Military Review

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By Order of the Secretary of the Army:

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Cover photo: A Ghost-X Unmanned Aircraft System awaits takeoff during ongoing experimentation at Project Convergence–Capstone 4, at Fort Irwin, California, 11 March 2024. Robots like the Ghost-X Unmanned Aircraft System are part of human-machine integration in simulated operations; this experimentation involved soldiers from the 316th Cavalry Brigade and the 82nd Airborne Division in support of PC-C4. (Photo by Sgt. Charlie Duke, U.S. Army)

Announcing the Harding Fellowship

Col. Todd Schmidt, PhD, U.S. Army

In the priority pursuit of renewing professional military writing and discourse, Gen. Randy George, chief of staff of the Army; Gen. Gary Brito, commanding general, U.S. Army Training and Doctrine Command; and Lt. Gen. Milford Beagle, commanding general, Combined Arms Center, are excited to announce the launch of the Harding Fellowship program in 2024. An Army-wide military personnel (MILPER) message, MILPER 24-321, was released on 9 August 2024, and senior leaders are currently promoting the newest addition to the Army's Broadening Opportunity Program to attract its best and brightest.

The Harding Fellowship program was established as an important component of an enterprise-wide effort to improve the written communication skills of soldiers. Leaders across the Army, particularly at the strategic level, need to be able to engage intellectually in the arena of professional discourse. While we may be the best-trained military in the world, we cannot lose our way by dismissing the incredible importance of professional military education and intellectual engagement.

Engaged and observant leaders understand that poor communication skills, particularly as they relate to writing and intellectual discourse, can be an unfortunate byproduct of our institutional culture, where more emphasis is often placed on tactical thinking, avoiding risk related to voicing opinion, and the physical nature of our profession. We often place less emphasis on intellectual development and engagement, higher education, and developing strategic thinking skills. To change course from this mindset, "intellectualism" must become one of our core Army values.[1]

There must be equal emphasis on career-long education and training. The ideas that "just-in-time" education is a real theory of education or that "constructive

Col. Todd Schmidt, PhD, U.S. Army
Director, Army University Press

credit" for deployments in lieu of attending professional military education institutions such as the Army War College need to be banished. Finally, if we are serious about real transformation, we need to invest in and resource our schools and training centers in a manner that demonstrates their top priority.

For an example from the past, consider the School of Advanced Military Studies. This revered institution was created during the Cold War and a time of renaissance in military education. Additionally, programs that sent leaders to civilian graduate schools were conceived as initiatives to challenge our best and brightest. Senior leaders at that time understood the importance of graduate-level education and that it cannot be a zero-sum game in terms of investment of time and resources, especially as we prepare to engage in a complex and demanding future operational environment.

The Harding Project and the Harding Fellowship are intended to reinforce the Army's commitment to education and intellectual engagement. We must extinguish the influences of anti-intellectualism and constructive

credit and promote the importance of academics and writing in the military profession. One way of doing this is through "broadening opportunity programs" (BOP).

In the case of the Harding Fellowship, the Army's newest BOP, select branches send nominated candidates to pursue a master's degree in journalism and communication. Upon graduation, these leaders will serve at least one year as a military editor in chief of their respective branch journals and incur a two-year additional duty service obligation. The intended outcome is that over time, as multiple cohorts matriculate through this program, awareness of the importance of written communication skills will become more embedded as an important component of what we value in our leadership development.

Currently, written communication skills, an imperative subcomponent of Army leadership attributes and competencies, is underemphasized in our institutional culture, doctrine, and regulations. This is changing, however, as the Army has updated Department of the Army Pamphlet 25-40, *Army Publishing Program Procedures*, and is considering updates to Army Regulation 600-100, *Army Profession and Leadership Policy*; Army Doctrine Publication 6-22, *Army Leadership and the Profession*; and Field Manual 6-22, *Developing Leaders*.

The rationale driving this evolution is increased scientific understanding of how demonstrated excellence in written communication skills is tied to higher cognitive performance, increased intellectual curiosity, improved logic, faster information processing, improved comprehension skills, and better decision-making. In short, good writers make better leaders. Better leaders can outthink their adversary, making better decisions faster. The result is a more lethal Army—the ULTIMATE priority of the chief of staff of the Army.

Combined Arms Center and Army University leaders enjoyed the opportunity to meet each of the Fellows at the first Harding Training Workshop held at Fort Leavenworth, Kansas, in June. Gregg Thompson, deputy to the commanding general at the Combined Arms Center, observed that the Harding Project and Army University Press had succeeded in creating an important community of practice that did not exist six months ago. He challenged participants to pursue sustainable change that is, in the long term, embedded in our professional education. This is the long game—changing how we educate and develop leaders.

We congratulate our 2024 Harding Fellows on their selection. Nominated by their branch senior leadership, and approved by Lt. Gen. Milford Beagle and Gen. Gary Brito, the 2024-2025 Harding Fellowship cohort includes the following Fellows:

Maj. Emily Lopez, Special Forces
Maj. Monique Schneeberger, Medical
Capt. Christopher Amador, Military Intelligence
Capt. Philip Fluke, Aviation
Capt. Vincent Kirk, Signal
Capt. Daniel Maresca, Infantry
Capt. Michael McCallister, Chemical
Capt. Peter Neil II, Air Defense
Capt. Andrew Porter, Armor
Capt. Garett Pyle, Transportation
1st Lt. Mackenzie Schott, Field Artillery
Sgt. 1st Class Benjamin Latigue, Special Forces

Army University Press encourages all interested leaders who wish to apply for the 2025-2026 cohort to investigate the program, talk to their leadership, and comply with the nomination requirements outlined in the Harding Fellowship MILPER message. ∎

Note

1. David P. Oakley and Mike Obadal, "Want 'Strategically Minded Warfighters?' Then Make 'Intellectualism' a Military Value," Inter Populum, 15 July 2024, https://interpopulum.org/want-strategically-minded-warfighters-then-make-intellectualism-a-military-value/.

2024
ANNUAL ESTIMATE
of the
STRATEGIC SECURITY ENVIRONMENT

Strategic Research and Analysis Department

The *2024 Annual Estimate of the Strategic Security Environment* guides the defense community to research and write collectively on critical national security challenges. Its supplemental "Strategic Research Topics" list contains over one hundred questions provided by US Army senior leaders to focus aspiring researchers on the pressing problems impacting defense organizations today.

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Write for *Military Review*

Suggested Writing Themes and Topics—2024

- From a U.S. military perspective, what are the greatest near-term external threats to the United States? Why, and how?

- What are the greatest long-term threats (looking out twenty-five years)?

- Many observers assert that Russia, China, and Iran already see themselves at war with the United States. Is there evidence that these and other actors are conducting actual "war" against the United States, and what are the probabilities of their success?

- What confederated blocs of nation-states are now aligned against the United States, and how do they cooperate with each other? What types of treaties or agreements do they have that outline relationships they share to reinforce each other?

- Which U.S. adversaries best synchronize their DIME (diplomacy, information, military, and economic) elements of power to achieve their strategic goals? Contrast and compare employment of DIME by China, Russia, Iran, and the United States. How should the United States defend itself against foreign DIME?

- Do China, Russia, and Iran have "Achilles' heels"? What are their centers of gravity? If each has one, how can it best be attacked/exploited?

- What do China, Russia, and Iran view as the United States' "Achilles' heel" or center of gravity? How specifically are they attacking it?

- What is the role now of the U.S. Armed Forces in Africa? Far East? Middle East?

- What does the future hold for nanoweapons? Electromagnetic warfare? Artificial intelligence? Information warfare? How is the Army planning to mitigate effects?

- What is diversity? How does one reconcile the concept of diversity with the concept of unity?

For information on how to submit an article, please visit https://www.armyupress.army.mil/Journals/Military-Review/MR-Article-Submission-Guide/.

General William E. DePuy Writing Competition — 2024

ANNOUNCEMENT: 2024 Winners and Honorable Mentions

Winners

1st Place—$1,000
"Lessons in Reconstitution from the Russia-Ukraine War: Gaining Asymmetric Advantage through Transformative Reconstitution"
Maj. Thomas L. Haydock, U.S. Army National Guard; and Maj. Jack C. Meeker, U.S. Army National Guard

2nd Place—$750
"Meeting Expectations: Failure in Ukraine Will Not Change the Russian Aerospace Defense Force"
Maj. F. Jon Nesselhuf, U.S. Air Force

3rd Place—$500
"What Constitutes a Capability? Leveraging the Ukraine Experience to Define an Overused Term"
Lt. Col. Kyle J. Hatzinger, PhD, U.S. Army; and Lt. Col. Molly J. Schaefer, U.S. Army

Honorable Mentions

"Bayraktars and Grenade-Dropping Quadcopters II: Year Two of Ukraine-Russia Drone Warfare"
Capt. Josef Danczuk, New York Army National Guard

"The Great Arsenal of Democracy"
Capt. Trevor M. Barton, U.S. Army

"The Russia-Ukraine War: It Takes a Land Force to Defeat a Land Force"
Lt. Col. Amos C. Fox, U.S. Army, Retired

"Something Old and Something New: Lessons from the Ukraine-Russia War"
Col. Daniel Sukman, U.S. Army

"Trust the Process: A Deliberate Approach to Capturing Lessons Learned from the Russia-Ukraine War in U.S. Army Doctrine"
Maj. Aaron Anderson, U.S. Army

The topic of the 2024 DePuy writing competition was "The Russia-Ukraine War." Participants were encouraged to identify original salient topics examining dimensions of the conflict that were not treated in the available professional literature elsewhere.

Military Review thanks our esteemed panel of judges for their careful, insightful, and timely evaluation of the manuscript submissions.

For information on the General William E. DePuy Special Topics Writing Competition, including the 2025 topic and how to submit an entry, visit https://www.armyupress.army.mil/depuy-writing-competition/.

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LETTER TO THE EDITOR

Col. James Stultz, brigade commander of 2nd Brigade Combat Team (Strike), 101st Airborne Division (Air Assault), briefs key leaders during a combined arms rehearsal prior to assaulting an objective during Operation Lethal Eagle 24.1 at Fort Campbell, Kentucky, on 25 April 2024. During the exercise, Strike tested and fielded a prototype of the U.S. Army's new mobile brigade combat team, an organizational structure being implemented as part of the Army's "transformation in contact." (Photo by Sgt. Caleb Pautz, 101st Airborne Division [Air Assault])

Continuous Transformation

Gen. James E. Rainey, U.S. Army

Editor's note: *The article presented in this edition of* Military Review *is a combination of three articles from Gen. James E. Rainey that were originally published as* Military Review *online exclusives on the Army University Press website at* https://www.armyupress.army.mil/Journals/Military-Review/Online-Exclusive/2024-OLE/*.*
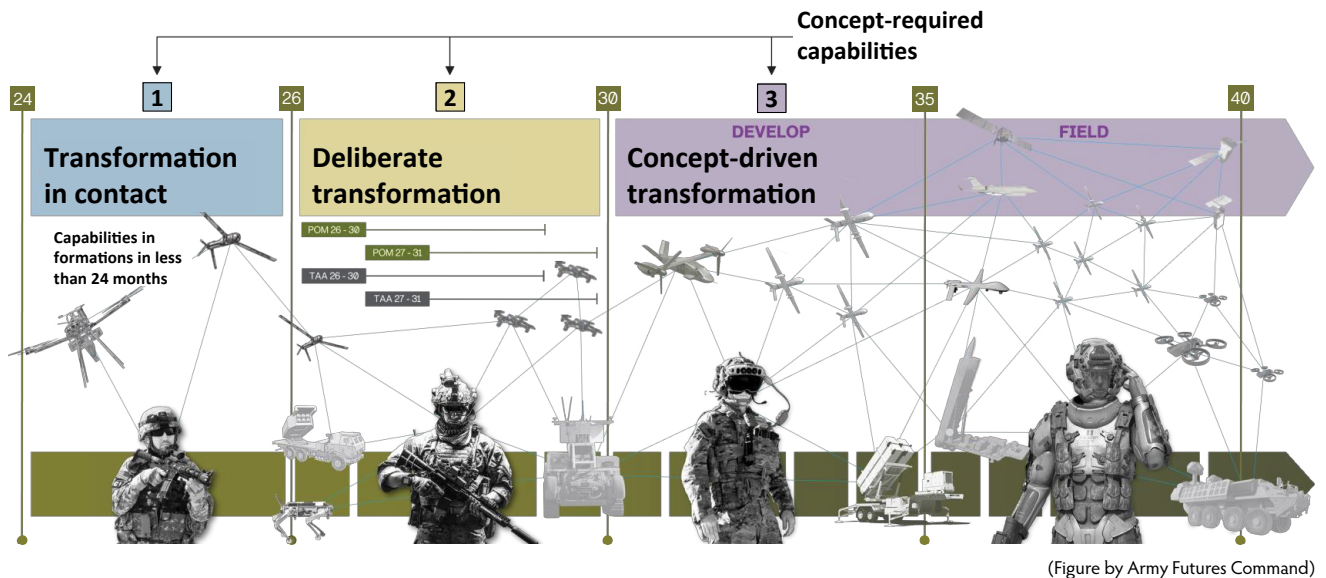
(Figure by Army Futures Command)

Figure 1. Three Periods of Time for Transformation

We've learned a lot of lessons … one of the things we want to start doing is transforming in contact, so we can start getting after some of these changes almost immediately.
　　　　　　　　—Gen. Randy George, 5 February 2024

Part I: Transformation in Contact

Our country and its allies are competing with determined adversaries during a period of unprecedented technological change. To guarantee our security, we must recognize change and adapt faster than any army in the world. We are not preparing for a theoretical future fight. The struggle for advantage is now.

Before we ask how warfare is changing, we should take stock of what is not changing. First, because war is a human endeavor, people matter most. Second, people live on land. Thus, armies must be able to seize and hold land. When they do, close combat is unavoidable. That means the ability to close with and destroy the enemy on land is decisive. Third, wars are unpredictable. No one can guarantee a war will be short or that it will not escalate. Finally, the United States abides by the law of armed conflict. We must build our force accordingly.

At the same time, civilian and military technologies are changing at a pace not seen since before World War II. Because armies adapt, new technology is rarely decisive in the ways people predict.[1] But, it is disruptive in that it changes how military forces operate, organize, and equip.

As technology makes warfare more complex, the difference between skilled and unskilled armies becomes more pronounced. The real impact of technology is that it will increase punishment of unskilled commanders and untrained formations. The consequences of failure to adapt will be severe.

We only have one Army. Transformation is challenging because we only have one Army. This Army must conduct current operations, generate ready forces, and transform simultaneously. Transformation efforts are directed toward three periods: capabilities we need in less than twenty-four months, capabilities we need in roughly two to seven years—the time frame for defense budget planning—and capabilities for the deeper future (see figure 1). The three periods are inextricably interrelated since decisions about one have implications for the others.

In this context, a *capability* is the ability to do something on the battlefield.[2] This requires having people organized, trained, and equipped to do it. Thus, technology is not a capability by itself. Capabilities come from formations, and developing a new capability requires action across doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P).

HIGH

HIGH UNDERSTANDING OF
REQUIREMENT BUT LOW
ABILITY TO MOVE MONEY
2024

GOAL

2030
HIGH ABILITY TO MOVE MONEY
BUT LOW UNDERSTANDING OF
REQUIREMENT

LOW   HIGH

UNDERSTANDING REQUIREMENT
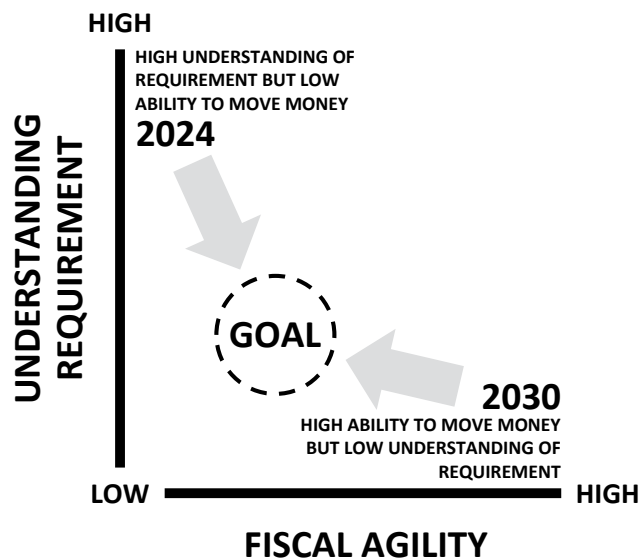
FISCAL AGILITY

(Figure by author)

Figure 2. Fiscal Agility

Transforming the Army starts with operational units *transforming in contact*, solving problems, and seizing opportunities today. It also depends on *deliberate transformation*—efforts managed through Army-level processes to deliver the Army we need within the time horizon for defense programming. All the above occurs within the context of *concept-driven transformation*, which is the longer-term vision described in the Army's emerging warfighting concept.

Flexible requirements and fiscal agility. The principal obstacle to transformation in contact is programmatic. It takes the Army about two years to approve a requirement and get funding added to the budget for a new system, even for existing technology. But the Army is increasingly reliant on AI-enabled robotics and other technologies that evolve much faster than that. As a point of reference, in the first two years after Russia's large-scale invasion of Ukraine, drone warfare evolved through four generations as the tactics and technologies changed.[3]

In some cases, when we document the requirement for a capability, the only thing we know with certainty is that what we need in two years will be different. The result is that we must fund requirements before we fully understand them. Later, when we fully understand the requirement, it is too late to change what we funded (see figure 2).

Our lack of fiscal agility comes mostly from necessary bureaucracy—sound processes that allow time for

consultation among Army stakeholders, higher-level review, and congressional oversight. But the Army must be able to integrate an existing technology into an operational unit in less than twenty-four months. During war, this will require even greater speed. We can build that capability into the Army now. It starts with thinking differently about how we write requirements and fund programs.

An illustration. The iPod music player was one of the most successful consumer electronics products ever sold. But, within eight years of the first sale, smartphones were already making them obsolete. What if that had been a warfighting technology? By the time the Army approved the requirement, funded it, and completed the multiyear effort necessary to develop, test, and start fielding a military-grade version of the system, it would be well on the way to obsolescence. Some soldiers might already be using a better commercial solution at home.

In that scenario, the Army would have two bad options. We could continue buying systems that would be obsolete before they finished fielding, or we could cancel contracts with industry partners and give soldiers nothing while we run a new requirement through the process. We could not nimbly pivot an acquisition program based on a requirement for a music player to a system so different as a smartphone. Army requirements documents are not written that broadly. Neither are the associated funding documents nor contracting arrangements.

A smartphone is a completely different tool from a music player. A requirement that could accommodate both might be problematic. Nevertheless, when tactics and technologies are evolving quickly, the Army needs to be able to evolve capabilities without restarting the process.

You get what you ask for. The solution is to develop requirements documents for a capability rather than a specific type of system and to manage program funding the same way.[4] This is what Mike Brown, then director of the Defense Innovation Unit, was discussing during congressional testimony in April 2022 when he proposed a "capability of record" approach for systems like small drones.[5] In their January 2024 report published by the Atlantic Council, the number one recommendation from the Commission on Defense Innovation Adoption was similar. They recommended piloting a "capability portfolio model."[6] If we communicate well with Congress, the Army can do this now.

Increasing our fiscal agility will also increase speed to capital for small- and medium-sized companies whose help we need. Sixty years ago, two-thirds of U.S. research and development was federally funded.[7] Today, only one-fifth is, and many technologies we need are developing fastest in the commercial space. Defense primes built their business models around Department of Defense processes because they build things only the Department of Defense buys. In the future, the Army will be increasingly reliant on companies that do not traditionally do business with the government and do not have to. We cannot tell these smaller companies that we need their technology but cannot pay for two or more years. They are moving too fast.

However, agility is not right for everything. When the Army needs to develop and manufacture a large system that does not exist on the commercial market, like a tank, the requirement can't be vague or frequently changing. These systems require years of development and large capital investments from industry. Success requires stable requirements and predictable funding. The agile, capability-focused approach is right for smaller tranches of lower-cost systems that have a rapid technology refresh rate and no major DOTMLPF-P implications.[8]

Perfect is the enemy of good enough. In many cases, we are allowing the aspirational to stand in the way of the doable. There are technologies that would be useful in our formations right now but are not yet fielded because we are waiting until they can do even more. New technologies with game-changing potential should be in operational units as soon as they are useful, even if only in small quantities of minimum-viable products. This accelerates development of the technology, but it also lets us learn how to best employ it and how to adapt our formations and training accordingly. Most importantly, it gives leaders experience using the technology as it evolves.

We can take a lesson from the development of military aviation. The world's first military airplane was the Wright Military Flyer, purchased by the U.S. Army in 1909.[9] It would be another twenty years before airplanes had the range and payload to start fulfilling their full potential. But the Army did not wait until airplanes could sink battleships to start fielding them. We fielded meaningful numbers for limited roles like reconnaissance. That developed the industrial base for military aviation and informed future requirements. It also ensured that, by the 1930s, the Army had a generation of officers who had grown up using the technology.

Today, we are in a similar place with AI-enabled robotic systems. We are years from the time that an uncrewed vehicle can keep up with an Abrams tank moving cross-country at full speed. And, we will not pin a Ranger tab on a robot anytime soon. But we can put uncrewed systems to good use as part of human-machine integrated formations this year.

Think big, start small, go fast. Formation-based transformation orients capability development on how people are organized, trained, and equipped—as a holistic solution—rather than orienting on equipment and then accounting for the other DOTMLPF-P implications of the change. The best way to do this is to put cutting-edge systems directly into our fighting formations, where they can be useful to soldiers today and mature in the laboratory of the real world.

If a system is safe and, in the assessment of the company-level leaders burdened with it, useful enough to be worth the work of having, it is a candidate for fielding—at least to a few brigades. What units learn will then inform how formations are organized, trained, and equipped only a few years later. The Army is doing this now, allowing operational units to purchase commercial-off-the-shelf equipment and experiment with innovative combinations of tactics and technology. Today, the priority is simplifying our warfighting formations' command-and-control (C2) networks and fielding human-machine integrated (HMI) formations.

The C2 network is central to everything we

Gen. James E. Rainey, U.S. Army, is the commanding general of U.S. Army Futures Command. He previously served as the deputy chief of staff, G-3/5/7, for the U.S. Army in Washington, D.C.; as the commanding general of the U.S. Combined Arms Center, Fort Leavenworth, Kansas; and as commander of the 3rd Infantry Division, Fort Stewart, Georgia. He holds master's degrees in advanced military arts and science from the School of Advanced Military Studies at Fort Leavenworth and in public administration from Troy University. He led soldiers during numerous combat tours in both Iraq and Afghanistan.

Staff Sgt. Stetson Manuel, a robotics and autonomous systems platoon sergeant from Alpha Company, 1st Battalion, 29th Infantry Regiment, 316th Cavalry Brigade, carries the Ghost-X Unmanned Aircraft System after its flight during experimentation as part of Project Convergence–Capstone 4 on 11 March 2024 at Fort Irwin, California. (Photo by Sgt. Charlie Duke, U.S. Army)

do on the battlefield. The first step to improving the network is reducing the complexity of the systems currently fielded in fighting formations. We are doing that now, streamlining C2 to reduce the burden on lower echelons and ensure compatibility across the Army. To be ready for 2030 and beyond, we must move to a software-centric C2 warfighting system very different from what we use today. The key to building that will be designing the system to continuously evolve and getting it into operational units so warfighters and engineers can develop it together and iteratively.

The secretary of the Army announced the Army's HMI formations initiative in October 2023, saying,

> [W]e are beginning a new Human-Machine Integrated Formations initiative. These integrated formations will bring robotic systems into units alongside humans, with the goal of always having robots, not soldiers, make first contact with the enemy. This will shift some of the work onto robots so that soldiers can do what

only humans can: make values-based decisions, accept risk, and practice the art of command.[10]

Human-machine integration is combining people with uncrewed systems—ground and air—in ways that optimally employ both. The goal is not to replace soldiers with machines but to offload risk and work to machines so that soldiers can do what only people can do. That includes exercising judgment and ethical decision-making, and practicing the art of command.[11]

The Army will develop HMI formations by putting capabilities in operational units, and learning and updating requirements in real time. While version 1.0 is in a brigade combat team, version 2.0 might be in trials with the opposing forces unit at the National Training Center. Meanwhile, version 3.0 can be in field experimentation with the Maneuver Center of Excellence, and version 4.0 can be on the drawing board. All the above will be a collaboration involving Army scientists and engineers, industry partners, acquisition program managers, capability developers,

Soldiers assigned to the 1st Battalion, 29th Infantry Regiment, based out of Fort Moore, Georgia, take part in a human-machine integration demonstration using the Ghost Robotic Dog and the Small Multipurpose Equipment Transport (SMET) during Project Convergence–Capstone 4 at Fort Irwin, California, on 15 March 2024. The robotic dog is a midsized, high-endurance, agile unmanned ground vehicle that provides enhanced reconnaissance and situational awareness supporting soldiers on the ground. The SMET is an eight-wheeled, enabling robotic technology serving as a "robotic mule" with the flexibility to operate in combat, combat support, and combat service support operations. (Photo by Spc. Samarion Hick, U.S. Army)

and operational units. The result will be a continuously improving, full-DOTMLPF-P solution that integrates state-of-the-art technology quickly and discards bad ideas just as fast.

The Army can do this because we will write requirements documents for capabilities rather than specific types of systems, fund them by capability portfolio, and keep the fielding effort at a manageable scale. That means fielding in small tranches, iteratively, rarely fielding a system to the entire Army. This will also open competition to smaller companies that are designed to turn engineering redesigns quickly—companies that want to sell more than a few prototypes but don't need multiyear production of high-price systems to justify their research-and-development investment.

Putting it all together. We must develop the ability to adopt and integrate technology faster. But new technology is not transformational by itself. To fully exploit the technology's potential, we must change how we operate, organize, and equip with it. That means accounting for every element of DOTMLPF-P together

as a holistic solution. The best way to do this is to orient capability development on formations. In other words, we buy equipment but fight formations, and the Army's transformation must be *formation-based*.

For this reason, an essential element of transforming in contact is unit innovation: warfighting formations using new combinations of tactics and technology to solve problems and create opportunities from the bottom up. How can a division operating in the Indo-Pacific simplify its communications networks, slim down command posts, and sustain itself while distributed? How can an infantry brigade operating in Europe use creative combinations of drones, loitering munitions, rockets, and precision-guided missiles to defeat an armored attack? What can we give our formations operating in the Middle East now to help them defend against drones?

To support unit innovation, the Army's transformation enterprise must be more agile. We can do that now, within existing processes, by doing three things. First, we must develop requirements documents for capabilities instead of specific types of systems and fund

Soldiers assigned to 3rd Platoon, Alpha Battery, 1st Long Range Fires Battalion, 1st Multi-Domain Task Force, fire an M142 High Mobility Rocket System on 2 May 2024 during Exercise Balikatan 24 at Rizal, Philippines. (Photo by Cpl. Kyle Chan, U.S. Marine Corps)

them the same way. Second, we must field meaningful quantities to operational units as soon as they can be useful. Third, we must develop holistic DOTMLPF-P solutions iteratively so that those solutions can update as fast as their underlying technologies. This approach fully engages the operational force in Army transformation and expands competition in the industrial base.

Transforming in contact must not be reactive. Investments we make today have a ripple effect on the future, creating some options and foreclosing others. They must be informed by our plans for deliberate transformation and concept-driven transformation. These are the topics of the next two sections in this article.

Part II: Deliberate Transformation

Reform of an institution as large as our Army is problematic under the best of circumstances … We may have analyzed … and made some considerable progress … But that in no way ensures either that change will occur or that it will be an easy, orderly process.

—Donn Starry, "To Change an Army," 1983[12]

The first section of this article addressed how the Army can rapidly integrate new technologies, evolving capabilities on multimonth rather than multiyear timelines. This section is on how we drive and manage change in the midterm.

Nothing published in an Army strategy document ever happened unless it was also published in an order. And even what we direct in orders may go undone without tracking and follow-up. But the most draconian staff could not *impose* change on an organization the size and complexity of our Army. Army transformation involves coordinated action across DOTMLPF-P.

Change on that scale involves the entire Army. No one leader below the levels of the secretary and chief of staff can manage it all. The reality is that changing the Army requires winning teammates and building consensus. The question is not how to impose change but how to work together to accomplish it.

A new warfighting concept from Army Futures Command will not move the needle on DOTMLPF-P without Training and Doctrine Command

determining how to put it into practice. A requirement document for new equipment is just a piece of paper until the Army headquarters funds the requirement and Army acquisition professionals begin developing the system. We need Army Materiel Command to ensure we get concepts and requirements right, help divest old capabilities, and support fielding and sustainment of new ones. And our best warfighters are in the operational force—Forces Command and the Army Service component commands. If they are not at the center of the process, what we give them will not be what they need.

This requires people to work across organizational boundaries and solve problems together. Transformation is not a relay race. We do not hand the baton from concept writer to requirement developer to organization designer and technology developer. Soldiers, scientists, engineers, acquisition, testing, contracting, and other professionals are working together throughout. Without that, plans laid in one stage will not be executable in later stages, and changes made in later stages will undermine earlier intent and parallel efforts. Who is in lead and who is in support changes, but no one organization truly *owns* any part of the pipeline. Managing change in a busy Army with multiple organizations working together to coordinate changes across DOTMLPF-P must be a deliberate effort. It starts with defining the objective.

Defining the objective. The way to achieve any goal is to make it specific, give it a deadline, and tell people how you will measure success. The Army's stated transformation objective for the period of two to seven years—the time frame for defense budget planning—is delivering Army 2030.[13] So, what is Army 2030, and how will we know when we have delivered it?

Army 2030 is a force optimized to win in large-scale combat in a multidomain operations environment.[14] It is a realistic goal, based on a clear-eyed assessment of what the Army can accomplish within available resources, with technology we are confident we can field by that time. This requires not only delivery of signature modernization efforts but also concerted effort across DOTMLPF-P.

For large-scale combat, our divisions need division-level artillery, engineer, and other capabilities.[15] We can address this by consolidating assets currently in brigade combat teams into division-level formations.

This has the added benefit of unburdening those brigades. Moving complexity up to the division echelon frees brigade commanders and their staffs to focus on maneuver. But we must also give divisions new assets, such as air defense battalions.

While brigades and divisions focus on ground maneuver, corps headquarters must converge land, sea, air, space, and cyber capabilities. These corps must be staffed, trained, and equipped to synthesize vast amounts of data from multiple sources, integrating Army sensors, shooters, and sustainment systems with those of other military services and coalition partners.

Managing large-scale combat operations involving multiple corps and many nations requires a headquarters to serve as a combined/joint land component command. U.S. Army Pacific and U.S. Army Europe and Africa must have the assets to do this. That includes new, theater-controlled intelligence brigades, fires elements, security force assistance brigades, and multidomain task forces with the staff, training, and equipment to manage them.

We can say we have delivered Army 2030 when we have organized the right people into the new or transformed formations, equipped them, trained them, and validated that they can perform their wartime missions. Some of those formations we are building from scratch, like mobile protected firepower (MPF) battalions and additional multidomain task forces. Others, such as division artillery brigades, require mostly reorganization of existing units.

Turning decisions into action. The U.S. Army knows how to stand up or reorganize a formation and make it ready for war—no army in the world does it better. But the systems we use to do that do not kick into action until we formally allocate resources— people, equipment, and funds, including for sustainment, facilities, and training. The real work does not begin until resources move in the Army Structure Memorandum (ARSTRUC) and the Program Objective Memorandum (POM).[16]

Making big changes in the ARSTRUC and POM can be an uphill climb. In practice, the decision to stand-up or reorganize a formation is not one decision. It is a set of interrelated decisions, made in separate forums, about resources that are managed in separate portfolios. Which units will lose personnel

Chief of Staff of the Army Gen. Randy A. George receives a demonstration on 18 March 2024 of next generation command-and-control system human-machine integration capabilities from a 1st Infantry Division officer during Project Convergence–Capstone 4 at Fort Irwin, California. Deliberate transformation focuses on developing program objective memoranda and Total Army Analysis to inform how the Army will leverage new systems, including by ensuring integration across DOTMLPF-P. (Photo by Sgt. Brahim Douglas, U.S. Army)

authorizations when others gain them? Where will the formations be stationed, and how will we provide their barracks and other facilities? Will we invest to accelerate procurement of the new equipment? What will we allocate for our maintenance enterprise to sustain it? How will we pay for fuel, ammunition, and other training expenses?

To turn decisions into timely action, the Army must do five things. First, as we have done with Army 2030, set the objective. Second, as we will explain below, focus on the formations, which are the true source of battlefield capability. Third, account for all the DOTMLPF-P costs associated with creating or changing those formations. Fourth, present Army senior leaders with options explicitly framed in terms of the costs, benefits, and risks. Finally, ensure decisions are unambiguous, clearly communicated, and aggressively executed.

Focus on the formations. Equipment is not, by itself, capability. A capability is the ability to do something on the battlefield.[17] This requires having people organized, trained, and equipped to do it. In other words, it requires a combat-ready formation. Fielding a new capability always requires action across multiple elements of DOTMLPF-P. Often, it involves all of them.

It was about six years from approval of the initial capabilities document for MPF to the award of a contract for initial production of what would become the M10 Booker armored combat vehicle.[18] In the beginning, the Army had plenty of time to decide whether to field the system in companies or battalions, where to station those units, and what occupational specialties would crew the vehicles. Nevertheless, on approach to fielding, we found ourselves racing to answer those questions and allocate resources. The tortoise nearly caught the hare. Some even thought we should slow

Soldiers with the 2nd Battalion, 263rd Air Defense Artillery, 678th Air Defense Artillery Brigade, 263rd Army Air and Missile Defense Command, South Carolina Army National Guard, conduct short-range air defense training 25 April 2024 at McCrady Training Center, Eastover, South Carolina. Soldiers, scientists, engineers, and other professionals in acquisition, testing, and contracting all work together throughout the process of deliberate transformation. (Photo by Sgt. Tim Andrews, U.S. Army National Guard)

the fielding. The answer was not to slow down delivery of the materiel. It was to speed up the rest of DOTMLPF-P.

In the future, nothing would prevent the Army from making those decisions in the same forums where we make decisions about equipment. We viewed MPF as a materiel solution with DOTMLPF-P implications, which were to be handled by separate Army processes. If, instead, we had viewed it as a DOTMLPF-P solution with a materiel solution component, it would have been harder to neglect the big picture. Focusing on the formation accomplishes that. When we ask how to make the formation that fights with the new equipment ready for war, the full DOTMLPF-P picture immediately comes into view.

Show the fully burdened cost. The Army is conscientious about forecasting the cost to develop and procure new materiel. We do this less well for the associated DOTMLPF-P. Battalions equipped with the M10 Booker need maintenance and training facilities. These do not yet exist everywhere they could be stationed. Since construction costs could vary widely depending on the station, we were understandably reluctant to budget for MPF facilities prior to an official stationing decision. Thus, for a time, there was no provision for this in the Army's budget plan for the two-to-seven-year time frame. This was a solvable problem. But there have been similar examples across DOTMLPF-P for many capabilities in the Army's transformation pipeline, and the unseen costs can add up.

Today, thanks to hard work by people in the Army headquarters, Training and Doctrine Command, and other organizations, we understand the costs associated with Army 2030. Going forward, we will make these costs visible to Army senior leaders earlier. Knowing the fully burdened costs of a capability early smooths

INVEST

DIVEST

INVEST IF LOW COST OR VERY HIGH PAYOFF

BATTLEFIELD UTILITY

RISK TO DELIVERY
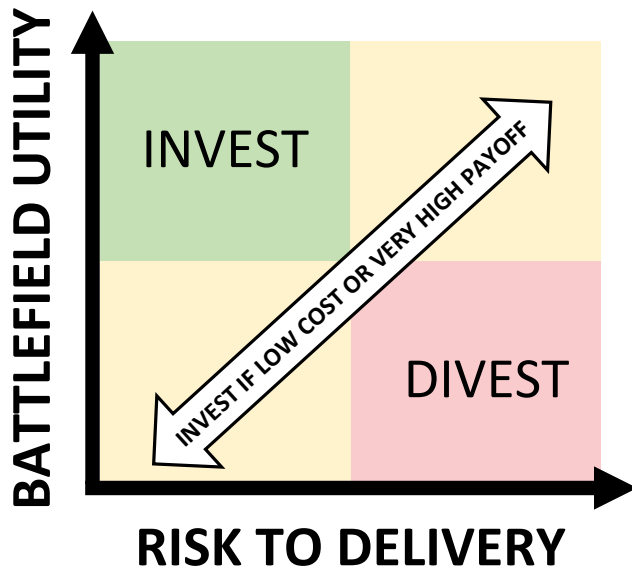
(Figure by author)

Figure 3. Cost-Benefit

implementation. But it should also be part of the cost-benefit calculus when we choose which capabilities to pursue in the first place.

Present costs, benefits, and risk. Army resources are finite. To invest in one opportunity, we must forgo another. So, we should frame investment options explicitly in terms of their full DOTMLPF-P cost, the battlefield utility of the capability, and the risk that we fail to deliver. On the one hand, if a new capability has great potential but will require costly research and development, and we will also struggle to recruit and train enough soldiers for the formations, those resources might do more for the Army elsewhere. On the other hand, if a capability is a moon shot, but it could be game-changing and the cost of taking that shot is low, why not try (see figure 3)?

Most of the Army's signature modernization efforts do not, by themselves, fit neatly into either category. In 2017, the Army set out to develop systems we knew we needed and could realistically deliver.[19] Today, a few have been responsibly off-ramped, but most are succeeding, which means they will eventually compete with one another and with other Army priorities for procurement dollars. However, considering every DOTMLPF-P change necessary to deliver the capability, and its battlefield utility given our updated assessment of the future operational environment, some capabilities will stand out.

Assessing the full DOTMLPF-P cost of a new formation with new equipment, the utility of that formation in different scenarios, and the risk if we fail to field it is both science and art. But it can be done. There will be disagreement about planning assumptions. Nevertheless, presenting information in that cost-benefit frame focuses the dialog on the right questions. Staff will know what information decision-makers need before they ask for it, and the Army will be better prepared for discussions with industry and Congress.

Undeciding. Force structure and budget are arenas of continuous competition for the Army's branches and parts of the Army bureaucracy. For example, the infantry and armor communities take an understandable interest in decisions affecting infantry and armor people, organizations, or equipment. The Army's many headquarters—and even different parts of the same headquarters—have different priorities, based on their unique perspectives and areas of responsibility. Different communities view themselves as custodians of important institutional imperatives. Sometimes this leads them to work at cross-purposes.

When the Army makes a hard decision about force structure or modernization, it must be documented and unambiguous. Rarely can a decision be implemented without cooperation among midlevel people in different organizations and staff directorates. If a decision appears tentative, some will simply take no action. If it is unclear, some will act according to their own, best-case interpretation. This is *undeciding*. People are usually acting in good faith—they do not always know they are undeciding. But the result is a time-wasting delay and relitigation of decisions already made.

Putting it all together. Given the size and complexity of the Army, that transformation is executable at all is a testament to incredible Army people and sound Army processes. Once unleashed, our transformation machine will execute. We should not wait for the publication of an annual document to start necessary movement. We should do the opposite—take Army senior leaders' intent and move fast. But the decisive point for changing the Army at scale is fully capturing the plan in the ARSTRUC and the POM. We are doing that by defining the objective; focusing on the formations holistically; accounting for all the DOTMLPF-P costs; framing options in terms of the costs, benefits, and risks; and then

A drone swarm operated by the Threat System Management Office takes off from a training area during Marne Focus 2024 at Fort Stewart, Georgia, on 7 April 2024. Modern warfare is waged in every domain. Frontline soldiers must remain flexible and agile while improving their lethality by leveraging technology and integrating all warfighting functions against current and future threats. (Photo by Staff Sgt. Jacob Slaymaker, U.S. Army)

ensuring Army senior leader decisions are clearly understood by all who have a role in implementation.

This is how the Army will succeed in *deliberate transformation*, making changes across DOTMLPF-P to turn the Army we have into the one we need in the midterm. How we set the course for longer-term transformation is the subject of the final section, *concept-driven transformation*.

Part III: Concept-Driven Transformation

If you don't like change, you are going to like irrelevance even less.

—Gen. Eric Shinseki[20]

The focus of this section is concept-driven transformation, which provides the broad avenue of approach for long-term change. Earlier sections address how the Army manages change in the near- and midterm—the *transformation in contact* and *deliberate transformation* periods.

The long-term vision. The purpose of the forthcoming Army Warfighting Concept is to drive Army transformation.[21] Transformation is everything we do to turn the Army we have into the one we need by

making changes across DOTMLPF-P. This involves the entire Army, which presents a coordination challenge. People in different organizations who focus on different time horizons are working through different processes to solve interrelated problems. The Army Warfighting Concept provides the common, long-term vision that unites those efforts.

Because we cannot perfectly predict the future, our long-term vision is not fixed. The Army Warfighting Concept is a living document, based on a continuously updated running estimate of the future operational environment.[22] This process includes intelligence assessments, observation of ongoing conflicts, research, wargaming, experimentation, and innovation by operational units deployed forward in their operational environment.

The role of the Army. The purpose of the Army is to dominate the land domain. Ground forces do this as a part of the combined joint force, employing capabilities from the sea, air, space, and cyberspace in the land domain while simultaneously providing joint force commanders land-based capabilities they need to deliver effects into other domains.

The broader purpose of all military forces is to deter aggression. With the right capabilities,

A soldier assigned to 3rd Infantry Brigade Combat Team, 25th Infantry Division, operates a drone to observe opposing force movements at South Range, Schofield Barracks, Hawaii, on 6 November 2023. The Joint Pacific Multinational Readiness Center is the Army's newest combat training center and generates readiness in the environments and conditions where the Hawaii-based forces are most likely to operate. The U.S. Army must be ready for a full range of military operations involving multiple threats and across varied geography. (Photo by Sgt. Samantha Cate, U.S. Army)

favorable to the United States and its allies.

Once political authorities commit military forces in pursuit of political aims, military forces must win something, or else there will be no basis from which political authorities can bargain to win politically. Therefore, the purpose of military operations cannot be simply to avert defeat but, rather, it must be to win.

—Gen. Donn Starry[23]

Military implications of the future operational environment. We live in a dangerous world, increasingly subject to the disruptive effects of new technologies. We have every reason to expect that by 2030 China and Russia will retain advantages in mass and magazine depth. They will also have closed capability gaps that restrain them today. At the same time, Iran, North Korea, and other adversaries—including nonstate actors that wield significant military power—will prevent the Army from focusing exclusively on the greatest threats.[24]

The combination of ubiquitous sensing and precision strike has significant implications for the conduct of warfare. The most obvious is that it pushes operational and strategic support area activities—logistics, staging, and higher-echelon C2—further away or into distributed nodes. But the combination of sensing with precision also changes the close fight.[25] The density of sensors and effectors—lethal and nonlethal—will only increase as forces approach forward lines. Commanders will not achieve surprise by the same methods they do today. They will also not mass forces for the close fight

capacity, and positioning, our military causes adversaries to question whether they could prevail by force. If that fails, the mission becomes to defeat enemy forces in the field, allowing a political resolution

without deliberate condition setting to break the enemy's ability to sense and strike.[26]

Precision remains an effective counter to mass, but it is a poor substitute for it ... the U.S. is probably over-indexed on long-range precision, versus adjusting to and dealing with proliferation of short-range precision on the battlefield ... UAS have democratized precision in the close-in battle. They made it cheap, they made it accessible. So now you have mass precision.

—Michael Kofman[27]

The major driver of change at the tactical level of war will be the employment of AI-enabled autonomous systems at scale. This will not displace traditional weapons, like tanks and tube artillery, but it will change how ground formations operate. At the operational level, the convergence of domains—land, sea, air, space, and cyberspace—will place a premium on joint force integration. The net effect of the above is an exponential increase in the complexity of modern warfare on par with the emergence of combined arms early in the last century.[28] This only raises the stakes for the decisions we make about training and leader development.

Problem statement, primary notions, and theory of victory. The Army Warfighting Concept has a two-part problem statement. The warfighting problem is how to succeed in the future operational environment described above. The institutional problem is how to build an Army as a warfighting *institution* that can do that across all time horizons.

