Multi-Domain Battle
The Advent of Twenty-First Century War

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This is the final article in a series discussing multi-domain battle through the lens of U.S. Army Training and Doctrine Command. This article discusses how the Army must adapt to meet the requirements for a future force operating in a multi-domain environment.

In July 1940, the U.S. Army could no longer dither about preparing to conduct armored warfare. France had just fallen to Germany in a lightning-fast campaign led by combined arms mechanized and motorized formations that integrated airpower at the tactical and operational level while synchronizing all elements of combat power on a scale and in a manner for which the Allies had no effective solutions. German success in such a short timeframe illuminated both that World War I-based doctrine had run its course and that the failure to adapt to changes brought by advances in technology had left the U.S. Army on its heels, facing a war that would eventually unfold on two fronts and requiring a modern army that did not yet exist. In a

matter of years, the U.S. Army would transform from a small active force of less than 250,000, devoid of modern equipment, to a modern army capable of defeating the Axis in Africa, the Pacific, and Europe.

Lessons of the Past—Failure to Adapt

After World War I, the Army failed to effectively modernize, despite efforts over two decades to do just that. At the beginning of the Second World War, the U.S. Army found itself little better off than it had been in 1920.[1] This failure to maintain a modern military during the interwar period was the result of a poor understanding and visualization of what constituted a modern force. The difficulty of securing money to modernize was exacerbated by the lack of a compelling vision of future combat. Still, the Army did try.

Significant efforts to modernize the U.S. Army began in 1920, when the Army took on a strategy of readiness specifically focused on personnel and mobilization as the core components to victory in modern war.

However, prioritizing personnel and mobilization came at a direct cost to overall force modernization. Given limited resources, it was difficult to promote or coordinate equipment and organizational modernization efforts in a cohesive manner.

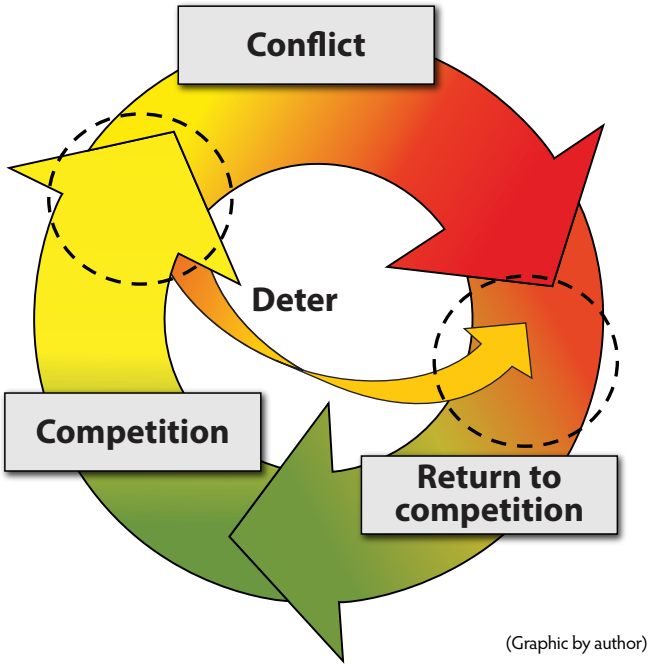
As an example, over the next twenty years, the United States failed to produce a capable armor force. In part, this was due to an inability to field modern tanks. Infantry Branch created a set of requirements for the production of a tank that could not be met by a vehicle under the weight of fifteen tons. Fifteen tons was the maximum weight that could be carried on Army pontoon bridges, the capabilities of which Engineer Branch was unwilling to commit research and development funds to increase. At a stalemate, neither side saw finding a solution a priority.

Even in 1939, with the invasion of Poland, the War Department pushed the chief of cavalry to deactivate horse cavalry units and provide personnel for new mechanized forces.[2] He refused, stating, "Under no circumstance will I agree to any further depletion of my horse cavalry. To do so would be a betrayal of the nation's defense."[3]

With limited funding, the Army defaulted to funding personnel and mobilization capabilities. These decisions ultimately played a role in a U.S. armored force meeting German panzers for the first time without adequate protection, firepower, and training.[4] Drawing lessons from this period, it is clear that we must understand the operational environment and visualize how the Army will operate with concepts that accurately address the requirements of future warfare.

