

Military Review

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November-December 2022

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Letter from the Editor in Chief

The Next 100 Years ...

With the January-February 2022 special edition of *Military Review*, Army University Press celebrated the one hundredth anniversary of the Army's premier professional journal. There is immense pride and ownership by the editorial staff of the journal, as well as more broadly across the Command and General Staff College, Army University, and beyond. This November-December edition marks the end of our one hundredth anniversary year. Thus, it is time to begin thinking about the next one hundred years.

In the months ahead, *Military Review* will publish articles marking the launch of the Army's new Field Manual (FM) 3-0, *Operations*. In the words of the chief of staff of the Army, the manual expands on the capstone doctrine of multi-domain operations. It remains rooted, however, in the principles of war; reinforces the offensive mindset; and demonstrates the imperatives of speed, range, and convergence of capabilities on current and future battlefields. Conceptually, it has potential to change how the Army operates and fights in the twenty-first century.

As with all new doctrinal publications, there will be much debate as new concepts are taught, trained, and operationalized. This is where our readers in the field and in our tactical and operational units play a very important role. The Army needs your contributions as a member of the Army profession to help understand the challenges, gaps, flaws, and confusion that can sometimes be overlooked in the development of operational concepts. To facilitate this public dialogue, *Military Review* will be hosting, posting, and promoting articles that discuss, question, and challenge FM 3-0. The 2023

DePuy Writing Competition will be solely focused on this important conversation and debate.

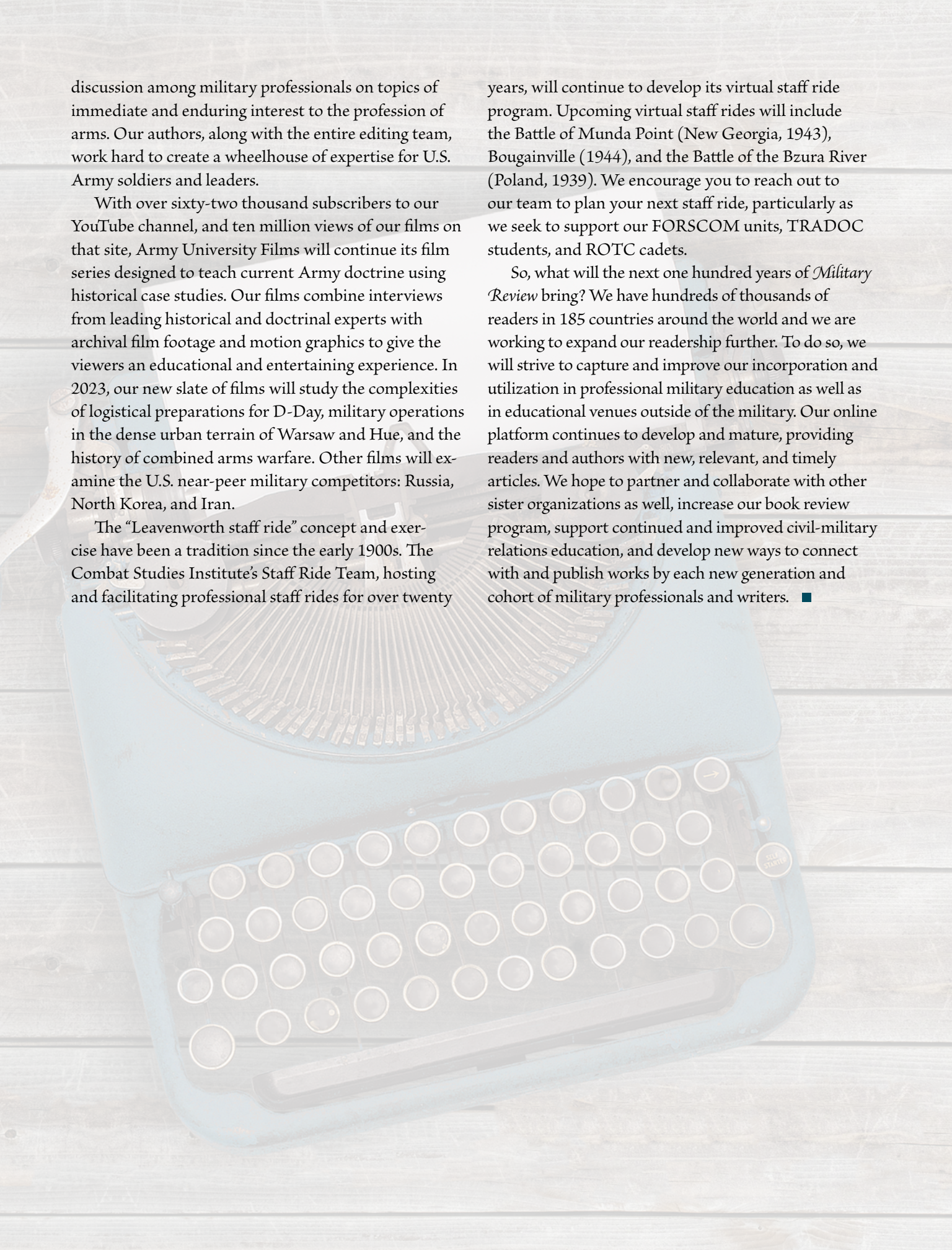
For anyone paying attention to current events over the past few years, the Nation's military—the all-volunteer force—has become party to and the subject of great debate related to civil-military relations. On 6 September, eight former secretaries of defense and six retired chairmen of the Joint Chiefs of Staff published an open letter calling attention to the “core principles and best practices” of civilian control of the military. Other respected scholars and intellectuals have also written several articles, blogs, op-eds, journals, and books on the topic. In 2023, we will publish and support work that celebrates the fiftieth anniversary of the all-volunteer force, particularly in the context of civil-military relations and future operational and political environments.