The Army Warfighting Concept is based on three primary notions.[29] These are C2 and counter-C2, expanded maneuver, and cross-domain fires. The Army does all these today, but not to the degree that it could, even with technology that already exists. The concept also clearly states a three-part theory of victory. First, the Army must sustain and build upon advantages it already has—its people and its competence in combined arms maneuver. Second, we must develop the ability to integrate new technology and adapt faster than any adversary. Third, we must significantly enhance endurance—capability and capacity within the Army and in the industrial base to prevail during protracted conflict.

A new approach. The Army Warfighting Concept is a new approach in both content and form. It

challenges assumptions about warfighting that have become so engrained in Army culture in recent decades that they are rarely questioned today. These include the relative importance of preparing to win the first battle versus preparing to win a long war, the primacy of the offense, and the idea that fires serve primarily to enable maneuver.

The concept also breaks with a tradition of Army concepts that specifically described how commanders should fight. AirLand Battle was first published over forty years ago.[30] Since then, a succession of Army concepts sought to furnish a theory of victory for the operational-level commander in the field. That was sound during the Cold War when the Army's organizational strategy was to optimize for one threat in one region.[31] However, we face multiple threats today, in multiple geographies, across the full range of military operations. No single, operational-level theory of victory would be practically useful in all those scenarios.[32]

For this reason, while the concept addresses tactics and operations, the theory of victory for the Army Warfighting Concept centers on how the Army as a warfighting *institution* remains the dominant land force in the world. Beyond that general theory of victory, the concept identifies competencies and provides a list of imperatives for Army transformation. These point to a need for bold shifts with significant implications for Army doctrine, force structure, leader development, and talent management.

How to fight. The Army can posture for multiple threats and still determine how to fight in different scenarios. To do that, we will conduct a series of wargames. Scenarios will vary by threat, geography, and time frame. Some will involve China-Taiwan crises. Others will pit the combined joint force against the People's Liberation Army in broader Indo-Pacific scenarios, with different combinations of coalition partners and different political objectives. There will be scenarios involving competition and conflict with Russia, North Korea, Iran, and other adversaries. Some scenarios will involve protracted contests that test strategic endurance. All will stress contested force projection, contested logistics, defense of the homeland, and the human and information dimensions of war.

Who participates in these wargames matters as much as their design. The Army's best warfighters are in our divisions, corps, and the Army Service

Spc. Dylan Horak, a network communication systems specialist with the 44th Expeditionary Signal Battalion–Enhanced, reacts to a drone swarm attack during Saber Junction 23 on 11 September 2023 at the Joint Multinational Readiness Center near Hohenfels, Germany. U.S. Army soldiers and NATO troops train with drones that simulate modern weapon systems to help their militaries update doctrine and training for combat against developing and future threats. (Photo by 1st Sgt. Michel Sauret, U.S. Army Reserve)

component commands. And we will wargame the same way that we fight—as part of the combined joint force. Scientists and engineers will participate to help warfighters understand what technology could make possible and people from industry will join to help explore the implications for industry.

What we learn will allow the Army to develop concept "applications," or annexes, for specific scenarios, threats, or geographies. When appropriate, these annexes will describe context-specific, operational-level defeat mechanisms. When a lesson applies across a wide range of scenarios, we will incorporate it into the main body of the Army Warfighting Concept.

2040 is sooner than you think. If a soldier who was discharged from the Army shortly before 11 September 2001 returned today, they would be more surprised by how the Army is the same than by how it is different. We are much closer to 2040 than we are to

2001. The world is changing too quickly for the Army to be changing that slowly.

Concept-driven transformation is implemented *through* transformation in contact and deliberate transformation. It is not a separate activity. While the primary function of the Army Warfighting Concept is to provide direction for the long-term, this necessarily also sets the broad avenue of approach for the near- and midterm. To have a capability by 2040 requires that it be in fielding by 2035, which means it must exist as a prototype by around 2030. The Army will submit its initial budget request for that year in 2025. And new materiel is not even the slowest part of DOTMLPF-P. The longest lead times are for personnel and leadership.

The challenge of the last two decades was how to develop leaders who could echelon fires for a combined arms breach as adeptly as they could negotiate with a tribal elder. The challenge of the next two decades will be the same, only technology is adding to the list of

required competencies. The best commanders will be—among other things—experts in the physics of combat, data fluent, and as attuned to the information and human dimensions as they are to the physical dimension of their operational environment.

There are two kinds of change described in the concept—changes we can make now and changes we will only make if we start now. Only by acting now will we ensure the U.S. Army remains dominant in the land domain. Commanders and leaders must start by creating a culture where innovation is expected as a normal part of how we win.

Leaders must educate themselves on the technologies that are changing how we and our adversaries fight. It is essential that officers and noncommissioned officers actively participate in the professional dialogue on the Army Warfighting Concept. By including our best leaders in wargaming and experimentation, we will sharpen the concept and identify areas across DOTMLPF-P where we can start necessary movement.

Since we only have one Army, we do not have the luxury of choosing between being ready to fight tomorrow and ready to fight tonight. The question is not whether to prioritize current readiness or future readiness, but how to account for uncertainty and manage continuous transformation across all three periods of time. ■

Notes

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U.S. Army soldiers with 3rd Squadron, 4th Cavalry Regiment, 3rd Infantry Brigade Combat Team, 25th Infantry Division (25th ID), fire an M240 machine gun on 2 November 2022 while defending an objective as the opposing force during Joint Pacific Multinational Readiness Center (JPMRC) rotation 23-01 at Pohakuloa Training Area, Hawaii. JPMRC used training scenarios specific to certain environments to train the 2nd Infantry Brigade Combat Team, 25th ID, with joint, allied, and partnered forces under conditions in which they would fight. (Photo by Sgt. Rachel Christensen, U.S. Army)

How I Corps Fights

Movement and Maneuver

Brig. Gen. Eric Landry, Canadian Army

Col. Andrew Watson, U.S. Army

Lt. Col. Alex Bedard, U.S. Army

Maj. Callum Muntz, Australian Army

Now the general who wins a battle makes many calculations in his temple ere the battle is fought. The general who loses a battle makes but few calculations beforehand. Thus do many calculations lead to victory, and few calculations lead to defeat: how much more no calculation at all! It is by attention to this point that I can foresee who is likely to win or lose.

—Sun Tzu, *The Art of War*

Tanks from 1st Armored Division download at the Port of Gladstone, Australia, on 14 July 2023 to participate in Talisman Sabre 2023. I Corps operates in archipelagic and littoral areas, relying on the joint force extensively for intratheater movement. (Photo by Sgt. Oneil McDonald, U.S. Army)

America's First Corps (I Corps) serves as the operational U.S. Army headquarters for U.S. Indo-Pacific Command (INDOPACOM), employing U.S. Army forces in the INDOPACOM area of responsibility (AOR) to contribute to the vision of a free and open Indo-Pacific. Previous work by the I Corps commanding general, Lt. Gen. Xavier Brunson, outlined the vision for how I Corps fights, introducing the DARES framework: define fights, apportion efforts, resource priorities, evaluate outcomes, and seek feedback.[1] The objective of this article is to build and expand upon this framework as it relates to the movement and maneuver warfighting function (M2 WfF). At the corps level, the M2 WfF is commonly misunderstood. Decisions regarding the M2 WfF need to be made well before those forces ever engage in combat with the enemy. This article first reviews how I Corps fights in the context of the INDOPACOM AOR, multidomain operations (MDO), and the I Corps distributed command and control nodes (DC2N) process. It then defines the M2 WfF. The next section introduces a thesis and applies it within the context of the DARES framework.

The INDOPACOM AOR is fraught with challenges unlike those seen in AORs where U.S. Army forces have played a more prevalent role in recent history. The INDOPACOM AOR contains over half of the

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Soldiers from the 25th Infantry Division, the Singapore Army, and the 1st Australia Division conduct a huddle during a Talisman Sabre field exercise in July 2023. I Corps forces frequently operate in a multinational construct without a common language or a multilateral military alliance like NATO. (Photo courtesy of I Corps Public Affairs Office, U.S. Army)

world's population with nearly two-thirds of the world's economy.[2] The INDOPACOM AOR's geography often requires operations in littoral and archipelagic regions, leading to noncontiguous areas of operation (AO). Time and distance challenges in this AOR surpass those in others, impacting force movement and sustainment operations. Geography also forces the U.S. Army toward greater reliance on the U.S. Navy, U.S. Marine Corps, and U.S. Air Force.

Another notable factor of the AOR involves the U.S. Army's partnerships and alliances in the region. Whereas other AORs may have well-established U.S. multinational military frameworks, the Indo-Pacific is rife with bilateral and multilateral agreements, often without a commonly understood language. Formal alliances exist with Japan, the Republic of Korea, Thailand, the Philippines, and Australia. Those alliances are reinforced regularly by military exercises like Yama Sakura, Freedom Shield, Cobra Gold, Salaknib-Balikatan, and Talisman Sabre. As the geopolitical situation across the AOR evolves, traditionally bilateral

U.S. engagements are expanding to include new partnerships. One example is the frequent integration of I Corps and the 1st Australian Division, or 1 (AS) DIV. Japan formally recognized 1 (AS) DIV as a participant in exercise Yama Sakura 85, traditionally a bilateral U.S.-Japan exercise. These distinguishing factors of geography and continually changing relationships within the INDOPACOM AOR set the stage for I Corps' role within U.S. Army MDO.

The U.S. Army fights using MDO, which highlights four tenets: agility, convergence, endurance, and depth.[3] Focusing heavily on the European theater and AirLand Battle as a foundation, applying MDO to the INDOPACOM AOR presents many challenges. I Corps focuses on development and realization of the tenet of convergence, defined as "an outcome created by the concerted employment of capabilities from multiple domains and echelons against combinations of decisive points in any domain to create effects against a system, formation, decision maker, or in a specific geographic area."[4] I Corps plays an instrumental role in

Staffs from I Corps and the Japanese Ground Self-Defense Force participate in a bilateral staff working group 6 December 2023 during Yama Sakura 85. I Corps operates with many partners throughout the Pacific without a common language or multilateral military alliance like NATO. (Photo by Pfc. Elija Magana, U.S. Army)

achieving convergence in the AOR by requesting and synchronizing joint effects with division maneuver. This is done while working with emerging formations external to I Corps, including multidomain task forces, security force assistance brigades, and sister service formations like Marine littoral regiments. I Corps works to integrate and synchronize operations through the development of the concept of convergence windows, an expansion on the tenet of convergence within the context of Brunson's vision of how I Corps fights.

I Corps fights in the INDOPACOM AOR using DC2N and by posturing combat credible forces west of the international date line to build interior lines against the pacing threat, China. I Corps uses DC2N to deliberately place the headquarters in time and space, task organized and purpose built by mission and resources. DC2N seeks to decrease signature, reduce logistical requirements, reduce data bandwidth, and increase survivability for the corps headquarters. There are six pillars to DC2N (structure, form factor, data, transport, location, process) and four characteristics

(agile, resilient, scalable, and survivable).[5] By executing operations using DC2N to build interior lines against the pacing threat, I Corps contributes to campaigning in the AOR. Given all the above factors, how does I Corps fill its role with respect to the M2 WfF?

The M2 WfF is defined as "the related tasks and systems that move and employ forces to achieve a position of relative advantage over the enemy and other threats."[6] This includes force projection activities, employing direct fires, occupying areas, conducting mobility and countermobility, reconnaissance and surveillance, and battlefield obscuration.[7] The M2 WfF does not include administrative movements of personnel and equipment, which instead reside under the sustainment warfighting function.[8] How do these functions materialize at the corps level, and specifically within the context of the challenges of the INDOPACOM AOR, MDO, and how I Corps fights?

The overarching concept for how I Corps fights the M2 WfF in its AOR is that I Corps shapes conditions for divisions to maneuver in the close area by

M142 High Mobility Artillery Rocket System launchers from the 17th Field Artillery Brigade are obscured by smoke as they fire during Talisman Sabre in Australia, July 2023. Fires support the movement-and-maneuver focus of I Corps on shaping conditions for division maneuver in the close area. (Photo courtesy of I Corps Public Affairs Office, U.S. Army)

focusing on movement to posture forces and by using the I Corps DARES framework to focus staff analysis and supplement doctrinal tools with best practices. Decisions concerning the M2 WfF are typically made at the future-operations-focused DC2N node (Node 2), but decision-making transfers to the Home Station Operations Center (HSOC) as required.[9] This article outlines how I Corps fights with respect to the M2 WfF by using the DARES framework as a road map.

Define the Fights

Defining the fights for I Corps is a critical portion of planning an operation and serves as the basis for how I Corps fights the M2 WfF. This process can be viewed doctrinally as deciding on operational frameworks, which is part of intelligence preparation of the battlefield (IPB) and the planning portion of the operations process. I Corps does not supplement these tools with any additional products or processes. However, due to the requirements of the AOR and frequent employment of I Corps in multiple roles, the corps staff needs

to focus additional analysis in this area to enable timely decision-making for the M2 WfF.

The first critical aspect of defining the fights is to determine the role the corps headquarters will play in the operation. A corps headquarters can serve as a joint task force, a joint forces land component command, an army forces command, or as the senior army tactical formation, with the former three roles requiring significant augmentation.[10] The corps may fill more than one of these roles during an operation and will likely also be called upon to do so in a multinational context. The decided role or roles of the corps headquarters must be understood by all as the role frequently changes in the AOR throughout a given year of campaigning.

Once the corps determines the role of the headquarters for the operation, I Corps employs doctrinal tools to further define the fights. When employed as an army forces command, joint forces land component command, or senior army headquarters, the corps staff employs IPB to help define the AO and area of interest. Combining IPB with the military

decision-making process (MDMP), the staff also determines the corps area of influence. This forms the basis for the development of the corps deep, close, and rear areas, and initial designation of main efforts and supporting efforts. When employed as a JTF, I Corps uses joint intelligence preparation of the operational environment combined with the joint planning process (JPP) to define the joint operations area, joint security areas, and component AOs. The geography of the INDOPACOM AOR often necessitates a noncontiguous AO. This decreases the agility of the corps with respect to the M2 WfF and necessitates earlier decisions than in other theaters.

As employed in I Corps, defining the fights places greater staff emphasis on doctrinal tools that currently exist in IPB, MDMP, and JPP. The frequent employment of the corps in different roles and the geography of the AOR highlights the importance of developing a detailed understanding of the operational framework to facilitate timely decision-making for the M2 WfF. The staff will often develop a noncontiguous AO or joint operations area for the corps, which requires a deliberate consideration for the next element of the DARES framework, apportioning efforts.

Apportion Efforts

The process of apportioning efforts involves expanding upon defining the fights through further application of MDMP or JPP. The implications of this process enable the corps to determine the right posture of forces and the correct task organization and assist the corps staff in assessing culmination. These are all vital to the M2 WfF. Apportioning efforts results in critical products for corps operations, including fights by echelon, development of a kill contract, and an 8-day sketch (visual matrix; see the figure). The process of apportioning efforts also enables the corps staff to identify and develop the aforementioned convergence windows. Central to the analysis and development of these products is the correlation of forces and means (COFMs).

The first critical product of apportion efforts is fights by echelon, which communicates what each headquarters involved in the operation must do to achieve successful outcomes. This includes the delineation of responsibilities, or "fights," for a higher headquarters, the corps headquarters, and subordinate organizations. This product conceptualizes what each element will do in the areas designated in define the fights. The fights by echelon can be described by many means but needs to be tailored to the operation through planning processes. It must be as specific as possible to be of the most use. Some common techniques involve using objectives, specifying enemy formations, or designating precise enemy capabilities. This simple document allows common visualization of responsibilities for each headquarters, aids in the principles of economy of force and mass and helps build unity of effort. Fights by echelon then forms the basis for development of the kill contract.

The I Corps kill contract provides greater refinement of fights by echelon focused on enemy forces in large-scale combat operations. Simply put, the kill contract specifies what enemy formations and systems each headquarters must remove from the operation in space and time for friendly forces to be successful. The term "contract" in the name implies the conditions must be met; however, the realities of military operations result in a more aspirational kill contract than a definite one. It assists commanders in understanding risk and articulates tangible requirements to achieve acceptable levels of risk for operational success to enable decision-making. The kill contract fills a vital role in synchronizing resources and allowing I Corps commanders and staffs to understand, visualize, describe, and direct operations.

The kill contract is developed during the course of action analysis portion of the planning process and heavily involves the use of COFMs. As staffs iterate through course of action analysis using COFMs, they identify minimum friendly force requirements and enemy capabilities that need to be targeted by specific echelons. Staffs gain an appreciation for how these conditions need to be met in space and time. This process is challenged by the lack of standardized COFMs calculators for the pacing threat and contemporary joint warfighting systems. The minimum friendly force requirements the staff develops serve to refine the task organization and assist in the assessment of culmination. These are of vital importance given the much longer time and distance factors in the AOR.

The I Corps kill contract is a living document. The staff continues to refine it during execution, through subsequent planning, and through the targeting process. This document aids in building unity of effort and
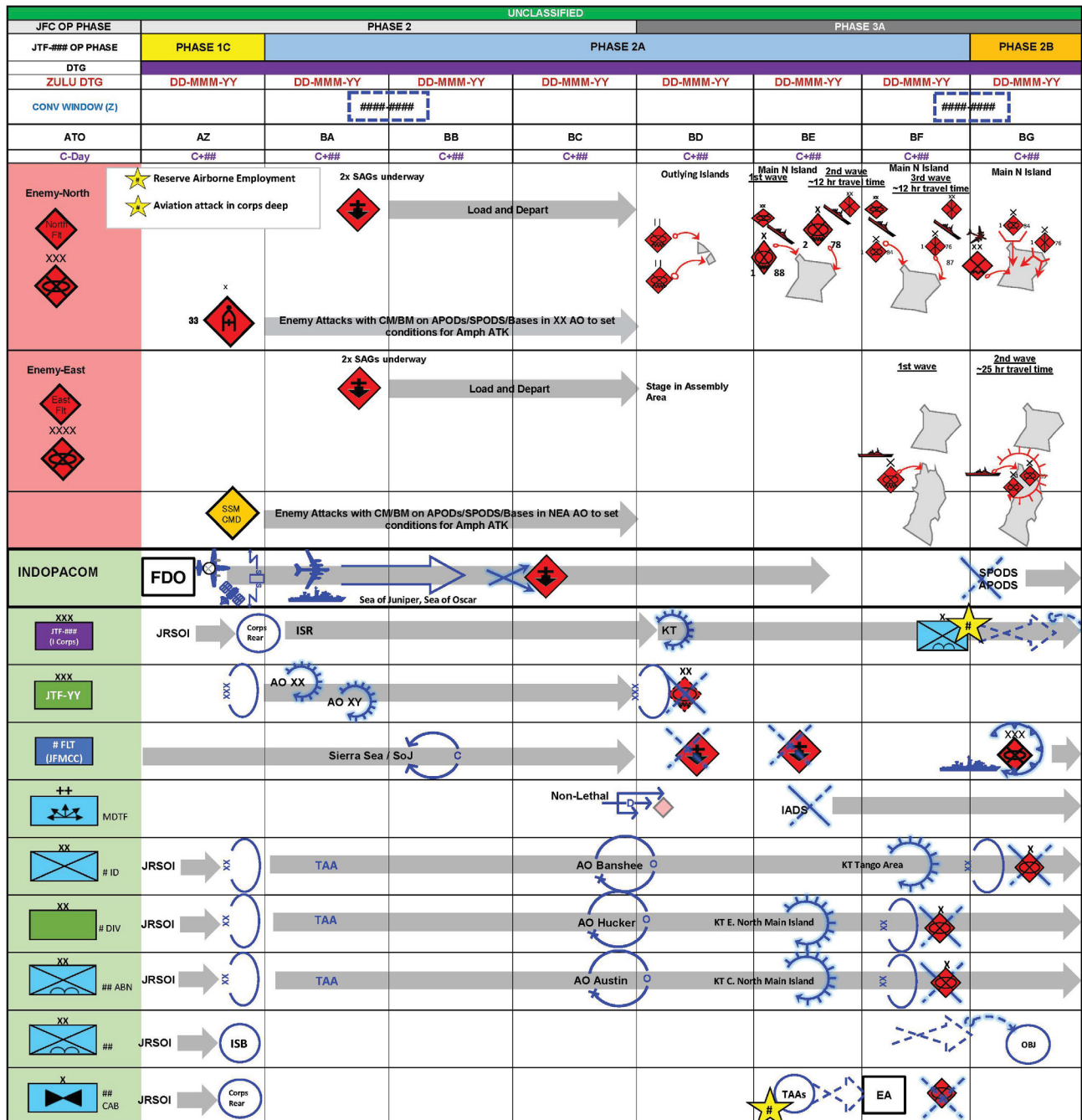
Figure. 8-Day Sketch

In this example of an 8-day sketch (visual matrix), I Corps is serving as a joint task force and joint force land component command in an archipelagic environment. The sketch covers two air tasking order cycles, depicts planned convergence windows, and enables commander understanding and visualization of the operation.

preserving economy of force, aids in massing effects, and helps realize convergence. As I Corps seeks to fulfill its kill contract, the staff often identifies the need for high-risk but high-payoff operations. I Corps seeks to

mitigate the high risk of these operations through the development of convergence windows.

I Corps defines convergence windows as discrete time and space intervals in which multinational and

joint forces layer effects across domains and dimensions to create temporary windows of vulnerability the corps can leverage to gain a position of advantage against an enemy force. This concept is related to the MDO concept of convergence. I Corps uses convergence windows to help achieve decisive points that will build the outcome of convergence. I Corps identifies requirements for convergence windows during planning and through development of fights by echelon and the kill contract. The staff typically plans and develops convergence windows around high-risk activities such as joint forcible entry operations, air assault operations, and aviation deep attacks. I Corps builds convergence windows through the targeting cycle. The corps staff links convergence windows, their associated operations, the placement of forces, and the sequence and timing of the operation to achieve the tenet of convergence.

A term in common use among the U.S. Navy and U.S. Air Force that is often conflated with a convergence window is a pulse. The U.S. Navy has used the concept of a pulse since at least the World War II era, meaning a discrete concentration of firepower directed at a specified enemy critical vulnerability designed to destroy the preponderance of an enemy's combat potential.[11] The concept of a pulse remains ill-defined and used colloquially. This working definition is related to the I Corps definition of a convergence window in that a pulse could contribute to creating a convergence window for a corps operation.

The I Corps staff takes the identified convergence windows along with their associated high-risk operations and portrays them on a visual model known as the 8-day sketch. The 8-day sketch assists the I Corps staff and commands in visualizing the operation in time and space and assists in coordinating and synchronizing the operation. The sketch portrays large-scale M2 WfF actions throughout the operation. It contains two air tasking order cycles to focus the staff on refining operations prior to the targeting cycle, which operates on a ninety-six-hour horizon. This product also aids the staff in visualizing required M2 WfF actions early enough in the process given the physics of operations in the Pacific. The 8-day sketch is continually refined throughout the operation and serves as a focal point to coordinate staff processes.

Apportioning efforts in the DARES construct involves further refinement and specification of the defined fights. This is critical for enabling decisions involving the M2 WfF. Major outputs of this process include fights by echelon, the kill contract, identification of initial convergence window requirements, and initial COFM analysis. After completing the apportionment of efforts, the corps staff next verifies the resources provided at echelon are sufficient for the defined fights and apportioned efforts.

Resource Priorities

Following apportioning efforts, the corps seeks to resource priorities. This is a critical aspect of the M2 WfF at the corps level in the INDOPACOM AOR due to time and distance factors, geography, and reliance on the joint force for intratheater movement. Considering these factors, the corps staff must resource priorities early and correctly to seize and maintain a relative position of advantage. Critical outputs of resourcing priorities are the task organization, positioning of corps sustainment assets, enabling brigade force posture, the composition and posture of the corps reserve, planning for culmination and follow-on forces, and development of the 8-day sketch. These are not novel products or processes, but the corps staff must conduct additional analysis and place emphasis on these aspects of the operation to enable the M2 WfF.

The task organization is a critical output concerning how I Corps fights with regard to M2. The task organization, informed by defining the fights and apportioning efforts, provides the correct resources to subordinate commands given their assigned missions. It enables the staff to position forces in an AOR where it is incredibly difficult to recover from a poor initial posture. Involved with the task organization is the designation of main and supporting efforts, which focuses the corps staff's support for subordinate headquarters. The corps staff also defines and refines command and support relationships, which feed into the positioning of corps sustainment, enabling brigade forces, and the corps reserve.

The geography of the INDOPACOM AOR exacerbates posturing corps enabling brigade forces and the corps reserve. This geography typically requires a noncontiguous AO with noncontiguous corps rear areas to enable operational reach. The corps often needs to split enabling brigade forces among multiple geographic locations. It is difficult to relocate those

forces within operationally relevant timelines, and repositioning typically involves reliance on the U.S. Air Force or the U.S. Navy. This necessitates early and correct decisions regarding the posture of the corps sustainment forces, the combat aviation brigade, field

These factors regarding the importance of reserve capabilities and posturing in the AOR link to the importance of assessing culmination and planning for follow-on forces early and often in the AOR. The sustainment WfF assesses and plans for casualties, materi-

> " While I Corps may exercise control of Army watercraft, they are ill-suited for the movement of reserve formations. With noncontiguous AOs, the corps may designate and posture multiple reserves or portions of the reserve to mitigate this risk and increase responsiveness. "

artillery brigades, the engineer brigade, the military police brigade, and other corps enabling forces. One corps maneuver enhancement brigade (MEB) is typically insufficient to protect multiple noncontiguous corps rear areas and enable operational reach. To fill this operational gap, I Corps has experimented with creating additional MEB-like capabilities from other enabling brigades like a military police brigade. This practice, however, detracts from the ability of an enabling brigade to fill its specified purpose. As a result of this identified gap, I Corps is requesting greater MEB support during future operations.

Positioning the reserve and the required capabilities of the reserve are also complicated by the AOR. Distances and geography in the AOR often preclude the useful employment of the reserve through road marches or Army aviation, forcing a reliance on the U.S. Air Force and U.S. Navy for intratheater movement of the reserve. This creates long lead times and competes with the use of vessels and aircraft for sustainment or other air and maritime missions. While I Corps may exercise control of Army watercraft, they are ill-suited for the movement of reserve formations. With noncontiguous AOs, the corps may designate and posture multiple reserves or portions of the reserve to mitigate this risk and increase responsiveness. This requires greater forethought, planning, and preparation early in the operation. The corps will often not be able to recover from poor reserve posturing with sufficient timeliness to enable commander decision-making.

el losses, personnel replacements, and the use of theater stocks for reconstitution operations.[12] The M2 WfF works with sustainment to integrate reconstitution operations into operational tempo and decision-making and retains overall responsibility for coordinating reconstitution. When tempo and combat losses exceed the ability to reconstitute combat power, the corps seeks to employ follow-on forces. Due to the geography of the AOR, planning factors for follow-on forces are typically more than a month. The corps needs to adjust the tempo of operations, vigorously monitor culmination, and signal and request follow-on forces extremely early to ensure continued operational reach.

To manage the above-mentioned challenges, I Corps refines the 8-day sketch, developed during JPP or MDMP and apportioning efforts. The 8-day sketch helps planners to visualize culmination in sufficient time to mitigate these friction points through coordination with the joint force. It also assists in coordinating supporting staff functions to synchronize and coordinate the operation.

The resource priorities portion of the DARES framework does not introduce any novel products or processes to enable the M2 WfF, but rather forces the corps staff to focus and conduct additional analysis using existing doctrinal tools. An optimized task organization and posture of corps forces is critical for preventing culmination in the AOR. This is achieved by enabling timely decision-making for the M2 WfF through the final two DARES framework elements: evaluating outcomes and seeking feedback.

Evaluate Outcomes

Evaluating outcomes of the DARES framework is vital to informing how the corps fights with respect to the M2 WfF and involves the formulation of assessments. An assessment is "the determination of progress toward accomplishing a task, creating a condition, or achieving an objective."[13] Evaluating outcomes, as with define the fights and resource priorities, does not necessarily add processes or products to doctrinal tools but serves to focus the staff in conducting additional analysis throughout the operations process. The major output of evaluating outcomes is the operational assessment framework. This framework is developed concurrently with the staff planning process and involves developing the assessment approach and the assessment plan.[14] The operational assessment framework provides the structure through which the corps staff will inform commander decision-making and the prioritization of planning efforts during execution, which in turn enables the M2 WfF.

The first portion of evaluating outcomes is developing the assessment approach. The assessment approach answers the broad question of how the staff will approach conducting assessments during execution.[15] I Corps uses a formal assessment process, conducting an assessment working group attended by representatives of all staff sections and subordinate commands. The assessment working group is run by the I Corps Future Operations section and chaired by the chief of staff. It is typically run out of the corps DC2N future-operations-focused node, with participants attending remotely from other nodes and from supporting organizations as required. To be effective, the assessment working group needs to occur at the proper time in the corps battle rhythm. To focus the staff accordingly, the assessments working group is viewed as the first meeting of the critical path. Inputs for this meeting are made through all the respective staff working groups, allowing the staff to evaluate the data that is collected before entering the assessments working group. The major output of the I Corps assessments working group is the operation assessment, which provides inputs into the I Corps operations synchronization meeting, the operations and intelligence briefing, the targeting working group, the targeting coordination board, and the commander's update brief.

The second portion of evaluating outcomes is developing the assessment plan. The assessment plan is developed from the corps operational approach, which the staff creates during the initial stages of the planning process. The staff reviews the approach and develops indicators that will provide metrics allowing the staff to determine progress along lines of operation and lines of effort toward achieving the desired conditions for the operation. The staff divides indicators into measures of performance (MOPs) and measures of effectiveness (MOEs) and assigns them to respective staff sections. These metrics quantify progress toward decisive points, objectives, and desired conditions while allowing the corps to assess and prevent culmination and prepare future operations and plans. This in turn enables decisions regarding the M2 WfF to be made with sufficient lead time given the time and distance factors of the AOR and frequent reliance on the U.S. Navy and U.S. Air Force for intratheater movement. The major output of this process is the structure of the operation assessment.

Evaluating outcomes involves creating the framework of the operation assessment, which is composed of creating an assessment approach and an assessment plan. These practices are well developed in joint and U.S. Army doctrine; however, applying the DARES construct focuses the staff in conducting the additional analysis needed given the features of the INDOPACOM AOR. This in turn enables adequate decision-making involving the M2 WfF. The outputs of evaluating outcomes form the basis for the collection of data that enables decision-making, emphasized in the DARES construct as seek feedback.

Seek Feedback

During the seek feedback portion of the DARES framework, the corps executes the collection of MOPs and MOEs while building the common operating picture. This is important to how the corps fights with regards to the M2 WfF, as it enables timely decision-making and force posturing to achieve desired conditions in the AO. Each warfighting function and staff section collect MOPs and MOEs according to the assessment plan, and those efforts are coordinated and synchronized through the current operations cell with assistance from subordinate and adjacent unit liaison officers. The staff then conducts analysis of MOPs and MOEs in

respective working groups. The staff brings those outputs into the corps assessment working group. The major output of the assessment working group is the operation assessment for a given twenty-four-hour period, which highlights opportunities, risks, informs decision-making, and recommends planning priorities for branches and sequels. These outputs are then integrated into current and future operations through the corps operations synchronization meeting, where the corps operations officer approves plans and fragmentary orders. Much like other portions of the DARES framework, seeking feedback does not add new practices to doctrine but merely focuses staff efforts appropriately. This in turn enables the corps to make timely decisions regarding the posture and movement of forces for the M2 WfF.

Conclusion

I Corps focuses on movement to position forces and uses the DARES framework to focus staff analysis and supplement doctrinal tools for the M2 WfF. This helps I Corps fill requirements as INDOPACOM's operational Army headquarters. In defining the fights, I Corps clarifies the role of its headquarters, developing appropriate operational frameworks given the geographical constraints of the AOR. Through apportioning efforts, I Corps develops fights by echelon, uses COFMs to aid in the development of a kill contract, and develops convergence windows to support operations in noncontiguous battlespaces. During the resource priorities portion of the DARES framework, I Corps develops and refines the task organization, designates main and supporting efforts, and refines command and support relationships. I Corps focuses on the posturing of corps sustainment, enabling brigades, and the corps reserve during initial planning efforts to prevent culmination and facilitate timely and appropriate requests for follow-on forces. This occurs in an environment where establishing interior lines can only be accomplished through joint efforts. Development of the 8-day sketch assists the corps in visualizing and directing required movement of forces in the AOR. The evaluating outcomes portion of the DARES framework focuses staff efforts on developing the assessment approach and the assessment plan, creating the structure of the operation assessment that will enable M2 WfF decision-making during execution. Finally, in seek feedback, the corps staff collects indicators during the corps

battle rhythm, evaluates those indicators, develops the operations assessment during the assessment working group, and makes recommendations for M2 WfF decision-making and planning prioritization during key battle rhythm events.

Based on current practices, there are several areas that require action. The first is with regards to COFMs tools for the pacing threat and for the joint level. The established standard COFMs tool uses Soviet threat equipment and does not adequately address joint capabilities. The Research and Analysis Center should lead development of improved COFMs tools. Due to reliance on the U.S. Navy, U.S. Air Force, and required cooperation with the U.S. Marine Corps, I Corps requires greater integration of joint forces in command post exercises and operations in the AOR. U.S. Army Pacific should continue to assist I Corps in resourcing and synchronizing operations within INDOPACOM. The frequent archipelagic terrain in the AOR creates noncontiguous corps rear areas that typically require more than one MEB. Time-phased force deployment data and operational plans should be adjusted to account for multiple MEBs. Finally, the lack of a U.S. military multinational framework such as the North Atlantic Treaty Organization hampers interoperability with partner and ally forces in the AOR. This highlights the importance of foreign liaison officers, military personnel exchange programs, and informal military engagements like the frequent integration of 1 (AS) DIV with I Corps operations.

How I Corps fights with respect to the M2 WfF involves focusing on the movement aspect of the WfF over maneuver to posture forces. It involves shaping conditions for divisions to maneuver in the close area by using the DARES framework to focus staff analysis and supplement the operations process and integrating processes. I Corps developed this practice over years of iterations conducting operations throughout the INDOPACOM AOR with the joint force, partners, and allies. It represents a continuing evolution in the application of MDO. Sharing this practice with the force is a vital part of preparing the U.S. Army for the next fight against the pacing threat, as I Corps will likely fight along several other headquarters that will not have the luxury of years of organizational learning in the AOR. With continued vigilance on sharing best practices and integrating lessons learned, the U.S. Army, our partners, and our allies will be ready for the next fight. ∎

Notes

Epigraph. Sun Tzu, *The Art of War*, trans. Lionel Giles (Blacksburg, VA: Thrifty Books, 2009), 22.

1. Xavier Brunson and Liam Walsh, "How I Corps Fights: Pivoting to Meet Threats in the Indo-Pacific," Association of the United States Army, 19 April 2023, https://www.ausa.org/articles/how-i-corps-fights-pivoting-meet-threats-indo-pacific.

2. The White House, *Indo-Pacific Strategy of the United States* (Washington, DC: The White House, 2022), 4, https://www.whitehouse.gov/wp-content/uploads/2022/02/U.S.-Indo-Pacific-Strategy.pdf.

3. Field Manual (FM) 3-0, *Operations* (Washington, DC: U.S. Government Publishing Office [GPO], 2022), 3-2.

4. Ibid., 3-3.

5. Brunson and Walsh, "How I Corps Fights."

6. Army Doctrine Publication 3-0, *Operations* (Washington, DC: U.S. GPO, 2019), 5-3.

7. Ibid., 5-3–5-4.

8. Ibid., 5-4.

9. Regarding I Corps distributed command and control nodes (DC2N), Node 1 is focused on current operations, Node 2 is focused on future operations, and Node 3 is focused on sustainment, protection, and the rear area fight. The Home Station Operations Center, located at Joint Base Lewis-McChord, Washington, provides reach-back support to forward deployed nodes. Forward nodes are restricted in size to facilitate deployment, logistics, minimize bandwidth, and decrease signature. While nodes may focus on one time horizon or warfighting function, there is redundancy so that loss of a node does not impair command and control for I Corps.

10. FM 3-94, *Armies, Corps, and Division Operations* (Washington, DC: U.S. GPO, 2021), 4-1.

11. Wayne P. Hughes Jr., "Naval Maneuver Warfare," *Naval War College Review* 50, no. 3 (Summer 1997): 40, https://digital-commons.usnwc.edu/nwc-review/vol50/iss3/27/.

12. FM 4-0, *Sustainment* (Washington, DC: U.S. GPO, 2019), C-1–C-3.

13. Deputy Director, J-7 Joint Staff, *Commander's Handbook for Assessment Planning and Execution* (Suffolk, VA: Joint Chiefs of Staff, 2011), I-1.

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15. Ibid., 8-5.

Army University Press—New Book Releases
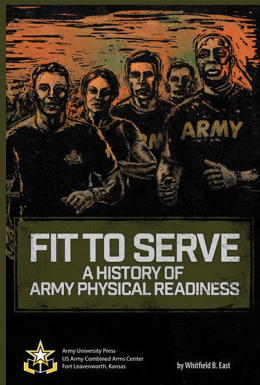
Fit to Serve: A History of Army Physical Readiness by Whitfield B. East is the second edition of an important history in U.S. Army readiness. East has provided significant revisions to the book from its original form, *A Historical Review and Analysis of Army Physical Readiness Training and Assessment*, published in 2013. Supplemental chapters provide in-depth accounts of how the U.S. Army's approach to physical readiness has evolved in the twenty-first century.

https://www.armyupress.army.mil/Portals/7/Research%20and%20Books/2024/June/Fit-To-Serve-Web-Book.pdf

Lessons Learned and Unlearned analyzes nearly a century of U.S. artillery innovation and adaptation, focusing on the pressures of incorporating new technology, applying combat experience, and assessing external threats. Indirect fire's role on the battlefield has been repeatedly reshaped by new technologies on the one hand and organizational and doctrinal changes on the other. This research examines successful and unsuccessful historical indirect-fire adaptations since the birth of indirect fire—identifying innovation themes, insights into future issues, and recommendations for more effective indirect fire.

Lessons Learned and Unlearned is available online and in hard copy.
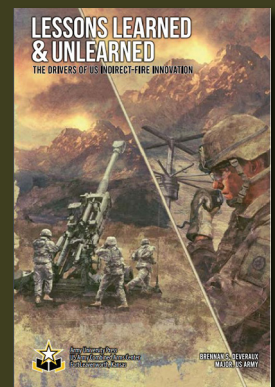
Soldiers assigned to 3rd Cavalry Regiment, "Brave Rifles," at Fort Hood (now Fort Cavazos), Texas, prepare for live-fire training 8 November 2019 during Decisive Action Rotation 20-02 at the National Training Center in Fort Irwin, California. (Photo by Spc. Kyler Chatman, U.S. Army)

The Agile U.S. Army Division in a Multidomain Environment

Col. Walt A. Reed, U.S. Army

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Published in October 2022, Field Manual (FM) 3-0, *Operations*, codified multidomain operations (MDO), maturing it from a warfighting concept into operational and tactical doctrine. It encompasses the Army's contemporary approach to conducting operations as part of the joint force in times of competition, crisis, and armed conflict (large-scale combat operations, or LSCO).[1] FM 3-0 explains, "Multidomain operations are the combined arms employment of all joint and Army capabilities to create and exploit relative advantages that achieve objectives, defeat enemy forces, and consolidate gains on behalf of joint force commanders."[2] MDO seeks to establish temporal windows of opportunity by first achieving convergence of effects across multiple domains. These opportunities are then exploited by agile formations, employing depth and operational endurance to achieve success.[3]

As the U.S. Army continues to develop tactical

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and operational warfighting skills in support of MDO, an understanding of roles and responsibilities across echelons becomes paramount. Although the lines blur in complex and ambiguous environments, foundational responsibilities will guide Army forces attempting to achieve convergence and exploit subsequent opportunities. FM 3-0 explains that effective convergence requires the integration of capabilities across echelon and the synchronization of military actions and effects appropriate to the situation. When integration and synchronization are conducted effectively, a relative advantage materializes in the form of certain conditions within a domain or across multiple domains. These advantages, relative to an adversary, present exploitable windows of opportunity.[4]

As the division becomes the U.S. Army's unit of action, it will wrestle with how to effectively integrate organic maneuver elements into the equation.[5] FM 3-0 explains that the corps is responsible for apportioning and integrating joint capabilities at the appropriate echelon in which their employment will be most effective.[6] As the corps works to integrate and synchronize joint and organic capabilities across domains, the division echelon integrates its ground scheme of maneuver in concert to exploit or expand the resulting windows of opportunity.

As such, U.S. Army divisions must cultivate agile formations, ready to rapidly exploit fleeting opportunities that materialize when convergence is achieved. Within this effort, divisions must evaluate how they plan and synchronize operations internally and externally as part of the joint force. Determining when and where to employ organic capabilities in relation to episodes of joint convergence brings an added level of complexity to the process. Furthermore, inflexible task organizations and rigid warfighting processes may limit the division's ability to respond to the fluid nature of the battlefield. Finally, commanders and staffs may have to reevaluate their roles to achieve the organizational agility that this fluid operational environment requires.

Joint Force Convergence and the Division

Division staffs face significant challenges as they seek to plan, resource, and synchronize operations to achieve a desired end state on the contemporary

battlefield. Planning challenges are not new to the division-level practitioner. Arranging actions and effects across warfighting functions (command and control, intelligence, sustainment, fires, maneuver, and protection) in time, space, and purpose requires the effective combination of operational art and science.[7] The challenge compounds during MDO.

The need for convergence in a multidomain construct acknowledges the temporal absence of

consideration when conducting operations against a peer adversary. As the joint force prioritizes requirements across domains, it must make difficult compromises about where and when to employ finite capabilities. Doctrinally, the corps is the Army echelon that secures, apportions, and integrates joint capabilities into tactical operations.[11]

In a perfect world, operations are seamlessly aligned from the joint force down to the U.S. Army

> Army Techniques Publication 5-0.1, *Army Design Methodology*, defines systems as groups of 'interacting, interrelated, and interdependent components that form a complex and unified whole.'

supremacy in certain domains that the U.S. Army once enjoyed during the Global War on Terrorism (GWOT) and requires a paradigm shift in the cognitive approach to modern warfare. A peer adversary's employment of highly capable, robust systems at scale will add complexity to the challenge. Army Techniques Publication 5-0.1, *Army Design Methodology*, defines systems as groups of "interacting, interrelated, and interdependent components that form a complex and unified whole."[8] Another definition states that "a system is a network of many variables in causal relationships to one another."[9] Effective convergence occurs when friendly forces target relationships between enemy systems through a multidomain approach that overwhelms these systems and exposes vulnerabilities.[10] Increasingly sophisticated and numerous antiaccess/area denial networks, constant surveillance, and the proliferation of autonomous and unmanned systems on the battlefield are just a few of the adversarial capabilities that require this convergence of effects to defeat. Consequently, access to the battlefield is no longer an assumption but at best exists in windows of time when effects surge or optimally align to achieve convergence.

In a LSCO environment, U.S. Army operations will often depend on the effective integration of joint capabilities and effects for these windows of opportunity. Reliance on joint partners in this environment is not a revolutionary concept, yet it requires deeper

team leader on the ground. However, finite resources and the complexities inherent in operating across five domains simultaneously will severely strain the ability of the joint force to fully synchronize its effects. As a result, subordinate elements utilize these effects in concert with organic capabilities according to their unique operational environment. A scenario in an archipelagic environment helps illuminate this point. In this environment, the corps' multidomain area of operations may be noncontiguous or nonlinear. In an island campaign, one division may be conducting a decisive offensive operation on one island (or series of islands), while another unit conducts defensive operations to consolidate gains on another island. Both may experience windows of opportunity provided by joint force effects but will have to utilize them in completely different ways.

Moreover, at the tactical level, restrictive authorities, classification levels, and a lack of understanding of capabilities add complexity to the division's planning and operations. The division warfighter may be told that "effects" are in place with limited clarity on what the effect is achieving, where it originates from, and how long it can be expected to remain. This friction may be most pronounced when windows of opportunity are generated by actions in the space and cyber domains. The division will have to rapidly gain awareness, assess risk, and then work to exploit the window of opportunity presented.