In 2018, the U.S. Army requires concepts that allow us to begin a modernization program to meet anticipated threats. The complexity of war on land continues to grow as the number of actors able to employ capabilities in the air, sea, space, and cyberspace domains increases. The interrelationship of military activities within domains becomes much more problematic than when forces enjoyed nearly uncontested

Previous page: Artist Spiros Karkavelas envisions combat on a future urban battlefield. Success in a complex environment like this will require coordinated, mutually supporting efforts by all U.S. services across the entire multi-domain battlefield. (Artwork by Art of Spiros, Spiros Karkavelas Entertainment Design, artofskar.blogspot.com; modified by Jim Crandell, Army University Press)



(Graphic by author)

Figure. Conflict Continuum

superiority in each of them. The Army's dominance on land has become dependent, if not contingent, on access to the air, cyber, and space domains. These domains are a challenge not just because they will be contested. They also challenge our previous views of responsibilities at echelons of command and geographical containment of actions and effects. When the next major fight comes, twenty-first century large-scale ground combat will arrive with it, whether the Army is prepared or not. To be ready, the Army must work toward an accurate vision of the future battlefield and understand its operational environments. Multi-domain battle is the start of this process. It is an evolving warfighting concept designed to win in an ever-changing complex world, leveraging the lessons of the past with twenty-first century capabilities.

Multi-Domain Battle: A New Concept for a New World

In 1940, the U.S. Army began to learn the hard way how to become a modern military force.[5] We face indications of similar challenges today. Operational environments are evolving through technological advancements and diffusion, increasingly weaponized information, and divergent political systems designed to upend the current international order. These

challenges demand a new perspective on how the Army fights both in purpose and in design.

The nature of war will remain unchanged. However, the continuum of conflict must be understood in the current and future context. There is and always will be strategic competition. You are either winning or losing, present tense. Seldom will conflict result in a permanent win or loss. The linear depiction of peace to war and back again must be revised to reflect the cyclical nature of war where there are only positions of relative advantage. The continuum of conflict is defined by *competition* short of conflict, *conflict* itself, and the *return to competition* (see figure, previous page).

Our adversaries and potential adversaries have studied and learned from our battlefield successes since the first Gulf War. With that knowledge, they are adapting their methods of warfare, while accelerating the modernization and professionalization of their combat forces. They seek to gain strategic advantage by offsetting the advantages we have enjoyed over the last twenty years. Through these new methods, they are competing now below the threshold of open armed conflict while continuing to posture to more effectively engage in large-scale combat, if it were to come to that. To offset our key advantages, three macro lessons are guiding their new approach to warfare. First, do not let the United States and our allies gain access to the area of operations. Once fully established, we have the operational advantage in logistics, firepower, and command and control necessary to overwhelm anyone. Second, try to fracture the joint team by isolating our air, sea, and land forces to prevent mutual support. It is the synergies of our interdependent joint capabilities that make us dominant. Third, fix us and do not allow our forces to maneuver and bring all of our elements of combat power (including leadership) to bear in the close fight.

We can expect all domains to be contested. Adversaries possess significant integrated air defenses and long-range fires, as well as sophisticated intelligence, surveillance, and reconnaissance and information, electronic warfare, and cyber capabilities. It is no longer possible to maintain total dominance in all domains all of the time.

Multi-domain battle is a concept designed to overcome our adversary's integrated defensive capabilities, avoid domain isolation and fracturing, and preserve freedom of action. The joint force must be able to penetrate adversarial defenses at a time and place of our choosing, in more than one domain, by opening windows of domain superiority to allow maneuver inside our adversary's integrated defense. The rate and speed of current and future world events will not allow us the time to synchronize federated solutions. In order to present the enemy with multiple dilemmas, we must converge and integrate multi-domain solutions and approaches before the battle starts. We must become sensor-shooter agnostic in all our platforms, and we must maintain a common operating picture.

Evolving Capabilities from Vision to Reality

Success of multi-domain battle is contingent on our ability to match the concept to the doctrine, organization, training, materiel, leadership and education, personnel, and facilities capabilities and material modernization requirements. Some of the emerging required capabilities to achieve this follow:

Long-range precision/cross-domain fires. The U.S. Army is developing multipurpose munitions and sensors for long-range precision fires and air-delivered electronic warfare. The goal is to have both lethal and nonlethal fires that are delivered from the land domain to produce effects in all domains. The ability to deliver precision fires at extended ranges is essential to mitigate risks associated with semi-independent maneuver and create the conditions necessary for deep maneuver to defeat the threat's integrated fires complex.