Over the next few years, *Military Review* will work to bring a series of special editions that will highlight war poetry, space and missile defense, special operations, artificial intelligence, and civil-military relations. We intend to bring our readers the most current and relevant work from leading authors and scholars, and publish articles that spur widespread interest and healthy debate. Moreover, readers will not want to miss the lineup of products Army University Press will present over the course of 2023 from its other stellar teams.

The Army University Press Research & Books Team will be bringing volumes on leadership in large-scale combat operations, retreat and the lessons therein, and an investigation into the perils of interwar innovation. Manuscripts submitted and accepted by our editorial board continue to keep the mission in mind: fostering



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

A light blue vintage typewriter is positioned on a wooden surface. The typewriter is semi-transparent, allowing the wooden grain of the surface beneath it to be visible. The keyboard is clearly defined with white circular keys. The background is a soft-focus wooden plank wall.

discussion among military professionals on topics of immediate and enduring interest to the profession of arms. Our authors, along with the entire editing team, work hard to create a wheelhouse of expertise for U.S. Army soldiers and leaders.

With over sixty-two thousand subscribers to our YouTube channel, and ten million views of our films on that site, Army University Films will continue its film series designed to teach current Army doctrine using historical case studies. Our films combine interviews from leading historical and doctrinal experts with archival film footage and motion graphics to give the viewers an educational and entertaining experience. In 2023, our new slate of films will study the complexities of logistical preparations for D-Day, military operations in the dense urban terrain of Warsaw and Hue, and the history of combined arms warfare. Other films will examine the U.S. near-peer military competitors: Russia, North Korea, and Iran.

The “Leavenworth staff ride” concept and exercise have been a tradition since the early 1900s. The Combat Studies Institute’s Staff Ride Team, hosting and facilitating professional staff rides for over twenty

years, will continue to develop its virtual staff ride program. Upcoming virtual staff rides will include the Battle of Munda Point (New Georgia, 1943), Bougainville (1944), and the Battle of the Bzura River (Poland, 1939). We encourage you to reach out to our team to plan your next staff ride, particularly as we seek to support our FORSCOM units, TRADOC students, and ROTC cadets.