Maj. Lazaro Oliva Jr. (*center*) shows the potential effects of a tactical decision to other 1st Cavalry Division planners using the Tactical Wargaming Analysis Model on 8 November 2018 at Fort Hood (now Fort Cavazos), Texas. The Center for Army Analysis team conducted a two-day intensive seminar to train the division planners on the new wargaming model designed to improve the quality of the outcomes relating to wargaming. (Photo by Maj. Joseph Payton, U.S. Army)

Division Staff Planning and Synchronization

Divisions must develop flexible plans that can rapidly adjust appropriately to harness or optimize joint capabilities employed within the operating environment. Much like traversing the water using a sailboat, the sailor has no control over wind speed or direction and may be surprised by a large gust of wind that materializes unexpectedly. Nonetheless, the expert sailor meticulously sets the course, prepares the crew, and readies the vessel to maximize the opportunity provided by the changing conditions, aligning the sails to make use of the wind most effectively. Similarly, the division's responsibility is twofold. First, the division must identify and recognize the opportunity at hand. This is no easy task as many opportunities that arise are unforeseen.[12] Once the opportunity is identified, the division must optimize the effects employed by the joint force despite the inability to control them.

As windows of opportunity open, the division must remain flexible and adaptable to exploit and expand.

FM 3-0 uses the tenet known as "agility" to describe this requirement in a multidomain framework. "Agility is the ability to move forces and adjust their dispositions and activities more rapidly than the enemy."[13] This becomes vital as surges in joint effects become episodic, and windows of opportunity are temporal. If the division is not prepared to exploit foreseen or unforeseen opportunities, it may miss the chance to employ decisive actions on the battlefield.

Another important aspect of division-level planning and synchronization becomes crafting what organic capabilities or effects to utilize in relation to the joint force. The term "convergence" can often be misused or misunderstood. To some, convergence may imply the massing of capabilities at a specific point in time and space. However, this oversimplifies the concept, similar to the Jominian way of thought, which asserts that victory rests in an Army's ability to simply exert the mass of its force upon a decisive point on the physical battlefield.[14] Massing at a specific point may achieve

convergence, but effects can be organized to be enduring, simultaneous, or sequential as well.[15] This provides the joint force options to overwhelm enemy systems or disrupt/degrade them in detail and episodically to open windows of opportunity at the tactical level.

As such, the division has the option to employ organic capabilities alongside the joint force, creating a surge and adding depth to certain effects. Or, the division can offset organic capabilities and preserve them for periods, like consolidation, when the joint force effects may be allocated elsewhere. The division may also elect to surge simultaneous effects in certain domains while offsetting the employment of organic effects in other domains. The correct blend of simultaneous and sequential effects will result in the appropriate level of endurance and depth (see figure 1). To illuminate, the joint force may surge effects in the space domain that degrade an adversary's integrated air defense system for several hours. This enables division rotary-wing aircraft and fires, which in turn enables ground maneuver. In a compounding effort, the division may also choose to surge its own electronic warfare capabilities in conjunction with joint capabilities, rendering a specific adversarial system completely ineffective. Using simultaneous effects in this instance may produce a prolonged impact on enemy systems providing a more pronounced opportunity to exploit.

On the other hand, the division may choose to employ certain organic capabilities once a joint surge in effects is complete. Synchronizing these capabilities sequentially might allow the division to maintain freedom of maneuver or reduce risk to ground or rotary-wing elements outside of joint convergence. This may create an overall enduring effect that achieves a relative advantage appropriate to the situation.[16] Furthermore, if the adversary defeats a sufficient number of joint force effects, or if the advantage produced by those effects is short-lived relative to the division's needs, it may be prudent for the division to retain the ability to employ its own effects offset from the joint force.

To illustrate, during a joint forcible entry operation (JFEO), the division may elect to surge internal capabilities with the joint force across echelons and domains, achieve convergence, and enter an opposed environment. Following the initial stages of a joint forcible entry operation however, the joint force may need to consolidate to reengage later. This may

require Army units at the corps and division levels to use a more sequential approach when using their organic capabilities. By surging organic capabilities in an offset manner, the division may limit an adversary's opportunity to exploit episodic gaps in joint effects employed on the battlefield. The same concept may apply to a large-scale wet gap crossing, where formations will have to synchronize simultaneous and sequential effects appropriate to the situation.

The takeaway for the division is the requirement to understand the joint force effects that the corps or higher is resourcing and synchronizing. Moreover, the division has the additional responsibility to balance the risk in employing organic assets to achieve multidomain effects outside of episodic joint force support. As the first tactical warfighting echelon, the division must optimize the employment provided by joint multidomain effects, but it also must balance the risk/opportunity calculus of employing organic or internal capabilities separate from the joint force (see figure 2).

Divisions must also be ready to conduct operations outside windows of opportunity provided by the joint force. Furthermore, they must be ready and able to manage the transition between surges in joint effects and periods of joint force consolidation. Developing a "dependency" on joint convergence may result in formations unprepared for the harsh realities of contemporary war against a peer adversary. FM 3-0 states that "Army forces must be prepared to conduct operations when some or all joint capabilities are unavailable to support mission accomplishment."[17] This becomes paramount as the United States prepares to conduct LSCOs in a multidomain environment. Many factors (including adversary actions) will determine the level of joint force support, but the division must be trained and organized to transition rapidly and maximize fleeting windows of opportunity that are determined by factors outside of its control (see figure 3).

Task Organization and Force Structure Considerations

Task organization and force structure design remain an important aspect of staff planning and synchronization. Transitions on the battlefield (especially unforeseen transitions) increase risk. However, they also bring opportunities to those who can reorganize or shift priorities rapidly to seize the initiative. An agile
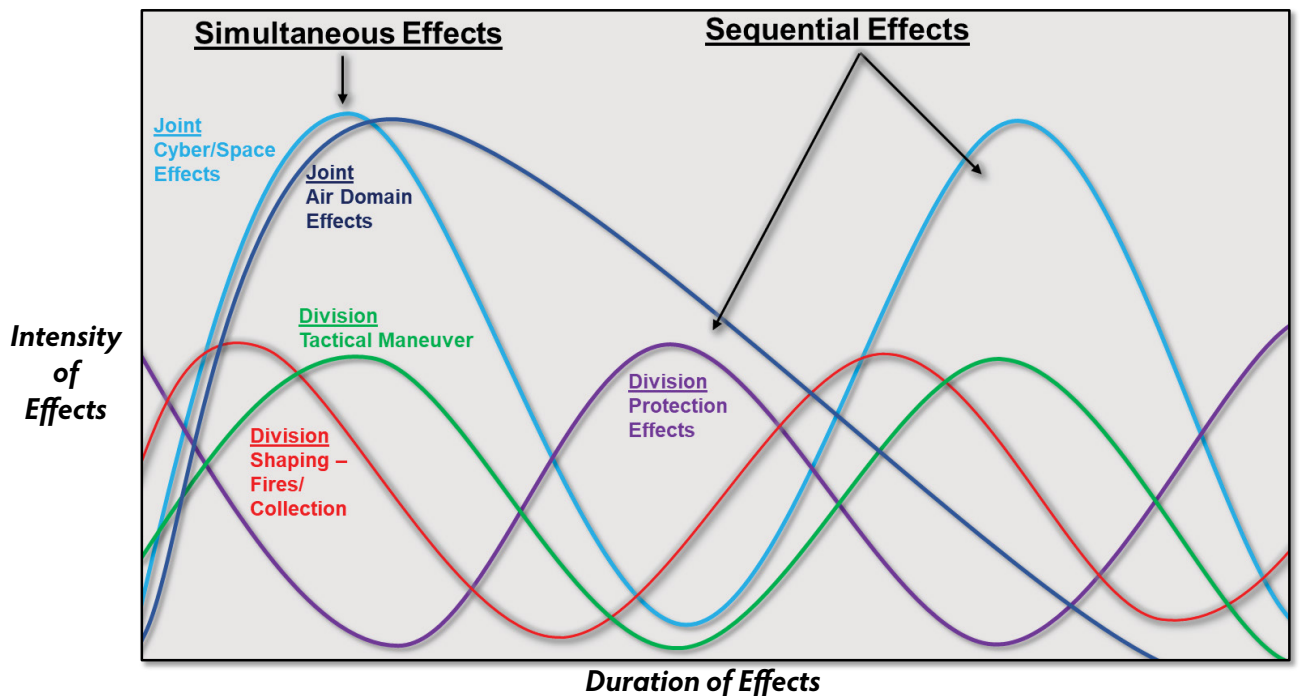
Figure 1. Division and Joint Simultaneous versus Sequential Effects
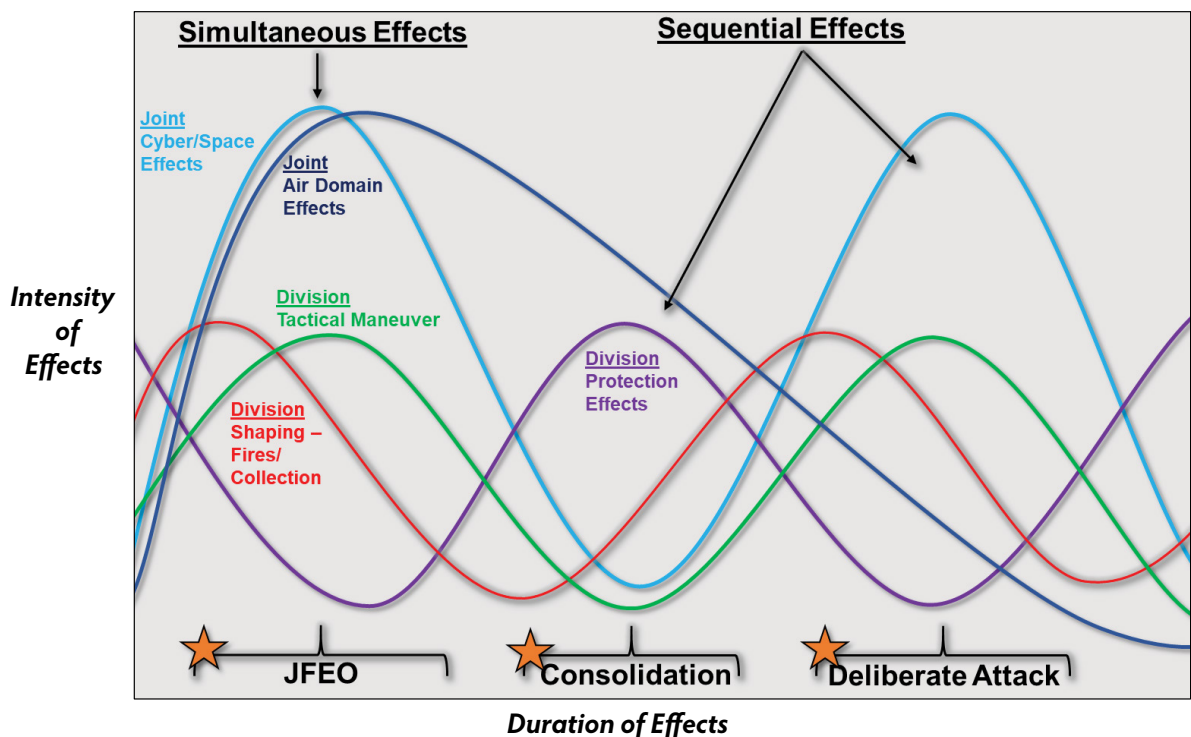
(Figure by authors)

**Figure 2. Division and Joint Simultaneous versus Sequential Effects
with Potential Battle Periods**
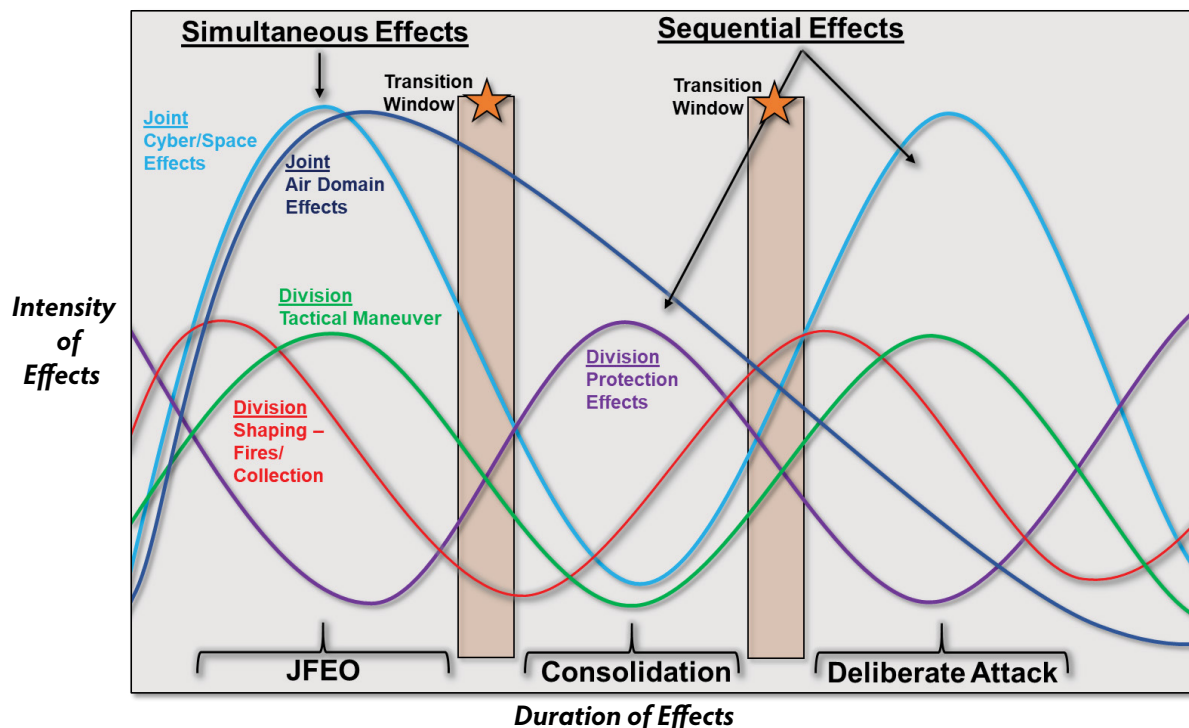
(Figure by authors)

Figure 3. Division and Joint Simultaneous versus Sequential Effects with Potential Battle Periods and Transition Windows

division builds flexible task organizations and can rapidly realign capabilities appropriate to the ever-changing environment.

Similar to a football quarterback shifting from a single back formation to a shotgun formation, Army divisions must be ready to rapidly shift units and capabilities as operations progress. Moreover, the division must be ready to adjust command relationships and rapidly disseminate the information. In certain situations, the ability to divest or reorganize capabilities rapidly may become more important than the plan itself.

Agile formations also build task organizations that can execute more than one specific operation or mission set. If an organization's task organization or force structure is only designed to accomplish one specific task, it may not have the inherent flexibility to adjust or exploit unforeseen opportunities when they arise. For example, defensive operations may present perishable windows of opportunity for counteroffensives that may disappear rapidly if an organization does not have the assets or capabilities required to exploit.

This requires division planners to develop foresight and anticipate what opportunities may materialize from joint convergence or actions on the battlefield. A flexible task organization is not a new requirement, but the challenge and importance of it has increased. Probably most important when changing task organization is the employment in certain domains of capabilities like electronic warfare, information operations, or the small but extant cyber capabilities at the division level.

Conceptual branch and sequel planning assist with this anticipation.[18] As ADP 5-0 explains, "effective plans include sufficient branches and sequels to account for the nonlinear nature of events."[19] Time often limits the planner's ability to build full branches and sequels at the division level, but that is not always the point. Purely identifying what outcomes could arise based on episodic convergence and other operational variables brings insight into potential risks and opportunities associated. These are typically best identified during course-of-action analysis or war gaming. The flexible plans that arise from this analysis drive the

division to then build a proper task organization; one that is ready to blunt certain risks and exploit potential opportunities.

Evolving Force Structure

It's important to note that building the correct task organization is likely to become more challenging for division-level practitioners in the coming years. U.S. Army leadership has now begun to label the division as the Army's "unit of action."[20] This signifies a transition from the brigade combat team (BCT), which served as the Army's unit of action during the GWOT.[21]

Much debate has ensued over which capabilities should consolidate at the division level and which should remain with the BCT. Gen. (ret.) Robert Abrams has publicly stated that removing capabilities from the BCT level may degrade the overall lethality of the organization.[22] Others assert that larger and more competent staffs at the division level enable decision-makers to better employ finite capabilities. Gen. Andrew Poppas, commander of U.S. Army Forces Command, explains, "The capacity and the capability to shape the conditions for the future fight … that's why the division as the unit of action moved up from the brigade because they've got a much greater capacity, in terms of warfighting capabilities, in their fires, their range, their visibility, every unit can't do the same thing."[23]

Despite the open debate among U.S. Army leaders, in February 2024, the Department of the Army released a white paper detailing force structure transformations to expect in the coming years. The white paper indicates several changes that can be expected at the division level. Divisions and corps should expect to receive increased air defense capabilities. These will come in the form of indirect fire protection capability battalions, counter-small unmanned aircraft system batteries, and maneuver short range air defense battalions. The white paper also calls for engineer assets to be reallocated from BCTs to the division level, providing division commanders the flexibility to concentrate these capabilities at the time and place of their choosing.[24] Finally, the plan removes cavalry squadrons from Stryker and infantry BCTs. The white paper asserts that all force structure transformation optimizes the U.S. Army's fighting formations for MDO rather than counterinsurgency operations.[25]

As stated earlier, the upcoming transformation of U.S. Army force structure brings the division new challenges when building an agile plan and task organization. The removal of engineer and reconnaissance assets at the BCT level reduces the BCT's inherent flexibility and lethality. Instead, divisions will have to apportion certain capabilities appropriate to the situation. With fewer assets and capabilities to go around, BCTs will naturally become less capable of organically exploiting opportunities that arise on the fluid battlefield. This emphasizes the need for the division to develop foresight to drive the apportionment of assets across BCTs and division-enabling brigades. Again, an archipelagic scenario illuminates the importance of these decisions. In a nonlinear fight across island chains, the limited organic mobility of assets at all echelons and reliance on the joint force for maritime security will severely challenge the division's ability to realign assets. BCTs may have to operate with the capabilities that are assigned to them for extended time periods.

Effective foresight and anticipation also inform which assets should be held at the division ready to surge at a critical time and place. Establishing systems, processes, triggers, etc. to enable the rapid realignment of exquisite assets and capabilities becomes critical on a fluid battlefield. This allows the division to rapidly reorganize to seize fleeting or perishable opportunities (foreseen and unforeseen). It also enables the division to execute transitions more effectively in relation to its adversary.

Warfighting Systems and Processes

As the division seeks to optimize agility, it should consider risks and opportunities associated with traditional warfighting processes. Rigid battle rhythms may increase internal synchronization but may also result in an organization that is less able to adapt in a timely manner. A chaotic and fluid operating environment may require the division to become more comfortable outside of a traditional twenty-four-hour battle rhythm. This may also require warfighting systems and processes to be more commander driven than the tactical echelon has grown accustomed to.

The average battle rhythm includes countless meetings or engagements across all warfighting functions. Again, these events improve synchronization across the force, but they build a system that may not be adequately responsive during LSCO. For example, the

traditional division targeting process may prove to be too slow in a conflict with a peer adversary. Planning fires for the next ninety-six hours in the targeting working group and then gaining approval from a commander in the decision board takes a considerable amount of time and energy across the staff. By the time the day's actions are complete, the environment may have utterly changed. Due to changing conditions on the battlefield, the group of sleepy-eyed staff officers

commanders trading synchronization for adaptability and survivability.

Commander Role during LSCO

For division-level operations to become more dynamic, commanders across tactical formations may need to become more involved in certain operational aspects than they grew accustomed to during the GWOT. The linear process of conducting analysis and

> "The dilemma exists across all warfighting functions, where meetings and engagements in the name of synchronization may hinder the division's responsiveness to changing conditions on the battlefield.

may now have to rapidly plan fires for defensive operations rather than offensive as previously expected.

This is not to say that the current targeting process does not work, only that it may not keep pace in a LSCO environment over time. The dilemma exists across all warfighting functions, where meetings and engagements in the name of synchronization may hinder the division's responsiveness to changing conditions on the battlefield.[26] Instead, developing systems and processes that enable dynamic action and decision-making may be necessary. Moreover, identifying time-sensitive ways of achieving an appropriate level of synchronization should be explored. This may translate to combining events to the essential few or increased presence from all warfighting functions at critical synchronization meetings where actionable guidance is provided by the commander and decision-makers.[27]

This discussion centers around risk acceptance during LSCO. Methodical and somewhat rigid processes reduce the risk of operations becoming desynchronized in time and space. However, the challenge on the modern battlefield is that these time-intensive processes incur additional risk by being predictable and resource intensive. These predictable meetings may develop signature emission patterns through physical presence or in the electromagnetic spectrum. Becoming more agile must be accompanied by some level of risk acceptance by

bringing several options to the commander for decision works when time is set aside in a controlled environment. However, once LSCO begins, the fluid nature of the battlefield may require commanders to be present for more "storming," or for lack of a better term, "sausage making," than has traditionally been accepted. This will allow them to provide immediate guidance and direction, likely saving vast amounts of time, energy, and bandwidth within their respective staffs and subordinate elements. Moreover, it may require commanders to become more active in current operations, ready to read the battle and make timely decisions for their respective organizations.

In a 1995 letter, Col. John P. Abizaid (an outgoing brigade commander at the Joint Readiness Training Center) addresses Lt. Gen. (ret.) Frederic J. Brown discussing a similar topic. Abizaid critiques that the Army of the 1990s had developed an obsession with planning and product production. Much of this was due to a lack of commander experience in a fluid operating environment.[28] "Most commanders do not know how to 'read the battle.' This is perhaps why staffs work so hard. Staffs work hard to solve their commander's inability to read the enemy, terrain, and friendly forces."[29] Abizaid goes on to discuss methods he used at the Joint Readiness Training Center to train commanders to be more comfortable operating in a fluid maneuver fight. Forbidding certain fighting product production

and encouraging active commander-to-commander dialogue are included in his approach to remedying the problem.[30] Moreover, Abizaid preached that deliberate repetition and training for commanders is vital.

The reference to Abizaid's letter is not meant to be an indictment of commanders in the contemporary U.S. Army. However, it does illuminate enduring challenges that tactical formations are likely to face in a fluid operating environment. It's worth noting that chaotic and fluid environments may require formations to reframe the roles that staffs and commanders play. Ultimately, tactical formations may need commanders to become more involved in planning and current operations during LSCO. This can save or better direct staff energy and will likely make the organization more responsive to the ever-changing conditions on the battlefield. Certainly, rapid decision-making can at times disrupt synchronization. However, time-intensive planning methods and battle rhythms quickly become irrelevant if staffs and commanders cannot keep pace with the environment.

Although commander involvement may increase agility, it does not dismiss the need for divisions to embrace a mission command culture when conducting MDO.[31] It's become clear that the adoption of mission command has been a significant contributor to Ukraine's success against Russian forces. At the tactical level, hierarchical Russian units that stifle initiative and creativity struggle to combat Ukrainian forces who are given agency and liberal decision-making authorities.[32]

However, mission command cannot simply be turned off or on based on the situation. It's a culture that the U.S. Army must fully embrace.[33] Empowering leaders and staffs builds trust in an organization and increases responsiveness and agility to the environment. ADP 6-0, *Mission Command*, explains, "No plan can account for every possibility, and most plans must change rapidly during execution to account for changes in the situation."[34] In the commander's absence, subordinate commanders and staff members must be empowered to exercise disciplined initiative in planning and operations.[35] The desire to control the chaos of war and impose order on the battlefield continues to be futile.[36] Chance alterations to the operational environment will force subordinates to make opportune decisions that are unforeseen in time and space.

The Way Ahead

The division must train as it fights. There is no substitute for division-level operations in the dirt. Shaping, synchronizing, and sustaining LSCO allows the division to experience the fluid nature of war in a multidomain environment. Consequently, the division then gains the opportunity to refine its systems, processes, and culture to optimize agility on the battlefield. Furthermore, these situations force the division to deal with complex problems sets in a combined and joint environment.

The Joint Pacific Multinational Readiness Center enables division headquarters to command and control joint and combined operations.[37] During these exercises, division headquarters serves as the higher command for every rotation. In this position, the division works closely with the Joint Pacific Multinational Readiness Center and its higher headquarters to develop, refine, and execute training across terrain that realistically replicates an area of responsibility while integrating joint capabilities.

Now U.S. Army Forces Command is following suit. The U.S. Army is making strides by beginning to deploy division headquarters to provide command and control for brigade combat teams at combat training center (CTC) rotations. Gen. Andrew Poppas explains that he is focusing on training divisions at CTC rotations "because we know that if that's the unit of action, then they've got to be at a level of competency and proficiency to support and set conditions for these lower echelons."[38] Poppas rightly concludes that there's no better instructor than experience. "You can read about it, but until you see them [space and cyber capabilities] in real life and you synchronize them in the fight in time and space, then you're not going to be effective. That's what that training does and that's what we're bringing to bear."[39] The bottom line is every CTC rotation that does not leverage a division headquarters is an opportunity lost.

Most importantly, deploying a division headquarters to a CTC rotation provides the organization a realistic training repetition to establish its tactical communications architecture up, down, and across the fighting force. This becomes paramount as the U.S. Army seeks to establish redundant communications and a common operating picture across the joint and combined force to enable interoperability. To be frank, all warfighting systems and processes become irrelevant if the division cannot talk internally and externally. This becomes

increasingly challenging when barriers to information sharing often stand in the way.[40]

Transitioning communications to a secure but unclassified-encrypted network is the answer according to Maj. Gen. Anthony Potts, program executive officer for Command, Control, Communications-Tactical. Potts explains, "We will never fight alone, so it's imperative that we find ways to communicate with our partners."[41] This new network service is used in experimentation across the U.S. Army, and initial feedback indicates that the demand is rapidly increasing.[42] Nevertheless, experimenting with a secure but unclassified-encrypted enclave at scale during CTC rotations is crucial to validate its effectiveness across the joint and combined force.

Concluding Thoughts

The world feels chaotic and the future is uncertain. The land war in Europe and ongoing instability in the Middle East are quickly breeding a sense of urgency in the West. All the while, allies and partners in the Indo-Pacific have made significant strides in standing up to China's coercive actions. However, an economically weaker, diplomatically isolated, and demographically challenged China may prove to make the region less stable in the future. As policymakers wrestle with how to manage the global geopolitical environment, the U.S. Army readies itself to deploy, fight, and win in a multidomain environment against a peer adversary.

As the U.S. Army's unit of action, which seeks to identify, exploit, and expand fleeting opportunities during LSCO, divisions must maintain a flexible and ready posture at all times. Joint convergence may become difficult to predict or control. This requires the division to deliberately foster an agile culture within its formation, one that develops warfighting systems and processes that enable rapid transitions and the synchronization of operations. Considerations in flexible planning, task organization, and the empowerment of subordinate commanders and staffs are essential. Additionally, commanders may need to become more comfortable actively planning with the team while preparing to "read the battle" and make timely decisions in a chaotic environment.

In an effort to ready itself and attain an agile culture, the division must seek out opportunities to practice LSCO in realistic conditions (such as CTC rotations). Realistic conditions will drive the need for agility and enable the division to work through the complexity of synchronizing operations with the combined and joint force in multiple domains.

Commanders and staffs must embrace the fluid nature of maneuver warfare. Joint effects will almost certainly be episodic, leaving U.S. Army forces with only organic capabilities for certain periods of time. The division's ability to synchronize operations in concert with joint convergence and maintain the initiative during periods of joint consolidation becomes essential. Furthermore, the ability to rapidly and effectively transition between the two may be the deciding factor on the future battlefield. ■

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French soldiers move from their trench to attack during the Battle of Verdun circa 1916 in France. (Photo courtesy of Wikimedia Commons)

On Attrition

An Ontology for Warfare

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Let's hit a reset, please. Attrition is perhaps one of the most misunderstood and abused ideas in contemporary military thinking. Policymakers, military practitioners, and theorists often use and abuse a slew of pejoratives to undercut attrition.[1] This phenomenon is a byproduct of 1980s and 1990s writing, which advocated nonattritionalist forms of warfare that appeared to be better aligned to advancing the U.S. Army's AirLand Battle doctrine, Marine Corps Warfighting doctrine, and supporting the all-volunteer force. The writing and doctrine from this period influenced a generation of military practitioners who are today's senior military leaders and policymakers within the Department of Defense, the U.S. government, and many of the United States' political-military partners.[2] Many of the assertions made at the time were unscientific, ahistorical, and proffered to generate and maintain consensus for AirLand Battle, yet they continue to

resonate deeply with the generation nurtured on those sentiments.

Authors such as William Lind assert that attrition is a form of warfare.[3] According to Lind, attrition warfare uses firepower at the expense of movement to reduce an enemy combatant's numbers. Lind and his coterie of associates further suggest that other types of warfare use firepower and movement to create unexpected and dangerous situations for an adversary.[4] Edward Luttwak takes an almost identical position, writing that "an attrition style of war" creates an embellished reliance on firepower at the cost of more movement-centric styles of war.[5] In the often cited but flawed *Race to the Swift: Thoughts on Twenty-First Century Warfare*, Richard Simpkin places maneuver and attrition in a suspended position of contrast—casting each of theories as the opposite of the other and asserting that the former is far superior to the latter.[6]

The commenters of this period thus assert that a dichotomy exists: military forces either use destruction-centric or movement-centric approaches to warfare. Within this dichotomy, movement-centric approaches are high-minded and the zenith of military art, whereas destruction-centric approaches reflect a military force's depravity of mind and practice in the military arts.[7]

The problem with these assertions, however, is that the pragmatic coupling of movement and firepower applies to almost every conceivable type of warfare. This accounts for whether a force is firing to move or if they are moving to fire. One would be hard pressed to find a quality theorist or military (state or otherwise) that does not have the combination of movement, firepower, and surprise at the heart of their approaches to warfare.

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Moreover, many of the antiattrition pejoratives are built on strawmen to advance false information about attrition. As a result, attrition serves as a strawman for policymakers, military practitioners, and theorists to advance self-interested bias and institutional narratives about both war and warfare. What's more, ad hominem is also used to undercut the authority of the individuals who advocate for the usefulness and necessity of destruction-based warfighting in armed conflict. Some of the antiattritionists' comments include referring to those who support destruction-oriented warfare as "attritionists" or even going so far to suggest these so-called attritionists "don't get it."[8]

Nevertheless, the other side of this discussion finds a handful of contemporary scholars, analysts, and practitioners doing yeoman's work to bridge the gap between the concept's true utility with the animosity and institutional recalcitrance with the concept. These individuals are seeking to reset the discussion and set the record straight on attrition while chipping away the calcified misinformation surrounding the concept. Jack Watling has correctly posited, "All warfare is attritional."[9] Michael Kofman states that attrition, as a matter of historical record, is the common way in which wars are waged.[10] In his seminal research project on success in war, *The Allure of Battle: A History of How Wars are Won and Lost*, historian Cathal Nolan writes that states are victorious in war as a result of long, bloody, attritional affairs.[11] Chris Tuck asserts that attrition can be (and is) purposeful because it creates situational and temporal windows of opportunity that pragmatic mobile forces can exploit.[12] Franz-Stefan Gady and Kofman write that attrition is a useful tool when the situation—that is, the disposition, resource availability, time available, among other variables—does not allow a military force to conduct flanking operations or mobile strikes toward an adversary's rear area.[13] Moreover, Anthony King asserts that destruction-based warfare is all but essential in areas of restrictive terrain, to include urban operating environments.[14] In addition, Mikael Weissman builds upon the ideas of King, correctly pointing out that urban areas continue to grow, and therefore, the potential for destruction-oriented fighting in urban areas will increase as we collectively move forward in time.[15]

This article examines five of the most prevalent elements of misinformation about attrition: attrition is a form of warfare, attrition is a correlation of forces

and means (COFMs) battle, attrition is focused on a one-to-one exchange ratio between adversaries, attrition abuses one's own logistics, and attrition is a lesser form of warfare. In examining these misunderstandings about attrition, this article provides three major findings.

First, attrition is not a form of warfare but a characterization of conflict in which one or more adversaries make the pragmatic employment of destruction-based tactics and operations to create or take advantage of tactical and strategic opportunities on the battlefield. What's more, it is time to progress past the use of the word "attrition" and the use of the phrase "attrition warfare." In its place, the defense and security studies community would benefit from identifying exhaustion and force-oriented approaches to warfare as destruction-based approaches. To make this point, this article uses this phrase, "destruction-based approaches," as a substitute for attrition warfare. Further, it is important to remember that destruction-based warfare is not movement agnostic. Rather, destruction-based approaches are fundamentally grounded in the combination of movement to enable firepower.

Furthermore, one form of warfare does not carry an inherent advantage over another. Rather, forms of warfare organically evolve to the situational requirements. As a result, a form of warfare's value resides in its ability to best address the military situation at hand and to not adhere to a state military's preferred doctrine.

Moreover, the forms of warfare, as a rule, correspond to three factors. First, the forms of warfare reflect a state or nonstate actor's military goals. If the goal is removing a hostile force from the sovereign territory of another state—like we see with Russia's invasion of Ukraine—then destruction-based warfare is required to push the hostile army out of their neighbor's sovereign territory. On the other side of the coin, if a combatant's goal is a dash to take control of another combatant's capital, then a more movement-centric approach to warfare is required.

Second, the battlefield's situation influences the type of warfare a combatant might employ. A situation can be defined many ways, but in this case a situation includes the physical terrain in which the conflict is occurring, the location of all forces—regular and irregular—throughout the theater of war, the availability of time, and the military objective. A combatant's choice on how they want to fight withers away when weighed against the situation at hand. Thus, the situation has a deterministic effect on campaigns and operations, and subsequently, the tactics therein.

Third, the forms of warfare are reflective of a state's tools of war. A state military heavily invested in a reconnaissance-strike complex and mechanized forces will tend toward a firepower and destruction-based approach to warfighting more so than a state military that cannot support a robust strike and mechanized force. Likewise, nonstate actors tend to operate not so much on firepower and destruction but on movement and making the best use of position.

Defining Attrition

Trevor Dupuy provides one of the most useful and unbiased examinations of attrition. As a result of his discerning assessment, Dupuy's definition is used as the baseline for what is and is not attrition within this article.

Dupuy writes, "Attrition is a reduction in the number of personnel, weapons, and equipment in a military unit, organization, or force."[16] Dupuy continues, defining attrition as "the difference between losses and returns to duty." Dupuy does not define attrition as a form of war, but rather, he defines attrition as a result of combat, and therefore as a characterization of warfare in which destruction is the currency and wars focused on exhausting an adversary by increasing the material costs of war beyond what the adversary can sustain.[17] Further, he states that enemy action and accidents are the primary methods through which attrition materializes.

Building on Dupuy's analytical frame, more recent literature describes attrition as a state of being—or put another way, attrition is a characterization and not a form of warfare.[18] The characterization of attrition can be applied situationally, or generally. For instance, an analyst can describe two tactical forces engaged in destruction-based fighting as a battle of attrition. This term can also apply if one side is using destruction-based methods against their adversary, but not putting their force in situations that allow for a comparable destruction-based approach from their opponent. Further, a combatant might use a destruction-based method combined with the pragmatic use of terrain, force disposition within the terrain, and timing to avoid having their own force attritted while inflicting high degrees of destruction on their adversary. This dynamic—the operational and tactical

Soviet troops on the Belorussian front take a short respite after fighting in Stalingrad during World War II. (Photo courtesy of RIA Novosti via Wikimedia Commons)

interplay between a force's location on the battlefield, firepower, and movement—is positional warfare.[19]

Nonetheless, Tuck notes that some situations require headlong fighting in which both adversarial forces have no recourse, nor method of escape from battering combat.[20] In these instances, in which both forces are engaged in methodical destruction-based warfighting like the international community witnessed in the latter phase of Operation Inherent Resolve's siege of Mosul, the watchful onlooker can classify this dynamic as a battle of attrition.[21] When combined with the similar dynamic that occurred during the 2015–2016 battle of Ramadi, this campaign can be defined as a war of attrition.[22]

In a conflict in which the entire theater is engulfed in destruction-based warfighting, the war itself can be defined as a war of attrition. Wars of attrition, as Nolan and other scholars remind us, are the womb in which military victory develops.

Examining Attrition's Detractions

The argument that attrition is not a form of warfare but rather a characterization of conflict threads throughout the five assertions:

- Attrition is a form of warfare.
- Attrition is a COFMs battle.
- Attrition is focused on a one-to-one exchange ratio between combatants.
- Attrition abuses one's own logistics.
- Attrition is a lesser form of warfare.

Assertion 1: Attrition is a form of warfare. Many individuals engaged in the defense-and-security studies space community imply that attrition is a form, or method, of warfare. This cannot be further from the truth. In a military thinking sense, a "form," "method," or "type" implies that the subject possesses a cohered body of knowledge and a set of operations and tactics. These ideas—the body of knowledge and operations

and tactics—might be institutionally developed and maintained, or organically developed by a theorist working outside the confines of an institution. These ideas might be codified as strategy, concepts, or doctrine if maintained by an institution such as a Western military force. On the other hand, these ideas might be codified as theory if they are maintained by scholars, analysts, or theorists.

Nevertheless, an exhaustive examination of open-source Western military strategy, doctrine, and concepts fails to identify any coherent articulation of attrition warfare. That is, none of these institutions possess any semblance of a strategy of attrition, an attritional operating concept, nor a doctrinal framework for attrition warfare and its associated tactics. The U.S. Army's Field Manual 3-0, *Operations,* and the British Army's *Land Operations* doctrine are instructive to this point. Field Manual 3-0 provides only one mention of attrition, and when it does, the purpose is, ironically enough, to assert that attrition is required to achieve victory in armed conflict.[23] The British Army's operations doctrine parallels the U.S. Army's absence of a cohered attrition warfare body of knowledge.[24]

Frontal attacks are the closest thing one might find pertaining to attritional tactics in U.S. Army doctrine. Yet, it is important to take a frontal attack in context to the larger picture. Frontal attacks are often not the sole operation or tactic employed in a specific situation but are a component of a larger operation that seeks to enable, collapse, or destroy an adversary through the combination of firepower and movement. Combatants use frontal attacks to eliminate an adversary's ability to move and to hold them in place, making them prone to encirclement or destruction. Regrettably, Western military doctrine tends to describe frontal attacks as

"costly" but fails to elaborate on their usefulness in a wide view.

Given the absence in Western military doctrine, as well as defense and security studies or international relations scholarship regarding attrition warfare, one must surmise that the word attrition is describing an environment in which destruction is the currency of conflict and not a form, style, or type of warfare.

In other publications, scholars have provided an alternative framework for defining the mechanics of armed conflict.[25] In this framework for warfare (see figure 1), movement serves as the X axis and contact serves as the Y axis. Contact (i.e., direct engagement with an adversary) is rated from heavy to light. Movement (i.e., the ability to use movement more than firepower) is

A Ukrainian soldier in a trench 26 November 2022 at the Battle of Bakhmut. (Photo courtesy of the Ministry of Defense of Ukraine via Wikimedia Commons)

Positional Warfare

Low Contact

Maneuver Warfare

Attrition

≥ 51% movement; ≤ 49% destruction

Entrapment Warfare

Roving Warfare

Mobile Warfare

≥ 51% movement; ≤ 49% movement

Methodical Warfare

Contact (Destruction-Based Fighting)

High Contact

Attrition
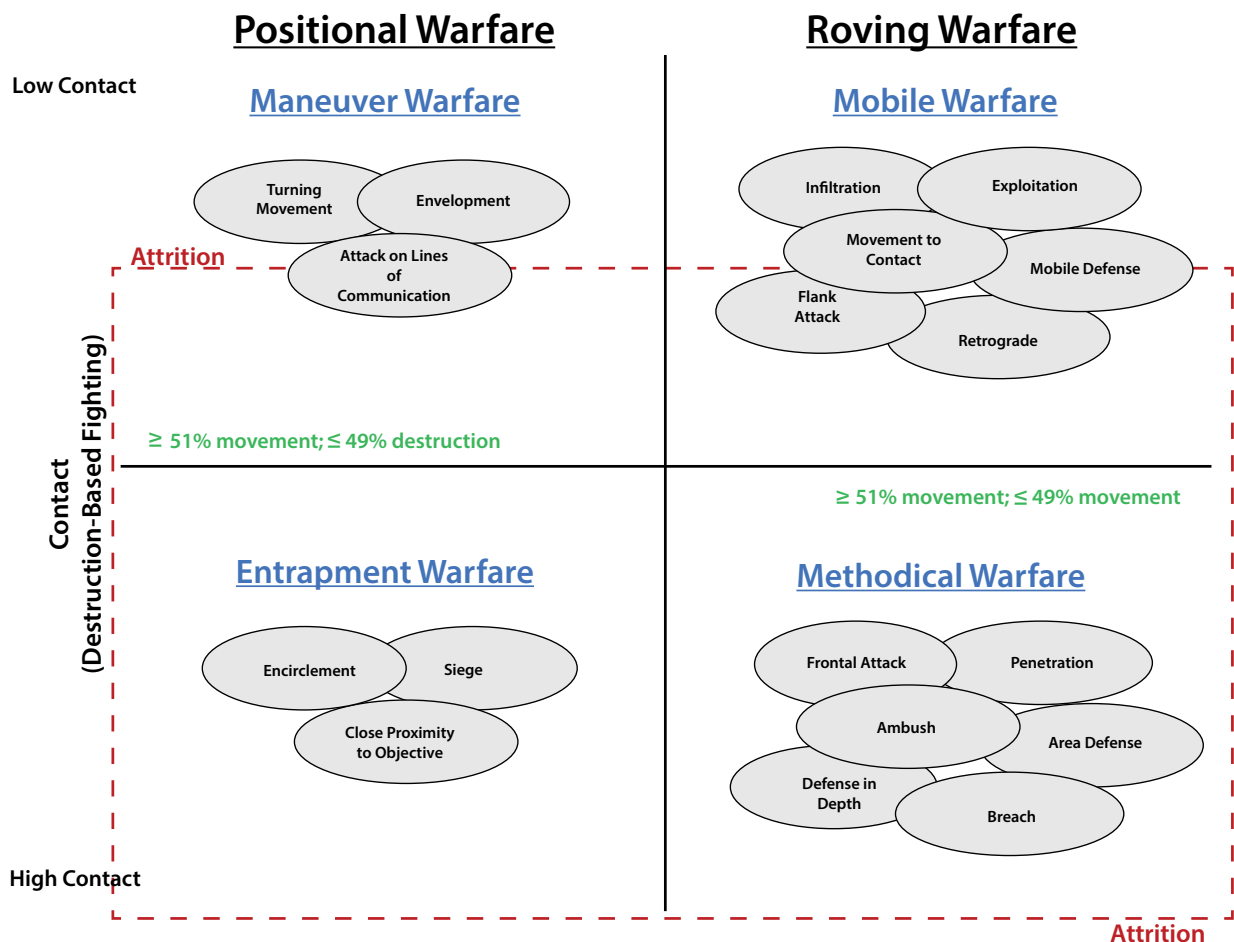
(Figure by author)

Figure 1. Framework for Warfare

also rated from heavy to light. The process of comparing movement and contact, from heavy to light along each of those variables, yields two primary forms of warfare—positional and roving warfare. Two subordinate forms of warfare exist beneath positional and roving warfare. Attrition, for its part, is not a form of warfare. Rather, attrition is a descriptor—it's used to highlight armed conflicts, campaigns, battles, or engagements in which destruction-based warfighting is high and at least one side in the conflict is inflicting significant casualties on the other.

Further, a large amount of literature on the forms of warfare suggests that the goal of attrition warfare is to wear an opponent down and outlast them on the battlefield.[26] The problem here is that is a goal, not a method of warfare. Semantics aside, differentiation is important. The goal of outlasting an adversary while preserving

one's own combat power is inherent to any actor operating in a competitive environment.[27]

Accepting that attrition is an adjective and not a noun, and thus moving forward with a more detailed framework for warfare might well help kickstart the much-needed reset.

Assertion 2: Attrition is a COFMs battle. Dupuy finds that "there is no direct relationship between force ratios and attrition rates."[28] Dupuy states many factors influence attrition rates to include weather, physical terrain, a force's location, and relative combat effectiveness. Dupuy adds that the combination of variables, not one specific variable, influence attrition rates. He concludes that neither personnel strength nor force strength ratios impact attrition rates in a meaningful way. Based on Dupuy's analysis, it is safe to say that attrition is not a COFMs battle.