Next generation combat vehicle. The next generation of combat vehicles will incorporate new weapons with greater range, as well as utility for urban environments. Designed to be optionally manned, they will be smaller in size, allowing greater maneuverability in restricted areas. They will have reduced fuel and bulk ammunition consumption rates while also incorporating integrated active protection combined with advanced-material armor. The next generation of combat vehicles will incorporate emerging technologies such as networked targeting systems, directed energy weapons,

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semiautonomous wingman teaming, and increased-range munitions.[6] These will enable the type of semi-independent maneuver that multi-domain battle requires.

Future vertical lift. Future vertical lift will play a critical role in moving combat power directly into the fight and ensuring casualties retain access to lifesaving treatment—despite distances. In multi-domain battle, aviation reconnaissance units will cover greater areas, aviation attack units will apply increased adaptability to take advantage of fleeting opportunities and respond more quickly to friendly ground units in need, aviation assault and transport units will move larger forces further and faster to build combat power at decisive points, and medevac units will move casualties over greater distances within the "golden hour" of lifesaving treatment. Future vertical lift, using supervised autonomy, will provide commanders additional options of manned and unmanned platforms dependent upon mission requirements and level of risk.

The network. The network will increase the speed and flow of the right information to the right people, enabling faster understanding and action while simultaneously denying our adversaries freedom of maneuver on the "electronic battlefield."[7] To do this, the U.S. Army is creating a single end-to-end network framework and advanced cyberspace offensive and defensive capabilities. The network will deliver a common understanding of the operational environment while sharing information horizontally and vertically across all services and partners—managing information from home station to the tactical edge. Offensive and defensive cyber capabilities, using artificial intelligence, protect the friendly network and create windows of opportunity while disrupting and denying the enemy's use of the electromagnetic spectrum.

Air/missile defense. The Army is taking steps to defend key fixed sites and provide effective air and missile defense protection of maneuvering forces by modernizing short-range air defense and Terminal High Altitude Area Defense systems as well as developing onboard aerial and ground vehicle advanced protection systems. Survivability of units will be dependent on the success and distribution of these capabilities. As an enabler, increasing ground-based fires will support joint force commanders with more options while simultaneously providing force protection against enemy missile and manned and unmanned air system attacks. As a deterrent, positioning and demonstrating these abilities will frustrate adversaries' aims to fracture the joint force.

Soldier lethality. The soldier and squad are the cornerstone of the U.S. Army. Our Army is only as good as our soldiers' ability to perform both physically and cognitively. They must have overmatch with their weapons and equipment to succeed in high-intensity combat. Lethality must be balanced between fire and maneuver with systems to increase the delivery of accurate and lethal fires while increasing individual soldier maneuverability. In terms of lethality, the Army is increasing close- and long-range small arms accuracy via new fire control systems, munitions, and weapon designs. The introduction of robotics in terms of exoskeleton suits and manned-unmanned teaming will improve maneuverability by decreasing the individual soldier's load while also increasing small unit range, coverage, and responsiveness.

Organizational design. One example of force design and experimentation pertaining to the multi-domain battle concept is the multi-domain task force (MDTF). The MDTF is experimenting under the guidance of U.S. Army Pacific. It delivers operational fires to enable joint force freedom of maneuver at the earliest stage of deployment and conflict. The MDTF achieves this by deploying and managing capabilities like long-range precision fires, air and missile defense, attacking enemy networks, and defending the friendly network. While still experimental, the first MDTF is a major step toward realizing the multi-domain battle concept.

From Parochialism to Understanding

Between 1920 and 1939, there was no greater challenge to modernization than branch and service parochialism. We cannot allow that to happen again.

Parochialism was mitigated in the past with significant and effective results. A great example of overcoming parochialism is the U.S. Army and U.S. Air Force's 31 Initiatives. As part of AirLand Battle, 31 Initiatives brought modernization efforts that had been in the works since the early 1970s to a combined recommendation shared between the Air Force and the Army.[8] Central to the success of this interservice effort was a shared Terms of Reference (TOR) that articulated a common understanding of demands on the present force as well as the process to design and field the best affordable AirLand combat forces.[9] The TOR began with Army doctrine in FM 100-5, *Operations*, as the point of departure to

conduct joint training and exercises—to reach a shared understanding of what AirLand Battle would require.[10]

For multi-domain battle, we have already begun to build the components for future collaboration in the spirit of the 31 Initiatives. As with AirLand Battle, multi-domain battle naturally challenges domain-based parochial positions. It readily identifies that land components cannot dominate without convergence across domains. With publication of the first version of the concept we are working to establish a clear point of departure for additional multiservice and joint collaboration, and building a coalition of leaders committed to developing a shared understanding and visualization of the future force and multi-domain battle.