So, what will the next one hundred years of *Military Review* bring? We have hundreds of thousands of readers in 185 countries around the world and we are working to expand our readership further. To do so, we will strive to capture and improve our incorporation and utilization in professional military education as well as in educational venues outside of the military. Our online platform continues to develop and mature, providing readers and authors with new, relevant, and timely articles. We hope to partner and collaborate with other sister organizations as well, increase our book review program, support continued and improved civil-military relations education, and develop new ways to connect with and publish works by each new generation and cohort of military professionals and writers. ■

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By Order of the Secretary of the Army: Official:

JAMES C. MCCONVILLE
General, United States Army
Chief of Staff


MARK F. AVERILL
Administrative Assistant
to the Secretary of the Army



Cover photo: U.S. special operations service members conduct combat operations in support of Operation Resolute Support in Southeast Afghanistan, May 2019. Resolute Support is a NATO-led mission to train, advise, and assist the Afghan National Defense and Security Forces and institutions. (Photo by Sgt. Jaerett Engeseth, U.S. Army)



2022 General William E. DePuy

Special Topics Writing Competition

"Insights from Two Decades in Afghanistan"

WINNERS!



1st Place

"Haunted by Clausewitz's Ghost: Moral Forces in the Collapse of the Afghan Military," John B. (J. B.) Potter



2nd Place

"All Power is Local: Understanding Disciplinary Power to Mobilize the People," Maj. Robert Rose, U.S. Army



3rd Place

"Civil Dispute Resolution: An Ignored Winning Strategy for Afghanistan," Col. Cornelia Weiss, U.S. Army, Retired



Honorable Mention

"Military Power Is Insufficient: Learning from Failure in Afghanistan," Lt. Col. John Q. Bolton, U.S. Army



Honorable Mention

"Rule of Law and Expanding the Reach of Government: Lessons Learned from an ACPAK Hands Foxhole," Maj. Theresa Ford, U.S. Army, Retired

U.S. special operations service members conduct combat operations in support of Operation Resolute Support in Southeast Afghanistan, April 2019. (Photo by Sgt. Jaerett Engeseth, U.S. Army)

For information on the DePuy Writing Competition including the 2023 topic and to submit an entry, visit <https://www.armyupress.army.mil/DePuy-Writing-Competition/>.

2023 General William E. DePuy

Special Topics Writing Competition

This year's theme is "Implementing FM 3-0, Operations"

The updated Field Manual (FM) 3-0, *Operations*, was introduced and disseminated throughout the Army during October 2022. The intent of this year's DePuy competition is to encourage close examination of the impact implementing FM 3-0 will have on the Army. A list of suggested topics for examination is provided below. However, the list is not exclusive and treatment of other relevant topics is encouraged. Manuscripts identifying and analyzing other salient topics that offer insight and productive critique of issues related to implementation of FM 3-0 are encouraged.

Competition opens 1 January 2023 and closes 20 July 2023

- 1st Place** \$1,000 and publication in *Military Review*
- 2nd Place** \$750 and consideration for publication in *Military Review*
- 3rd Place** \$500 and consideration for publication in *Military Review*

For information on how to submit an entry, please visit <https://www.armyupress.army.mil/DePuy-Writing-Competition/>.

Articles will be comparatively judged by a panel of senior Army leaders on how well authors have clearly identified issues surrounding implementation of FM 3-0 within the Army in general and/or to a significant portion of the Army; how effectively detailed and feasible solutions to the issues identified are presented; and the level of expository skill the author demonstrates in developing a well-organized article using professional standards of grammar, usage, critical thinking, original insights, and evidence of thorough research in the sources provided.

Some Suggested Writing Topics Salient to FM 3-0

- What are the chief obstacles to the implementation of the new doctrinal concepts in FM 3-0?
- What did the new FM 3-0 get right? What did it overlook or get wrong? How does it need to be revised?
- Surviving on the future battlefield. How does a modernized army equipped with the latest technology, to include cyberspace and space capabilities, remain concealed and protected on the battlefield when our adversaries can "see" and track its units from social media and other media posts from home stations (CONUS or other) to the forward line of own troops?
- Given the concepts introduced in FM 3-0, the antiaccess/area denial capabilities possessed by our potential enemies, and what we are observing in Ukraine with regard to the technical sophistication available for defeating air assets, is it time for the U.S. Army to divest itself of its large-scale airborne forcible entry capabilities?
- Has the tank gone the way of the battleship? With the concepts introduced in FM 3-0, the exponential increase of long-range precision fires and unmanned aircraft systems capabilities, and the U.S. Marine Corps' recent divestiture of heavy armor capabilities (tanks and



self-propelled howitzers), should the Army divest of its armor formations?