Moreover, Wayne Hughes writes that destruction-oriented warfare is vital to suppressing a combatant, which in turn creates more situational opportunities for mobile exploitation.[29] That is, attrition creates many opportunities for deft military commanders to exploit.[30]

Nonetheless, no compelling or empirical scholarship has emerged to refute Dupuy or Hughes's research. Further, Dupuy's use of attrition in relation to a rate implies its descriptive (i.e., adjectival) nature and not a form, method, or style (i.e., noun). Considering this article's first assertion in relation to Dupuy's proposition, it is safe to say that attrition is not a COFMs battle, but rather a descriptive term used to describe destruction-oriented warfare.

Assertion 3: Attrition is focused on a one-to-one exchange ratio between combatants. This assertion is incorrect on multiple grounds. First, if attrition is a characterization of conflict and not actually a method of warfighting, then this assertion's premise is null.

Second, the "one-for-one exchange ratio" assertion is a simplistic strawman used by attrition's detractors to obviate any discussion of the subject. Attempting to out-destroy an adversary does not also allow for a reciprocal amount of destruction to one's own forces—these two things (i.e., out-destroying an opponent and allowing for one's own force to be destroyed) are not synonymous with one another, which is what the one-for-one exchange ratio explicitly asserts. The problem with this strawman is that it is illogical. To be sure, this pseudologic does not view each combatant as a self-interested, self-organizing combatant who attempts to learn from its environment and adjust its behavior in pursuit of survival and winning. A more appropriate logic—one that shows deference to the cognitive ability of all combatants to operate in self-interested ways—asserts that an activity or action in war oriented against an adversary does not require having the same activity or action levied against oneself. For example, if combatant A destroys combatant B's field army, combatant A will do so insofar as doing so does not cause it to also destroy its own field army.

Nonetheless, to continue dissecting assertion 3, let's assume for a moment that attrition is a form of warfare. Let's assume two combatants, both of whom are industrialized states, are engaged in armed conflict. A degree of parity exists between both combatants; neither combatant A nor combatant B possess a significant advantage over the other in terms of the elements of national power or combat power. Both combatants operate on the logic of systems theory (i.e., their first goal is survival, and their second goal is victory), they are both rational actors (i.e., they each operate with their self-interest at the fore but will not sacrifice their survival for self-interest), and they both adhere to economic decision-making, which includes avoiding large-scale troop deployments and the wanton use of their forces. Viewed collectively, these ideas form the causal mechanism that dictates a military force's form of warfare (see figure 2).

Combatant B is combatant A's adjacent territorial neighbor. Combatant B has invaded combatant A's territory, and it is occupying one-sixth of combatant A's territory with a large joint force made primarily of a large land army. Diplomacy is at a dead end. Military options, at least for the time being, are combatant A's only recourse to its geopolitical problem.

Militarily, combatant A has a more open command system in which senior leadership empowers its junior leadership to make on-the-spot decisions. This ethos permeates throughout combatant A's military force. Combatant B, on the other hand, has a closed command system in which decision-making is hierarchical. As a result, combatant B operates a command system that is slower, less informed, and less responsive to a current tactical or operational situation than combatant A's.

Combatant A wants to use a destruction-based approach to fighting and defeating combatant B. Combatant A wants to fight this way because the existence of combatant B's military force is the object of combatant A's military strategy and the primary challenge that its policymakers must address. Thus, combatant A assumes that the physical destruction of combatant B's land force will trigger combatant B's policymakers to change their state's policy and end the conflict posthaste. Moreover, it is also wise to assume that combatant B will call for a negotiated end to the conflict at a point far removed from the outright destruction of their land army. Therefore, combatant A is correct to assume that a destruction-based approach is best for addressing combatant B.

Yet, combatant A's caveats—avoid large-scale troop deployments and the wanton loss of one's forces and equipment—means that they are not interested in using bad operations or poor tactics. Bad in this case means methods of warfare that increase their own casualties.
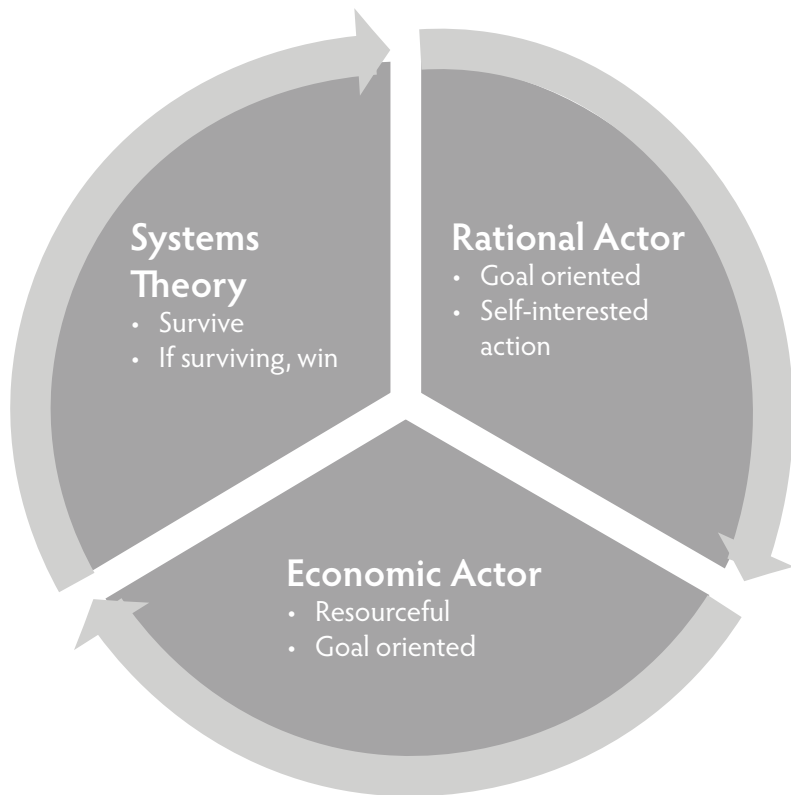
Figure 2. Causal Mechanisms for a Specific Form of Warfare

Combatant A's true military interest is in destroying as much of combatant B's military force as possible, in the shortest amount of time feasible, while protecting its own force and preventing its destruction.

As a result, combatant A's operations and tactics will be a blend of movement, striking (i.e., attacking), and protection that best delivers a destructive effect on combatant B while preserving its own force. Preserving one's own force is the important thing to remember here. Any rational and economically minded combatant will operate, to its best ability, in a self-preserving way, while striving to achieve its military objectives.

History does nonetheless provide a few instances in which a state's military was forced into situations in which it was in a relative reciprocal scenario with its adversary. World War II's eastern front, for instance, provides many examples in which exchange rates between the Soviet Union's armed forces and those of Nazi Germany were relatively equal.[31] This was more the result of situational factors than preferential methods.

Russia's activity during the battles of Mariupol and Bakhmut is instructive. In each battle, Russia attempted to offset the loss of its own state military forces by increasing its reliance on proxy forces. These proxies included the Donetsk People's Army, the Luhansk People's Army, and the Wagner Group.[32]

Nevertheless, one would have to eliminate one or more of warfighting's causal mechanisms (figure 2) to assume that combatant A or B would willingly engage in combat that allowed for a one-for-one exchange rate. At the same time, one would have to assume that a combatant is irrational if it were to remove one or more of the elements of causality. Causality aside, it is dishonest to assume that a state military would intentionally operate in an irrational manner, and this is assertion 3's most egregious leap of logic. States and their militaries do not operate illogically. At least not intentionally.

Assertion 4: Attrition abuses one's own logistics. Building on the three previous assertions, it is easy to understand that most logistics concerns regarding attrition are unwarranted and overinflated. The abuse of logistics argument only stands on merit if one assumes that the combatant using destruction-based warfare is an irrational actor. Yet, we have already established that states and their militaries operate rationally and economically, according to the determinism of systems theory. To squander one's personnel and equipment through haphazard military operations would be the acme of irrational action. To be sure, the combatant would have to have to set aside the prospect of long-term survival, both of the state and its military, to prioritize short-term winning. That is not likely to happen, and states will likely modify their behavior and objectives to achieve balance within their own balancing of systems theory, rationality, and economic thinking.

Assertion 5: Attrition is a lesser form of warfare. Many of the strawmen provided by the late 1970s-, 1980s-, and 1990s-era theorists continue to erode clear thinking about attrition. Writing in 1979, Edward Luttwak disparages attrition as a firepower-centric

A Russian tank burns in a field on 5 November 2023 near the town of Vuhledar in the Donetsk region of Ukraine. (Photo courtesy of the General Staff of the Armed Forces of Ukraine)

warfare that is out of step with the direction the United States and NATO should be headed.[33] Luttwak writes,

> We all know what attrition is. It is war in the administrative manner, of Eisenhower rather than Patton, in which the important command decisions are in fact logistic decisions. The enemy is treated as a mere inventory of targets and warfare is a matter of mustering superior resources to destroy his forces by sheer firepower and weight of materiel.[34]

Luttwak offers that more movement-oriented forms of warfare are better than firepower-based forms of warfare.[35] Luttwak provides this opinion without providing empirical evidence to support his argument. Further, he asserts that Western militaries would be best served using an alternative, movement-centric form of warfare rather than the laborious and synchronized attritional style.[36]

In the mid-1980s, William Lind emerged on the scene as another attrition detractor. Lind decries attrition as a slow, ponderous approach to warfare that places synchronization, timing, and centralized command and control ahead of responsiveness and surprise.[37] Writing

in the early 1990s, John Antal states that armies that adopt an attritional style of warfighting emphasize firepower ahead of movement, and that by doing so, attrition-oriented armies are less capable of inflicting cognitive paralysis on an adversary and winning in a more cost-effective manner.[38] Lind, Antal, and Luttwak's theses, in addition to promoting institutional recalcitrance toward the concept's utility, remain today's static that interferes with a clear picture about destruction-oriented warfare.[39]

Many of the points made by individuals such as Luttwak, Lind, and Antal do not stand up to analytical rigor. The empirical work of Hughes, for instance, finds that firepower and destruction are quintessential elements of battlefield victory.[40] Moreover, terrain, more so than anything, dictates the speed at which a combatant operates. Terrain further defines whether a military operation or tactical engagement is a headlong clash of forces, or if one combatant can flank the other combatant and reach the rear of their formation. Terrain, when combined with an adversary's actions, further complicates matters. An adversary in open

terrain might contract into restrictive terrain, such as mountains, dense woods, and urban areas to offset the advantages of a mobile adversary who possesses fire and combat power overmatch.

A combatant's training proficiency is also another factor that determines the swiftness of a combatant's combat operations. To this point, it is also important to convey that combat losses over time change an army. Kofman notes that as a conflict elongates over time, the original, highly trained army of regulars tends to be replaced by hastily trained conscripts.[41] As a result, the combatants both become less adept at synchronized combined arms warfare, and thus, sequential combined arms warfare overtakes the former. It is therefore disingenuous to assert that attrition is a lesser form of warfare. Instead, destruction-oriented warfare often results from necessity.

Further, unless a combatant is fighting a purely defensive war, all combatants are interested in applying the combination of movement and firepower and in generating surprise in an adversary in order to make the most of a tactical engagement or military operation. Even in a defensive war, tactical elements therein are interested in mobility behind their lines so that they can reinforce and conduct other support at various points in their respective lines. As a result, it is disingenuous to suggest that attrition is not an important feature of warfare.

What's more, strategist Alexander Svechin offers that destruction-oriented approaches to warfare are the next logical option when a war cannot be won in a single, decisive strike or battle of annihilation.[42] Svechin writes that destruction-oriented approaches are directed toward obtaining and maintaining material superiority, while depriving a hostile combatant of the means that they need for continued resistance.[43]

Since history demonstrates that most wars are not won in a singular, decisive strike, it makes sense for destruction-oriented operations to take center stage in armed conflict.[44] Thus, attrition, although not actually a form of warfare, is not a lesser form of warfighting. Those who make this suggestion are selectively ignoring the impact that deterministic elements such as terrain, time, an adversary's action, and training have on combat.

Conclusion

Attrition is a characterization of conflict; it is an adjective used to provide meaning to engagements, battles, campaigns, operations, and wars in which destruction is high. Moreover, attrition lacks a coherent body of knowledge and an accepted set of practical applications that would allow it to be considered a form of warfare. Therefore, it is prudent to accept that attrition warfare is not actually a typology. Rather, it is a misnomer that needs rectifying. Replacing attrition in all cases in which the defense and security studies community, as well as military practitioners, are not outlining an activity's character is paramount. The term destruction-oriented warfare is an appropriate replacement for attrition's use regarding a form of warfare.

Further, Western militaries must graduate beyond fanciful and idealist thinking about armed conflict. The destruction of hostile armies is how a military creates the situation required for their policymakers to pursue strategic victory. In some instances, however, that is not the case. The threat of or the bludgeoning push toward the destruction of a hostile army generates the signal for hostile policymakers to negotiate an end to armed conflict.

Lastly, if the United States remains an economic and military superpower, then it can (and should) operate with a destruction-oriented approach to warfare. When looking for strategic advantage, the United States' economic and industrial asymmetry with nearly the rest of the world is one of its most salient and powerful advantages. It would be foolish to not make the most of that advantage. The U.S. military and its Western partners can fight and win large-scale industrial wars in which destruction-oriented combat is the central component. The destruction of armies or the push toward destroying armies is the most effective and historically supportable way in which to drive policymakers to the negotiation table. ■

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Capt. Terry Shields (*right*), commander, Iron Troop, 3rd Squadron, 2nd Cavalry Regiment, provides a status update 13 June 2018 to his higher command utilizing the assistance of his radio transmission operator and the Nett Warrior system in the vicinity of Kaunas, Lithuania. Shields's troop conducted an air assault into the north side of the Neman River to secure the area for bridging operations during a contested wet-gap crossing as part of Saber Strike 18. (Photo by Pfc. James Crowley, U.S. Army)

Reinvesting in Techniques

Col. John A. Gabriel, U.S. Army

During a brigade combat team's (BCT) initial attack to seize a lodgment, a maneuver battalion (BN) is given two specified tasks. Serving as Supporting Effort 1, it is tasked to block in order to secure the BCT main effort's southern flank. On order, it is to seize a key intersection southeast of the blocking position to facilitate freedom of maneuver. Additionally, the BN is instructed to use aircraft as the insertion means.

From completion of the BCT operations order brief, there are approximately eighty-one hours until the air

assault H-hour. Abiding by the one-third/two-thirds rule, the BN has twenty-seven hours to publish a plan, complete the required steps of the air assault planning timeline, and participate in the BCT rehearsal sequence, which begins twenty-four hours after the conclusion of the BCT operations order brief.

During mission analysis, the BN identified eight implied tasks along with its two directed tasks for a total of ten major activities. These included staging the battalion at the aerial port of embarkation, moving to the pickup zone

(PZ), controlling PZ operations, controlling landing zone operations, conducting a movement to contact, establishing battle positions (directed), developing an engagement area, conducting ground assault convoy operations, conducting battalion consolidation, and attacking to seize (directed) and retain terrain.

Acknowledging that it had no off-the-shelf techniques on which to rely, the BN started from scratch. It triaged its list of specified and implied tasks and focused most of its planning time on what it identified as the activities with highest risk to the BCT's success (e.g., the air assault operation). In retrospect, the BN achieved an appropriate level of detail for PZ staging but failed to break through conceptual planning on the other tasks. Recognizing that doing so is difficult under the best of circumstances, a reservoir of actionable techniques on common activities would have helped. The BN could have spent its planning time on the unique aspects of the mission and fallen back on practiced, actionable techniques for the rest. One might also consider that the BCT may have asked too much of its battalion. Regardless, the BN did what it was told to do by its higher headquarters, which was similarly deficient in techniques. The lack of emphasis on techniques is amplified by gaps in Army doctrine. Productive discourse through a variety of means would better fill these gaps.

Techniques, generically defined as bodies of performance methods, are critical to how well an Army fights. Yet they are misunderstood and underappreciated. When actionable (can be put immediately into play without much thinking), techniques set the conditions for the successful employment of units. In 2003, the U.S. Army was arguably tactically sound in large-scale combat operations (LSCO) because it was grounded in refined techniques.[1] Twenty years of calibration to AirLand Battle and Full Spectrum Operations enabled this refinement across tactical echelons. Unfortunately, those techniques are now stale because of the natural regression of being unpracticed and almost disregarded because the current generation of leaders has not yet seen their value. The Army's rightful refocus on LSCO and recent structural changes has ironically amplified this dynamic in a way that requires immediate recalibration.

As field-grade leaders gain sets and repetitions in training for LSCO, there is an operational necessity to mature the scant attention on echelon fundamentals and techniques to refined and actionable methods. Theory and tactics alone—routinely on full display at combat training centers—are insufficient for the effective employment of combat formations. The Maneuver Center of Excellence's recently established Brigade Fight Course for incoming BCT commanders is an attempt to fill this gap and must be met with increased professional discourse. An Army-wide technique reformation effort would be consistent with the Army chief of staff's core emphasis on warfighting and strengthening the Army profession.

Although the U.S. Army defines and employs the term "technique" in its doctrinal manuals, the quality of techniques are varied and, in most cases, lack the rigor needed for them to be helpful to the operational force. It is the quality of published techniques that is in question. The true sign of a high-quality technique is that it has breached the conceptual and has reached appropriate levels of detail; it is *actionable* to the point of being off-the-shelf useful for commanders and planners in stressful environments. To this point, examples of both conceptual (low-quality) and detailed (high-quality) techniques are presented here. Hereinafter, a technique that is precise in detail to an organization's mission, people, and equipment, and is refined to the point it can save considerable time while planning in combat, is referred to as an actionable technique.

This article sheds light on this enterprise blind spot through the lens of a former Joint Readiness Training Center task force senior observer, coach, trainer. A decrement in the quality of techniques currently available directly impacts the tactical success of brigades and battalions. A fresh perspective on

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how to think about techniques is needed to replace the Army's current conceptual leaning. Techniques that account for, in sequence, a formation's theory of employment, structure of employment (or organization construct), and method of employment provide the precision needed to make a difference on the battlefield. Moreover, this proposed framework shows how actionable techniques require an understanding of a formation's people and equipment, among other influences, as its most important ingredient. Finally, while the article demonstrates the framework in action through

> The next level down publication, FM 3-90, *Tactics*, states, 'Units plan fires in series or groups to support maneuver against enemy forces on or near their geographical objectives. Assault elements move rapidly across their objectives as their units shift artillery fires and obscurants from the objectives to other targets.'

the lens of a BCT infantry battalion, it is not specific to that formation. Rigorous attention to techniques better prepares all units to succeed in close combat now and in a way that is congruent with the development of future concepts.[2]

Army Doctrine and Army Techniques Publications

The Army's doctrine authority defines principles, tactics, and techniques, and apportions the data associated with each of these terms to specific echelons of publication. Below is an overview of the interplay of these publications. Understanding this connection is important because it amplifies the lack of distinctiveness in how doctrine presents employment of formations.

An Army doctrine publication (ADP) presents principles, or comprehensive and fundamental rules or an assumption of central importance that guides how an organization approaches and thinks about the conduct of operations.[3] A field manual (FM) presents tactics, or the employment and ordered arrangement of forces in relation to each other.[4] Army techniques publications (ATP) present Army-sanctioned techniques. The Army currently uses the standard joint definition

for techniques: "non-prescriptive ways or methods used to perform missions, functions, or tasks."[5] Again, it should be the realm of techniques that bridges the generalized theory associated with broad categories of formations to the specific formation under observation—from a shallow description of a maneuver battalion to something more specific, like an infantry BCT (IBCT) infantry battalion, to an actual IBCT infantry battalion of 731 soldiers with an attached field support company, 105 prime movers, tactical vehicles of different storage capacity, four tank rack modules, WIN-T increment

2, and a basic load of forty-eight Javelin surface attack FMG-148E missiles.

As an example, the following sequence provides the doctrinal progression of the use of obscurants in the offense. Starting with principles, ADP 3-90, *Offense and Defense*, provides basic concepts and control measures associated with tactics. In reference to the use of obscurants, the ADP states, "Commanders use obscurants to disrupt an enemy force's assault or movement formations and to deny an enemy force's use of target acquisition optics, visual navigation aids, air avenues of approach, landing zones, and drop zones."[6] The next level down publication, FM 3-90, *Tactics*, states, "Units plan fires in series or groups to support maneuver against enemy forces on or near their geographical objectives. Assault elements move rapidly across their objectives as their units shift artillery fires and obscurants from the objectives to other targets."[7] Still, the reference to obscurants is generic to all types of maneuver formations. The lowest level publication, ATP 3-21.20, *Infantry Battalion*, only references that mortars can use white phosphorous as an obscurant.[8] ATP 3-21.90, *Tactical Employment of Mortars*, at its most specific, states that "combat experiences in World

Theory of Employment *Purpose ~ Context ~ Tactics ~ Echelon Fundamentals*	→	Structure of Employment *METL* ~ Load ~ TOE***	→	Method of Employment *Operational Narrative ~* **Actionable Technique**

*METL: Mission-Essential Task List
**TOE: Table of Organization and Equipment
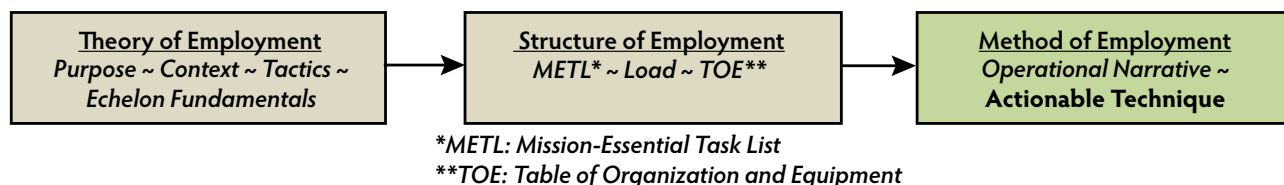
(Figure by author)

Figure. Actionable Technique Framework

War II and Korea have shown that an onboard mix of 70-percent high explosive, 20-percent white phosphorus or smoke, and 10-percent illumination ammunition is the most flexible."[9] In this example, neither of the two mentioned ATPs provide the detail needed for an infantry battalion (IN BN) to effectively employ its organic obscurants in the offense. The offered technique is too conceptual.

What the leaders of an IBCT IN BN need to know in order to be effective is the detail associated with an IN BN mortar basic load, the minimum duration and size required for an obscuration of a complex obstacle, and the characteristics of packaged mortar rounds by Department of Defense Identification Code (DODIC). A basic load for a mortar platoon organic to an IBCT IN BN does not include smoke; it does, however, include twenty-eight rounds of 120 mm white phosphorous. Depending on the DODIC, twenty-eight rounds of 120 mm white phosphorous only provide a quick smoke mission of five hundred meters for five minutes in ideal meteorological conditions. If a BN needs an eight-minute quick smoke mission to allow for a complex breaching drill, the mortar platoon can provide a reduced two-hundred-meter smoke screen for eight minutes. Any different fires plan requires a unique ammunition request that would necessitate a resupply from the field trains. Increasing the quantity of 120 mm white phosphorous rounds requires a decrease in a different round type within the carried load. Knowing this detail at the field-grade level matters. It is what enables a well-synchronized BCT attack.

With this level of detail, an actionable technique is within reach. A BCT commander can standardize the quantity of rounds by DODIC on hand within maneuver battalions for an attack, and direct that these rounds are preserved for a breach. Even when allocated

a 105 mm smoke target, an IN BN has a backup plan in case the BCT smoke mission is delayed. Because a class V basis load and assigned equipment is different for an IBCT IN BN, an armored BCT combined arms battalion, and a Stryker BCT infantry battalion, each type of formation would employ a different technique.

Actionable Technique Framework: Theory, Structure, Method

The Army needs a new frame of reference for thinking about techniques. The framework above, grounded in organizational theory, may work for the enterprise.

The figure depicts a sequence of concepts flowing from left to right. The left is more generic, while the right is more specific. The three boxes contain a few items commonly understood by military professionals (tactics, table of organization and equipment [TO&E], and mission-essential task list [METL]) and a few concepts that are new (echelon fundamentals and operational narrative). In this framework, sequence and logic flow matter. Theory drives the creation of structure, which then drives the creation of employment method. Creating structure without knowing the unit's intended purpose is dysfunctional as is changing structure without first rethinking a unit's theory of employment. To identify echelon fundamentals, one must understand the desired tactics, which requires a knowledge of context underpinned by the formations purpose of existence. Therefore, for techniques to be detailed enough to have the impact desired in this article, it must account for three influences built upon each other: a formation's theory first, structure second, and then method of employment third.[10]

Theory of employment is generic. Theory broadly defines how a specific type of formation interacts with others in mutual support to achieve objectives. It flows

from the Army's overall theory of employment presented in its capstone operational doctrine (which, in the case of FM 3-0, *Operations*, is vague). All echelons and types of a formation are designed, or should be designed, with unique purpose and sometimes differentiating context in mind. Corps headquarters do something different than division, an aviation brigade has a different mission than a sustainment brigade, and an IBCT should excel in restricted terrain while an ABCT should not. Tactics flow next, with depictions of relationships in space and purpose, agnostic to time and capacity. The final point under theory is echelon fundamentals. Although the mastery of fundamentals is mostly associated with individuals, squads, and platoons, there are skills in LSCO that, when not performed by higher headquarters, put mission accomplishment at risk. These fundamentals serve as the connective tissue that ties tactics together. In LSCO, battalions, brigades, and divisions own unique tactical roles with unique fundamentals. A well-defined formation theory of employment feeds formation design.

Structure of employment flows second in the framework and adds the specific tools and expectations to the generic formation. The METL provides the formation's primary operational requirements for which it was manned and equipped. These operational requirements scope the unit's desired capacity in terms of load (the things it carries for action and endurance). Load matters because it affects needed haul capacity, whether rucksack or trailer. Most of a formation's structure is defined by its TO&E. Applying structure to theory is the point that current attempts at techniques avoid.

Method of employment is the final step and adds specificity. Missing from most doctrine is an operational narrative that offers a visualization for how a specific formation does what the Army wants it to do with the tools and people it was given. It connects activities together and explains interactions not typically associated with mission-essential tasks (MET). Actionable techniques are the conclusion in the logic flow. Their creation, practice, and execution help formations solve compounding tactical problems in a time-constrained environment.

Techniques crafted with respect to these influences provide three main benefits to a formation. First, they are precise, apply to all like formations, and require little additional effort to apply. Second, they save time

in planning because the relevant detail is already established. Third, a leader who served her or his entire company-grade time in one specific type of formation could study the techniques relevant to a different type of formation and have an immediate impact on arrival. Techniques reduce planning time, increase common understanding across the formation of their detail, and allow leaders to more quickly calibrate to formations in which they have not previously served.

So, how might this framework apply in practice? The following sequence puts the technique framework into action and depicts the interplay between theory, structure, and method of employment for an IBCT IN BN.

Theory of employment. For the purpose of informing IBCT IN BNs, the TOE considered in this analysis is the K-series, Infantry Battalion (IBCT) 07215K000. In accordance with the TOE, the purpose of an IBCT IN BN is "to close with and destroy enemy forces using fire, maneuver, and shock effect, or to repel his assault by fire and counterattack," which is identical to the other two types of infantry formations: Combined Arms Battalion (INF) (ABCT) 07315K000 and Infantry Battalion (SBCT) 07195K000.[11]

Specific to IBCTs, published context is limited. In accordance with doctrine, the most important aspect of IBCT employment is terrain. FM 3-96, *Brigade Combat Team*, states that the IBCT is optimized "for the offense against conventional, hybrid, and irregular threats" in complex or severely restricted terrain, with complex terrain defined as "a geographical area consisting of an urban center larger than a village and/or of two or more types of restrictive terrain or environmental conditions occupying the same space."[12] Complex and severely restricted terrain is the IBCT's niche. The FM continues that an IBCT can conduct "entry operations by ground, airland, air assault, or amphibious assault into austere areas of operations with little or no advanced notice."[13] This last statement is deceptive. While portions of an IBCT may be able to air assault, the BCT itself is unable to air assault because its structure cannot support it. The IBCT is not designed to do all of what doctrine states it can do. Some aspects, like an IBCT air assault, are aspirational at best due to an IBCT's equipment array and aircraft limitations. Someone preparing to lead an IBCT IN BN without previous experience could very well be deceived by the formation's capabilities—much like the vignette

introduced earlier. The context of an IBCT's employment is ill-defined and leaves room for improvement.

Mission-essential tasks are broadly understood as the common training readiness frame of reference. However, METs are usually trained at home station in isolation, with limited interaction with pre- or post-mission tactical influences or the demands of adjacent units. Experience offers that, counterintuitively, a formation's home-station METL assessment does

> **" Experience offers that, counterintuitively, a formation's home-station METL assessment does not always correlate to the quality of unit overall action in a training rotation. "**

not always correlate to the quality of unit overall action in a training rotation. What does matter, however, is how much a formation is prepared for the underlying requirements that tie METs together. For example, a BCT that can stage, move, and occupy an attack position is far more likely to be successful in the aggregate. Fundamentals are the things that the echelon headquarters node (commander and staff) must direct, that only it can direct, to set favorable conditions for subordinate formations. Subsequently, identifying the right echelon fundamentals is important to understanding a formation's theory of employment. The METs matter, but fundamentals matter more.

The following subjective list of IBCT IN BN fundamentals might serve as a starting point for subordinate units to work through.

- Stage, move, and occupy: "Uncoiling" can be a complex operation. In order for a formation to fight well, it must first transport itself to the fight and establish its line of departure. This is often impeded by a battalion's inability to task-organize appropriately into smaller elements capable of moving themselves into an area of operations.
- Transition between METs: While we assess METs in a binary way, the reality is that one necessitates another, and the specific timing of these transitions is not always predictable. The ability to anticipate a transition, then drive the formation from one MET to the next is vital to a BN's endurance in

close combat. Transitions require synchronization of consolidation, reorganization, preservation of remaining combat power, reconstitution of spent combat power, planning, and preparation, all while within a nonpermissive environment and likely still in contact.
- Subscribe to, control, and structure signal networks: Effective command is founded on a well-structured signal plan. A well-structured signal plan requires an understanding of networks and the ability to control them over lower tactical internet, subscribe to them over upper tactical internet, and structure services within digital platforms.
- Fight an organizational load: An IN BN is quantifiable in cubic footage and weight, and this load must be organically carried, or assistance must be requested well in advance. An understanding of occupied versus transient haul capacity and the mechanics of echeloning this haul capacity forward allows formations to transition and endure more effectively.
- Identify enemy disposition, enemy composition, and terrain: BCT reconnaissance activities create an enemy sight picture one magnitude too high to effectively drive IN BN operations. Employment of organic reconnaissance assets, driven by an information collect plan, is necessary to understand enemy disposition and composition and key terrain relevant to the enemy's destruction. Deliberate attacks (operations undertaken with a more complete enemy picture) are inherently more successful than movements to contact.
- Shape with organic close supporting fires: Infantry BNs complete the destruction of the enemy with direct fire. "The effective employment of indirect fires creates the physical and psychological conditions that if closely synchronized with maneuver

enables destruction."[14] Mortars may be the only indirect fire asset available to an IN BN commander. An understanding of desired effects and of what can be achieved with a mortar basic load enables success on the objective. For example, a 120 mm high-explosive basic load only provides two quality suppression missions. Anything more requires elegant ammunition management or requests for additional support.

- Triage soldiers, equipment, and supply: Operationalizing the concept of triage during execution allows subordinate units to win the current fight, preserve life and equipment, and reconstitute combat power. Triage is not something that can wait for the engagement to be over.

- Retain gains: A deliberate approach to organic security operations accommodates the retention of tactical gains and a transition between METs. Ubiquitous sensors on modern battlefields already make this harder and underscore the importance of recurring attention here.

- Conduct passages of lines in and out of contact: Any scenario in which a higher echelon is massing combat power or transitioning formations demands interaction between adjacent units. Preparing for a passage of lines is likely an implied task in every operation.

- Support BCT enablers postured within the BN's area of operations: There are inherent responsibilities between landowners and tenants that do not share directed command or support relationships. These responsibilities are derived from an understanding of area of operation ownership and the supported-supporting requirements within that area of operations. In an IBCT, a 105 mm position area for artillery likely resides within an IN BN area of operations. Effective terrain management with unit boundaries is permissive, not restrictive, and enhances BCT survivability.

Structure of employment. Mission-essential task combat expectations include attacking, defending, moving to contact, securing areas, and air assaulting as part of an IBCT. Notwithstanding ongoing Army structure decisions and reorganization around Army 2030, the TOE provides the clearest understanding of the Army's structural expectations. A commander is provided a specific quantity of soldiers across paygrade and specialty, and equipment. This equates to a known cubic footage, weight, and consumption rate. Specific to an IBCT IN BN TOE, this includes a lack of mobility for its nine rifle platoons, along with a motorized heavy weapons company and large quantity of armored support and command vehicles. Load is a necessary consideration. For example, a rifle company's organic hauling capability, a Medium Tactical Vehicle, is unable to carry all the equipment the TOE expects the company to have on hand for combat, let alone with an added basic load of commodity. A battalion commonly solves this problem by adding a carried Tricon container to its distribution platoon for rifle company equipment. Additionally, many rifle companies are currently in possession of a twenty-foot-equivalent military van of non-TOE subterranean gear. The unintended consequence of this discrepancy in capacity versus requirement is that the battalion gives up more than a third of its distribution platoon space to move equipment. Distribution platoon manning adds to this problem set for it lacks excess. There is precisely one driver and one vehicle commander for each of its seven trucks. One nondeployable soldier reduces the battalions haul capacity by about 15 percent. With this in mind, a battalion can realistically rely on less than half of its haul capacity to move commodity. It is this dichotomy of surplus versus famine that drives a unique perspective on employment. The battalion is not light enough to be truly unshackled of organic vehicular requirements and not heavy enough to move itself, protect itself in the fight, and endure with the necessary mix of commodity.

Although billed in doctrine as a formation designed to operate in severely restricted terrain, the triage and endurance of the battalion is reliant on access to ground lines of communication up to the front line of troops. Any intention of separating dismounted soldiers from their vehicle-based trains (and water) incurs risk to the force and mission that must be accounted for. Additionally, the battalion's organic indirect fire systems are dismounted and require static positioning to be responsive. In light of these unique structural dynamics, the ideal geometry of an IBCT IN BN fight is defined by the effective range of its static indirect fire systems and a ground line of communication to each line company and to the brigade trains.

Staff Sgt. Jared Smith (*left*), fires noncommissioned officer of Iron Troop, 3rd Squadron, 2nd Cavalry Regiment (3/2CR), provides 1st Lt. Pace Murray, platoon leader of 3rd Platoon, Iron Troop, 3/2CR, with the fires plan prior to upload 9 August 2018 at Vaziani Airfield, Georgia. Air assaulting directly onto an objective comes with obvious assumed risks. Suppression fires during the mission required precise timing and accuracy to ensure the effective employment of available weapons: 155 mm rounds from a M777 howitzer and 30 mm rounds and 2.75-inch rockets from two AH-64 Apache attack helicopters. (Photo by 1st Lt. Ellen C. Brabo, U.S. Army)

Method of employment. A formation's operational narrative is an attempt to understand its true nature. It is similar to a commander's "how we fight" document and is a consensus-building tool. Looking only at the IBCT's structure, one would expect the formation to be considered up-armored. One might also think that the IBCT is designed to fight off-grid; with an understanding only of purpose, one would think that an IBCT has the speed and firepower to "shock" any type of enemy formation. In isolation, none of these perspectives are true. However, overlap of all three perspectives does provide clarity.

Furthering the narrative, an IBCT IN BN in LSCO fights as a collective battalion; it is designed to employ its companies in mutual support to each other. There is only one main effort at a time, whether it is a rifle company, weapons company, or company team.

Everything is done to ensure the success of the main effort. The battalion owns its role in the close fight as the primary synchronizer, condition setter, and terrain manager for company actions. The battalion headquarters assigns purpose and priority of resources to subordinate formations, incorporates inorganic enablers, synchronizes through command posts, identifies enemy disposition/composition and advantageous terrain through reconnaissance activities, enables maneuver by suppressing and fixing the enemy with organic direct and indirect fires, provides medical triage to maintain combat power, and manages endurance with combat and field trains. The battalion fights the main effort to the decisive point, in theory, with the requisite combat power to succeed.

The battalion subsequently owns responsibility to transition the formation from one MET to the next.

This includes the retention of gains made in the previous mission; security of the formation as it consolidates, reorganizes, and regenerates combat power; and the planning and preparation for the next mission. As one of the IBCT's IN BNs, everything done is to support the success of the BCT. An IBCT IN BN is terrain oriented. Terrain provides the only widely available protection. Even when enemy focused, an IBCT IN BN keeps close watch on defensible terrain. An attack begins and ends in a defense. An IN BN attacks to destroy enemy formations, but it must seize key, defensible terrain in close order. If not attacking, then it is defending. Battle space is defined by the effective range of the 120 mm mortars. Rarely should a battalion operation occur outside two-thirds of the maximum effective range of its organic indirect fire capability.

By way of observation, in restricted or severely restricted terrain, an IBCT commander can employ the entire capacity of an IN BN offensively once over a seventy-two-hour period with small adjustment decisions every twenty-four hours. It takes about this long to effectively plan, prepare, execute, and reorganize from a MET. It can be done on a tighter timeline but will cost reorganization, planning, and preparation depth. A rifle company can fully exert itself well for eight hours a day. This equates to an eight kilometer movement under load, four kilometers of a movement to contact cross terrain, or two kilometers of movement to contact followed by a deliberate attack. To defend, it takes approximately forty-eight hours for an IN BN to plan, prepare, and effectively posture. Within the ebb and flow of combat activity, an IN BN's full capacity is intentionally employed to accomplish a MET with an understanding that some portion of it will be irreversibly destroyed or incapacitated, and supply reduced. The timeliness in which a BN can assess its losses, reorganize, and request replacements affects its ability to transition into a follow-on MET and its ability to endure.

Ideally, this operational narrative gives truth to a formation's capability that may or may not be written in doctrine, and it helps identify connections that would normally be missed by only associating with METs. It is admittedly subjective, and there is no correct way to present an operational narrative. Nonetheless, it adds another layer of understanding and specificity to the formation. Finally, it is from this sequenced connection from theory through structure to method that one can build actionable techniques like in the obscuration example above.

Conclusion

Actionable techniques are critical to warfighting at all tactical echelons but especially brigades and battalions. Recognizing their importance to how the Army fights and acknowledging that the Army's current techniques are in serious need of remodeling are first steps in the right direction. The framework provided in this article is one way to stimulate that conversation. By aligning a formation's theory, structure, and method of employment, much needed precision can have immediate impact on the Army's warfighting skill. Certainly, there are other ways of initiating dialogue beyond ATPs. This includes reinvigorating the professional discourse in military journals. The Harding Project is already pursuing renewal of professional military journals and provides a useful backdrop for rigorous professional debate.[15]

However, doctrine writers must reassess the utility of the current slate of ATPs as the domain of techniques. A conceptual technique is really just another tactic. It is detail that is needed. A clearer distinction among theory, tactics, and techniques is necessary to advance the warfighting narrative. Centers of excellence have a pivotal role here—they can relook how they prepare brigade and battalion commanders for tactical command and consider adopting a Brigade Fight Course like that of the Maneuver Center of Excellence. Combat training centers are also uniquely postured to support technique development. Task force trainers are seasoned with LSCO sets and repetitions and can ably drive debate. Combat training center involvement is especially important to the refinement of techniques through practice.

Finally, the Army could go as far as to dictate "a way" so that leaders can baseline their perspective that might include mandating future commanders conduct combat training center ride-alongs as part of their precommand circuit. This would most quickly set the line of departure across all generations of officers from which the Army can then evolve techniques and eventually return them to the realm of standard operating procedures. Such steps might constitute a tactical recalibration. They would certainly go a long way in building tactical prowess more closely aligned with the chief of staff of the Army's warfighting focus. At a minimum, such steps would return techniques to their rightful place in our lexicon. ∎

Notes

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FUTURE WARFARE WRITING PROGRAM

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D-Day, 6 June 1944, by Leslie Arthur Wilcox, n.d., oil on canvas, 71 x 98 cm. On D-Day, 6 June 1944, the 1st Battalion, Hampshire Regiment led 231 Brigade ashore on Gold Beach as the spearhead of the invasion of Normandy. (Artwork courtesy of the Royal Hampshire Regiment Museum)

The True Test of Mission Command

Maj. Will Happel, British Army

Military professionals often study historical leaders whose interventions and decisions at a critical moment have turned the course of a battle. Of course, these case studies yield many valuable lessons to developing leaders. However, there are many other great lessons to be learned from less obvious, less celebrated leaders. The mark of true mission command can be seen in an organization that achieves greatness with no intervention from the commander. Leaders who prepare their organization for success in their absence are those who develop their subordinates, foster a learning organization, and encourage adaptability. These leaders prepare their unit for operations by clearly

communicating a simple and flexible plan and by nurturing trust across the force.

Military professionals should also study the leadership within an organization that achieves success without intervention or supervision from their commander. In the future, mastering the art of good mission command will be more important than ever. Commanders will get targeted and killed with greater frequency. Therefore, our organizations must be able to succeed in their commander's absence.

Students of the Command and General Staff Officers' Course will be familiar with Brig. Gen. Norman D. Cota's exploits on D-Day. At 0730 on 6 June 1944, Cota landed on Omaha Beach with his "Bastard Brigade."[1] From this time until dusk, Cota's direct leadership at critical points and his disregard for his own personal safety helped to prevent a potential disaster from unfolding in that sector of the D-Day landings.[2] Cota was awarded the British Distinguished Service Order and the U.S. Distinguished Service Cross for his actions that day.[3] Aspiring leaders today rightly study his actions to learn from his example. However, the fact that the attack stalled and Cota had to become so directly involved at the coalface is a possible symptom of inadequate preparation prior to the landings. At the same time Cota was landing, a British officer was wading ashore who was far less likely to be remembered for his actions on D-Day because he had very little direct impact on the how the battle unfolded. However, his leadership prior to the landings and his good use of mission command enabled his unit to achieve success in the most extreme circumstances.

On D-Day, Lt. Col. H. D. Nelson-Smith, MC, was the battalion commander of the 1st Battalion, Hampshire Regiment (1 HAMPS), which made up the right flank of 231st Brigade, 50th (UK) Infantry Division. The 1 HAMPS landed on the Jig Green sector of Gold Beach at 0730 as the first British troops ashore. The battalion ran into fierce resistance and shortly after landing, Nelson-Smith was wounded and evacuated to the regimental aid post, never to return to lead the battalion.[4] To make matters worse, the battalion second-in-command landed at 0930 and was killed by a sniper as he left the landing craft.[5] The commander of A Company and several platoon commanders were also killed or wounded on the beach.[6] The battalion had

landed further east than they planned and most of the radio sets had been destroyed by enemy fire or saltwater.[7] Maj. Richard "Dick" Gosling, the battalion's artillery battery commander, who had also been wounded, was unable to call for fire support that day.[8] In the opening hours of D-Day, the 1 HAMPS faced utter chaos on Gold Beach. Yet despite this, the battalion was one of the few units that day to achieve almost all of its day one objectives before nightfall. This achievement is a symptom of good preparation and mission command. How was this possible? To answer this question, one must examine Nelson-Smith and the battalion's preparations in the months and years leading up to D-Day.

Nelson-Smith served with the battalion continuously from 1936 to 1944. During this time the battalion was constantly overseas, from the North West Frontier in India 1936, Palestine in 1938, the Western Desert in 1940, and the Siege of Malta in 1942 to the invasion of Sicily and the Salerno landings in 1943.[9] In October 1943, Nelson-Smith took the battalion back to a sealed camp in the New Forest, England, to prepare it for Operation Overlord.[10] This was the first time the battalion had been home in twenty-three years, and it would only be there for eight months.[11] The battalion would become like a family to Nelson-Smith. He cared deeply about his soldiers and subordinate development. This was evident in the three "A Basis for Training" documents the battalion used to prepare for D-Day.[12] Emphasis was placed on leader selection and mission command.