The idea of a coalition of leaders from across the services is not aspirational. From inception, the U.S. Marine Corps partnered with the Army to develop the original multi-domain battle white paper and concept (version 1.0). The Marines brought their extensive experience in both combined arms maneuver and cross-domain maneuver. The Air Force also committed to working multi-domain battle issues. They helped identify U.S. Army natural bias to think spatially at the cost of functional perspectives when viewing the operational framework.[11] The Air Force, through the Air Combat Command (ACC), also committed to conducting multiservice exercises, experiments, and wargames on multi-domain battle to increase shared understanding and visualization. The U.S. Army Training and Doctrine Command and Air Combat Command are working jointly to develop a converged operational framework to visualize multiple domains simultaneously. Finally, there are the invaluable roles of U.S. Pacific Command and U.S. Army Pacific, which have provided, and continue to provide, opportunities to operationalize multi-domain battle through exercises and taking on the first MDTF.

Conclusion

The U.S. Army must continue to strive to be a premier learning and innovative institution. Multi-domain battle and the subsequent Army capabilities will continue to be assessed through our iterative processes of think, learn, analyze, and implement. To get where we want to go, it is critical to understand that multi-domain battle, at this stage, is still a concept. Transitioning the Army from the constabulary force of 1917 to a modern army took over twenty years and two world wars. Transitioning the Army from the Vietnam War to AirLand Battle took over ten years. In the years to come, multi-domain battle is our concept to drive change. We will invariably find that the ideas, capabilities, and requirements we generate are not always correct—what will be critical is that we adapt and innovate consistently with a common joint vision and shared understanding.

Twenty-first century warfare is coming. In many respects it has already arrived. The challenge the Army and Joint Force face today is whether we can adapt. The battlefield has simultaneously compressed and expanded globally.[12] Unlike the past, we will not have two years to correct the mistakes of twenty. The force that is postured, resilient, and able to converge its capabilities across all domains will win. We must be that force. Victory starts here. ■

Notes

1. David E. Johnson, "From Frontier Constabulary to Modern Army," in *The Challenge of Change: Military Institutions and New Realities, 1918-1941*, eds. Harold R. Winton and David R. Mets (Lincoln, NE: University of Nebraska Press, 2000), 204.

2. "Memorandum, Brig. Gen. F. M. Andrews for the Chief of Cavalry, G-3/42070," 23 February 1940, file 322.02, Office of the Chief of Cavalry, correspondence, 1921-42, Box 7b, Record Group 177, National Archives and Records Administration.

3. "Memorandum, Maj. Gen. J. K. Herr for the Assistant Chief of Staff, G-3," 28 February 1940, file 322.02, Office of the Chief of Cavalry, correspondence, 1921-42, Box 7b, Record Group 177, National Archives and Records Administration.

4. Ibid., 201.

5. Johnson, "From Frontier Constabulary to Modern Army," 191.

6. "U.S. Army Future Force Development Strategy (unsigned)," May 2017, 26; "U.S. Army Tanks, Strykers, and Bradleys Are Getting Active-Protection Systems to Fend off Enemy Fire," Business Insider website, 8 June 2017, accessed 7 September 2017, http://www.businessinsider.com/us-army-tanks-strykers-and-bradleys-getting-active-protection-systems-2017-6.

7. "U.S. Army Future Force Development Strategy," 24.

8. Richard G. Davis, *The 31 Initiatives: A Study in Air Force–Army Cooperation* (Washington, DC: Office of Air Force History, 1987).

9. Ibid., 38.

10. Ibid., 35; Field Manual 100-5, *Operations* (Washington, DC: U.S. Government Printing Office, 1982 [obsolete]).

11. James M. Holmes and David G. Perkins, "Multi-Domain Battle: Converging Concepts toward a Joint Solution," *Joint Force Quarterly* (forthcoming).

12. *Ground Force Modernization Budget Request, Before the Subcommittee on Tactical Air and Land Forces, Committee on Armed Services, U.S. House of Representatives,* 115th Cong. (24 May 2017) (statements of Lt. Gen. John M. Murray and Lt. Gen. Paul A. Ostrowski), accessed 21 September 2017, https://armedservices.house.gov/legislation/hearings/ground-force-modernization-budget-request-0.