- The concept of convergence is one of the key concepts undergirding multi-domain operations. Explain this concept and how it will be achieved. What are the implications of enemy electronic warfare on the ability for Army forces to achieve convergence?
- Does the new FM 3-0 adequately address the introduction of new adversarial technologies such as hypersonic weapons? Exotic weapons such as biological warfare agents?
- Army forces have been multi-domain forces in many ways for years, so what are the implications of what is new about the multi-domain operations concept as described in the new FM 3-0?
- What are the implications of multi-domain operations for echelons above brigade?
- What are the implications of multi-domain operations for echelons below brigade?
- Are multi-domain operations described in FM 3-0 a continuation of (or departure from) the evolution of operational art? If so, how are they different? In any contrast and compare analysis, consider the works of Soviet military theorist G. S. Isserson, former U.S. Army Training and Doctrine Command commanding general Gen. Donn A. Starry, and other military theoreticians who have been involved in the evolution of the concept.
- How well does FM 3-0's operational concept address how Army forces need to operate given what we have observed in Nagorno Karabakh and Ukraine?
- Does FM 3-0 reveal anything about the readiness of our Army to fight a Russia or China?
- Compare and contrast the development of AirLand Battle with the development of multi-domain operations. Consider the influence of the Vietnam and 1973 Yom Kippur War and that of the Global War on Terrorism and the conflicts in Ukraine and Nagorno Karabakh. What lessons can be drawn from this analysis?
- Using FM 3-0's maritime chapter (chapter 7) as a point of departure, provide insight into the unique challenges of operating in maritime environments.
- What command and control challenges can we anticipate when employing multi-domain operations?
- An assessment of the feasibility of doctrine implementation given the projected logistical/material or other constraints?

Soldiers from the British army conduct infantry training during Exercise Eager Lion in Jordan, 11 September 2022. (Photo by Sgt. Nicholas Ramshaw, U.S. Army)

10 **Embracing the Need for Command Climate Change**

Maj. Gen. Christopher R. Norrie, U.S. Army
Lt. Col. Jaron S. Wharton, PhD, U.S. Army

Healthy command climates are essential to who we are and how well we fight, so we must continuously challenge how we assess, promote, and value positive command climates.

22 **Cultivating a Coaching Culture**

Maj. Christine S. Chang, U.S. Army

There is a gap in what Army doctrine says about leader development and how leaders are executing it in their formations. Coaching is a critical aspect of developing leaders and should be the primary focus of leader development in the Army.

34 **Perception Is Reality**

Redefining Capacity to Influence

Maj. Chris Adams, British Army

The Army should adopt a model where perception powers a leader or organization's capacity to influence to promote self-reflection and build emotional intelligence across the force, improve command climates, and generate opportunities in conflict to build advantageous disconnects between enemy perception and reality. This article was the runner-up in the 2022 MacArthur Military Leadership Writing Competition.

42 **Haunted by Clausewitz's Ghost**

Moral Forces in the Collapse of the Afghan Military

J. B. Potter

If future U.S. military operations coupled with nation-building are to be successful, American blood and treasure should not be expended abroad unless they lead to civic commitment and defensive determination among the people whom the United States seeks to help. This article was the winner in the 2022 DePuy Special Topics Writing Competition.

50 **Teach as They Fight**

Why Preparing Students for America's Future Operational Environment Requires Studying Britain's Military Past

Dr. Jacob Stoil
Dr. Daniel Whittingham

To anticipate and overcome the challenges of a future war, the U.S. Army should gear its professional military education curricula and studies to focus on those who have successfully faced and overcome similar problems—the British Empire.

64 **Four-Dimensional Planning at the Speed of Relevance**

Artificial-Intelligence-Enabled Military Decision-Making Process

Col. Michael S. Farmer, U.S. Army

Human learning and even the ability of the most-seasoned commander to intuit will not keep pace with the evolving character of war. To shepherd battle-winning insight into the future, there must be an improvement to human cognition, the decision-making process, or its augmentation.

74 **Enhancing Situational Understanding through Integration of Artificial Intelligence in Tactical Headquarters**

Maj. Benjamin Scott, U.S. Army
Capt. André Michell, U.S. Army

To meet the demands of modern battlefields, the Army must enhance tactical command posts by integrating artificial intelligence (AI) into its systems. Well-designed AI algorithms and AI-enabled applications will help U.S. maneuver units better understand their operating environment and will enable a more robust common operating picture.