Within "A Basis for Training – II," the paragraph on fatigue emphasizes the importance of having energetic leaders to combat the inevitable apathy that sets in due

Maj. Will Happel, a student at the Command and General Staff School, has been an infantry officer in the British Army for eleven years, working most recently (2020–2023) in combat training centers (CTCs) in both the UK and United States. He has developed a keen interest for mission command during his career and has witnessed many different styles of it through first-hand experience at CTCs and through historical analysis. Happel had an article published in the Wavell Room in 2017 that had a similar thesis on mission command and being able to prepare organizations for success with minimal commander input.
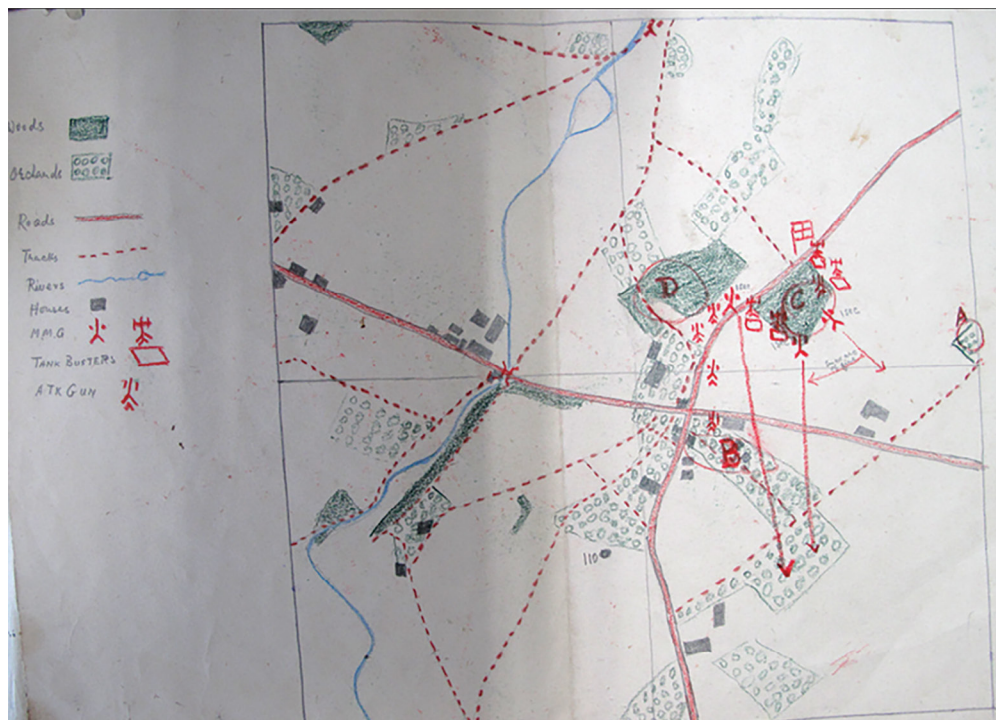
From the 1st Battalion, Hampshire Regiment's *Battalion War Diary*, a sketch from a patrol report made after a night patrol from one of the nights following D-Day. (Photo courtesy of the Royal Hampshire Regiment Museum)

to the weariness that combat causes.[13] Nelson-Smith also directed that soldiers must support their commanders in physical and administrative tasks to enable their commanders' better decision-making. In "A Basis for Training – III," the paragraph on bravado explains the required temperament traits for good leaders and how brash and bravado in peace time does not often equal bravery in combat.[14] These paragraphs show the consideration that Nelson-Smith was giving to selecting and developing his subordinates. Nelson-Smith placed high importance on his subordinates' abilities to make decisions.

During training, Nelson-Smith helped to enforce good mission command in his subordinate leaders. More recently, the British Army describes mission command as a philosophy that empowers subordinates and encourages freedom and speed of action.[15] By using mission orders to empower subordinates to generate agility and tempo, units can prevail in the most chaotic and demanding situations.[16]

The paragraph on rigidity in "A Basis for Training – III" summarizes the attitude at the time toward mission command. The paragraph said platoon leaders must act on their own judgment without waiting for orders from

higher.[17] Especially during the early stages of an operation, the platoon commanders would have the most accurate picture of the battle and are best placed to make decisions to adapt to chaotic situations. Therefore, in training, platoon commanders were encouraged to act first and report the outcomes afterward. This encouragement placed higher levels of trust in subordinate commanders. One of the tenets of mission command is trust as it speeds up decision-making and generates tempo.[18] Under Nelson-Smith, the 1 HAMPS fostered high levels of trust and developed a good sense of mission command.

Through these documents, Nelson-Smith made an effort to simplify the orders process as much as possible. He made it the responsibility of every subordinate to know at least four bits of information before setting off on a task. The information subordinates must know was "Where am I going? What am I doing when I get there? Which way am I going? When am I going?"[19] Nelson-Smith was reinforcing mission command within the unit by simplifying orders and making it a subordinate's responsibility to figure out what basics were required of them.

The existence and use of these training documents show that, under Nelson-Smith, the 1 HAMPS were a learning organization. The structure for "A Basis for Training – I" was a two-column table with observations in the left-hand column and recommendations in the right-hand column.[20] This structure is not dissimilar to the one the British Army still uses when learning from experience today. The 1 HAMPS's ability to make candid observations on their own performance and on the enemy's tactics to develop recommendations

enabled them to learn quickly and adapt to a changing situation.

The battalion's patrol reports are evidence of this learning cycle in action. The training documents dedicate several pages to patrols, observation posts, and reconnaissance.[21] The reports and sketches that patrol commanders produced during the days and nights following D-Day

The 50th (Northumbrian) Division, 1944, by Anthony Imre Alexander Gross, 1944, ink, 392 mm x 573 mm. This full-length portrait features the three British battalion commanders of the 231 (Malta) Brigade (*from left*): Lt.-Col. H. D. Nelson-Smith, MC, 1st Battalion, Hampshire Regiment; Lt.-Col. A. W. Valentine, DSO, OBE, 2nd Battalion, Devonshire Regiment; and Lt.-Col. W. H. B. Ray, DSO, 1st Battalion, Dorset Regiment. (Artwork courtesy of the Imperial War Museums)

show the high level of proficiency the battalion had for these activities.[22]

In his operations order for D-Day, Nelson-Smith managed to simplify the complex task ahead of them. He clearly and succinctly articulates the higher intent, scheme of maneuver, and the phases of the flanking forces.[23] Nelson-Smith also managed to distill the battalion's task into a pithy, one-sentence intent statement, "1 HAMPS will land on JIG GREEN BEACH WESTERN and clear enemy coastal 'crust' from LE HAMEL to MANVIEUX 8286."[24] This intent statement is reminiscent of Adm. Horatio Nelson's signal, "Engage the enemy more closely"; one of only three tactical signals flown by Nelson throughout the Battle of Trafalgar.[25] Nelson-Smith's simple plan was backed up with sufficiently detailed annexes that equipped his subordinates with every known fact about the "coastal crust." This combination of a simple plan and detailed coordinating instructions empowered Nelson-Smith's subordinates to make their own decisions and seize the initiative within his intent.

1 HAMPS's battle did not go according to plan. The battalion landed on Jig Green East instead of West, whereas the Duplex Drive (DD) tanks landed in the West, the commander was wounded and the second-in-command killed, the artillery and air force bombardments had been ineffective, the radios were inoperable, most of the AVRE (Armoured Vehicle Royal Engineers) tanks were jammed in their landing craft, and one of the flail tanks exploded in the minefield.[26] Some of the leaders had the situational awareness to realize they were landing in the wrong place. Lt. Alan Norman of A Company recalled looking through the slit in the landing craft's ramp with his binoculars and noticing that they were too far to the east.[27]

The battalion landed in Jig Green East (not West) with A Company on the right and B Company on the left. A Company landed opposite WN36 (a platoon-sized defensive bunker) and B Company landed opposite the strongpoint Les Roquettes, both WN36 and Les Roquettes were originally objectives for the 1st Battalion, Dorsetshire Regiment.[28] Both A and B

OFFICERS QUITTED DURING WEEK

No.	Rank + Name		Corps	Date	Cause
69156	MAJ. MARTIN DSO	A.C.W.	Dorset	6 June	Killed E.A.
62620	" BRINES	R.G.T	Hamps	"	-do-
253674	LT. WILLIAMSON, MC	C.Y.	"	"	-do-
288933	" BAWDEN	L.A.	"	"	-do-
180302	" WESTLEY	G.N	Y+Lancs	"	-do-
62621	LT-COL. SMITH, MC	H.D.N.	Hamps	"	Wounded E.A.
195359	CAPT. ARNETT	J.A.	"	"	-do-
264945	LT. LAUDER	J.E.F.	Dorset	"	-do-
207707	" BOYS	J.N.	Beds Herts	"	-do-
134345	CAPT. EDKINS	D.R.J.	Hamps	"	-do-
121455	" HUGHES	F.A.E.	"	"	-do-
247055	LT. MILLER	K.C.	K.S.L.I.	"	-do-
268027	" ELLIOTT	G.M	Hamps	"	-do-
281977	" NORMAN	A.G.	"	"	-do-
219361	" JAYLSON-LUNGLEY G	Gen. List	"	-do-
302138	" LAYTON	G.F.B.	Hamps	"	-do-

(ii) OFFICERS ATTACHED IN EXCESS OF W.E. LESS 1st RFTS.

Name and Initials	Regt. or Corps	Date of attachment	Nature of attachment

10 June 44
(Date of Despatch.)

LIEUT COLONEL
COMDG. 1ST BN. THE HAMPSHIRE REGIMENT
231 Inf. Bde.
(Bde., Divn., Area, etc., with which Unit is serving.)

This page from the 1st Battalion, Hampshire Regiment's *Battalion War Diary* features "Officers Quitted during Week," which shows the amount of leadership (not just the command and second in command) who were put out of action on D-Day. (Photo courtesy of the Royal Hampshire Regiment Museum)

Hamel.[30] It was 1700 before Le Hamel was cleared.[31] D Company then cleared the radar station on the cliffs at Arromanches and B and C Companies went on to clear the town. Here the battalion reorganized and conducted patrols to Tracy-sur-Mer and made their report to the brigade commander.[32]

The story of the 1 HAMPS on D-Day is one of an adaptable organization that was well prepared, well briefed, and trusted to carry out their work. They passed the true test of mission command by gaining and maintaining the initiative, in the face of extreme adversity, with minimal supervision. This success was in no small part down to the leadership of Nelson-Smith, though he may not receive much credit for it.

In conclusion, a leader who passes the true test of mission command is one who prepares their organization for success in their absence. Nelson-Smith achieved this by developing his subordinates to adapt to chaotic situations and empowering and trusting them to make decisions. Nelson-Smith nurtured a learning organization that was able to adapt quickly and flexibly. For D-Day, the operations order that Nelson-Smith delivered to the battalion outlined a simple and flexible plan. He did not try to forecast events but balanced his force so that they could respond effectively to a changing and chaotic situation. All of these factors combined created a recipe for success for the 1 HAMPS

Companies were able to clear these objectives, orient themselves and move west toward their original objectives. Helpfully, the intelligence annex of Nelson-Smith's operations order contained detailed paragraphs on the strong point at Les Roquettes.[29] Around this time, C and D Companies also landed on Jig Green East. Maj. David Warren MC, C Company commander, took over command of the battalion and directed them through the strong enemy positions at Le

on D-Day. The die was already cast once the ramps dropped on D-Day. No intervention from the battalion commander or the second-in-command was required or occurred. Chaos ensued, yet the battalion went on to succeed that day. While the heroics of the Cota often attract the study of military professionals, perhaps also more notice should be taken of the Nelson-Smiths who, without much credit, prepared their units for war so effectively that their intervention during the battle was not required.

In late 1944, Nelson-Smith returned to command 1st Battalion, 5th Welch Regiment, 53rd Division, in Holland and the Ardennes where he was again wounded and evacuated. He ended the war as a staff officer in 30 Corps headquarters and was awarded the Belgian Order of Leopold II and the Belgian Croix de Guerre.[33] ∎

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20. "A Basis for Training – I," sheets 1–6.

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American soldiers relax between engagements in a trench near Douaumont, France, circa November 1918. The trenches became trash dumps for the detritus of war—broken ammunition boxes, empty cartridges, torn uniforms, shattered helmets, soiled bandages, shrapnel balls, and bone fragments—in addition to occasionally becoming long graves when the trenches collapsed. (Photo courtesy of the U.S. Army)

First World War Doctrine and the Modern War of Positions

Josiah Mosser

If the Russo-Ukrainian War has proven one thing, it is that a positional war is still possible to initiate and maintain against limited Western equipment and tactics. This makes it imperative to study past and present wars of position due to the realistic possibility that the United States will have to induce, terminate, or prevent a positional war. In this article, I argue that the Russian defense in Ukraine is an iteration of the German First World War elastic defense in depth and explore the effects of technological advances on the offense and defense in positional war.

To begin, it is worth establishing what a positional war is. A positional war is characterized by relatively little movement, where the regular combat revolves around the capture of favorable terrain, the improvement of friendly and the destruction of enemy positions, to create an acceptable ratio of attrition. Positional wars are usually fought as delaying actions that allow one or both sides to create favorable conditions for the return to mobile war, where they seek a decision.[1] In the First World War the positional war in the West gave time for Germany to seek a conclusion in the East, while it gave the entente time for its economic war to take effect.[2] Victory can also be achieved through the bleeding out of armies or destruction of civilian morale without a necessary return to mobile warfare by the capture and retention of favorable terrain, such as the attempt at Verdun.[3]

Though it has been a century since the United States engaged in positional warfare, there are strong reasons to consider it today. In the first case, it may be forced. The Russo-Ukrainian War demonstrates that even aging air defenses with competent crews could deny air space from a numerically superior and more advanced power. U.S. open-warfare doctrine relies heavily on the strategic deep fires and close support of air forces.[4] While the U.S. Air Force is undoubtedly the most powerful, it seems hubristic to assume its advantage in the number and quality of aircraft can be maintained on all possible fronts ad infinitum. Deprived of air dominance, it seems possible that the United States may be forced into a war of positions. A concern unique to America is that despite the great strength of its armies in the event of a peer war, it will be at an initial disadvantage due to their wide deployment. America must be prepared to salvage the situation if it occurs, and positional warfare may be the answer. Additionally, no other power shares the United States' unique position of strength, making understanding the events and innovations in Ukraine worth studying in itself.

The Elastic Defense in Depth

The Russians in Ukraine seem to be employing a version of the most successful defensive doctrine of the First World War: the elastic defense. The Battle of the Somme is popularly known as a disaster for the entente, but British artillery superiority severely punished the German defenders concentrated on the front lines.[5] It was clear to the Germans that they would have great difficulty withstanding the entente past 1917 without a change in defensive tactics.[6]

The foundational documents of the elastic defense are *The Principles of Command in the Defensive Battle in Position Warfare* (1916) and *The Experience Gained during the English-French Offensive in the Spring of 1917* (1917).[7] The guiding principle was that it was impossible to concentrate enough strength on the front lines to defeat a determined enemy attack, and doing so would lead to horrendous casualties from artillery.[8] Instead, forces would be deployed lightly to the front lines, with authority given to local troops to temporarily withdraw if a position was unfavorable or untenable.[9] It became known as the "elastic defense" because forces would retreat in unfavorable conditions to launch immediate counterattacks. The deeper a position was penetrated, the greater resistance was encountered as it compressed the defenders. When counterattacks and accurate artillery barrages finally succeeded, the position snapped back. While the name evokes an image of passive defense, it is a defense characterized by its offensive nature. In its final iteration, the elastic defense used five zones: the barrage zone (BrZ), the outpost zone (OZ), the main line of resistance (MLR), the battle zone (BaZ), and the line of artillery defense (LAD). This system was so successful that the entente had broadly copied it by 1918.[10]

Barrage zone. The BrZ was the distance from the enemy's fieldworks to the OZ. Here, artillery would fire on predetermined barrage lines while barbed wire stalled and funneled advances. German doctrine considered 200 m to be a medium depth of the

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(From a German Document captured in June, 1917.)

Diagram showing the Organization of a Regimental Sector

Printed by the Topographical Division, Intelligence Section, G.S.R.E.F.

LEGEND
- BaZ (Battle Zone)
- LAD (Line of Artillery Defense)
- MLR (Main Line of Resistance)
- OZ (Outpost Zone)
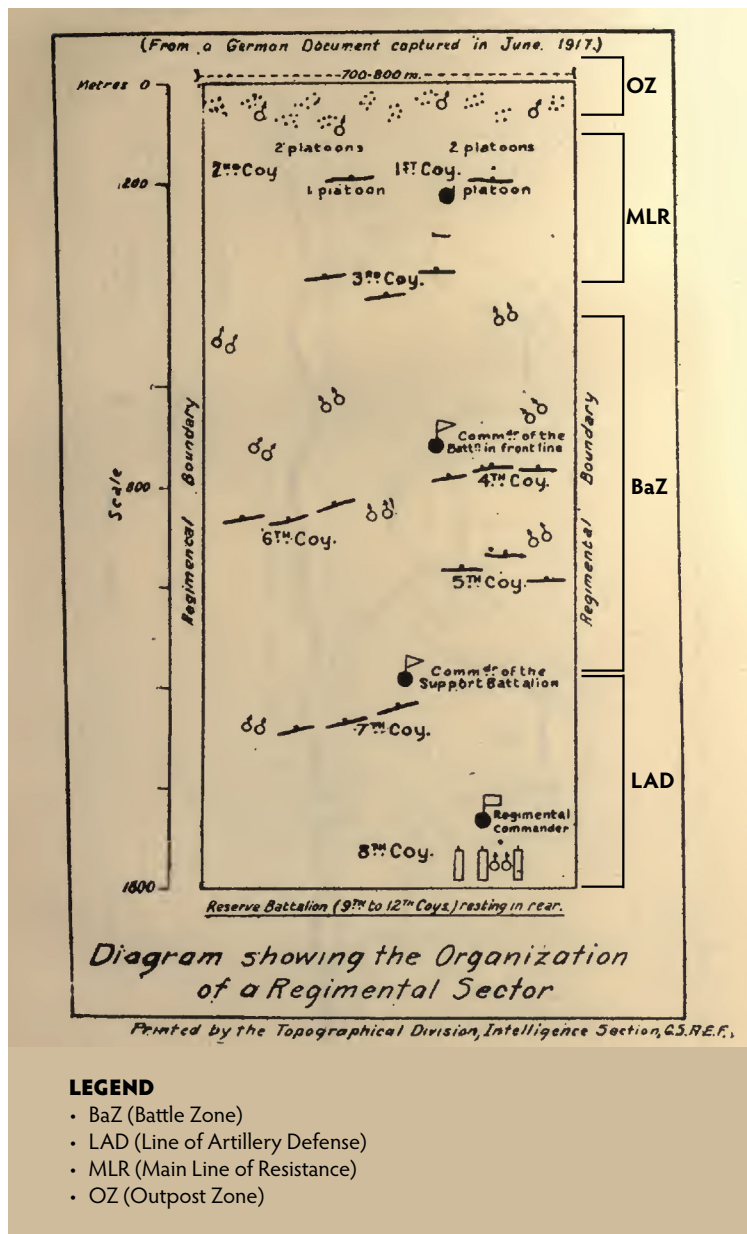
Translated from a captured German document in June 1917, this diagram displays the organization of a regimental sector. (Graphic adapted by the author, courtesy of the Army War College, *German and Austrian Tactical Studies* [1918])

BrZ, though it could be as little as 50 m or as deep as 1,000 m.[11]

Outpost zone. The OZ is a front line formed of small-unit fortifications. There was a continuous trench that provided shelter during daily life. In the event of an assault, defenders moved forward into a line of specially prepared shell holes, and the trench became a communication trench. Rather than defenders positioned evenly throughout the line, groups usually of seven would hold small shell-hole fortifications.[12] This accomplished three things. First, the defenders managed to avoid the majority of the preparatory barrage and suppressive fire so long as they were not observed.[13] Second, it gave an element of surprise because the line of resistance was formed when the attack commenced.[14] Third, it allowed some units to advance further than others as resistance was uneven.[15] The attacker was faced with the choice of arriving at the MLR piecemeal as different units broke through; with an enemy to their rear as points were bypassed; or together but risking artillery fire breaking up the attack.

Main line of resistance. The MLR typically consisted of two or three fire trenches with the appropriate communication trenches, dugouts, and dummy positions. The majority of machine guns were checkerboarded in independent positions behind the MLR. It was sited to be easy for friendly artillery observers to view and difficult for enemy observers. Positions on the reverse slope of hills and behind tree lines and towns were typical, but due to the large front and local considerations, less favorable, and even unfavorable positions had to be held too.[16] Like spaced armor, the OZ was designed to fragment an attack while the MLR stopped it.

Battle zone. The BaZ extended for 1–1.5 km behind the MLR and was filled with false positions and disconnected infantry, mortar, and machine gun positions. It was here that local counterattack troops were found. If the MLR was taken, there was an immediate barrage from directly laid field guns and a counterattack. The idea was that the disorganized enemy who had just occupied the MLR would have suffered heavy casualties and be further disorganized by the well-aimed barrage and easily thrown out of the captured positions.[17] It was for this reason that German troops could give up positions easily if they were temporarily disadvantaged and risked high casualties. Positions would be permanently abandoned if they were costly to retake, did
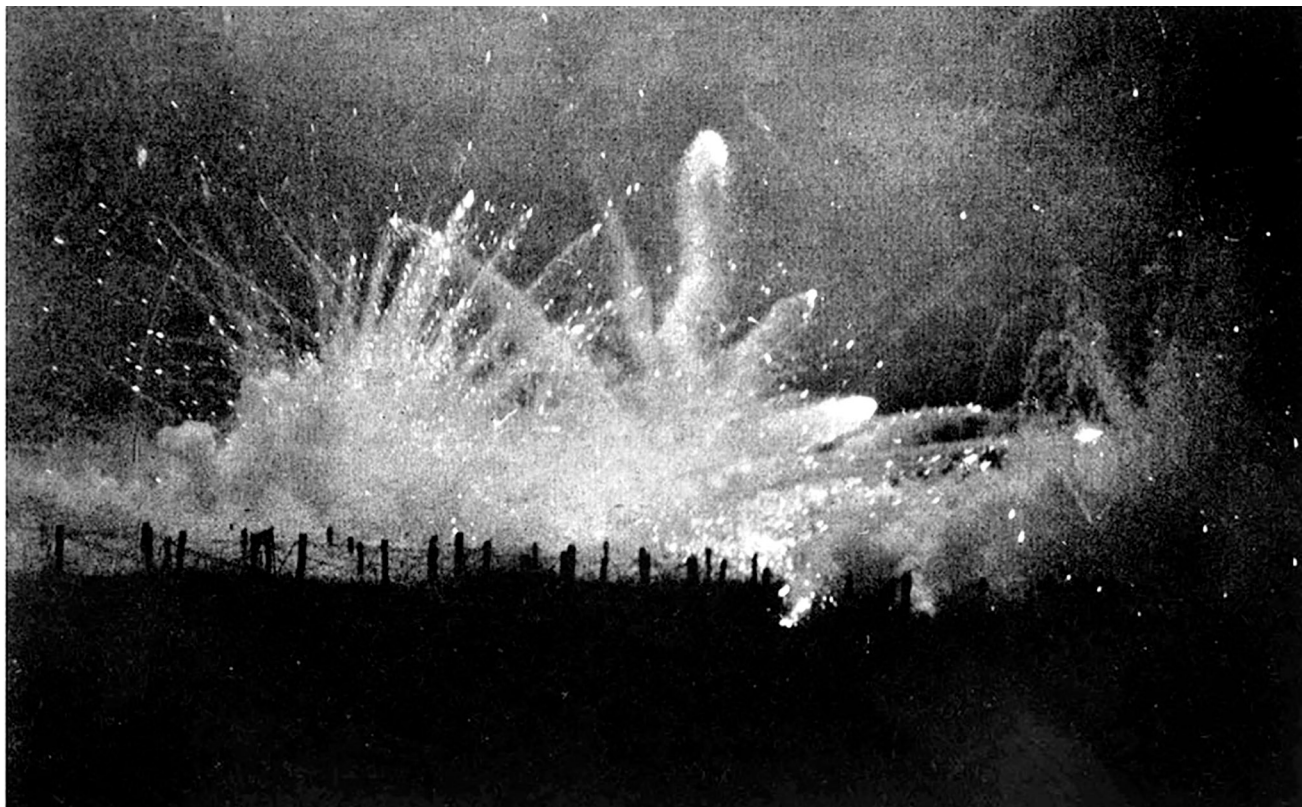
A German artillery barrage pounds Allied trenches during the night at Ypres, Belgium, in 1915 (likely the Second Battle of Ypres). (Photo courtesy of George C. Nasmith, *On the Fringe of the Great Fight* [1917], via Wikimedia Commons)

not offer a substantial defensive advantage, or could channel the enemy attack into unfavorable ground. This system of withdrawal and counterattack theoretically allowed defenders to funnel advances into disadvantageous terrain even at the lowest level.

By mid-1917, a typical regimental sector placed three-quarters of a brigade in the OZ and MLR, the strength of a full brigade in the BaZ, and a single company garrisoned the critical points in the LAD. On the local level, this made the majority of a brigade available for immediate counterattacks and reinforcement for the MLR and left an unengaged reserve of one brigade per regiment or one regiment per division. The clear offensive spirit of the doctrine can be seen in these in-depth deployments staged primarily for counterattacks.[18]

Line of artillery defense. The LAD was typically one or two fire trenches. The BaZ had the same disruptive effect for the LAD as the OZ had for the MLR. If efforts to recapture the MLR were fruitless, then the LAD bought time for artillery to retreat and new defensive lines to be created.[19]

The Russian Defense as an Elastic Defense in Depth

The Russian defense in Ukraine seems to closely copy the German defense. The largest departure is that the depth of zones has greatly increased. This is because the rate of advance was limited to the pace of an infantryman in World War I. The increased theoretical rate of advance of mechanized columns means that there must be greater depth to allow for adequate reaction time.

In Ukraine, the BrZ, traditionally understood as the distance between fieldworks, is usually between 1 km and 1.5 km deep in open country.[20] The distance from enemy lines that infantry and mechanized forces can operate is different. This has led to a zone behind the front lines that both sides attempt to deny to vehicles: the gray zone (GZ). The primary difference between the two zones is that one is concerned with breaking up attacks after they leave their zone of control, while the other is concerned with denying the use of an area behind the enemy's front line to vehicles, which includes breaking up mechanized assaults.

U.S. troops man a captured German communications outpost 19 September 1918 in France. (Photo courtesy of the U.S. Army)

While there was deep searching fire before this war, it was generally limited to known positions, lines of communication, and situations in which artillery-spotting aircraft could operate. The proliferation of observation and attack drones, guided shells, and ground radar capable of detecting vehicles has greatly increased the range and consistency of accurate engagement.[21] In eight examples of mechanized assaults, both Russian and Ukrainian, the mean distance they came under fire was 1.63 km behind their front lines.[22] Accounting for time between observation and shells on target, the GZ likely extends to a minimum of 3.5–6 km.[23] The zone of "searching fire" beyond this is at least 10 km, where enemy vehicles are commonly engaged.[24] With the increase in number, payload, and range of attack drones like the Lancet, the GZ will continue to expand in depth and increase in efficacy.

So far, the GZ has been the greatest arrow in the defender's quiver and the Achilles' heel to the attacker. The rapid advance in drone technology has forced attackers to gather and launch their strikes from far further than before. This means more time under fire and better prepared defenders. There is no way to bypass or cut through this zone of defense unless artillery and drones can be completely suppressed.

The OZ operates much as it did in World War I, though with an increased depth to deal with faster advances. Unconnected positions work to break up attacks before they reach the MLR. Instead of using dense wire to block and stall advances, deep minefields extend through the entire zone. The additional depth also offers increased opportunities to funnel attacks into naturally and artificially disadvantageous terrain. An excellent example is Russia breaking the pattern of counterattacks southeast of Robotyne, channeling the Ukrainian advance where the hills gave the Russians a significant line-of-sight advantage.[25]

South of Robotyne, two or three MLRs are visible from satellite stills; the first is 10 km from the front line's location at the time of construction. The distance between subsequent lines is from 3 km to 6 km.[26] There are contiguous antitank ditches and a fire trench dotted with fortresses and dugouts. They conform to German positioning doctrine as best as possible, running behind tree lines, hills, and towns. Further comment is not warranted since neither the MLR or the BaZ and LAD have been truly tested.

Objections to the Elastic Interpretation

There are two primary objections to the interpretation offered here. First, one cannot definitively know the Russian doctrine without access to internal publications or discussions. While the epistemological point is true, the latest public publications places preference on maneuver in defense. Where a purely positional defense must be held, doctrine recommends a main defensive position of four layers of strong points separated by 400-1,000 m in depth and brigade defensive zones as wide as 15 km, and emphasizes the importance of directly laid fire from artillery and integrated armored vehicles in repelling assaults.[27] Russia's defenses and actions during the Ukrainian 2023 offensive as described earlier are incongruous with prewar doctrine. There is more to discuss in the shortcomings of prewar Russian defensive doctrine than there is space here, but the unprecedented state of surveillance in Ukraine alone is certainly responsible for many of the changes, as it forces vehicles from near static positions on the forward edge of the defense which in turn requires changes to the whole system.[28] Since the tactics of Russian commanders in the field have been forced to evolve faster than Russian doctrine the argument that the elastic interpretation is not supported by available Russian doctrine falls flat.

The second objection is weaker. One might object that Russia has held the OZ far more strongly than it would if it was employing an elastic defense. This is a simple misinterpretation of an elastic defense. Regarding the pattern of retreat and counterattack, *The Principles of Command in the Defensive Battle in Positional Warfare* says, "These tactics cause the fighting to take place not in, but for, the front line."[29] While an elastic defense acknowledges, plans for, and even generates its greatest strength through retreat and compression, in ideal circumstances (like those in Ukraine) when the enemy attacks with insufficient strength to break through and neither artillery nor local circumstances render the captured positions unfavorable, the front line will be recaptured.[30] Russia's continued counterattacks for favorable OZ positions while relinquishing others is best understood as part of an ideal elastic defense. It is not an argument against the notion that Russia employs an elastic defense. Whether it is favorable to hold the front lines so dear is a different question than whether it conforms with such an interpretation.

A 2015 map of the buffer zone established by the follow-up memorandum of the Minsk Protocol during the war in Donbas, Ukraine. (Map by Goran tek-en via Wikimedia Commons)

Benefits of the Elastic Interpretation

Disruption zones. Even though it is plausible to interpret Russia's defense as an elastic defense, why should we? One reason is that it offers a more discriminating framework than viewing it as an iteration of other types of defenses like the U.S. area defense, which has a single disruption zone. Forcing Russian defense into a framework like that ignores that the GZ, BrZ, and OZ all use distinct methods to achieve their disruptive effects and take place in distinct locations on the battlefield. Accepting the elastic interpretation allows and encourages the focused study of the unique challenges each zone poses to its implementation or destruction.

Air superiority. Understanding Russian defense in Ukraine as an elastic defense helps correctly identify the obstacles to a successful breakthrough battle. While there were many failings of the Summer Offensive, Ukraine's and its Western allies' flawed understanding of the Russian defense is most visible in the importance ascribed to their failure to seize air superiority.[31] Ukraine certainly suffered heavily due to extremely active Russian aviation during those early June nights and would have had more success using Western mechanized tactics if they were able to present at least a contested airspace.[32] Even if they had local air dominance, the likelihood of a successful mechanized breakthrough attempt against a modern elastic defense is slim as no aerial bombardment can totally destroy a defender's ability to resist. A much reduced but steadfast garrison could still plausibly repulse a mechanized advance behind the drones of the GZ and mines of the BrZ and OZ that are left untouched from the air. Simply put, while at least denying airspace to the defender is of critical importance, air superiority is not a sword able to slice the Gordian Knot of a Russian-style defense.

Minefields. We are able to obtain a tentative solution by placing the modern problem of minefields in the context of World War I's elastic defense. These minefields on an unprecedented scale do not represent a fundamentally new challenge but rather a return of an old one. In World War I, a single line of uncut wire and a stout-hearted machinegun could stall an advance; now, one undiscovered line of mines can repulse an advance by its own powers.[33] The Mine Clearing Line Charge only clears an 8 x 100 m path, and the largest cleared zone by the mine clearing equipment of a major power is the British Python, with a 200 x 7.3 m cleared zone.[34] When confronted with individual obstacles .5 km in depth that are layered across the entire OZ, they will, of course, be found wanting.[35] The narrow, cleared corridors also make advancing columns more vulnerable to all types of fire. I believe the solution is the same now as it was then: systematic obstacle-clearing artillery fire.

There are three clear objections to this. First, the wear on equipment; second, the consumption of ammunition;

and third, the need to "shoot and scoot." The first two objections are economic and certainly are problems that must already be overcome by any country engaged in a peer war.[36] The third seems more damning until you consider German neutralizing artillery tactics. While it relies on gathering at least a local artillery parity, it also offers the hope of rendering a sustained bombard-

be located or planned for in advance. A more consistent implementation of independent armored vehicles or anti-tank teams operating deep in the OZ would help shift the line of resistance away from fieldworks.

These mitigate the issue but do not entirely remove it. The infantry is still required to occupy a front line. The German method of moving forward from field-

> In the First World War, the Germans successfully shifted the line of resistance away from fieldworks through a doctrine reliant on counterattacks, and where positions must be occupied, like the OZ, the line of resistance formed only as the attack commenced.

ment plausible. A sustained bombardment is rendered palatable because achieving surprise is always difficult in positional war and has become almost implausible with the advent of drones. An advance is likely to falter even if surprise was obtained without a way to quickly breach minefields. Trading an attempt at surprise for a comprehensive preparatory bombardment, including obstacle clearing, is at least an interim solution.

The line of resistance. Understanding the Russian defense as an elastic defense helps to pinpoint the key issue to breaking or maintaining it. The glaring weakness of any defense in a positional war is that with almost constant surveillance, any positions that could be observed can be destroyed by preparatory fire or accounted for in attack plans; the elastic defense is no exception. In the First World War, the Germans successfully shifted the line of resistance away from fieldworks through a doctrine reliant on counterattacks, and where positions must be occupied, like the OZ, the line of resistance formed only as the attack commenced.[37]

Russian doctrine already extensively uses counterattacks, but there are also limited instances where the Russian defense unconsciously mimics German OZ doctrine. There is the famous incident where a single Russian tank repulses a Ukrainian column that had broken past an outpost and other cases where Russian tanks ambush columns well forward in the OZ.[38] Acting alone, these vehicles are far more likely to avoid attack in the GZ and greatly enhance the disruptive effect and defense of the OZ since they are points of resistance that cannot

works is not employed in Ukraine. I suspect this is primarily due to constant observation. The German manuals are clear that pushing out of cover was effective only when it was not observed as otherwise, they were more vulnerable to the fire now directed on them.[39] In the specific case of Ukraine, where the majority of positions are built in agricultural windbreaks, it may be possible to move forward into the windbreaks on the flanks of the position or possibly break the line of sight of observing drones by moving behind the position.[40] This introduces the risk of the attacker embedding themselves in the defender's position. It may still be favorable in specific circumstances like a typical Russian or Ukrainian mechanized advance where the disembarked infantry will be without support after their vehicles withdraw. The individual tactics to shift the line of resistance must be tailored to the conflict, but an aggressive defense—the German move forward, the Russian disruptive armor, or even the creation of numerous dummy works and saps—all help mitigate a defender's fundamental disadvantage in a positional war.[41]

For any would-be attackers, understanding the Russian defense as an elastic defense reveals that they must find a way to pin the defender to their fieldworks.[42] As discussed later, the use of remote-deployed minefields may help to smother enemy movement, making German breakthrough artillery tactics effective and forcing the defender to fight from his positions.

A soldier from Ukraine's 10th Separate Mountain Assault Brigade "Edelweiss" fires a mortar within the Kupiansk axis on 26 January 2024 after receiving coordinates from drone operators about enemy positions. (Photo by Serhii Nuzhnenko, Radio Free Europe/Radio Liberty via the Collection of war.ukraine.ua)

Breaking an Elastic Defense

The technical method. If the Russian defense is an elastic defense, it is logical to look at the two historical methods of breaking an elastic defense: what I characterize as the entente's technical method and the Quadruple Alliance's shock method.[43] Each method played to the relative advantages and disadvantages of the powers in industry and manpower.

The technical method leveraged the entente's advantages in industry, raw materials, and manpower. I call it the technical method because it believes that technological and industrial solutions such as tanks and an overwhelming advantage in artillery will allow them to grind down and break through the enemy lines.[44] So long as they could keep a nearly even casualty ratio, they would continually degrade the Central Powers' fighting ability relative to their own. They would quickly smash enemy lines and silence defending batteries with their massive advantage in tubes and shells. Tank attacks would move

forward without bombardment, bringing an element of surprise and direct fire to the front. In theory, trucks, tanks, and artillery tractors kept the advance faster than the construction of defensive lines. While infantry tactics had improved by the end of the war, the entente's method is best summed up by the dictum, "The artillery conquers, and the infantry occupies."[45]

Modern Western maneuver doctrines share a key feature with the technical method; they rely on technological or industrial advantages to prevent or terminate a positional war.[46] In the case of the United States, there are visions of overwhelming precision air and artillery strikes while mechanized columns slice through defensive lines like a scalpel. The possibility of a positional war is not considered in high-level doctrine.[47] Open warfare is possible in this manner. However, it relies heavily upon industrial and technological advantages or the opponent's willingness to fight an open war. It is unwise to presume these conditions will always be

obtained before the outbreak of hostilities or that they can be sustained throughout a conflict. Weapons and munitions are always finite resources, and their production and distribution can be disrupted in sometimes surprising ways. Furthermore, extended conflicts are one of the primary drivers of technological and tactical advancement on the battlefield. Over time, an undefeated force tends to overcome or at least mitigate the technological superiority of their opponents.[48]

The shock method—artillery. The German High Command realized its industrial weakness and instead focused on improving infantry and artillery tactics and cooperation.[49] German breakthrough artillery tactics departed from contemporary artillery tactics in one important way: they accepted that the ability to resist was impossible to destroy by fire.[50] They instead sought to disorganize their opponent's rear and deny them room to maneuver on the battlefield. The barrage lasted between one-and-one-half and five hours, with overwhelming fire converging on and departing from their determined targets to the minute. The fire from all arms was distributed across a greater width than the intended attack to pin troops on the flanks and deceive the enemy of the center of the effort. The German preparatory barrage consisted of three phases, starting with targets of opportunity, then moving to counterbattery fire, and ending with destruction fire on the front lines.[51]

It began with fire on command posts, rail lines, roads, depots, communication centers, infantry concentrations, and occupied battery positions. The large number of guns made batteries difficult for the entente's forces to locate.[52]

The majority of the artillery shifted to dedicated counterbattery fire after around fifteen minutes. As many battery positions and alternates as possible were located prior to the start of the offensive.[53] Field guns conducted the majority of the counterbattery fire, saturating any potential positions with lingering gas shells.[54] The use of chemicals, which could take days to disperse fully, silenced the batteries for the course of the combat as gas masks made the operation of the guns nearly impossible and had a limited life.[55] With areas as large as a square kilometer contaminated and all observed secondary battery positions hit, it was very difficult for a battery to relocate and reenter the fight quickly.[56] Using gas instead of high-explosive shells eliminated the chance of destroying the battery but

was more likely to silence a battery. High-explosive shells would have also introduced the opportunity of a battery not being wholly destroyed and reentering the fight. If there were any unlocated batteries or batteries that managed to reenter the fight, there were field guns dedicated to reactive counterbattery fire.[57]

Finally, fieldworks, secondary lines, flanks, and assembly areas were hit with intense destruction fire and dispersing gas. Trench mortars were largely responsible for destructive fire on obstacles and fieldworks due to their ease of production and high angle of fire. Rather than attempting to destroy every position like the British at the Somme, they focused on battering deep corridors for shock troopers while using gas to smother enemy movements and pin them to their works.[58] The use of dispersing gas prevented the movement of reserves and counterattacks while allowing friendly troops to safely cross those positions later.

Infantry. German stormtrooper tactics are widely recognized for their contribution to modern light infantry tactics, but their ethos is often ignored. They relied on a type of infiltration that now straddles the line between infiltration and penetration.[59] This has led them to be characterized as light infantry tactics; however, I believe it would be more accurate to call them shock tactics due to the frequent emphasis on the enemy's morale.[60]

Stormtroopers were elite units that began forming locally as early as 1915.[61] Their methods had become more uniform by 1918, and the entente had broadly copied the elastic defense.[62] To bypass the OZ as best they could, stormtroopers would deploy in depth with sufficient distance between units so that each could use the terrain to their advantage. They often leaped into the frontline trenches behind grenades even as the last shells of the bombardment burst, catching defenders in their shelters or forcing them to expose themselves to the barrage.[63] As previously discussed, the OZ was formed of many small fortifications rather than evenly spaced infantry in trenches, making it possible to narrowly breech it. The stormtroopers then headed for the MLR as more or less intact groups that would continue attempting to cut through lines without replacement until their strength was exhausted.

Stormtroopers shattered the front lines with the close support of infantry guns, mortars, flamethrowers, and heavy machine guns, but they did not push back

the front line themselves. Regular infantry conducted a frontal assault after numerous local penetrations.[64] In an ideal situation, the enemy offered little resistance after the weight and confusion of the new barrage tactics and the terrible violence of the stormtroopers passing. On the first day of Operation Michael, the first German attempt in 1918 to win a breakthrough battle before U.S. involvement made victory impossible, twenty-one thousand of England's thirty-eight thousand casualties were prisoners.[65] This demonstrates the value of the shock generated by these new German tactics.

A New Method—The Tandem Method

The technical method and its modern descendants are overly reliant on technological and industrial advantages to count on in advance, especially for lesser powers. While successful in returning to open warfare, the shock method never managed to achieve an operational breakthrough. The exact reasons it failed are contested and range from Germany's lack of trucks and tanks to Gen. Erich Ludendorff's decision to switch the main effort to the entente's ample reserves.[66] Whatever the case may be, a tactic that was not wholly successful in its own time cannot be applied to a vastly different technological era unchanged and be expected to succeed.

The modern elastic defense has proved its resistance to the forceful blows of mechanized advances.[67] Armor's breakthrough potential appears to have decreased with the advent of massive minefields, first-person view attack drones, and an increase in infantry antitank weapons.[68] This is demonstrated by the failure of Russia's Thunder Run-like tactics in the opening months of the conflict, in the steady repulse of Ukrainian columns during their Summer Offensive, and the stall of the Russian mechanized advance toward Avdiivka in November 2023.[69]

This is not to suggest the impotence of armor but to highlight the need for improvement in its use. Ukrainian infantry was the first to breach the Russian MLR in the Robotyne direction, and Russian infantry made faster progress fighting through Avdiivka than mechanized forces in the advance to it.[70] These examples should prove that faster-tempo infantry operations could play a critical role in breaking a modern elastic defense.

I propose a tandem method in which infantry pushes through the lightly held OZ and the MLR and mechanized units are committed to defeating counterattacks and preventing the compression of defenders in the BaZ

and the LAD. Without the disruptive actions of the OZ and the antitank obstacles of the MLR, the success of armor acting by Western doctrine seems more likely. Their success should also prevent the compression of defenders within the later lines of defense.

Modern breakthrough artillery tactics. Simply clearing the way for armor with infantry will not break a modern elastic defense. A solution to the disruptive actions of the BrZ and OZ needs to be found. Modernized German breakthrough artillery tactics seem to be a potential solution, though a degree of artillery command centralization is required.[71]

While drones are, in large part, responsible for the current positional war in Ukraine, they may be the solution to it as well. Drones allow for the comprehensive tracking of batteries, alternate positions, fieldworks, depots, command posts, assembly areas, and all other targets of breakthrough artillery. While attacking them as they are located is tempting, maintaining surveillance and striking them all with an overwhelming preparatory bombardment is more likely to lead to a successful breakthrough attempt.

A bombardment could open after waves of attack drones strike known battery positions and search for targets of opportunity around alternates and ammunition dumps. Drones have also proven effective in a reactive counterbattery role.[72] The widespread use of first-person view attack drones could reduce the number of guns devoted to counterbattery fire while providing an edge in artillery action.

While the problems associated with obstacle-clearing fire in the modern battlefield require more research and experimentation than I have to offer, it seems to be a possible solution to the densest minefields on the front lines. Mortars, like in the First World War, are the best-suited arm to obstacle-clearing fire due to their low cost, high rate of fire, and ease of production and fielding. They should be tasked with battering deep corridors rather than engaging in every fieldwork and destroying every mine obstacle. Conventional mine-clearing methods can be employed for the safety of vehicles after the infantry assault has passed a position.

An objection is that while the depth of individual mine obstacles is narrow enough to conceivably be cleared by fire (500 m), their total depth in the Russian defense is closer to 10 km.[73] This resurrects a problem encountered in the First World War of maintaining

artillery support during an advance. Fortunately, the mine obstacles are less complete the further a position is penetrated since there must be lines of communication to the front. If an attack manages to maintain close contact with the defenders, they may be able to pass through them before they are able to seal them or use current line charges to breach weak points observed during the enemy's retreat.

