed January 31, 2019, <https://www.military.com/dodbuzz/2018/05/25/us-coalition-forces-used-cyberattacks-hunt-down-isis-command-posts.html>.

accept professional risk, advocate for new ideas, and protect the ideas to allow time for development.¹¹¹ TRADOC has established a firm foundation for the US Army in its first forty-five years of existence, and Futures Command is the next iteration of that evolution.

In conclusion, two problems are worth highlighting. First, some theorists argue that technological advances and transformative weapons will mandate a new principle around which to organize for and conduct war, and the traditional concept of joint operations will no longer be valid.¹¹² MDO may turn out to be the new principle, but is currently service-driven. There is collaboration among services, and guidance in the CCJO and the JCIC acknowledge a need for MDO. However, the military service departments own each of the traditional physical domains, and therefore physical domains drive decisions on personnel, equipment, and training. If left alone, services will necessarily experiment and test the viability of the concept to dominate the domain they are statutorily required to operate within, and will focus primarily at the tactical level. Conflicting cultures and priorities between the services could place the achievement of truly multi-domain solutions at risk. DoD does not have the mechanism or capacity to adopt MDO as the future concept for waging armed conflict at the national level, preventing a means for rigorous joint experimentation and testing of the concept.¹¹³

Second, the period of competition poses a paradox for the US Army and the Joint Force. Outside of the DoD, no other department or agency has the capacity or resources to act in a decisive manner during competition, and yet MDO depends on an unlikely paradigm shift to enable the DoD to act in this space. Additionally, MDO attempts to defeat adversaries short of armed conflict, but requires a deterrence value that will only come from a significant build-up and modernization of land forces. This expansion of the military may not be palatable within the current political environment. The extent to which MDO seeks military action during competition

¹¹¹ Hundley, *Past Revolutions*, 55.

¹¹² Palazzo, "When Joint is Not Enough."

¹¹³ Woods and Greenwood, "Multidomain Battle," 19.

bleeds heavily into strategic choices, and this could be dangerous. This is not simply a question of isolationism and nationalism versus continued engagement and globalism; it is a question about where the United States is willing to spend scarce resources. Recently, retired General B. B. Bell published an article, arguing that the human and financial burden of continuous overseas commitments and wars the United States has been involved in since the beginning of the Cold War is not worth the cost, and requires a reframing.¹¹⁴ More debate is required on the role of the armed forces during the period of competition.

Whether MDO is anything new and whether predictions about the future prove correct is less important than the fact the US Army has selected a path for the future, and DOTMPLF priorities are in the early stages of aligning to achieve MDO. Complexity prevents reliable prediction of the future, and therefore strategy is required to cope with complexity.¹¹⁵ Adopting MDO as the AOC is a logical strategy for the US Army to manage the complexity of the future security environment. Above all else, the US Army must be prepared to dominate enemies in the land domain. The concepts of convergence and cross-domain synergy, enabled by the modernization of conventional weapons, force structures, and technologies, will ensure the US Army is capable of executing LSCO, and appears sufficient to manage application of land power for a wide spectrum of military operations. Of greater significance is ensuring a holistic method of waging warfare for the United States, and until the DoD and the Joint Force ensure integration of the US Army concept into a cohesive military strategy, MDO may fall short in the future. Finally, as a nation the United States must come to grips with the realities of the current and future environment, and decide how best to protect national interests in competition with Russia and China.

¹¹⁴ B. B. Bell, "Military Generals and Globalism," *The Chattanooga*, January 3, 2019, accessed February 25, 2019, <https://www.chattanooga.com/2019/1/3/382367/General-Bell-Military-Generals-And-Globalism.aspx>.

¹¹⁵ Colin S. Gray, "The 21st Century Security Environment and the Future of War," *Parameters: United States Army War College Quarterly* 38, no. 4 (Winter 2008-2009): 15.

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