The largest objection to the adoption of German breakthrough artillery tactics is that there is nothing to replace the neutralizing roles of lingering and dispersing gas. I believe that using remote-deployed mines with highly variable and perfectly consistent self-destruction may fill this gap. Mines may be especially effective in a counterbattery role to disrupt current shoot-and-scoot tactics, either exposing enemy artillery to fire or outright destroying it.[74] Multiple Launch Rocket Systems, which provide some of the most effective defensive artillery fire due to their volume and maneuverability, would be especially vulnerable to this technique. Their typical approach to the front to fire and retreat to reload could be interrupted by minefields along all roads and likely secondary routes with concentrations around depots. Attack drones could further enhance this effect by loitering around blocked roads to prevent clearing and around gaps in the minefields where the defender attempts to slip through.

Remote-deployed minefields would also be effective in pinning the defender to his works. As discussed earlier in a positional war, one of the defender's greatest weaknesses is that all observable positions can be destroyed or accounted for in attack plans. As such, they seek to shift the line of resistance away from fieldworks. Using an inordinately active defense that relies on counterattacks like the elastic defense or tactics like the First World War German move into no-man's-land, and the modern Russian use of armor in the OZ all accomplish this feat. Saturating fieldworks, support works, likely assembly areas and routes of counterattacks with short-duration minefields, like a German chemical barrage, could smother the ability of the defender to shift the line of resistance. This would weaken an elastic defense, making it more vulnerable to preparatory fire and decreasing the threat of it "snapping back." The mines would be set to destruct before the advance is expected to pass, allowing them to fill the roles of both lingering and dispersing gas.

The two prime objections I can see to this proposal are the increase in munitions and equipment necessary to place dense enough minefields in the required time frame. These are real issues that I suspect any power will already encounter in a peer war. In the specific case of the United States, the German AT-2 rocket is compatible with current equipment and closely fits many of the requirements of offensive mining.[75] An issue that would require development is creating an antipersonnel mine with similar qualities.

Conclusion

The elastic interpretation and the modern technical and tactical challenges that accompany it concern all nations that face the realistic possibility of being forced to induce or terminate a positional war in the near future. The framework of First World War doctrine helps guide one to the fundamental challenges of the offensive and defensive in positional war and historically proven remedies. ■

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Arctic Munitions Operations

Munitions Safety and Suitability for Service

Chief Warrant Officer 4 Michael Lima, DBA, U.S. Army

The winter was our disaster. We became the victims of Russia's climate.

—Napoleon Bonaparte

The 2022 Russian invasion of Ukraine escalated the region to an all-out conflict, one like Europe had not seen since 1945. The war has proven disastrous for the Russian military, just as Napoleon and his Grand Army experienced when it occupied Moscow in 1812. The onset of winter and its cold weather, lack of supplies, and other factors forced the French to retreat from Moscow, leading to its ultimate defeat in the campaign—a bitter loss to what has been known as "General Winter."[1] Winter is an enemy that Ukraine and Russia have had to endure throughout the conflict. "Battles take place day and night, regardless of the weather," said Ukrainian lawmaker and soldier Yegor Firsov from the front lines of the Russian-Ukrainian War.[2] Protracted military operations in arctic cold weather require endurance in unfavorable conditions that most Americans are unfamiliar with. Sustainment, including munitions supply, provides the logistical means to apply lethal effects in arctic conditions.

Arctic Competition

The Arctic Circle is a shared region with overlapping claims by various nations. Russia and China want to expand their influence and capabilities in the Arctic. While Russia continues its invasion of Ukraine, it still maintains large-scale arctic military capabilities (see figure 1). As a pacing threat, China's growing economic, scientific, and military activities increase to influence the Arctic region. China has gone so far as to declare itself a "near-Arctic state," created to gain a more significant role in regional Arctic relations.[3]

The Arctic is immense, with segments in three geographic combatant command areas of responsibilities: United States Northern Command, United States European Command, and United States Indo-Pacific Command (see figure 2). These different commands require extensive coordination as they create a framework to guide their approaches to address emerging challenges and take advantage of opportunities in the Arctic in support of the *Department of Defense Arctic Strategy* and the *National Strategy for the Arctic Region*.[4] Enhancing capabilities and increasing capacity for arctic operations is the principal way and initiative the U.S. Army can build upon to create Arctic dominance in the region. However, extreme temperatures, variable periods of daylight, mountain ranges, and glacier changes are arguably the greatest hindrance to creating military capabilities and increasing capacity during arctic operations.

Arctic Capability

The central hub of the U.S. Arctic presence is Alaska. The U.S. Army has had an almost continuous presence in the state since the territory was purchased from Russia in 1867.[5] Army forces in Alaska reside on three major installations: Fort Wainwright, Fort

The U.S. Army Cold Regions Test Center tests the Army's Next Generation Squad Weapon at Fort Greely, Alaska, 23 January 2024. The XM7 and XM250 are successors to the M4 rifle and M249 light machine gun that U.S. forces have used for decades. The new weapons boast improved accuracy and range, weigh less, and fire with less recoil even though the 6.8 mm round is larger than the two legacy weapons' 5.56 mm cartridge. (Photo by Sebastian Saarloos, U.S. Army)

Locations are approximate

Legend:
- NATO (teal)
- U.S. (blue)
- Russian (red)
- Military base
- Air base
- Joint base or Headquarters
- Military port
- Port

NOTE: AFB = Air Force base. AS = air station. JBER = Joint Base Elmendorf–Richardson. NATO = North Atlantic Treaty Organization. SFS = Space Force station. Finland joined NATO in 2023, and Sweden had submitted its NATO letter of application as of 2022.

(Figure from *Report on the Arctic Capabilities of the U.S. Armed Forces*)

Figure 1. Russia's and the North Atlantic Treaty Organization's Postures in the Arctic

are needed in the Arctic region to ensure that the United States has an overwhelming advantage in strategic competition between nations. The installations, ports, and facilities provide an anchorage point for military forces in the region to defend national interests. Nothing exemplifies commitment to the Arctic region more than the activation of the U.S. Army's 11th Airborne Division, the "Arctic Angels," to conduct multidomain operations in the Arctic.

Arctic Division

A former World War II-era unit, the 11th Airborne Division, was reorganized from Alaskan-based brigade elements to focus operations on the Arctic region. The 1st Stryker Brigade Combat Team and the 4th Infantry Brigade Combat Team (Airborne) of the 25th Infantry Division were reflagged to the 1st and 2nd Brigades of the 11th Airborne Division to focus on Arctic and cold-weather combat operations.[6] Creating a division from Alaskan-based organizations provides the ability to maintain institutional knowledge and have a cohesive identity.

Greely, and Joint Base Elmendorf-Richardson. Other government and military facilities include Joint Rescue Coordination Center Juneau, Coast Guard Air Station Kodiak, Eareckson Air Station, Eielson Air Force Base, Pituffik Space Base (formerly Thule Air Base), and Clear Space Force Station.

The Army provides land-component forces to the joint force that complement the capabilities of the other services and governmental departments. The capabilities

Cold Region Sustainment

Equipment and sustainment infrastructure are vital in sustaining the Arctic Division in its specialized environment. The sustainment function provides maneuver

forces support and services to ensure freedom of action, extend operational reach, and prolong endurance. The elements of logistics include maintenance, transportation, supply, field services, distribution, operational contract support, and general engineering.[7] In the Arctic, ground mobility is most favorable during the winter months, while in the spring, ground movement becomes impossible across large parts of Arctic territory.[8] Thawing permafrost affects infrastructure, and the warming of the Arctic has led to longer windows and reduced ice conditions that can open new waterways and increase transit through the region.[9]

Distribution of munitions material into the Arctic region is critical for support of maneuver units and their ability to apply lethal effects. The physical infrastructure for munitions storage, such as ammunition bunkers and igloos, is essential to ensure the reliability of munitions. Ammunition magazine temperature control is essential for storing munitions that are adversely affected and susceptible to temperature extremes.[10] Soldiers should not exceed military published temperature limitations under prevailing climate conditions in the region conducting Army operations (see, for example, table 1).

Army Publications

The Army Ammunition Data Sheets are reference handbooks published to aid in planning, training, familiarization, and identification of military munitions;

(Figure from *Regaining Arctic Strategy*)

Figure 2. Geographic Combatant Command Areas of Responsibility in the Arctic

for each item, there are illustrations with characteristics and related data such as weights, dimensions, performance data, shipping and storage data, type classification, and logistics control codes.[11] The Army Ammunition Data Sheets fall into different categories and federal supply classes (FSC), which include small caliber ammunition (FSC 1305); artillery ammunition for guns, howitzers, mortars, recoilless rifles, and 40 mm grenade launchers (FSC 1310, 1315, 1320, 1390); grenades; rockets systems and rocket fuses (FSC 1340); land mines (FSC 1345); military pyrotechnics; demolitions material; cartridges, cartridge actuated devices, and propellant actuated devices (FSC 1377); armor tiles; and remote munitions (FSC 1346). The technical publications provide performance data of munitions to ensure safe operations.

The performance data for munitions are not haphazardly applied. The data points are created from a systematic approach that allows commanders to trust in the reliability of their weapons systems and the munitions employed regardless of the environment. The Joint Ordnance Test Procedure (JOTP) and Allied Services Safety and Suitability (S3) publications provide the planning and implementation of S3 assessment testing covering the entire life cycle of munitions material (see figure 3).

Testing covers the material life cycle from shipping and transportation from the manufacturer to storage and logistics-supply-using units. The environmental tests performed under JOTP and Allied S3 publications are the most relevant to munitions endurance in arctic environments; they provide any temperature limitations or restrictions in expected environmental conditions.

Joint and Allied Testing Publications

JOTP and Allied S3 publications apply to various ammunition categories, and specific publications cover S3 assessment testing of all munitions for government production and procurement. For example, JOTP-022, *Safety and Suitability for Service Assessment Testing for Small Caliber Ammunition Less Than 20mm*, provides the U.S. joint services S3 test procedures until the Allied Ammunition Safety and Suitability for Service Assessment Test Procedure (AAS3P)-22 is approved by NATO Allied Committee 326.[12] Currently, AAS3P-22 Edition A, version 1, is effective and is quite similar to JOTP-022 because joint ordnance test procedures tend to be the basis for the allied services safety and suitability publications. JOTP-020 covers large caliber ammunition greater than 40 mm; and JOTP-011, *Safety and Suitability for Service Assessment Testing for Surface and Underwater Launched Munitions*, covers surface and underwater launched munitions; each has a corresponding allied S3 publication. The United States has in the past developed its own JOTP and then submitted it to NATO as the basis for the associated AAS3P since the NATO process for ratification of standards can take several years.[13] This technique ensures the most rigorous testing and validation of munitions for both U.S. and NATO operations.

Generally, a representative life-cycle environmental profile is based upon the applicable environmental factors for storage, transportation, and deployment and is used in part to create the S3 test program.[14] For example, S3 assessment testing of small-caliber ammunition requires a series of functional/firing tests, life-cycle environmental profile tests, and standalone (nonsequential) tests.[15] Ammunition is transported from the munitions industrial base to a joint security area and then on to a tactical area, where it is put into storage. Munitions can receive exposure to arctic conditions through many phases of multimodal operations, and ammunition is required to remain safe and suitable for service at extreme temperatures for military operations within NATO climate category C2.[16] Additionally, ammunition is expected to remain safe and suitable for service following storage at extreme cold conditions (C3 climate category) but would not necessarily be expected to move during the coldest period within this climate zone due to difficulties with vehicles and the temperatures outside the human comfort zone.[17] The Arctic region varies regarding cold temperatures, and the term "arctic" is often used synonymously as an adjective for cold weather. However, that is not the case in testing; cold categories have specific meanings.

Standardization Agreement (STANAG)-4370, *Environmental Testing*, is a NATO standardization document specifying member countries' agreement to Allied Environmental Conditions, and Test Publication (AECTP)-230, *Climatic Conditions*, and contains the standard climate conditions.[18] A subset of the agreement is Leaflet 2311/1, which contains climatic categories and their geographical locations, including the categories Mild Cold C0, Intermediate (Basic) Cold C1, Cold C2, Severe Cold C3, and Extreme Cold C4;

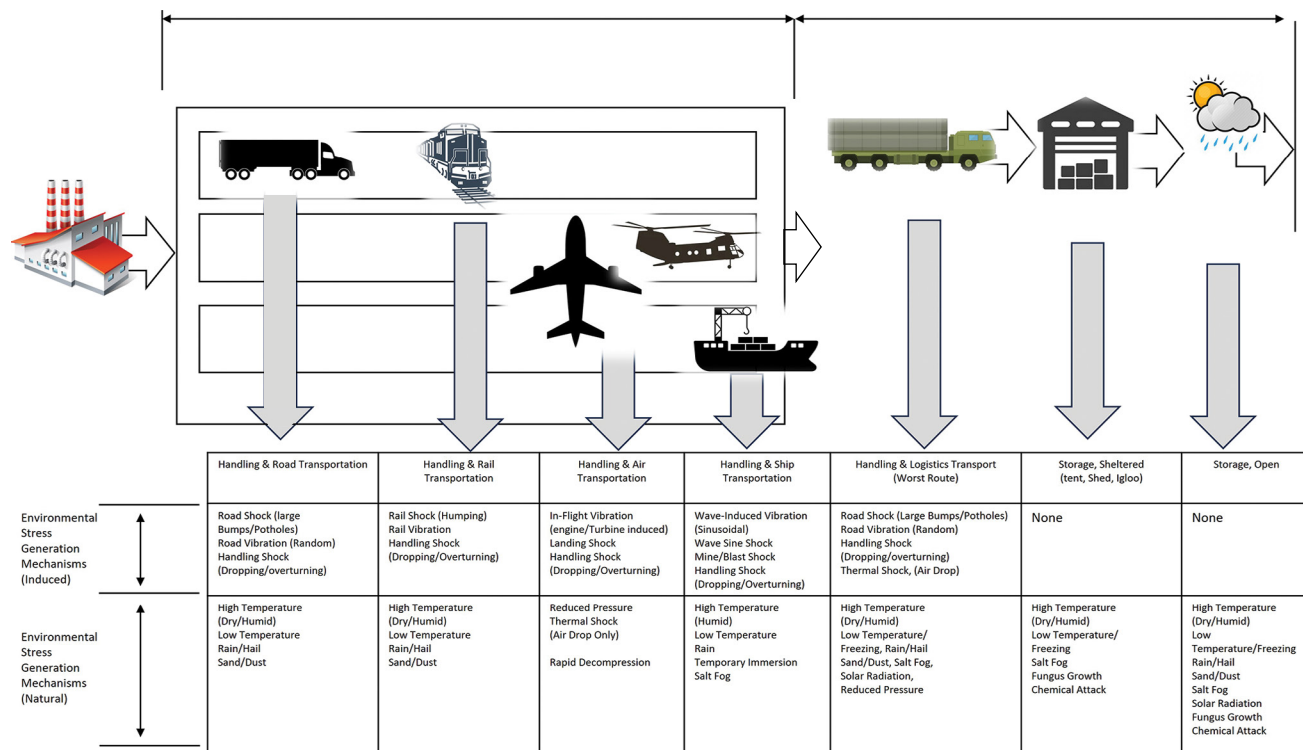**Chief Warrant Officer 4 Michael Lima, DBA, U.S. Army,** serves as a training developer with Ordnance Training Development Division, Ordnance Corps and School, under Combined Arms Support Command at Fort Gregg–Adams, Virginia. He was a training with industry participant at Raytheon Missile Defense and an accountable officer for the Army ammunition supply point at Kadena Air Base, Okinawa, Japan. He holds a doctorate in business administration and a master's degree from Baker College Center for Graduate Studies.

(Figure partially from Military Standard 810H, *Environmental Engineering Considerations and Laboratory Tests*)

Figure 3. Generalized Life Cycle Histories for Military Hardware (Partial)

the last three categories apply to the operational environment of the Arctic (see figure 4).[19]

The U.S. Army in Alaska operates from Intermediate Cold C1 to Severe Cold C3 (see table 2). Meanwhile, Category C4 applies to the coldest areas of Greenland and Siberia.[20] Climate categories are an important factor when considering operational usage of munitions in an arctic environment, along with the possible limitations or restrictions placed on munitions in specific operational environments that fall outside normal environmental conditions.

Sequential environmental tests are for normal usage in typical environmental conditions. Cold logistic storage testing consists of low-temperature and thermal shock testing for extreme expected environmental conditions. Military Standard (MIL-STD)-810H, Method 502.7, "Low Temperature," directs testers to "use low temperature tests to obtain data to help evaluate effects of low-temperature conditions on material safety, integrity, and performance during storage, operation, and manipulation."[21] MIL-STD-810H also states the purpose of Method 503.7, "Temperature Shock":

Use the temperature shock test to determine if materiel can withstand sudden changes in the temperature of the surrounding atmosphere without experiencing physical damage or deterioration in performance. For the purpose of this document, "sudden changes" is defined as "an air temperature change greater than 10°C (18°F) within one minute."[22]

It is essential to ensure adequate testing of munitions in environmental conditions. Climate Category C3 conditions for small arms ammunition are expected during storage but unlikely during transportation and deployment. In Climate Category C3, a constant low temperature of -51°C is likely to predominate significantly due to a lack of sunlight and solar radiation during the coldest period of the year.[23] For low-temperature testing, a minimum of seventy-two hours is sufficient to stabilize the ammunition thermally and has proven sufficient to demonstrate short-term safety in cold climates.[24] And for thermal shock testing, small-caliber ammunition is exposed to a low temperature of -51°C and sequentially exposed to a high

Table 1. Ammunition Temperature Limits for the M3 Multi-Role, Anti-Armor Anti-Personnel Weapon System

Weapon	Model	Type	DODIC	Operating		Storage	
M3 MAAWS	HE 441D RS, 84-MM cartridge	High explosive	CA27	-40°F (40°C)	+140°F (+60°C)	-60°F (-51°C)	+160°F (+71°C)
	HEDP 502 RS, 84-MM cartridge	High explosive dual purpose	CA21	-40°F (40°C)	+140°F (+60°C)	-60°F (-51°C)	+160°F (+71°C)
	TPT 141, 84-MM cartridge	Target practice with tracer	CA10	-40°F (40°C)	+140°F (+60°C)	-60°F (-51°C)	+160°F (+71°C)
	ADM 401/B, 84-MM cartridge	Area defense munition	CA23	-4°F (20°C)	+140°F (+60°C)	-60°F (-51°C)	+160°F (+71°C)
	ASM 509, 84-MM cartridge	Antistructure munition	CA41	-40°F (40°C)	+140°F (+60°C)		
	HEAT 551, 84-MM cartridge	High explosive anti-tank	CA383	-40°F (40°C)	+140°F (+60°C)		
	Illuminator 545C, 84-MM cartridge	Illumination	CA36	-40°F (40°C)	+140°F (+60°C)		
	MT 756, 84-MM cartridge	Multi-target	CA51	-40°F (40°C)	+140°F (+60°C)		
Notes							
TC 3-22.84							
DISTRIBUTION: Approved for public release; distribution is limited							

(Table by author; data from Training Circular 3-22.84, *M3 Multi-Role, Anti-Armor, Anti-Personnel Weapon System*)

temperature of +71°C.[25] Vigorous testing is required to ensure that the effects of low-temperature environments do not affect ammunition safety and suitability for service. For instance, Allied Ordnance Publication (AOP)-4172, *Technical Performance Specification Providing for the Interchangeability of 5.56mm x 45 Ammunition*, only has environmental requirements down to -54°C, just a few degrees outside the Climate Category C3 range.[26] Low temperatures have adverse effects on material and can affect combat operations. Consideration must be applied when exposed to temperatures outside of limitations, and adverse effects include the possibility of

- hardening and embrittlement of materials;
- changes in electronic components;
- changes in performance of transformers and electromechanical components;
- cracking of explosive solid pellets or grains, such as ammonium nitrate;
- cracking and crazing, change in impact strength, and reduced strength;

- effects due to condensation and freezing of water in or on the equipment; and
- change of burning rates.[27]

Commanders must be familiar with Army ammunition data sheets and associated technical manuals for their munitions, and they must ensure all operating and storage limitations are followed, even more so when environmental conditions are colder than usual for a given period. Precautions should also be taken for proper care and maintenance during cold weather operations.

Cold Weather Care and Maintenance

Ammunition (Class V) planners expect increased use of indirect fire ammunition because of dead space, deep snow, and other effects of mountainous terrain, and the preparation of ammunition supply points is more difficult due to freezing and mud, making resupply in cold climates difficult for large munitions over land.[28] As discussed, cold weather and low temperatures adversely affect the performance of munitions. General considerations include the following:
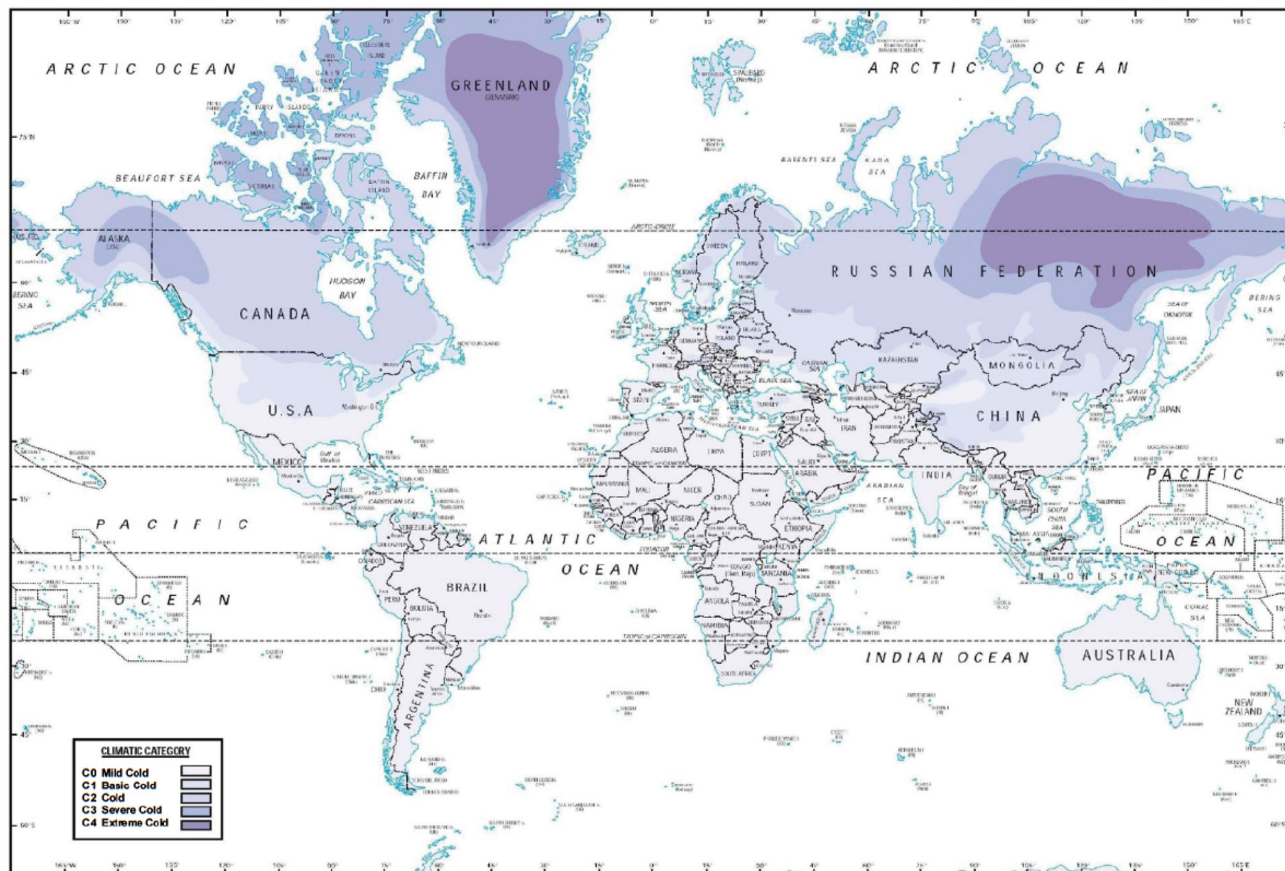
(Figure from Military Standard 810H, *Environmental Engineering Considerations and Laboratory Tests*)

Figure 4. Area of Occurrence of Climate Categories C1, C2, and C3

- Cold air is denser than temperate weather air, which creates greater drag, reducing range;
- Severe cold slows down chemical reaction processes, reducing the propulsion energy of a round exiting a tube or the pressure of flame exiting a nozzle;
- Unpacked munitions moving from cold to warm areas are subject to the same condensation threat as weapons; and
- Munitions usually cannot be lubricated to protect them from moisture corrosion.[29]

Ammunition should be kept at the same temperature as the weapons, and storage containers should be raised off the ground and covered with tarps or salvage tents.[30] Open munitions storage should be marked with poles to assist with relocating if snow covered.[31] The Army has not collectively conducted munitions operations in an arctic environment, so they require a greater degree of planning and an understanding of the operational environment.

Recommendations

The contested Arctic region has created a new environment for strategic competition. While Russia has formable capabilities in the Arctic, the United States has closed extensive military installations such as Camp Century, an Arctic U.S. military scientific research base that was first constructed in 1959 with covered trenches linking laboratories, storage, quarters, kitchen, post exchange, and library; it also included a PM-2A portable nuclear reactor to supply power.[32] Arguably, Camp Century was the height of U.S. Arctic operations outside of Alaska. Now, the Department of Defense's (DOD) northernmost installation, Pituffik Space Base, provides missile warning, defense, and space surveillance missions.[33]

While the DOD is increasing the U.S. presence in the Arctic region, there are three arctic-specific munitions recommendations to ensure an increased capacity of lethal effects in Climate Category C1 through C3 of the Arctic and sub-Arctic regions:

Table 2. Low Temperature Cycle Ranges

DESIGN TYPE	LOCATION	TEMPERATURE[1]	
		AMBIENT AIR °C (°F)	INDUCED ENVIRONMENT (STORAGE AND TRANSIT) °C (°F)
Basic Cold (C1)	Most of Europe; Northern contiguous U.S.; Coastal Canada; High-latitude coasts (e.g., southern coast of Alaska); High elevations in lower latitudes	-21 to -32 (-5 to -25)	-25 to -33 (-13 to -28)
Cold (C2)	Canada, Alaska (excluding the interior); Greenland (excluding the "cold pole"); Northern Scandinavia; Northern Asia (some areas), High Elevations (Northern and Southern Hemispheres); Alps; Himalayas; Andes	-37 to -46 (-35 to -50)	-37 to -46 (-35 to -50)
Severe Cold (C3)	Interior of Alaska; Yukon (Canada); Interior of Northern Canadian Islands; Greenland ice cap; Northern Asia	-51 (-60)	-51 (-60)

[1]These cycles were derived from AR 70-38, 1 August 1979, and essentially conform to those in MIL-HDBK-310 and NATO STANAG 4370, AECTP 230 (except for category C0). These values represent typical conditions. Induced conditions are extreme levels to which materiel may be exposed during storage or transit situations. Do not use these levels carte blanche, but tailor them to the anticipated storage or transit situation.

(Table from Military Standard 810H, *Environmental Engineering Considerations and Laboratory Tests*)

An ice core drill rig is operated inside a covered snow trench at Camp Century, northwestern Greenland, in 1964. Adopting previous techniques for fashioning such structures could prove effective for current arctic sustainment operations. (Photo by Langway, U.S. Army Corps of Engineers/Cold Regions Research and Engineering Laboratory)

Construction of expeditionary munitions storage in arctic environments. Experience in Iraq and Afghanistan provided invaluable tactics, techniques, and procedures for the construction of expedient protective structures. Civil engineers can quickly create infrastructure to support military operations and missions using earth-filled protective barriers. Underground storage facilities may consist of excavated or natural geological cavities, but current DOD regulations do not cover Arctic regions. Munitions storage in snow tunnels (cut-and-cover type), open trenches covered with timber trusses, and undercut trenches with and without metal arch forms are possibilities for storage validated at Camp Century, but they now require more research and development.

Field expedient munitions operations in arctic environments. Establishing munition holding areas requires interim storage periods before constructing permanent and semipermanent facilities. No doctrine exists regarding the use of military shelter systems and military base camps for munitions operations in arctic environments. Munitions surveillance and

maintenance can be supported using medium shelters and small shelters, but specified systems are not centered on the safety of explosives in arctic conditions.

Modernized arctic support vehicles and engineer equipment. The newest U.S. Army Cold Weather All-Terrain Vehicle provides greater flexibility in operations and replaces its aging Small Unit Support Vehicles. However, more investment is required to complement robust cross-country tactical mobility vehicles to support the delivery of munitions

Soldiers of the 70th Brigade Engineer Battalion build a snow berm 18 April 2024 in the Yukon Training Area, Alaska, to test the use of snow for constructing hasty fighting positions on the battlefield. The series of experiments demonstrated that properly compacted snow shaped into berms can provide significant protection against small and medium arms rounds at similar levels to those of earthen works. (Photo by Chief Warrant Officer 2 Jomar R. Perez, 70th Brigade Engineers)

in the Arctic. For example, engineering equipment to support snow berming, which effectively stops small arms during cold to extremely cold weather operations in the Arctic region, will be invaluable.

Conclusion

While the Russian invasion of Ukraine has become catastrophic for the Russian military, the Arctic is still an area where the Russian military maintains dominance. Cold weather operations in Climate Category C1 through C4 of the Arctic require a different approach and skill set for sustainment to provide freedom of action, extended operational reach, and prolonged endurance. Munition sustainment, the logistical element that provides a means to apply lethal effects, needs access to new expeditionary construction plans for munitions arctic storage and doctrine that provides for field expedient munitions storage in the case of escalation of conflict in the Arctic region. Having the capacity to store munitions is critical to winning in a conflict. At the same time, munitions safety and suitability for service assures commanders that they can apply overwhelming combat power in the Arctic area of operations against an enemy more versed in the operational environment. ■

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The Lockheed Martin Variable In-flight Simulation Test Aircraft X-62A (VISTA), a one-of-a-kind training aircraft, is piloted by an AI agent on 13 February 2023 at Edwards Air Force Base, California (although safety pilots were continuously on board). The aircraft flew for more than seventeen hours and was the first time AI engaged on a tactical aircraft. (Photo by Kyle Brasier, U.S. Air Force)

Artificial Intelligence in Modern Warfare

Strategic Innovation and Emerging Risks

Ryan Atkinson, PhD

In recent years, artificial intelligence (AI) has achieved notable victories over human opponents, including AlphaZero in Chess, AlphaGo in Go, and AlphaStar in StarCraft II. The United States Air Force and the Defense Advanced Research Projects Agency (DARPA) have created AlphaDogfight to test AI against a human pilot. The AI came at the pilot from the front in a speeding-precise game of chicken, "winning 5-0 through aggressive and precise maneuvers the human pilot couldn't outmatch."[1] These advancements highlight AI's growing capability to challenge and surpass human skills in complex scenarios, underscoring its potential to reshape competitive and strategic environments.

Increasingly, decision-making is automated and human involvement is lessened as autonomous systems have more control over aircraft. The U.S. Air Force tested an AI system that piloted the X-62A or VISTA tactical aircraft.[2] This significant milestone in developing AI systems indicates the potential for future autonomous or semi-autonomous military operations.

Dual-use technologies are becoming increasingly significant as AI tools evolve, presenting emerging risks and opportunities. These technologies can be applied to civilian uses that inform military operations and vice versa. For instance, precedents and practices of AI used to target advertisements on social media for marketing or political campaigns can then support military strategic communication and psychological operations. New medicines will be developed, but so will new chemical weapons, furthering the need for ongoing research into related risks and opportunities.[3] Dual-use technologies remain a double-edged sword of AI applications.

Defense innovation and strong partnerships between the military and industry are significant. Emerging AI firms within the defense industry provide new initiatives for innovations among allies. Critical cases are to be found through an emphasis on collaboration within the extensive network of defense industry titans and new emerging innovators. AI is quickly changing military technology and tactics, and the dual-use nature of the technology challenges the development of applied AI in military settings.

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Autonomous weapon systems represent a significant advancement in military technology, operating without direct human intervention. Beneficial military applications include Army-specific cases such as intelligent decision-support systems and aided target recognition, which can reduce the mental load for operators, enabling faster decision-making.[4] This approach provides advantages, including rapid response times, the ability to operate in high-risk environments, and a reduced risk to human personnel.

Generative Intelligence and Coordinated Swarms

Emerging technologies related to generative agents provide dual-use applications. Researchers at Stanford and Google demonstrated "computational software agents that simulate believable human behavior," resembling a small town of twenty-five agents.[5] Cooperation was observed among the group, which led to emergent social behaviors to "exchange information, form new relationships, and coordinate joint activities."[6]

The architecture allows generative agents to "remember, retrieve, reflect, interact with other agents, and plan through dynamically evolving circumstances."[7] Large language models are used to "supplement those capabilities to support longer-term agent coherence, the ability to manage dynamically evolving memory, and recursively produce higher-level reflections."[8]

Resilient democracies inherently need adaptable internal mechanisms to adjust to change and address unexpected situations swiftly. Applying language models to real-world scenarios often lead to unforeseen and emergent consequences. Democracies must proactively create countermeasures to address the emerging risks associated with the widespread use of generative AI and large language models, which add an additional layer of security challenges. The malicious abuse of language models demonstrates an immense challenge for future elections and democratic processes.[9]

The risks associated with foreign influence operations using deep faked video and audio are increasingly tailored and case specific. Further research must address the proliferation of state-sponsored information operations using generated disinformation to foster "widespread misunderstanding, foment social divisions, and negatively impact economic and political systems."[10] Automation has also been applied to group behavior

involving drones sending information to others in the swam, providing immense value for military operations. Research into swarm intelligence has involved autonomous agents for military applications, and testing is currently ongoing in the United States and China.[11]

Drones have posed a significant challenge to conventional weaponry. In the Red Sea, a $2,000 drone took down a $2 million missile.[12] In Ukraine, $400 drones are being employed to destroy $2 million tanks.[13] This stark contrast underscores the widening gap between the cost of traditional military assets and the affordability and effectiveness of modern drone technology.

China's AI Build-up

As of 2021, China's AI industry was worth 150 billion yuan (US$23.2 billion) and is expected to reach more than 400 billion yuan (US$55 billion) by 2025.[14] China's Next Generation AI Development Plan set a target for AI to contribute US$150 billion to China's GDP by 2030.[15] In August 2023, Beijing approved the public release of generative AI technologies from Chinese firms Tencent, Baidu, Huawei Technologies, Alibaba Group, JD.com, ByteDance, iFlytek, and Kuaishou Technology.[16]

Microsoft released a report in September 2023 that demonstrated how generative AI strategies are used in influence operations conducted by the People's Republic of China (PRC).[17] The U.S. Department of Justice reported a group called 912 Special Working Group within China's Ministry of Public Security that operated a troll farm on social media, which "created thousands of fake online personas and pushed CCP propaganda targeting pro-democracy activists."[18]

The Microsoft report noted that in March 2023, suspected PRC influence operations "on Western social media have begun to leverage generative [AI] to create visual content," which "has already drawn higher levels of engagement from authentic social media users."[19] China's information operations will only get more sophisticated, as applications of generative AI become increasingly tailored to specific targets.

The report described the CCP's "multilingual internet celebrity studios," staffed by 230 state media employees and affiliates posing as independent social

The use of artificial intelligence autonomous drones employed in swarms has significant potential to inflict broad, large-scale destruction on designated targets. Targeted forces would have immense technical difficulty in defending themselves against a massive, broadly coordinated first strike against multiple targets. The simultaneous employment of large numbers of drones could overwhelm the material capabilities of a defending force as well as a defender's command and control and civil governance within a matter of hours, if not minutes. Of note, in June 2024, China's People's Liberation Army conducted drone exercises, including swarm techniques, focused on island seizure that transparently mirrored actions that it would likely take in an invasion of Taiwan. (Photo courtesy of the U.S. Army/Shutterstock)

media influencers, aimed at Western social media.[20] Microsoft noted that in 2022 and 2023, "new influencers continue to debut every seven weeks on average."[21] China Radio International is one of the numerous entities that "recruited, trained, promoted, and funded" such capabilities among other state-sponsored media entities to reach 103 million people in forty languages.[22]

Various platforms of targeted activity by China include firms such as Vimeo, Wattpad, Indeed, Rotten Tomatoes, Instagram, Quora, Medium, Facebook, Reddit, Tumblr, YouTube, Twitter/X, Pinterest, Blogger, TikTok, Flickr, and LinkedIn.[23] A sponsored network of influence demonstrates a significant challenge where Western populations can be influenced by personalities sponsored by foreign governments, providing the possibility for subversion operations over video-sharing apps.

Microsoft provided examples from January 2022 of a CCP-aligned campaign which targeted "Spanish non-governmental organization Safeguard Defenders after it exposed the existence of more than 50 overseas Chinese police stations."[24] The campaign deployed 1,800 accounts across social media platforms and

(Photo by Adobe Stock)

dozens of websites to spread CCP-aligned memes, videos, and messages criticizing the U.S. and other democracies. The messages were shared in Dutch, Greek, Indonesian, Swedish, Turkish, Uyghur, and more on platforms like Fandango, Rotten Tomatoes, Medium, Chess.com, and VK.

Allied Networks of Defense Innovation

Countries pursue technological superiority in AI to gain competitive advantages in various domains, including military capabilities, economic productivity, and technological innovation. In recent years, NATO allies have been focused significantly on defense innovation and related challenges. NATO released its first-ever AI strategy in October 2021.[25] A revised AI strategy was released at the Washington Summit in July 2024.[26]

NATO's Defense Innovation Accelerator for the North Atlantic (DIANA) works with governments, industry, and academia to support the development of emerging technologies in America and Europe. The program provides innovators access to a professional network to help develop a customized accelerator program.[27] Beyond AI, NATO has focused on numerous other emerging disruptive technologies, which include autonomous systems, quantum technologies, biotechnology and human enhancement technologies, hypersonic systems, space, novel materials and manufacturing, energy and propulsion, and next-generation communications networks.[28]

DIANA became operational in the summer of 2023, where it launched its first round of challenges to foster innovation on specific critical security needs to target technological advancement.[29] In 2023, NATO launched the first round of challenges to support the development of dual-use technologies to solve problems on energy resilience, sensing and surveillance, and secure information sharing. [30]

DIANA launched five new challenges in 2024, which include energy and power, data and information security, sensing and surveillance, human health and performance, and critical infrastructure and logistics.[31] DIANA is committed to fostering cutting-edge solutions and bolstering NATO's strategic capabilities in an increasingly complex global landscape. These initiatives align with the critical need for robust defense innovations and strategic collaborations essential to counter AI's rapidly evolving military applications. ■

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Malian soldiers fight against Islamist rebels during clashes that erupted in the city of Gao on 21 February 2013. An apparent car bomb exploded near a camp housing French troops as Malian and foreign forces struggled to secure Mali's volatile north. (Photo by Frederic LaFargue, Agence France-Presse)

Information Sharing and the Effectiveness of Peacekeeping Operations in Mali

Christopher Sims, PhD

Information shapes the conduct of civil conflict. Its source, composition, curation, sharing, and use dictate comprehension of the operational environment and inform all levels of military planning and execution. How we understand and act upon the economic, political, and social contexts of our environment are all affected by the information available to us. Factors that enable or impair this process therefore exercise significant influence over the management of violence and the success or failure of security activity.

The challenges of information sharing were particularly pronounced for the international community's Mali intervention after the 2012 rebellion, during which armed separatists and Islamist groups ejected government forces in the north of the country. A military coup followed. French-led military action beginning in early 2013 prevented further encroachment southward by antigovernment forces and a United Nations (UN) stabilization mission was inserted into this febrile and fragile security environment later in the year. After a decade-long presence, a deteriorating security situation, and further coups in 2020 and 2021, the French military force left amid deepening government mistrust of its activities and intentions, and the UN mission ceased operations and withdrew its personnel in 2023 after the Malian authorities requested its departure.

Such a troubling trajectory invites scrutiny. This article addresses some of those international security assistance efforts by examining the issue of information sharing in and among organizations with a focus on the UN mission. Understanding why the outcome for a well-resourced mission was so poor requires assembling perspectives from internal stakeholders; semistructured interviews conducted with previously deployed American and European personnel give insights into the challenging character of the deployment, with implications for future stabilization operations. This article first examines the internal information-sharing challenges of the UN mission, then places the deployment within the context of the ecosystem of international actors present in Mali, and concludes with policy implications arising from the research.

MINUSMA's Information Maze

Central among the constellation of organizations operating in the country after the 2012 rebellion was the UN Multidimensional Integrated Stabilization Mission in Mali (MINUSMA). It was created in 2013 to stabilize and support the reestablishment of state authority and the implementation of a political roadmap as well as provisioning for broad security sector assistance, protection of civilians, and support for humanitarian action. Possessing both force (military and police) and civilian pillars in the mission, crosscutting mandate priorities required coordination between military and other mission components, with the constant challenge to balance force and diplomacy.[1]

Stabilization for MINUSMA was an umbrella term for a raft of efforts plagued by strategic incoherence. Political scientist Bruno Charbonneau observed that while stabilization was at the heart of the mission in Mali, the mandate "suggests rather than defines" what it means in practice; the broad interpretation gave rise to the widespread notion of Mali as a "special mission" distinct from straightforward challenges and had arisen in response to a "complex" situation.[2] When the language that frames the operational environment is equivocal, as was the case in Mali, it complicates information sharing because there is no common understanding, no unified goal to harmonize collaboration and coordination. This lack of consensus fostered mistrust across MINUSMA both internal to the organization and with international stabilization partners.

A stabilization advisor described how this uncertainty handicapped efforts, because "mandates are really important in determining how people think, and what they think they can do."[3] A mandate encumbers operations with the freight of strategic aspiration and can create a Christmas tree effect in which numerous legislative add-ons, many inevitably only tangentially related to the original purpose, metaphorically resemble the decorations of a Christmas tree.[4] As the various military forces inserted into the country, "the presence of multiple parallel forces with various mandates, means, and objectives and without a clear political process or common strategic goal to guide them has at times created a 'security traffic jam.'"[5]

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An integrated team serving with the UN Multidimensional Integrated Stabilization Mission in Mali (MINUSMA) investigates armed attacks during a visit to the Mopti region of Mali on 21 and 22 February 2019. Preliminary information indicated that at least eighteen people were killed by shooting and burning, a large number of houses and granaries were deliberately burned down, and some animals were stolen or killed. The team, composed of human rights officers and a forensic team of the United Nations Police, visited the settlements of Koulogon Peulh, Minima Maoude (a village that was entirely burned down), and Libe Peulh, escorted by peacekeepers from the MINUSMA Bangladeshi contingent. (Photo by Marco Dormino, MINUSMA)

Within MINUSMA, the effect was pronounced. The lack of civilian direction in the mission led military forces to conduct their own operations according to their own identified priorities. This created a coherence issue concerning the management of MINUSMA. The ineffective force-mission synthesis resulted in a series of tactical, tangible military events with no overarching coherent strategy to solve local problems that were presented to operators on the ground.[6] With no observable progress, popular Malian frustration with the host government and the international organizations that supported it worsened over time.[7] International intentions could not be communicated to the country effectively because of the conflicting mandates that personnel were operating under.

There was pervasive mistrust between mission and force personnel in MINUSMA. In part, this was cultural. Military agencies deploy with command-and-control structures and hierarchies that may not tessellate well with civilian organizations. There was also a perceived reluctance of civilian components such as political affairs and stabilization affairs within MINUSMA to cooperate closely with force components. While the source of the reluctance was unclear, it may have been a result of normal bureaucratic stovepiping of efforts; the result was the creation of an us-versus-them mentality between force and mission.[8] In part, it was structural. In UN integrated missions, a civilian leads the mission with two deputies; one is a political leader and the other manages work related to project implementation. The military force commander and the chief of police are separate and lead their pillars. Information sharing and communication were constrained by these separations.

Square Pegs for Round Holes

Geography and culture complicated analysis. Northern Mali was a tapestry of nuanced security

dynamics where localized insurgency was interwoven with transnational extremist organizations and economic and social drivers of violence overlapped. With such complexity, erroneous analyses could distort and disrupt effective planning. Alliances in the north were largely based on local dynamics such as family and clan ties and common histories; yet, within the forward UN mission bases in the country, there was a paucity of understanding of these relationships.

Analysis was stymied by the labeling of armed groups that placed them in "black boxes" that were not dynamic enough to understand behaviors and events. The focus on "terrorist armed groups" reinforced a way of thinking in the military that saw MINUSMA, first and foremost, as primarily a military operation bordering on a counterterrorism operation. Consequentially, the analytical community was "constantly surprised by developments" and "prisoners of our ideas."[9]

The spectrum of the intelligence process afforded widespread opportunity for misinterpretation between and inside organizations. The complexity of Malian security dynamics is explicit in the 2019 UN peacekeeping intelligence policy that codified an intelligence framework for UN missions.[10] The policy identified the requirement for a "peacekeeping-intelligence cycle, as distinct from other information and reporting" and its activities

> will be fully autonomous from and independent in all aspects of any national intelligence system or other operations and will maintain their exclusively international character. Missions may liaise with non-mission entities for the purposes of receiving intelligence and may share specific peacekeeping-intelligence with non-mission entities.[11]

Instructive in existing deficiencies, the policy identifies the need for a process-driven approach in which intelligence would be generated from leadership requirements.[12]

Efficient sharing within MINUSMA was also handicapped by its multinational character. A newly created force intelligence unit, the All Source Intelligence Fusion Unit (ASIFU), employed a Dutch system. There was no interoperability between this system and the UN's standard Situational Awareness Geospatial Enterprise database.[13] In addition, when the Dutch contingent departed, the incoming German personnel

had not been trained on the Dutch system, and it was not in official use by the German armed forces. The result was that in the middle of the Dutch drawdown, a huge wealth of information was sitting in this database, and the incoming rotations could not add on this. It was kept in use as it was, but the incoming collation officers in Bamako were unable to fill it.[14] The result exacerbated the sense of mistrust between the civilian and force sides of the UN mission as well as the technical inability to share information.

Information management was deleteriously impacted by a practical disconnect between intelligence centers in the UN mission. A Joint Mission Analysis Centre placed at the headquarters level provided strategic intelligence to the mission whilst the ASIFU collected, analyzed, and disseminated operational and tactical level information as part of the military component and was later integrated into the force commander's intelligence staff.[15] What these multiple systems meant in practice however was competition rather than collaboration and synthesis. As Sebastiaan Rietjens and Erik de Waard noted of that arrangement, data and analyses are not widely shared, and there was overlap and territorial encroachment between intelligence units.[16]

Much of the information focus within the civilian component of the mission was on high-level political processes, whereas the "actual difference can be made out on the ground in the sectors."[17] Even for the force focused on operational- and tactical-level information, in practice, it often defaulted to tactical-level collection and analysis because of the reality of the mission-protection paradox; forces were just trying to prevent the next attack on the mission. While the civilian component gathered strategic-level information, the necessity for daily tactical analysis generated and perpetuated a perception from the force side that civilian pillar intelligence was too focused on "ethereal concepts," such as trying to get the government to do its job when it could not, and failing to consider the most important elements of mission intelligence.[18] The freight of aspirational objectives within the mandate weighed heavily on the focus of the Joint Mission Analysis Centre. The contrasts in focus between force and mission also contributed to tensions between the pillars, and while there was an intention that force intelligence would knit with strategic mission intelligence, the gap between the two served to exacerbate professional tensions.

The focus on ethereal concepts was compounded by inadequate granularity of information. Seen from the strategic level of the mission, information materials provided to the leadership were "on too basic a level, and were therefore of no use" to military commanders.[19] In general, the analytical community had "too shallow an understanding of the conflict" in Mali.[20] The absence of mission coherence also impeded relevant, actionable information from making its way to force command; "it was the wrong focus," and the providers of intelligence "didn't understand" what the information would be needed for, in "terms of decision-making, so the directive part at the beginning was absolutely crucial, to get it right."[21] Getting it right was a complex undertaking, inhibited by the geography of the country, organizational resources, and cultural obstacles.

Personalities also mattered. Communication style, receptivity, rapport, and perspective all influenced communication dynamics. It came down to human relationships over and again. Those relationships ebbed and flowed. There was difficulty in building institutional memory with multiple nationalities present, as the often-contrasting personalities and the transient, fragile nature of the knowledge generated in the mission was like building sandcastles; it was time-consuming, unstable, and needed to be constructed anew after each incoming tide of personnel.

In addition, it was necessary to create a process that survives the turnover of people. In practice, institutional knowledge retention was inadequate for the scale and scope of the mission. High levels of staff attrition create obvious and pronounced effects. There is a loss of skills and experience, disruption to operations during transitions, deleterious impacts on morale, and challenges for leadership to manage the associated ripple effects. The inevitable result of high turnover was that leadership would default to focus on personnel issues and therefore lose sight of strategic objectives. The issue is not unique to security assistance in Mali and continues to disrupt the effectiveness of deployments.[22]

Civilian rapport building with military personnel within MINUSMA was also inhibited by the short European nations' force rotations, normally six months, which were "not serious" as they lacked the time on the ground to make sense of the operational environment and form robust relationships within the UN mission and with international partners.[23] These abbreviated military deployments seen from the civilian side of the mission paint a dispiriting picture:

> The military want to engage with everybody. But the civilian side they get a bit tired, let alone the locals, of having a new military point of contact to talk to every six months who are really ambitious and think they are going to have a big impact, but from the civilian side they had to make a calculation about how much time to invest in that interaction. So, you have institutionally inbuilt incompetence in the military system.[24]

Military involvement in a region is typically episodic and ephemeral, and civilian presence is often longer term, such that "there is a real issue in terms of information exchange with the militaries that they are in such a learning process and often don't speak the local language: In terms of the rotation what we always have with all these interventions is that we have a real gap between resourcing and ambition."[25] In the end, it was as much a political as a technical military deployment because "it was not really the force that was required there. It was the force that was necessary to send."[26]

> "The often-contrasting personalities and the transient, fragile nature of the knowledge generated in the mission was like building sandcastles; it was time-consuming, unstable, and needed to be constructed anew after each incoming tide of personnel.

National Sensitivities

Mali is more than twice the size of France. Navigating the geography has created logistics and sustainment issues in security assistance, with a base in Gao, in northeast Mali, home to the French military operation Barkhane and primus inter pares among the UN's mission field offices in the country. The Gao base was approximately one thousand kilometers from the capital Bamako, and the regional insecurity prevented the build-up of civilian personnel there.

Additionally, effective synchronization of efforts in Gao was complicated by a discordant organizational structure. For example, the German Intelligence, Surveillance, and Reconnaissance Task Force received commands directly from the force headquarters in Bamako.[27] This created a parallel structure to the general-purpose sector forces in Gao that were under the command of the commander of sector forces. The presence of a Gao sector head of mission meant there were in practice three equal heads of mission: the head of mission, the head of sector forces, and the commander of the mobile task force.

The mobile task force deployed in early 2021 to increase military reach in Gao, and the head of sector forces there separately reported to force headquarters in Bamako. The civilian sector head of mission in Gao reported to MINUSMA mission headquarters, not the force headquarters, resulting in "two entirely separate chains of authority reporting up into the head of the mission" and this created a convoluted structure that generated different information streams, ultimately, "we will tangle with the question of how well you do civil-military integrations in operations forever. Wherever you draw a boundary, you create friction."[28]

The mission-protection paradox also meant that whilst there was a well-defined process where the force supported civilian-identified priority tasks, in practice, the process was severely compromised because the mobile task force often defaulted to support sector activity. That was not their remit, given the restrictions that MINUSMA had in Gao in terms of troops and resources.[29]

Within MINUSMA, the array of different nations involved generated national caveats, either declared or undeclared, with the potential to completely undermine a mission or the intent of a mission and could enormously impact information sharing. National caveats are controls enacted by a participating nation on the activities of its military personnel deployed in a multinational operation. This often manifests as information-sharing restrictions with particular operational partners that inevitably limits flexibility, common understanding, and coordination in the field.

Therefore, different nations' abilities and appetite to do different things was a complicating element of the mission. Each force had its own lines that it was not willing to cross, or its national government would not want it to cross. But no nation spoke about what those lines were, which was an enormous information-sharing obstacle for a force commander.[30]

In Gao, there was a sizeable Chinese contingent in MINUSMA, and some other national contingents were not at ease sharing information given preexisting national security tensions. In addition to that bureaucratic impediment there was a cultural impediment present in the MINUSMA force, with an implicit sense of us-versus-them in some European contingents exacerbated by separate annex bases in Gao such as Camp Castor.[31]

At the individual level, national sensitivities created security prohibitions around technology such that lives were

> slightly at danger by restricting what things we could use, such as tablets, phones, because of a fear of a national counterintelligence threat, when that weirdly increases the risk to life. If I cannot use my phone to log where I have been because there is a fear of someone hacking it, I could drive over the same place twice, increasing risk to life. Sharing that data does not represent a security risk.[32]

Language hurdles exacerbated interoperability constraints. For example, there was no expectation that the mobile task force reports would make their way to sector forces, very few of whom spoke English. There were therefore legitimate and enduring concerns that the information generated by NATO forces was not used to its fullest effect. And the best use of the information would have been for the civilian pillar to decide what it was going to do and get the force to support that, rather than the intelligence driving the force to conduct activity.[33]

Intelligence collection capabilities that could bubble up through the mission were also uneven due to capacity.

Field units were typically from underresourced African countries, and these units often lacked intelligence officers. Force composition was also a broader issue that required careful consideration with primarily NATO countries in force headquarters and African countries' troops bearing the brunt of casualties in the field. As Peter Albrecht noted, "Intra-mission inequality encumbers collaboration and coordination between African and non-African units in MINUSMA. Most of the time, the units operate more or less separately, to the extent that MINUSMA risks becoming a two-tier mission."[34]

The Fragile Ecosystem of International Organizations

Information sharing between organizations is instrumental for effective collaboration, effective adaptation to changing priorities and contexts, and efficient resource allocation. Information also enriches awareness of the operational environment. In Mali, for example, the humanitarian community possessed valuable analysis on trends across different sectors such as food security and water scarcity that informs understanding of local contexts. The different local stakeholders with whom the humanitarian community engaged could provide important perspectives and granular detail on issues that could inform planning processes for multiple actors.

Yet in Mali, there was consistent friction between organizations because of perceived or actual misalignment of objectives and which continually impeded information sharing. While MINUSMA priorities included protection of civilians and the creation of an enabling environment for humanitarian assistance, there was resistance on the part of the humanitarian community who wanted nothing to do with the mission because it was perceived as an active party to the conflict by many stakeholders, including other parties to the conflict.[35]

Discomfort in the humanitarian community ranged from the pragmatic to the principled. A pragmatic example was its engagement with members of the population whose most recent traumas were often caused by uniformed men with guns. A principled example was that it was hard to be independent, neutral, and impartial while also supporting some of the mission mandates such as the return of the state and the use of all necessary means to achieve objectives.[36]

Yet humanitarian access was one of the mission's key mandates and only very loosely understood.

Communication was hampered by the view of those outside the mission that it was difficult to obtain useful information from MINUSMA. There was a perception that mission staff were rules-bound and uncomfortable about sharing information outside formal processes, but those processes were also integral to maintaining a degree of organizational coherence.[37]

The array of international organizations present in Mali were an interconnected ecosystem. The health of this ecosystem was clearly endangered by the constraints placed on information sharing, which eroded trust and inhibited collaboration. When relevant data were not exchanged, the strengths and resources of each organization could not be leveraged to create the partnerships that might generate much-needed consensus among those international actors on the ground in Mali. Without that consensus, attempting to tackle the multiple overlapping economic, political, and social issues in Mali remained a patchwork of often competing activities that took place against a disquieting backdrop of mistrust.

A critical misalignment sprang from the humanitarian community's neutrality. This meant in practice that it viewed many MINUSMA activities in conflict with its own mandate, leading to "on-going contestations."[38] This animosity between the mission and the humanitarian community in Mali highlights a common misconception in military organizations that impedes understanding of the operational environment; civil-military engagement can too often default in military thinking to conceptualizing the civilian actors erroneously as an aggregation of organizations that form a monolithic, unified whole.

There was also a mentality that the military component of the mission was the mission—in other words, the military tended to see MINUSMA in terms of a military response to a kinetic security problem rather than seeing itself as an enabler of a civilian-led effort. In Mali, the international military constituent part was small, relative to the size of the international civilian sector. And that broad civilian sector would differentiate itself between UN organizations and other donors, pursuing different objectives and with different funding cycles.[39]

While there was coordination between French forces and MINUSMA force headquarters facilitated by French officers in the mission, at the operational level, communications were primarily centered upon deconfliction rather than coordination, and

Civilian representatives from a MINUSMA team composed of human rights officers and a forensic team of the United Nations Police meet with civilian leaders and village residents from Minima Maoude, a village that was entirely burned down by insurgents, during a visit on 22 and 23 February 2019 to collect firsthand accounts from local residents affected by the violence. A critical component of information sharing to support coordinated peacekeeping efforts is direct contact with civilians affected by violent events. (Photo by Marco Dormino, MINUSMA)

information sharing was only functional in character.[40] Sensitivities around targeting at the operational level were pronounced and complicated. In the view of one MINUSMA intelligence official, there was an urgent requirement for information-sharing policy to be written that outlined the policies and process behind any exchange, "because one of the issues is aggregation of data. If you aggregate data to a point and you provide it, then the UN could be held responsible for providing targeting information to an external actor such as [the French military force] Barkhane."[41]

The complex dynamic between French forces and MINUSMA gives insight into the difficulties of parallel forces operating in Mali with different priorities. Communication, coordination, and deconfliction were constant requirements but were only effective to varying degrees. These problems are hallmarks of such deployments. Operations in volatile operational environments "blur" the "division of labor" between international security assistance forces "and their goals have sometimes come into conflict. This raises the question of whether they are partners or competitors."[42] Even within national operations, frictions arose from a blurring of the division of labor. For example, the military culture of overclassification was and remains a systemic problem, particularly in multinational missions and in settings where military forces must nest efforts within civilian-led processes.

The many moving parts of parallel international assistance efforts created enduring frictions that proved insurmountable in the lifetime of the UN mission in Mali. A decade after the northern insurgency had brought French forces and a UN mission to the country, escalating antipathy toward international involvement precipitated its departure, and a complicated, dispiriting chapter of Malian history was closed. As the security picture deteriorates, we inevitably ask discomfiting questions as to why the efforts and

Chinese soldier Chang Shifeng has been a peacekeeper for almost ten years, serving twice for the UN Mission in Darfur (known as UN-AMID before its closure in December 2020) before serving with the UN Mission in Mali. (Photo courtesy of MINUSMA)

resources brought to bear on the overlapping problems there failed in many objectives. While a small and often overlooked element of international security assistance force assistance, challenges associated with information sharing impeded operations in Mali. Beneath the shadow of strategic inconsistencies, the ripple effects of these challenges were felt throughout the deployment of the UN mission.

Conclusion

There are limits to the effects that information sharing can achieve in a complex operational environment. This article does not suppose that alleviating sharing constraints would automatically translate into common understanding and unity of purpose between a constellation of actors whose resourcing, scope, and ambitions in Mali were diverse and, at times, conflicting. One can question the validity of peacekeeping operations in an environment where there was arguably little peace to keep. Yet, the overlapping issues of strategic incoherence, logistical challenges, conflicting cultures, and national sensitivities all created information-sharing hurdles. These issues must nevertheless be framed by the magnitude of the challenges confronting international security assistance forces in Mali.

The insights lead to policy implications. Firstly, civil-military conversations should be given high priority and primary relationships between stakeholders should be built quickly. Secondly, to retain and develop institutional knowledge in the face of persistent rotations, lengthened deployments should

be implemented high up in military hierarchies, with sector commanders, staff officers, and battalion commanders staying in post for more than twelve months. Thirdly, information-sharing channels between national actors should be coordinated through doctrine to circumvent national sensitivities. In addition, systematic embedding of officers between partners, particularly in intelligence sections, can mitigate many interoperability issues where heterogenous systems have been barriers and consequently improve information flows. Finally, understanding, acknowledging, and accounting for different perceptions of the security problems in an operational environment can assist in navigating between personalities across the civil-military divide. ■

The views expressed here are those of the author and are not an official policy or position of the National Defense University, the U.S. Department of Defense, or the U.S. government.

Notes

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Victory Soon

Myrrh on the walls of the icon,
blood-soaked statuettes of Jesus,
a candle burns out, drops the piece of oin,
in the heart anxiety, as always, premonitions are heavy, precarious.

Prayers drive away evil every second,
let the executioners stop the
atrocities against the Ukrainian people,
The mockery in Bucha was a message to the world and an instructive lesson.
Rocket volleys will wake up the bell on the steeple.

Victory is here, wait a little longer,
On earth with weapons, the people are stronger.

—Vyacheslav Konoval
Resident of Kyiv

A church in the village of Novoekonomichne in the Donetsk region was destroyed by Russians in July 2024. (Photo by Serhii Korovainyi, Ukraine Ministry of Defence)

A Ukrainian soldier of the Territorial Defense Forces holds a fragment of a Russian Su-34 fighter jet shot down by Ukrainian troops 6 April 2022 in Chernihiv. (Photo by Serhii Nuzhnenko, Radio Free Europe/Radio Liberty)

A mass reenlistment for soldiers with the Division Special Troops Battalion, 3rd Division Sustainment Brigade, and 541st Combat Sustainment Support Battalion is highlighted by a "fireball" detonation on an explosive ordnance disposal range at Camp Buehring, Kuwait, 8 September 2021. The Army has faced recent shortfalls in retention and recruiting, and the author opines this is partially a leadership issue and proposes a modification of its talent evaluation process for officers early in their careers. (Photo by Spc. Elorina Santos, U.S. Army)

The One-Hundred-Year War for Talent

Maj. Jeffrey T. Wilson, U.S. Army

In recent years, the Army has encountered challenges in meeting its recruiting and retention goals.[1] This raises critical questions: Could these challenges stem from our treatment of personnel, or could they be caused by our promotion decision processes? Perhaps they are influenced by factors beyond our control. Ultimately, the root cause is likely a combination of multiple elements. However, the primary concern is not just identifying these factors but determining actionable steps to address them. While this article does not aim to resolve every issue faced by the Army, it narrows its focus to one significant

area: refining the talent evaluation process to weed out counterproductive leaders between the rank of second lieutenant to major. Later, this article delves into why these specific ranks are selected.

Measuring the intangible result of leadership in the Army can be difficult. While it has some quantitative metrics, it is largely qualitative overall and less definable of what success looks like in the long term. However, one way to quantifiably measure leadership success, or effectiveness, is through echo metrics. By looking at how the American populace views and thereby joins the Army, we can see and measure the effectiveness in our leaders to build cohesive teams. The better they build those teams, the more likely soldiers are to speak positively about their experience and, as a result, build good will with the American populace and increase the likelihood of their joining the military.

There is no one single item or data point that fixes everything. There is no "easy button." Consider this: when planning to climb a mountain, considerable thought goes into to achieving that goal. To climb that mountain, first you must train your body, gather tools, practice, plan your primary and contingency routes, and identify danger areas; then, you have to work your way up. Even the journey up the mountain is a tiered process, such as when to switch tools or when to start using oxygen. This proposal is just one item to address the issue but not a simplistic "fix it all."

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Multi-Source Assessment and Feedback

In 2024, the Army will celebrate the one hundredth anniversary of using Form 67, the officer evaluation report series for talent evaluation, a practice that began over a century ago. Despite notable advancements since the introduction of the War Department Adjutant General Office Form 711 in 1922, which evolved into Form 67 two years later, the Army's approach still requires further refinement.[2] Unsurprisingly, the evaluation system is not perfect. The challenge of accurately rating such a vast and varied organization as the Army is both complex and substantial. This complexity only increases when attempting to standardize evaluations across diverse roles, locations, and missions. This article explores identified issues and changes in response to reform the evaluation system over the past two decades, culminating in a proposed approach for the next evolution in talent evaluation to prevent counterproductive leaders from continuing to promote and advance in the Army.

Army Regulation (AR) 623-3, *Evaluation Reporting System*, para. 3-9, states, "the senior rater will assess the rated officer's potential compared to all officers of the same rank."[3] When comparing two officers, specifically regarding leadership, subjectivity plays a part in its evaluation. The Army needs to strike a balance in evaluations mixing objective and subjective elements.

The Army attempted to use the Multi-Source Assessment and Feedback (MSAF) 360 to address part of the subjectivity. In 2008, the Army instituted the MSAF to allow peers, subordinates, and superiors to provide assessment on performance.[4] The MSAF was the right idea but poorly thought out and executed. First, the rated officer was the one who selected which of their subordinates to evaluate and assess. Human nature is inclined to select people we know and like and is indicative of positive reviews. Second, it required time and access to complete. At the platoon level, many soldiers, especially junior enlisted, do not have regular access to a government-issued computer. Third was the concern of backlash; while it was anonymous, it was unknown if what was written could be identified or tied to a person and used informally against them. Lastly, there was no actional or tangible result tied to it. Everyone may have understood what it was supposed to do (provide feedback and make adjustments to leadership methods), but no one truly understood what it actually did (what tangible results it led to). And within a few years of its inception, completion of the MSAF was rescinded as a requirement for future evaluations.[5]

However, that is not to say there are not lessons to be learned. The intent of the MSAF was good—it was largely tied to the Battalion Commander Assessment

Program (BCAP) process for lieutenant colonel and above competing for centralized selection list (CSL) positions. In 2019, the Army instituted the BCAP process to assess and evaluate officers as part of placement on the CSL. The CSL relied on evaluations and officer record briefs to select personnel to become battalion commanders, division staff officers in charge, and other key nominative billets.[6] The CSL, prior to BCAP, did not take in a holistic view of the whole soldier concept, nor did it factor in information from peers or subordinate observations. BCAP does take a holistic view using Leader 360, along with physical and mental evaluations and previous board information to determine if the officer under evaluation is ready for these specially selected positions. Waiting until someone is already a lieutenant colonel is too long to identify counterproductive leaders. There needs to be a tool to identify them earlier in their careers and allow them to adjust before continuing to move up the ranks. The below proposal is based on identifying those traits at the second lieutenant to major levels before even being considered for BCAP, and this information can also be used as part of the overall BCAP process as a continual evaluation.

In "360 Degree Feedback Best Practices and the Army's MSAF Program," Col. James Fiscus notes that while the Army differs fundamentally from civilian organizations, it can still benefit from adopting their best practices.[7] With nearly one million soldiers, including active duty, Army Reserve, and National Guard personnel, the Army's scale is vastly larger than most civilian entities, posing significant challenges in devising an effective evaluation system applicable across the entire organization. Although a perfect model is unattainable and inherent flaws will persist, this does not preclude the possibility of improvement. Criticisms of the evaluation system are longstanding, yet they also underscore the potential for ongoing refinement.

Fiscus identifies eight key components when instituting new assessment tools to be used by employees; however, personnel answering assessment questions need to understand and believe in the purpose.[8] Inherently within that is the key messaging of what the intended purposes are: evaluations, assessments, promotions, assignments, etc. As the MSAF 360 did not directly tie into any of those, it became another "check the block" item that needed to be completed,

similar to unit tasks as stated by Leonard Wong and Stephen Gerras in *Lying to Ourselves: Dishonesty in the Army Profession*.[9] Too many tasks to do and not enough time to do them results in compulsory completion at best. The key is identifying the specific purpose and how a soldier's assessment can provide tangible results.

An article written by Brennan Randel in 2023 titled "It's Time to Re-Evaluate the Officer Evaluation System" discusses congressionally mandated changes to the OER [officer evaluation report] system.[10] The law provides a framework to consider how to accomplish this: "(A) increase its effectiveness at accurately evaluating and documenting the performance of officers; (B) provide more useful information to officer promotion boards; and (C) provide more useful feedback regarding evaluated officers."[11]

Evolution of the Evaluation System and Limitations

The Army is not a public company with a product for sale; however, if it were, its product would be people. The measure of success of a leader cannot be adequately measured solely by objective metrics, especially as they become more senior in grade. As a new second lieutenant, their effectiveness might be how well they execute a range operation, live-fire exercise, Army Combat Fitness Test, etc., but as they move up in rank, assessing leadership requires a more qualitative rather than quantitative review.

To show the system is capable of change, the table is a brief overview of some of the issues and changes applied to them.[12]

In the current officer evaluation system, three primary ratings are utilized to assess performance: Most Qualified (MQ), Highly Qualified (HQ), and Qualified (Q). The MQ rating is designed to identify the top one-third of officers, illustrating exceptional performance. The HQ rating is intended to recognize officers performing better than the majority, marking them as above average. The Q rating, theoretically, should indicate satisfactory performance, sufficient for retention. However, in practice, a Q rating has come to imply a recommendation against promotion or retention. This issue is exacerbated by the lack of a cap on HQ ratings, leading to a situation where officers deemed adequate for retention are often rated as MQ or HQ. With MQ

Table. Evaluation System Issues and Changes

Issue	Authors	Impact	Change
Subjective Bias	David Tier	Introduction of Evaluation Entry System replacing AKO MyForms	Mandatory block checks for company grade officers
External Evaluators	David Tier	Proposing external evaluators to reduce bias	Concept deemed infeasible due to potential for misunderstanding
Opposing Force (OPFOR)/ Combat Training Center (CTC) Evaluations	David Tier	Suggested using OPFOR and O/C teams during CTC rotations for evaluations, increasing realism but adding logistical challenges	Misunderstanding of the evaluation system
Civilian Education for Officers	Paul Yingling, Scott Maucione	Advocated for encouraging officers to pursue civilian post-graduate degrees to broaden their perspectives and improve strategic capabilities	Congressional guidance addressed
All-or-Nothing Retirement/ Blended Retirement System (BRS)	David Tier	Military retirement system	Introduced BRS to provide a 401k-style plan, addressing the career risk of the all-or-nothing twenty-year retirement system
Toxic vs. Counterproductive Leader	Center for Army Learning	Counterproductive leader	Changed terminology to focus on leadership effectiveness, shifting from "toxic leader" to "counterproductive leader" to better identify and address leadership issues

(Table by author)

ratings extending up to 50 percent, distinguishing the top one-third from those just above the median becomes challenging. Restrictive limits are valuable, yet they are not without flaws. Not everyone can attain the highest evaluation rating, because if everyone is rated the best, then no one truly is.

In the context of the MQ, it is crucial to understand the imposed limitation that only one individual in a group of three can receive the MQ, as the number of MQs awarded must remain below 50 percent. This constraint necessitates a strategic approach in the evaluation process. Consider a scenario with three candidates: one with poor performance, another with average abilities, and a third who demonstrates exceptional skills and qualifications. The challenge arises when the individual of the highest caliber is evaluated first. The core challenge is that the MQ cannot be awarded to the most deserving candidate until the evaluations of the other two individuals are completed, or at least considered. A comprehensive assessment of the Army evaluation system necessitates a balance between subjective insights and objective data. By scrutinizing both the qualitative and quantitative dimensions, we can begin to formulate a data-centric solution.

Statistics and Bias

Lt. Col. Lee A. Evans and Lt. Col. G. Lee Robinson critically examine the U.S. Army's officer evaluation system in their article "Evaluating Our Evaluations" in the January-February 2020 publication of *Military Review*. They focus on mathematical errors, statistical errors, and cognitive biases inherent in the system in the realm of objective metrics rather than subjective views.[13] They delve into the implications of these constraints on evaluating a large number of officers, emphasizing the challenges in ensuring fairness and accuracy in performance appraisals. The article also explores the impact of cognitive biases on evaluations, underscoring the complex nature of accurately assessing officer performance and potential.

> a) If the potential assessment is consistent with the majority of officers in that rank, the senior rater will place an "X" in the "Highly Qualified" box. If the rated officer's potential exceeds that of the majority of officers in the senior rater's population, the senior rater will place an "X" in the "Most Qualified" box. The intent is for the senior rater to use this box to identify the upper third of officers for each rank.
>
> b) In order to maintain a credible profile, the senior rater must have less than 50 percent of the ratings of a rank in the "Most Qualified" top box. Fifty percent or more in the "Most Qualified" ratings will be processed with a "Highly Qualified" HQDA electronically generated label (see DA Pam 623–3); however, it will be charged against the senior rater's profile as a "Most Qualified" OER if it is unresolved, and a documented senior rater profile misfire will occur. To ensure maximum rating flexibility when rating populations change, or to preclude an "Most Qualified" box check from profiling as a "Highly Qualified" rating, senior raters need to maintain a "cushion" in the number of "Most Qualified" ratings given. Senior raters may consider limiting the use of the "Most Qualified" rating box check to roughly one-third of all ratings for officers of a given rank, but this is not a requirement.

(Figure from Army Regulation 623-3, *Evaluation Reporting System*)

Figure 1. Mandated Evaluation Restrictions

Their article identifies several key issues within the Army's talent evaluation system similar to issues identified elsewhere within this writing but from an academic standpoint. Part of the issue is based off guidance contained within AR 623-3, *Evaluation Reporting System*, itself. AR 623-3 limits rating to 50 percent for Most Qualified but also recommends keeping a profile at one-third (see figure 1).[14]

By having a tool that allows for a variance of roughly 17 percent provides for a larger range of potential error. A reasonably large sample, typically larger than thirty, means any ratings less than that size increase the chances of error, or in contextual terms, there is a 32.9 percent chance that there would be exactly two top one-third officers in a rating pool of five, assuming officers are randomly distributed into ratings pools. Thus, given the current profile constraint of less than 50 percent, raters could only award two "Most Qualified" evaluations to a pool of five officers. Moreover, the rater's ability to discern the two top one-third performers is affected by cognitive biases. There are roughly ten thousand first lieutenants within the Army. That means a little more than five hundred of those who should receive an MQ will not receive an MQ rating.[15]

There is a challenge in objectively evaluating talent across different roles and ranks, with subjective biases often influencing outcomes. The system struggles with balancing objective metrics and subjective assessments, particularly in diverse roles ranging from ground-level soldiers to field grade officers. What is needed is a measure to objectively evaluate counterproductive leaders without losing the subjective aspect of assessing leadership.

Proposal to Counteract Bias and Subjectivity

The MSAF initiative, while no longer in use, laid a foundation in which elements can still be observed through BCAP. The number of officers assess through CSL, and therefore BCAP, is a much smaller cohort than the entirety of second lieutenant to major promotions. However, we can scale down the idea and refocus it as one piece of the evaluation process by adding a singular data point—specifically, have subordinates assess the rated officer.

An objection to the proposed change to the evaluation system might be the fear of leaders pandering to their subordinates for favorable feedback. However, this concern is misplaced; the biggest reason is this is only one small item of consideration for the board. All of the other current metrics stay in place (see figure 2), where the MQ with low enumeration results in high board scores and HQ or lower with poor or no enumeration results in low board scores. What rating an officer receives from their senior rater—enumeration, block checks, and potential—all remain relevant as the primary scoring component to determine who is or is not promoted.

Using the metrics of how a subordinate rated their leader could be as small as changing from a 5 to a 5+ or 5-. If the rated officer was viewed as a productive leader, and their file warranted a 5, then they might move up to a 5+. Alternatively, if they were rated as a counterproductive leader with that same 5 board rating, then they might move down to a 5-. And if they were deemed neither productive or counterproductive, the that same 5 rating would remain a 5.

Board File Messaging

Rating		Message rater is trying to send	What you can expect to see on an evaluation		
			Enumeration		Potential
Most Qualified	6+	Top few	#1, #2	1%	Must select BZ Resident ILE
	6	Superior performer	#3	3%	
	6-	Superior potential	#4	5%	
	5+	Select ahead of peers	#5	10%	Select BZ Promote ahead of peers Resident ILE
	5	Outstanding performer		20%	
	5-	Outstanding potential		25%	
Highly Qualified	4+	Select with peers		33%	Promote with peers Satellite ILE
	4	Solid performer		Top 49%	
	4-	Good potential			
	3+	Select if there is a requirement Average performer/potential	None	Bottom 51%	Groom for promotion Consider for promotion ILE alternate
	3				
	3-				
Qualified	2+	Do not select Weak performer		Bottom 25%	Weak performer Not ready With further experience No ILE at this time
	2				
	2-				
Unqualified	1	Show cause		Explanation of derogatory information	Do not promote Do not send to ILE

(Figure by author, not official board guidance)

Figure 2. Example Board Guidance

The evaluation system is multifaceted, including MQ, HQ, and Q ratings, with additional metrics for board consideration. Consistent negative feedback over time could indicate leadership issues, suggesting the leader may not merit a high rating. It is essential to communicate effectively with subordinates; failure to do so might reflect poor leadership. Additionally, the tendency to undermine others for personal gain should be a critical factor in identifying detrimental leadership behaviors. And while it is possible a leadership style, while productive, might rub a subordinate the wrong way, it will even out over a measured scale. Moreover, if a leader is not effectively communicating why something is done, that is an indication that something needs to change in their communication style. Stepping on others to make oneself look better needs to be a measurable metric.

The current evaluation system can be compared to its proposed alternative but in reverse. While the senior rater is responsible for setting organizational goals, that does not always equate to achieving those to receive an MQ. In essence, the way our current system is set up is to not necessarily meet the goals of the organization, but simply to make your boss like you. A rated officer may even be abysmal in their job and as a leader, but they appeal to their boss so well they end up getting that coveted top block simply by being in the boss's good graces, even at the expense of stepping on the soldiers beneath them.

The complexity inherent in this model is twofold: who fills it out and how it is measured. First, it is not going to apply to every position. The initial implementation is a test run. Time is needed to evaluate if it works before full implementation to affect board scores. Time is also needed to evaluate what a positive and negative value equates to.

Whenever the evaluation is being completed, there is a message box asking the following questions: Is the

Promotable Info

Is the Rated Officer promotable and serving in a position authorized for the next higher grade? ○ Yes ● No

Frocked Info

Is the Rated Officer frocked to the next higher grade and serving in a position authorized for the rank to which he/she is frocked? ○ Yes ○ No

(Figure from Evaluation Entry System)

Figure 3. Officer Evaluation Report Input Box

Rated Officer promotable and serving in a position authorized for the next higher grade? Is the Rated Officer frocked to the next higher grade and serving in a position authorized for the rank to which he/she is frocked (see figure 3)?

A third question needs to be added: Is this a key developmental position for the rated officer based off rank and area of concentration? If this is marked yes, then, after the officer evaluation report is completed and signed, before submitting to Human Resources Command, a questionnaire of either the binary or ordinal questions goes out to the soldiers (see figure 4). They mark their answer, and that submits the evaluation. Part of defining that measure would be the minimum number of answers required, which could also vary by position. Company commanders, compared to staff officers, have different numbers of soldiers working for them or numbers of soldiers they interact with throughout a battalion. How many the survey goes out to and how many respond are also two different metrics. It may need to be limited to basic branches as many functional areas work independently, along with the Army Medical Department, Judge Advocate General's Corps, and Army Chaplains Corps as special case scenarios. This is part of the details that needs to be worked out before implementation.

Further analysis is needed to determine the best course of action as to which option to move forward with for use. After a year of scores, it may be an Army-wide number for what equates to a productive or counterproductive leader, or there may be a number by branch as to what a "good" or "bad" score entails.

Not every position has soldiers under them. And some have more than others. Without looking at every single position available, it is worth considering most key developmental positions for basic branch officers are going to have soldiers. Both in the sense of those working for you and those working with you. That means this metric would only be used in key developmental positions.[16]

Implementing this modified assessment approach would likely have a minimal impact (regarding cost, effort, and time) on the prevailing methodologies used in personnel evaluations within the force. The foundational tools for this implementation are already in place, though they require updating and refinement. The assessment process utilized for the BCAP, which identifies personnel within the same unit identification code (UIC) as the officer undergoing evaluation for CSL, can serve as a model. This process can be adapted to dispatch a single-question survey to a select group of soldiers within the officer's UIC. Alternatively, the survey could be distributed to all personnel within the UIC, incorporating an additional query: "Did you work for or with this individual?" This approach could be further delineated to exclusively gather feedback from subordinates, or alternatively, to generate two distinct sets of data: one from those who worked under the officer and another from peers who worked alongside them.

The incorporation of this assessment is just one of several factors that require careful consideration, and additional contemplations will be discussed toward the conclusion of this article. Another critical aspect to determine is the timing of these evaluations. Drawing from the MSAF model, which recommended

Option 1a	**Option 2**
Binary: Would you deploy with this person? Yes/No	Ordinal: Would you deploy with this person?
	1 – I would fight to deploy with this person
Option 1b	2 – I would deploy with this person
Binary (plus): Would you deploy with this person? Yes, No, No Preference	3 – No preference
	4 – I would not deploy with this person
	5 – I would fight to not deploy with this person

(Figure by author)

Figure 4. Proposed Options Following an Evaluation to Assist in Identifying Counterproductive Leaders

assessments every three years, it is proposed that more frequent assessments could yield a more comprehensive understanding. For instance, lieutenants, who do not hold key developmental positions as defined in Department of the Army Pamphlet 600-3, *Officer Talent Management*, might benefit from annual reviews. In contrast, for ranks captain and major, this process is more applicable exclusively in key developmental roles.

Lastly, a significant consideration is the accessibility of the gathered data. Limiting access to this information at the division level, analogous to iPERMS (Interactive Personnel Electronic Records Management System), warrants examination. After the completion of evaluations, subordinate units could request access to this information, enabling the senior rater to provide informed feedback to the rated officer. This feedback could either affirm the current course of action if evaluations are positive or suggest modifications in response to negative assessments. Furthermore, this data could complement performance metrics, offering a more holistic view of an officer's performance as perceived by their senior rater.
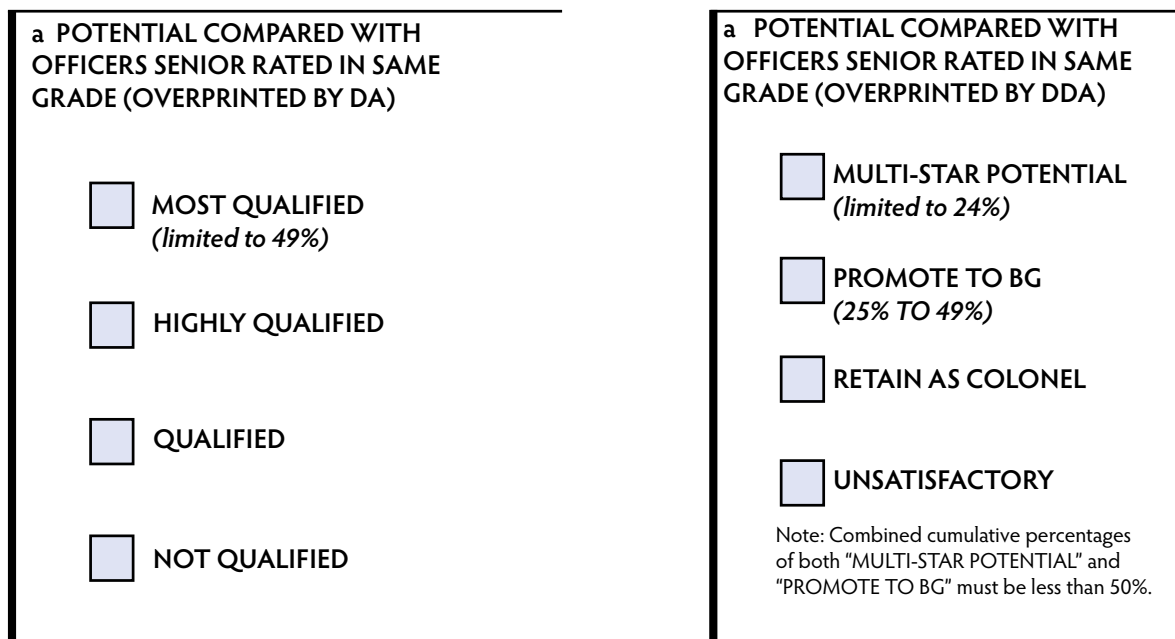
Proposal to Counteract Mathematical Error

The application of MQ ratings varies significantly among senior raters. Some may assign an MQ to an officer they consider in the top 5 percent or 10 percent, while others may use a #3 enumeration for the same rating. This inconsistency results in varied interpretations of an officer's standing within the rating pool. The need for a more precise demarcation among MQ, HQ, and Q ratings is evident, as the current system

allows for disparities in senior raters' interpretations. For instance, one senior rater may grant an MQ rating to an officer they deem in the top 20 percent, whereas another may use similar criteria for an HQ rating.

To address these issues, setting limits on HQ ratings and adjusting the MQ percentage is crucial. MQs should be reserved for officers considered for Below Zone or Early Consideration promotions, signifying superior performance. In contrast, HQs should be seen as indicators of officers suitable for standard promotion timelines. The Q rating, under this proposed structure, would be reserved for officers who meet the basic requirements but are not yet in the running for immediate promotion—a critical signal for improvement, particularly for newer officers such as second lieutenants. By establishing MQs at approximately 24 percent to 30 percent and adjusting HQs to encompass between 50 percent to 60 percent, a clearer understanding of an officer's relative performance within the top, middle, and bottom thirds is achievable. This approach would not only provide clarity for officers receiving their evaluations but also ensure a more objective and transparent assessment process.

As illustrated in the preceding figures, the concept of employing distinct metrics is not a novel practice. At the level of colonel, there exists a delineation between the equivalents of MQ and HQ, in contrast to the singular MQ metric (see figure 5). Implementing such a change in the evaluation system would be a considerable undertaking, necessitating extensive efforts. This would involve not only substantial modifications to the existing system but also securing the endorsement of senior leadership. Additionally, it would require a

a POTENTIAL COMPARED WITH OFFICERS SENIOR RATED IN SAME GRADE (OVERPRINTED BY DA)

MOST QUALIFIED
(limited to 49%)

HIGHLY QUALIFIED

QUALIFIED

NOT QUALIFIED

a POTENTIAL COMPARED WITH OFFICERS SENIOR RATED IN SAME GRADE (OVERPRINTED BY DDA)

MULTI-STAR POTENTIAL
(limited to 24%)

PROMOTE TO BG
(25% TO 49%)

RETAIN AS COLONEL

UNSATISFACTORY

Note: Combined cumulative percentages of both "MULTI-STAR POTENTIAL" and "PROMOTE TO BG" must be less than 50%.

(Figure from DA Form 67-10-3, *Strategic Grade Plate Officer Evaluation Report*)

Figure 5. Excerpt from *Strategic Grade Plate Officer Evaluation Report*

comprehensive reset of profiles, akin to the initial implementation of the evaluation entry system.

The current evaluation system is commendable for its simplicity. With the limitation of awarding MQ status to less than 50 percent of the candidates, the system allows for straightforward management. Following the first three HQ evaluations, every subsequent assessment can confer an MQ status, facilitating ease of administration and immediate calculation of compliance with established limits. However, transitioning to a system that restricts evaluations to thirds (or similar), although it addresses certain mathematical inaccuracies inherent in the current system, would demand considerably more effort and strategic planning. Such a shift would necessitate significant alterations to the existing system, revisions to regulations, and a thorough communication strategy to inform and guide the entire force. Moreover, this change has the potential to provide subordinates with more clearly defined feedback on their performance, enabling them to make more informed decisions regarding their careers based on this input.

Closing Remarks

The central focus of this article is the imperative evolution of the Army's evaluation system with a particular emphasis on the identification of counterproductive leaders. While striving for continual improvement, two key recommendations are proposed for system enhancement: (1) the introduction of a mechanism to specifically identify counterproductive leaders through feedback from subordinates, and (2) adjusting the limitations on HQ and MQ ratings.

The first recommendation is pivotal and feasible in the short term. It involves a modest modification to the Evaluation Entry System, providing a crucial data point for boards to identify leaders who negatively impact their units. This focus on counterproductive leadership is crucial for maintaining the integrity and effectiveness of our forces.

The second recommendation, addressing the MQ and HQ metrics, serves to refine the evaluation process and correct mathematical errors. While important, this change is more complex and long-term in nature. However, it supports the primary goal by contributing to a more holistic and objective assessment of officers.

This approach directly aligns with the congressional mandate, prioritizing the identification and management of counterproductive leadership within the Army. It offers a more precise and effective method

for evaluating and documenting officer performance. These enhancements will not only aid in pinpointing counterproductive leaders but also in tracking performance trends. For the officers themselves, this refined system will provide vital feedback on their leadership capabilities and areas for improvement, thereby guiding their professional growth and decision-making in their careers. ∎

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The Musculoskeletal Imperative

Enhancing Combat Capability through Effective Injury Management

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Maj. Gen. Michael Talley, the former head of the Army's Medical Center of Excellence, issued a clarion call during a recent maneuver warfighter conference panel at Fort Moore, Georgia: "It will take everyone to clear the battlefield as quickly as we can when we're talking about the scale of 21,000 casualties in corps warfighting. That's reality. How do you keep going?" By statute, the Selective Service must deliver its inductees to the military within 193 days from activation of the draft.[1] Between these two waypoints, we must fight with "the Army we have," regenerate combat power wherever possible, and sustain operations until our personnel and materiel generative capacities catch up.[2] Against this stark backdrop, a harsh truth of warfare remains: disease nonbattle injury (DNBI) historically results in a significantly greater number of casualties than combat-related injuries. During World War II, DNBI produced nearly five times more casualties than battle injuries.[3] In the early phase of Operation Iraqi Freedom, DNBI accounted for around 75 percent of all hospitalizations.[4] If we imagine our next conflict as a muddy, bloody war of attrition, nonbattle injury becomes even more unacceptable.

Among the subcategories of DNBI, musculoskeletal injuries (MSKI) pose a constant and possibly growing threat to readiness. The Army's ability to regenerate and maintain combat power is heavily dependent on its ability to manage MSKI. The Army must (1) place a new emphasis on MSKI, standardizing care across echelons using a common analytical framework; (2) establish a quality-assurance, quality-control process that ensures proficiency; and (3) integrate MSKI treatment at echelon in a way that parallels the scaled capabilities within the Joint Trauma System.

The Strategic Burden of MSKI

MSKIs present a significant challenge to readiness across the spectrum of conflict. In March 2019, MSKIs accounted for around four brigade combat teams' worth of soldiers in the active component deemed medically nondeployable.[5] During the Global War on Terrorism, at least 30 percent of all medical evacuations from Iraq and Afghanistan were for DNBI, including spinal pain. What's more, more than 80 percent of the service members evacuated

U.S. Army Reserve Spc. Neil Blue (*left*) and Lt. Col. Tola Akomolafe, both from the 311th Medical Surgical Detachment, perform physical therapy on 1st Lt. Briana Rodriguez at Fort McCoy, Wisconsin, 19 August, 2023, during Exercise Global Medic. Global Medic is a collective training exercise in which forces from all components along with joint and international partners test their medical equipment, systems, and procedures to help prepare for future conflicts. (Photo by Sgt. Mikayla Fritz, U.S. Army)

for MSKIs failed to return to duty—the worst return to theater rate outside of psychiatric conditions and battle injuries.[6] MSKIs are also the leading cause of attrition within an enlistee's first forty-eight months of service, factoring into 91 percent of all disability discharges.[7] Given the limited number of physically fit, eligible recruits, the increasing weight of combat loads borne by soldiers on the modern battlefield, and the potential need for a draft to offset losses in a large-scale combat operation (LSCO), the issue of MSKI becomes central to any discussion on America's long-term defense strategy.[8] Addressing MSKI is not just a health concern; it's a critical factor in maintaining our national defense capabilities.

Our Doctrinal Charge

Army Techniques Publication (ATP) 3-94.4, *Reconstitution Operations*, specifies, "medical personnel identify RTD [return to duty] patients as early in the evacuation chain as possible," and "the goal of medical efforts in the regeneration site is to maximize RTD."[9] Reconstitution also lists RTD forecasting as part of the external assessment that a different unit conducts on behalf of the attrited unit.[10] To military practitioners, these tasks seem straightforward. Yet, for MSKI, they aren't always clear-cut issues. During conflicts in Iraq and Afghanistan, "sprain" injury was the most common cause of MSKI, and "overuse conditions" were the second most common reason for medevac related to MSKI.[11] Particularly regarding back pain and spinal injury, "sprain" is a nonspecific term lacking firm diagnostic criteria.[12] "Overuse conditions" are often overdiagnosed and used as a catch-all when a clear anatomical insult is absent. What's more, different types of "overuse conditions" and "sprains" have different recovery timelines—one soldier with "overuse knee pain"

might recover in six to eight weeks, and another might recover in three to four months. In both instances, there is a lengthy RTD timeline. We should be absolutely clear when overuse conditions are truly present, and this requires a high level of diagnostic capability in our medical providers.

Regrettably, the majority of our medical providers lack sufficient training in musculoskeletal and orthopedic triage, assessment, and treatment. An infantry battalion is equipped with a physician assistant and when deployed, with a battalion surgeon. Those who have completed the Interservice Physician Assistant Program receive around ten credit hours in orthopedic training, mainly focused on surgical management.[13] Similarly, unless a battalion surgeon has specialized in orthopedic surgery or sports medicine, their orthopedic/musculoskeletal training is likely limited to ten to twelve credit hours.[14] This shortfall in expertise is underlined by a 2007 military medicine study by John D. Childs et al., which found that only 18 percent of nonorthopedic military physicians in their sample passed a musculoskeletal competency examination.[15]

As a result of this deficit in knowledge and training, nonphysical therapists are more likely to rely on diagnostic imaging to obtain a MSKI diagnosis.[16] The problems here are twofold: (1) in the LSCO environment, every effort should be made to reduce the signal footprint as part of force protection; and (2) diagnostic imaging often results in false positives.[17] Prognosis and treatment that follow an inaccurate diagnosis is at a very low level of precision. To recap, we have inadequately trained individuals using technology with a significant logistical and

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electromagnetic footprint at high risk of misdiagnosing MSKIs and inaccurately forecasting RTD.

In light of these limitations, there is a significant chasm between what reconstitution requires and what Army medical providers are typically able to do. A simple response might be to train more physical therapists. However, there is only so much space at Fort Sam Houston and so many positions available at the Army-Baylor program. To account for this gap between Army-Baylor graduates and what holistic health and fitness (H2F) requires, the Army has increased its number of direct accession physical therapists. Yet, while every physical therapist is required to possess an entry-level doctoral degree and state licensure, there is still considerable variability in clinical practice. Physical therapists practice across a wide range of settings, and licensure doesn't guarantee orthopedic expertise but rather an ability to work as a generalist.[18]

Orthopedic practice across physician and nonphysician providers similarly demonstrates a lack of standardization, and troublingly, many invalid forms of clinical testing predominate.[19] Orthopedic providers often use different terms and conflicting paradigms to describe and assess the same clinical entities, complicating communication regarding whether a soldier can RTD, what resources will be needed to facilitate RTD, and how long it will be before a soldier can RTD. In civilian and military orthopedic practice, these inconsistencies can lead to overtreatment and further legitimize orthopedic surgeries with questionable benefits beyond placebo.[20]

Doctrinal Changes to MSKI Management

Clearly, if Army medicine is to accomplish the charge set forth in ATP 3-94.4, it must reform every aspect of MSKI management and demand a level of standardization of its MSK specialists. Standardization is a critical part of Army medicine that allows continuity of care at echelon. In trauma management, combat medics use the mnemonic MARCH PAWS (massive bleeding, airway, respiration, circulation, head and hypothermia, pain, antibiotics, wounds, and splinting) to guide assessment and tactical combat casualty care to guide initial treatment.[21] Providers at higher echelons of care are trained in advanced trauma life support, the Combat Casualty Care Course, and other courses within the Joint Trauma System.[22]

ATP 4-02.5, *Casualty Care*, specifies a number of different triage and treatment pathways for combat and operational stress control (COSC), dental care, and concussion care. Conspicuously absent in the military health system doctrine is any detailed instruction on MSKI management. In fact, there are no algorithmic depictions of MSKI triage and RTD decision processes in Army doctrine.[23] COSC is a logical point of comparison, and the many parallels between COSC and MSKI management are instructive. Five behavioral health professional disciplines and two enlisted specialties support the COSC mission.[24] All are trained using the BICEPS (brevity, immediacy, contact, expectancy, proximity, and simplicity) concept of combat operational stress reaction management.[25] It is expected that over 95 percent of soldiers who experience combat and operational stress reactions will return to duty.[26]

Just as physical therapists approach the treatment of MSKI with advanced strategies, COSC units are strategically positioned to optimize their impact, ensuring a higher rate of return to duty.[27] Echoing the principles of COSC, the management of MSKI involves a collaborative, multidisciplinary approach that transcends the boundaries of any single profession. However, there is a notable lack of standardized guidelines for both orthopedic and nonorthopedic medical practitioners to follow. The Army's need for a substantial rate of RTD from MSKI cases is critical. Adopting a method akin to COSC's successful practices is not only logical but also critical. In the same vein as COSC's BICEPS and the "five Rs" (reassurance, rest, replenish, restore, return) principles, MSKI demands a unified language and consistent protocols for triage and assessment.[28] We propose a foundational framework to inform future doctrine and training in this area in the following sections.

Rapidly Reversible Conditions

In 2021, active-duty soldiers sustained over five hundred thousand musculoskeletal injuries. Counting diagnosis codes in the electronic health record, the Army Public Health Center's report classified over 86 percent of these injuries as "cumulative microtrauma" injuries, with the remainder classified as "acute traumatic injuries."[29] Some diagnostic codes, such as those for bone

stress fracture, refer explicitly to conditions that directly result from repetitive, sub-threshold loads on musculoskeletal tissue that eventually lead to anatomic disruption. However, many nonspecific diagnostic codes are also included in this count. These include codes based on symptoms such as "low back pain" and "runner's knee."[30] In reality, many of these codes do not correspond to specific disorders. Instead, they are catch-all terms for musculoskeletal symptoms that either lack a distinct pathology or cannot be effectively diagnosed and treated based solely on X-ray, magnetic resonance imaging results, or laboratory tests.[31]

The narrative that follows these reports is that many injuries in the Army are a result of repetitive microtrauma due to overtraining or resultant from military training exposure. While cumulative microtrauma injuries are certainly a relevant portion of MSKIs (particularly during initial entry training), a third category of injuries is overlooked through this classification scheme. For this argument, we'll refer to these conditions as "green flag conditions."[32]

Green flag conditions are clinical entities that mimic stereotypical orthopedic injuries (e.g., "bursitis," "sciatica," "impingement").[33] Instead of requiring multiple treatments over several weeks to months to improve, a green flag condition rapidly improves in response to a specific, single exercise, oftentimes on the first day of treatment. In contrast to sprains and strains, green flag conditions resolve quickly, allowing the soldier to RTD without significant time loss.[34] Green flag conditions are present in over 70 percent of all people who report some type of spinal pain (neck, mid back, or low back), and though comparatively less common in the extremities, represent a significant proportion of complaints.[35] Between 2021 and 2022, a majority of patients treated at the Brigade Physical Therapy Clinic in the 173rd Airborne Brigade were diagnosed with green flag conditions. Though this was in garrison, many if not most of these injuries resulted from military training events such as airborne operations and long-distance movements.

Image from Ronald Donelson et al., "The Cost Impact of a Quality-Assured Mechanical Assessment in Primary Low Back Pain Care," *Journal of Manual & Manipulative Therapy* (19 May 2019).

In a LSCO environment, it is improbable that these injuries would suddenly stop occurring.

Soldiers, medics, and providers can identify the presence of a green flag condition through a standardized mechanical assessment. This assessment uses repeated joint and spinal movements as well as sustained bodily positions to clarify the clinical picture and accurately classify a musculoskeletal injury or pain complaint. MSKIs may be classified as green flags, structurally compromised (e.g., a shoulder dislocation or ACL tear), recovering trauma (e.g., a sprain or strain), joint or muscle dysfunctions (e.g., tissue abnormalities that require remodeling through exercise), or as resulting from other disease processes. Each classification has a specific prognosis and course of treatment.

The standardized mechanical assessment, known as mechanical diagnosis and therapy (MDT), is diagnostic and therapeutic. When practiced by trained examiners, MDT is highly reliable in classifying spinal and extremity pain—unlike other commonly used orthopedic examination processes.[36] In the 75th Ranger Regiment, MDT has been an integral part of injury prevention and orthopedic assessment for decades.

Though perhaps not widely known, it is because of the Ranger Regiment's success in using MDT as self-treatment that its pamphlet, "Joint PMCS: How to Find and Treat Your Own Pain," was incorporated into the Army's official fitness doctrine in chapter 17 of ATP 7-22.02, *Holistic Health and Fitness Drills and Exercises*.[37] MDT has demonstrated effectiveness in military medicine as treatment for MSKIs and as injury prevention.[38]

therapists will have to triage, treat, and take off. Therapists using MDT have advantages in this environment. MDT emphasizes patient empowerment—patients are taught self-assessment and treatment, reducing reliance on medical providers to perform specialized procedures such as trigger point dry needling, taping, or joint manipulation/adjustments. Using MDT, providers give patients a movement

> The ability to discern green flag conditions from true structural compromise will decrease the number of soldiers requiring medevac/casualty evacuation to the Role 2 and beyond.

Implications for LSCO and Home Station

MDT affords several advantages over other forms of orthopedic assessment in the LSCO environment. First, it requires no specialized equipment, which means no additional electromagnetic signal output. MDT practice is also scalable at echelon. Basic self-treatment principles (such as those from the Joint PMCS [Preventive Maintenance Checks and Services]) can be taught as "self-aid." Platoon/Role 1 medics are capable of learning an abbreviated assessment that allows for rapid resolution and RTD and have demonstrated this capacity in the 75th Ranger Regiment and 173rd Airborne. Physicians and physician assistants at the Role 1 can use MDT to make more informed judgments and keep more soldiers in the fight. Moreover, the ability to discern green flag conditions from true structural compromise will decrease the number of soldiers requiring medevac/casualty evacuation to the Role 2 and beyond. In a contested environment where medevac (particularly aerial medevac) will be far less available, evacuating DNBI MSKI must be kept to an absolute minimum.

There are also benefits for physical therapists and other providers traditionally working in a Role 2 or Role 3. We can expect our enemy to utilize drones for continuous intelligence, surveillance, and reconnaissance of rear echelon support areas and effectively use fires to disrupt sustainment. A static Role 2 or Role 3 may become a thing of the past, and physical

prescription that resolves their MSK problem and a maintenance plan that prevents recurrence.

Outside of LSCO, MDT confers several additional benefits beyond the current standard orthopedic care. It is a guideline-recommended treatment for low back pain and knee osteoarthritis. In the private sector, quality-assured MDT spinal care resulted in significant cost savings and decreased surgical rates. If extrapolated to the military setting, this means fewer days lost to profile and fewer days lost in postoperative recovery. Most importantly, MDT allows health-care providers to develop a common operating picture of MSKI that simply and effectively communicates diagnosis and prognosis.

Beyond the confines of LSCO, MDT offers a multitude of advantages over conventional orthopedic approaches. Renowned for its effectiveness, MDT is a widely endorsed approach for managing common ailments such as low back pain and knee osteoarthritis, as substantiated by guidelines and research.[39] In the private health-care sector, implementing a standardized MDT approach in spinal care using certified clinicians has yielded substantial cost savings and significantly reduced the frequency of surgical interventions.[40] Translating these benefits to a military context suggests a potential reduction in the number of days soldiers are sidelined due to medical profiles or recovering from surgery. Crucially, MDT equips health-care professionals with a streamlined and cohesive framework for understanding and communicating the nuances of MSKI, encompassing both diagnosis and prognosis.

This unified approach enhances clarity and efficiency in managing these injuries, significantly benefiting military medical practice.

Rising to the Challenge

To effectively address the MSKI crisis, the Army must adopt a standardized approach to orthopedic care that mirrors the rigor and effectiveness of the Joint Trauma System protocols. This comprehensive strategy encompasses several critical elements: (1) MDT training and education at echelon, (2) uniform diagnostic and treatment protocols for MSKI, and (3) robust monitoring and quality-control measures. Each element forms a foundational part of this framework, with each subsequent component building upon the preceding one.

Squad level. Holistic health and fitness (H2F) integrators, formerly known as master fitness trainers, form the first line in this effort. This is because the Joint PMCS, when properly executed, can prevent injury, treat latent injuries, and identify "faults" for holistic health and fitness readiness experts to examine more closely.[41] The Joint PMCS is akin to weapons maintenance. We train our soldiers on how to perform a functions check, take immediate actions, and properly maintain their materiel weapons systems. The Joint PMCS is the same for the human weapons system. This is a critical item in current doctrine. We would recommend ongoing collaboration between an expert MDT clinician and instructors in the U.S. Army Physical Fitness School for quality assurance and to integrate lessons learned from the field. We would also recommend enhancing the focus on the Joint PMCS during leader development courses and initial entry training to ensure the doctrine is part of everyday practice.

Platoon and company level. The first touch medical provider for a given line platoon is a military occupational specialty [MOS] 68W combat medic. In garrison and during combat operations, the platoon "doc" is often the first triaging member of the Army's casualty care pathway. Regardless of the issue, "doc" is the first to take a look. It has been our experience that combat medics are frequently asked about MSKI management. Many soldiers want to avoid duty-limiting profiles or feel that visiting a medical provider is an admission of weakness. Systemic underreporting of MSKI is the result.[42]

Given the myriad demands on combat medics' time, it remains crucial that their annual training prioritizes managing battlefield trauma. However, to improve MSKI management, we propose adopting a streamlined, MDT-based algorithmic method. This approach simplifies the triage, assessment, and treatment of musculoskeletal injuries, enabling medics to deliver efficient and effective care in diverse scenarios. Units and/or professional military education courses should draw from the successful programs of instruction and algorithms in use at the 75th Ranger Regiment and 173rd Airborne.

Though physical therapy specialists (MOS 68F) aren't attached to platoons or companies, equipping them with algorithmic MDT training can markedly enhance clinical efficiency across Role 2, H2F, and brigade physical therapy settings. The 173rd Airborne Brigade physical therapy clinic was able to enhance access to care using this model. For those unfamiliar with their MOS training, it is worth noting that both 68Ws and 68Fs have algorithm-driven protocol manuals. For 68Ws, these algorithms are found in U.S. Army Medical Command Pamphlet 40-7-21, *Algorithm-Driven Troop Medical Care*. The 68Fs receive a booklet in Advanced Individual Training known as the neuromusculoskeletal screening tool.[43]

Battalion level. The battalion physician assistant plays a crucial role in medic training. While H2F-equipped brigades may alternately use an empaneled athletic trainer, we recommend training physician assistants in a minimal level of MDT proficiency to sustain ongoing medic training and enhance medical capability at the Role 1. A practitioner is considered minimally proficient in MDT upon completion of the McKenzie Institute USA's certification process. This preliminary postgraduate course in MDT consists of five courses held over eighteen nonconsecutive days and culminates in a two-day credentialing exam. Training nonphysical therapists in MDT has demonstrated economic and health outcomes benefits in the private health sector, and we believe similar gains can be realized within the military health system.[44]

Brigade and division levels. To achieve the pinnacle of quality assurance and control in MSKI management and its corresponding training programs, it is essential to elevate the training of H2F and/or brigade MSK providers to a level of mastery. In parallel to how

1st Lt. Benjamin McDaniels, a physical therapy intern, consults with a patient at the Soldiers in Training Physical Therapy Clinic at Fort Sam Houston, Texas, 17 May 2023. The Soldiers in Training Physical Therapy Clinic provides walk-in services as well as scheduled appointments. (Photo by Jason W. Edwards, Department of Defense)

an armored brigade combat team benefits from the expertise of a brigade master gunner, every brigade should similarly have a designated master MSK clinician to ensure the highest standards of musculoskeletal care and proficiency. At echelons above brigade, parallel structures should be organized within the division and corps surgeon cells. In units executing reconstitution, the master MSK clinician in the higher echelon fills a critical role in RTD forecasting for soldiers recovering from MSKI.

It bears repeating that accurate prognosis and staff communication during reconstitution is impossible without a common operating picture. Similar to a master gunner's training, each master MSK clinician should learn the same language, procedures, and protocols. As of yet, no program accomplishes this, complicating the continuity of care. The language of MDT provides this—trained clinicians can classify MSKI, and each classification communicates the nature of

the problem and the duration of recovery. Mastery of MDT is accomplished through the MDT diploma program. Diploma candidates must already possess MDT certification. This diploma program includes a semester of online schoolwork, a nine-week clinical residency, and a final oral board exam.

MDT is considered a postgraduate program and is outside the scope of entry-level medical training. We recommend gaining units fund this training for inbound personnel in lieu of changes to professional military education. Physical therapists serving as the master MSK clinicians may demonstrate additional proficiency through board certification in either orthopedic or sports physical therapy. If the position is held by another health-care provider, we would suggest an orthopedic surgeon, fellowship-trained orthopedic physician assistant, or sports medicine physician. In all cases, a diploma in MDT forms the common denominator in MSK training.

Quality Assurance and Quality Control

At brigade level and above, tracking and actioning on relevant measures of performance and measures of effectiveness are essential to implementation. Measures of performance may include the number of personnel trained, to what degree they are trained, and the frequency of retraining for combat medics. Measures of effectiveness may include specialty care visits for MSKI, duty days lost due to MSKI (temporary profile), and a number of medical evaluation boards initiated for MSKI.

Master clinicians will evaluate their certified colleagues through the above in concert with patient survey items. These surveys track a soldier's self-rated readiness to deploy, confidence in passing the Army Combat Fitness Test, level of pain, and level of pain-related disability. The Military Orthopedics Tracking Injuries and Outcomes Network (MOTION) is the designated Defense Health Agency database for collecting, securing, and analyzing this information. Using MOTION outcomes, master clinicians can conduct azimuth checks on individual courses of recovery and provide "in-flight" corrections to maximize RTD. This process is known as MOTION/MSK triage, and it is a current Defense Health Agency initiative. Using MOTION is not yet a widespread practice in H2F, though this must change if we are to holistically understand care outcomes.

An Investment That Puts People First

It takes an estimated $40,000–$70,000 to produce a soldier.[45] A soldier who suffers an MSKI within their first term of service and is medically discharged incurs additional costs—both in terms of money and opportunity. From 2011 to 2016, MSKIs factored into 91 percent of the medical separations for first-term enlistees. Even beyond the first term of service, the loss of a soldier compromises small-unit training and prolonged temporary profiles that culminate in the medical evaluation board process delay the arrival of replacements. This is particularly acute in low-density specialties. Monetarily, the Army has lost the initial cost of training the soldier, the wages paid while the soldier was recovering, and whatever amount of severance pay the soldier is entitled to.

Following discharge, the soldier may then be eligible for VA compensation for a service-connected disability. Notably, the annual expenditure for this compensation has surged, now exceeding $70 billion annually.[46] Considering these costs, investing $3,600 for each MDT-certified clinician and $20,000 for every MDT diplomat emerges as an exceptionally prudent and financially sound decision. Recently, the Army allocated $100 million toward an advanced human performance wearable technology program, complemented by further investment in CoachMePlus exercise planning software.[47] While these wearables show potential in injury prediction, their current reliability (consistency of measurements) and validity (accuracy in measuring what they claim) vary.[48] In contrast, clinicians trained in mechanical diagnosis and therapy (MDT) consistently exhibit high reliability in assessments, accurately predicting patient recovery timelines and outcomes.[49] Furthermore, health systems and individual practices employing MDT-trained clinicians have demonstrated superior clinical and economic results.[50] Considering these factors, the investment in MDT training presents a significantly greater value for a lower cost.

Conclusion

The Army's implementation of the H2F program represents a strategic initiative to effectively address the widespread issue of MSKI. However, there's a noticeable gap in translating the successes of tactical combat casualty care to musculoskeletal care. Effective MSKI management, akin to combat casualty care, requires a seamless integration of standardized practices across medical capabilities. MDT provides this integration, offering a comprehensive framework that empowers soldiers, medics, and medical providers to conduct prompt and effective triage, assessment, treatment, and management of MSKI. The expanding evidence base consistently affirms the efficacy of MDT.[51] It's imperative now for commanders to recognize the necessity of this training, not only as a measure of sustainment but as a critical aspect of reconstitution. Equally crucial is the need for policymakers and leaders of major commands to recognize and address the significant risk that MSKI poses to ensure long-term readiness and operational capability. ■

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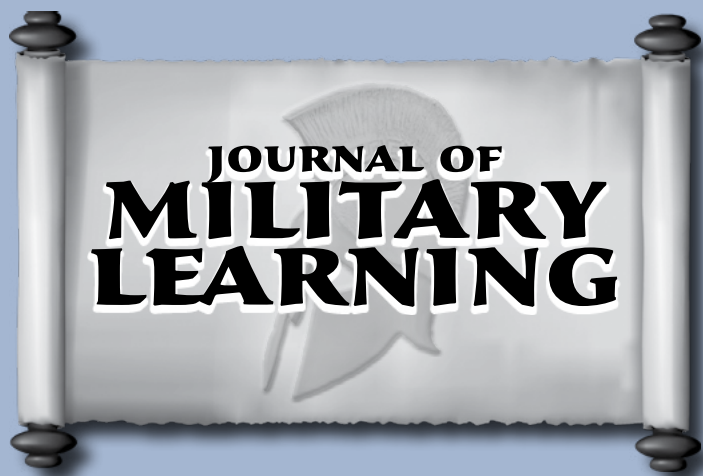
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A Different Kind of War

The Unknown Story of the U.S. Navy's Guerrilla Forces in World War II China
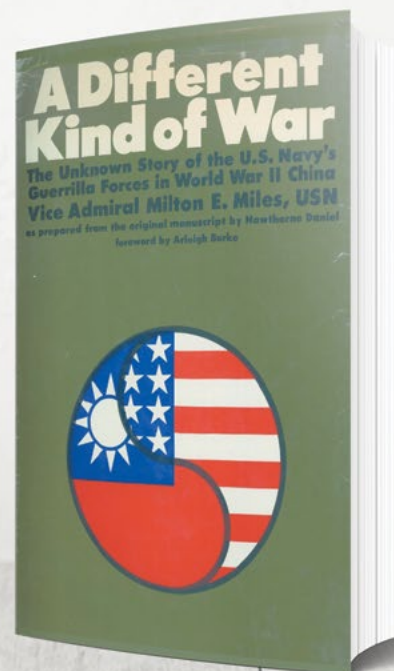
Milton E. Miles, Doubleday, New York, 1967, 629 pages

Maj. Cody Chick, U.S. Army

Most people would be surprised that the United States raised an army in China during World War II; that relationship was overshadowed by the 1944 D-Day landing in Northern France and island-hopping in the Pacific. In the wake of the attack on Pearl Harbor by Japan on 7 December 1941, Japanese forces had operational momentum as the U.S. military struggled to get a strong footing in the Far East theater. It was at this time that the U.S. Navy identified a military information gap that could significantly hurt impending operations to come—a lack of weather stations. Forecasting weather was critical to military planning. Japanese forces knew how to use weather forecasting to their advantage by screening their movements, because most of the weather formations moved from west to east across China, Japan, and then the Pacific Ocean. Seeing the need to track daily and weekly forecasts ahead of Japan by establishing weather stations in China, the U.S. Navy sent Capt. Milton E. Miles on a mission that would ultimately disrupt Japanese operations and serve as one of the foundational units for U.S. conduct of irregular warfare.

Miles served as an ensign in China with the Asiatic fleet from 1923 to 1927 and again from 1934 to 1939, where he became fluent in Mandarin and endeared himself to the Chinese people he worked with. As the Navy began shifting forces within the Pacific following the Pearl Harbor attack, Adm. Ernest King selected Miles to establish weather stations along the Chinese coast. Also, he was to use a small number of U.S. service members for training Chinese guerrillas to conduct intelligence collection and maritime interdiction operations. Initially serving as a "naval observer" to accomplish this mission, Miles created the Sino-American Cooperative Organization (SACO) along with Dai Li, the director of the Nationalist Chinese Bureau of Investigation and Statistics. The organization would be codified by agreement between U.S. President Franklin D. Roosevelt and Republic of China's President Chiang Kai-shek to support large-scale combat operations throughout the China-Burma-India theater. Miles remained the SACO

deputy director, second to Dai from its creation to its disestablishment, giving him the insight to write one of the most comprehensive accounts of a unique organization steeped in guerrilla warfare.

In *A Different Kind of War: The Unknown Story of the U.S. Navy's Guerrilla Forces in World War II China*, the retired vice admiral recounts his experience from the initial days of World War II to setting up SACO, fighting the Japanese, and to the end of the war at Tokyo Bay.[1] Miles's record of SACO reveals valuable lessons that remain applicable today regarding unconventional warfare and organizational friction among military branches. His detailed memoir recounts three important areas to understand: (1) the development of SACO and its contributions to the Pacific theater, (2) the numerous mission command issues between the services and Office of Strategic Services (OSS) in supporting joint operations, and (3) the guerrilla mindset necessary for unconventional warfare leaders.

Initially focused on intelligence, SACO established weather stations along the Chinese coast for the dual purpose of radio interception and reporting Japanese aircraft and ship movements, later bringing former members of the Federal Bureau of Investigation to train select law enforcement and criminal investigation skills. As SACO grew, it established twelve inland camps that were used to train Chinese guerrillas in sabotage, raids, aerial and ship recognition, radio interception, and even the rescue of downed pilots. It would grow to approximately 2,500 U.S. service members with ninety-seven thousand guerrillas who destroyed two hundred bridges, eighty-four locomotives, and 141 ships and boats.[2] Miles also reported twenty-three thousand Japanese troops killed in their operations, an estimate that would be increased by postwar SACO historians to seventy-one thousand.[3] Within a few years of its inception, SACO mounted a significant guerrilla warfare campaign against the occupying Japanese forces and forced Japan to split their scarce forces between China and the rest of the Pacific theater, dedicating over a million soldiers to China at one point in time.[4]

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When reading through Miles's memoir, it is possible to feel the frustration he dealt with coordinating among the services. Within the Pacific theater, the Army, Navy, and the OSS each wanted to lead the efforts on intelligence collection. In an effort to get his foot in the door of China and control operations there, OSS Chief William Donovan selected Miles as the OSS director in China in addition to his responsibilities for the Navy. Likewise, the Army repeatedly challenged the Navy's jurisdiction and would place their own requirements on SACO. Unfortunately, SACO can be counted as a case study for the negative effects that interservice rivalry and fighting for control had in impeding their operations. Personalities, like those of Gen. Joseph "Vinegar Joe" Stillwell and "Wild Bill" Donovan, and the ever-present bureaucratic fight for resources weighed on SACO and its role within the theater.

A Different Kind of War provides valuable insight into the leadership qualities needed for unconventional warfare. In addition to being a Navy officer who trained a guerrilla army, Miles stood out as an unconventional leader in his approach to work with his Chinese hosts and allies. Pulling from his prior experience in China and his ability to speak Mandarin Chinese, Miles firmly believed in working by, with, and through the indigenous population. As he was structuring SACO, he avoided recruiting "Old China Hands," who were former experts who had lived in China but had a colonialist mindset toward the Chinese. He and his subordinates ate, trained, and lived alongside the Chinese in shared training camps. Within the command structure of SACO, Miles even deferred the primary command position to his Chinese counterpart, as they were fighting for their own occupied territory and the United States served in a supporting role. Because of this cooperative mindset, Miles was the only U.S. officer who was accepted by Dai Li, which enabled both countries to work effectively together.

One critique due *A Different Kind of War* is common to the subjective nature of memoirs. Miles maintained a very descriptive account of the entire period but is inherently one-sided. His subjectivity is most evident when he discusses interservice rivalries, seemingly to justify his position, or particularly in the role of law enforcement training for the guerrilla forces. While some of the investigative and counterintelligence tasks complemented future missions and provided a level of

operational security, critics today believe that SACO equipped the Kuomintang with the resources necessary to punish members of the Chinese Communist Party (CCP) during the Chinese Civil War.[5] The political impact of limiting military aid to one particular group is an issue that raises questions still relevant today in terms of legal authorities, ethical practices, and foresight into future conflicts for the host nation. In Afghanistan for the past two decades, or in Ukraine today, these are questions that need to be answered by national-level leadership and managed by military theater commanders. Nonetheless, Miles presents these issues and remains the most authoritative and extensive first-hand source about SACO and irregular warfare in China during World War II.

Overall, World War II Pacific theater enthusiasts and students of unconventional warfare will find Miles's account hard to put down. While some chapters focus on the organizational structure and administration of SACO, Miles also captures readers with his firsthand depictions of leaders like Generalissimo Chiang Kai-shek, Gen. William Donovan, Adm. Ernest King, Gen. Albert Wedemeyer, Gen. Joe Stillwell, and Gen. Claire Chennault. He includes incredible stories like the rescue of a princess, partnerships with riverine pirates, and attempted assassinations against him. Additionally, he provides a unique perspective on the internal political wrangling between the Kuomintang and CCP before the final years of the Chinese Civil War in 1945. *A Different Kind of War* sheds light on the use of unconventional warfare with a full inclusion of indigenous forces during large-scale combat operations, which had disproportionate positive effects at little cost to the U.S. Navy in lives and resources. With only 1,500 U.S. service members, SACO conducted operations along the entire seacoast of China, forcing Japan to commit additional forces there. Readers of *Military Review* and *Special Warfare Magazine* would like Miles's memoir because it blends modern Chinese history, irregular warfare, and an appreciation of Kuomintang unconventional warfare in the mid-twentieth century.

The United States and both Chinese governments learned important lessons in their combined efforts against Japan during World War II. The People's Republic of China (PRC) and the Republic of China have each been involved in U.S. unconventional warfare, and the PRC continued refining its own operations and strategies as it solidified its power on mainland China following Mao Zedong's rise to power. Miles's history of SACO reveals potential pitfalls today in interservice challenges, security cooperation, and the role of unconventional warfare. SACO is an important case for military professionals to examine in light of the great power competition between the PRC and the United States, and the Republic of China's precarious position. ■

The views expressed are those of the author and do not reflect the official position of the Naval Postgraduate School, Department of the Army, or Department of Defense.

Notes

1. Milton E. Miles, *A Different Kind of War: The Unknown Story of the U.S. Navy's Guerrilla Forces in World War II China* (Garden City, NY: Doubleday, 1967).

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Letter to the Editor, *Military Review*

Dear Sir,

I write regarding the article "Lessons Learned by the 75th Ranger Regiment during Twenty Years of Tactical Combat Casualty Care" (*Military Review*, March-April 2024).

I agree the Ranger Regiment has done excellent work during the counterinsurgency and counterterrorism operations in the War on Terrorism, and received excellent medical support. Leaders, medical and line, have focused on elements that have indeed meant the Rangers had zero preventable deaths. In one remarkable case, a Ranger received well over fifty units of whole blood, plus other blood products—bleeding out several times over—but through good tactical casualty care, prompt evacuation, and surgery, he survived.

To read "Lessons Learned by the 75th Ranger Regiment during Twenty Years of Tactical Combat Casualty Care," visit https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/March-April-2024/Lessons-Learned/.

However, I doubt whether this would be possible during large-scale combat operations. As Col. Matthew Fandre pointed out ("Medical Changes Needed for Large-Scale Combat Operations: Observations from Mission Command Training Program Warfighter Exercises," *Military Review*, May-June 2020, 36–45) casualty volumes during major operations would be substantial, and the Rangers' portion of those would likely be far larger than the casualties the Regiment suffered in the War on Terrorism. The past is not going to recur, but the two Ranger battalions at Pointe du Hoc suffered well over two hundred wounded in two days of action. It is hard to imagine achieving zero preventable deaths with that volume of casualties against an enemy that can—even intermittently—deny resupply and evacuation.

We should not stop trying to get better at casualty care, but we should consider what casualty care will be possible in a LSCO. ∎

Yours sincerely,
Sanders Marble, PhD
Senior Historian, U.S. Army Medical Department Center of History and Heritage
U.S. Army Medical Center of Excellence
Fort Sam Houston, Texas

Military Review

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Army University Press

Medals of Honor

Master Sgt. Gary Gordon and Sgt. 1st Class Randall Shughart

Operation Restore Hope

Less than a year after the deaths of Master Sgt. Gary Gordon and Sgt. 1st Class Randall Shughart in Mogadishu, Somalia, the two Delta Force operators were posthumously presented the Medal of Honor by President Bill Clinton on 23 May 1994. The snipers would be the first to receive the Medal post-Vietnam. In his remarks, the president said,

> The pilot of their helicopter said that anyone in their right mind would never have gone in. But they insisted on it because they were comrades in danger. … And so, they asked their pilot to hover just above the ground, and they jumped into the ferocious firefight.[1]

He continued,

> They believed passionately in the creed that says, "I will not fail those with whom I serve." ... Gary Gordon and Randall Shughart died in the most courageous and selfless way any human being can act. They risked their lives without hesitation. … Both were men whose dreams and generous hearts we can never adequately portray. Both were quiet men whose steadiness gave strength to all who knew them.[2]

Gordon, who grew up in Maine, joined the U.S. Army at eighteen. He was a combat engineer prior to joining the 1st Special Forces Operational Detachment-Delta.[3] Shughart grew up in Newville, Pennsylvania, and joined the Army right after high school. He served in 2nd Battalion, 75th Ranger Regiment, and then in 1st Special Forces Operational Detachment-Delta as an assistant team sergeant.[4]

Army Sgt. 1st Class Randall Shughart (*left*) and Army Master Sgt. Gary Gordon. (Photo courtesy of the U.S. Army)

Gordon and Shughart have been remembered fondly; elementary schools near Fort Liberty were named after both men, and a memorial was built in Gordon's hometown of Lincoln, Maine.[5] The urban warfare training facility at the Joint Readiness Training Center at Fort Johnson, Louisiana, is named Shughart-Gordon in honor of the two men, while the U.S. Navy honored them both by naming two Large, Medium-Speed Roll-on/Roll-off vessels USNS *Shugart* and USNS *Gordon*.[6] In 2001, actors Nikolaj Coster-Waldau and Johnny Strong portrayed the two soldiers in the award-winning film *Black Hawk Down*.[7]

To fully understand the sacrifices Gordon and Shughart made on 3 October 1993, a summary into the

Army soldiers of Company B, 2nd Battalion, 14th Infantry Regiment, watch helicopter activity over Mogadishu, Somalia, on 3 October 1993. Later the same day and throughout the night, the battalion's A and C companies were part of a rescue convoy assembled for nearly one hundred Rangers who had become trapped in the city after two Black Hawk helicopters were shot down. (Photo courtesy of the U.S. Army)

leadup of what would be commonly known as the Battle of Mogadishu is needed.

Amid a civil war, Somalia's socialist dictator Mohamed Siad Barre was overthrown and fled Mogadishu in 1991, leaving the city to the rebel group United Somali Congress.[8] The rebel group then split into several factions led by former military officers, including one commanded by Gen. Mohamed Farah Aidid. However, a man-made famine the following year brought international attention to the country.[9] The UN sent humanitarian relief, but not without difficulty.[10] Food became "the new tool of power" among regional warlords, who would have relief organizations pay protection money while distributing food supplies that, more often than not, never reached those in need.[11] The United States joined the relief efforts in August 1992, attempting to use its logistical expertise without support by military ground forces.[12]

Aidid held little to no respect for those in charge of the relief efforts, and tensions flared. The United States deployed Task Force (TF) Ranger on 22 August 1993 to capture Aidid and his lieutenants after a 5 June ambush by his Somali National Alliance killed twenty-four Pakistani peacekeeping soldiers and wounded another forty-four.[13] Between August and September 1993, TF Ranger successfully completed six missions in Mogadishu; however, it would all go wrong during its seventh, and what would become its final, mission.[14]

On 3 October, TF Ranger was tasked to capture Aidid's key lieutenants along with supporters at his Mogadishu stronghold. Under increasingly heavy enemy fire, the task force was loading twenty-four prisoners into a truck convoy when a rocket-propelled grenade struck one of the UH-60 Black Hawk helicopters providing air support.[15] When Super 6-1 crashed about three blocks from TF Ranger's position, the mission changed from "capturing [Aidid] supporters to one of safeguarding and recovering American casualties."[16] The situation would only worsen. Another two Black Hawks were struck; one was able to return to the airport while the other, Super 6-4, crashed less than a mile from the first.[17]

There was no rescue team immediately available to Super 6-4 as the first crash site was being secured by soldiers already on the ground, but two Delta Force snipers providing air support during the raid volunteered to protect the second helicopter's survivors until forces could arrive.[18] Aware of the mob making their way to the second crash and knowing any "survivors wouldn't stand a chance," Master Sgt. Gary Gordon and Sgt. 1st Class Randall Shughart volunteered to secure the crash, fully aware of the danger they would face.[19] Twice they asked to go in but were denied. It wasn't until their third request that they received permission. Gordon and Shughart were inserted about one hundred yards from the site. After making their way through a maze of buildings, they pulled lone survivor Chief Warrant Officer 3 Michael Durant from the wreckage and moved him to a safer location before attempting to secure the perimeter.[20]

"Gordon and Shughart knew their own chances of survival were extremely bleak."[21] Each was armed with only a sniper rifle, a sidearm, and limited ammunition. During intense fighting, Shughart was fatally wounded, and Gordon was running out of ammunition, having used up the supply from the downed Black Hawk. Gordon gave Durant the last of the ammunition and a rifle, saying "good luck" before reentering the fight with only his sidearm; he would be shot and killed shortly

thereafter.[22] A badly injured Durant was overrun by the mob and held hostage before his eventual release eleven days later.

The fighting would continue into the next day until TF Ranger broke contact with the aid of a 10th Mountain Division battalion and support from Pakistani and Malaysian armored vehicles.[23] In less than two days of fighting, sixteen members of TF Ranger were dead and eighty-three wounded, with the Red Cross estimating two hundred Somali dead and seven hundred wounded.[24] President Clinton ordered the end of combat operations except in self-defense on 6 October and ordered the full withdrawal of U.S. ground forces by 4 March 1994.[25] As stated in a 2003 after action report,

The battles of 3–4 October were a watershed in U.S. involvement in Somalia. The already complex mission and difficult environment took a dramatic turn with those events. … In a country where the United States, perhaps naively, expected some measure of gratitude for its help, its forces received increasing hostility as they became more deeply embroiled into trying to establish a stable government. ... The Somali people were the main victims of their own leaders, but forty-two Americans died and dozens more were wounded before the United States and the United Nations capitulated to events and withdrew.[26] ∎

Notes

1. William J. Clinton, "Remarks at the Presentation for the Congressional Medal of Honor, 23 May 1994," American Presidency Project, accessed 11 July 2024, https://www.presidency.ucsb.edu/documents/remarks-the-presentation-ceremony-for-the-congressional-medal-honor.

2. Ibid.

3. Katie Lange, "Medal of Honor Monday: Army Master Sgt. Gary Gordon," U.S. Department of Defense, 1 July 2019, https://www.defense.gov/News/Feature-Stories/story/Article/1890858/medal-of-honor-monday-army-master-sgt-gary-gordon/.

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11. Eugene G. Piasecki, "If You Liked Beirut, You'll Love Mogadishu: An Introduction to ARSOF in Somalia," *Veritas: The Journal of Army Special Operations History* 3, no. 2 (2007): 20; Stewart, "The United States Army in Somalia, 1992–1994," in *Somalia After Action Report*, 4.

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14. Ibid.

15. U.S. Army Special Operations Command History Office (ARSOF), *Task Force Ranger: Operations in Somalia, 3-4 October 1993* (Fort Liberty, NC: ARSOF, 1 June 1994), 3, https://www.esd.whs.mil/Portals/54/Documents/FOID/Reading%20Room/International_Security_Affairs/07-A-2365_Task_Force_Ranger_Report_Operations_in_Somalia_1993.pdf; Stewart, "The United States Army in Somalia, 1992–1994," in *Somalia After Action Report*, 11.

16. ARSOF, *Task Force Ranger*, 3.

17. Stewart, "The United States Army in Somalia, 1992–1994," in *Somalia After Action Report*, 11.

18. Lange, "Medal of Honor Monday."

19. Ibid.

20. Ibid. Super 6-4's other copilot and crew chiefs—Ray Frank, Tom Field and Bill Cleveland—were already dead when Gordon and Shughart arrived.

21. Clinton, "Remarks, 23 May 1994."

22. Lange, "Medal of Honor Monday."

23. Piasecki, "If You Liked Beirut, You'll Love Mogadishu," 26.

24. Ibid., 12.

25. Rick Atkinson, "Night of a Thousand Casualties," *Washington Post* (website), 31 January 1994, https://www.washingtonpost.com/archive/politics/1994/01/31/night-of-a-thousand-casualties/1f-0c97b1-1605-46e5-9466-ba3599120c25/; Clinton, "Remarks, 23 May 1994."

26. Stewart, "The United States Army in Somalia, 1992–1994," in *Somalia After Action Report*, 13–14.

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