84 **Mission Essential** **Digital Interoperability during Multi-National Joint All-Domain Operations**

Col. John Bonin, PhD, U.S. Army, Retired
Lt. Col. Mark Balboni, U.S. Army

The authors provide a mathematical modeling framework to explain the relationship between the elements of combat power.

95 **Modernizing Tactical Military Microgrids to Keep Pace with the Electrification of Warfare**

Maj. Nicholas Barry, U.S. Army
Surya Santoso, PhD

The electrification of warfare is accelerating at an undeniable rate. To support the growth in emerging technologies and capabilities, the U.S. Army's electrical power systems require significant modernization and development of the Army's microgrids.

109 **Conceptualizing Information Advantage**

Using Boyd's OODA Loop

Maj Christopher Kean, U.S. Air Force

To successfully meet the requirements demanded of multi-domain operations, specifically decision dominance, information will need to become a central aspect of the planning process across all warfighting functions. The author provides an updated framework to help Army leaders better conceptualize the role information plays in each warfighting function. This article won the 2022 Armed Forces Communications & Electronics Association Writing Contest.

116 **A Balancing Game of Janus** **Turkish Armed Forces' Border Security Measures**

Col. Özgür Körpe, PhD, Turkish Army

Turkey is one of the main destination and transit countries of migration movements in the world. An assistant professor of military strategy at the Turkish Army War College describes Turkey's efforts to deal with the issue of refugees and illegal migration while maintaining a stable security environment.

130 **Russian Logistics and Forward Urban Defense in the Baltic States**

Lukas Milevski

The author considers the plausibility of an urban defense of near-border Baltic cities in the context of Russian military and logistical performance in Ukraine and the threat of Russian incursions into the Baltic States.

REVIEW ESSAY

140 **To Risk It All** **Nine Conflicts and the Crucible of Decision**

Mark Montesclaros

The author critiques a book by retired Adm. James Stavridis that offers the admiral's insight into and analysis of the decision-making and character of nine historical naval figures who found themselves in challenging, stressful situations during peacetime and war.

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Idaho Army National Guard soldiers practice tactical movement techniques on 14 May 2022 during annual training at Orchard Combat Training Center, Idaho. (Photo by Thomas Alvarez, U.S. Army)

Some Suggested Writing Themes and Topics—2023

- From the U.S. military perspective, what are the greatest external threats to the United States? Why? And, how?
- Do any external threats realistically risk the survival of the United States or its allies? If so, how?
- Are there nations that consider themselves to be at war with the United States? If so, how are they conducting war and what would increase the probabilities of their success?
- Is there a new "Cold War"? If so, which nations make up the new confederated blocs (e.g., new "Axis" powers) 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?
- Who does DIME (synchronization of diplomacy, information, military, economic elements of power) to achieve strategic goals best on the global stage? Contrast and compare employment of DIME by China, Russia, Iran, and the United States. How should the United States defend itself against foreign DIME?
- Does China have an "Achilles' Heel"? What is its center of gravity? If it has one, how can it best be attacked/exploited?
- What does China view as the United States' "Achilles' Heel" or "center of gravity"? (e.g., trade relations? Resource shortages? Diminishing technological manufacturing base? Societal instability and factionalism? Etc.) How specifically is it exploiting these? Specific examples?
- What is the impact of irregular immigration on the security of the United States? What role does the U.S. military currently have by law to protect U.S. borders from irregular immigration and criminal activity linked to it? What relationships does the military currently have with other security institutions to protect the border? What relationships should it legitimately have? How should the National Guard be used?
- Update on status of security force assistance brigades. What is the role now of the U.S. Armed Forces in Africa? Far East? Middle East?
- What logistical challenge does the U.S. military foresee due to changes in infrastructure and forward operating locations?
- What is "just over the horizon" in terms of weapons systems about to be deployed? Nanoweapons? Electromagnetic? Artificial intelligence? Other? How is the Army planning to mitigate effects?



Lt. Col. James Raines, commander of 2nd Battalion, 18th Field Artillery Regiment, 75th Field Artillery Brigade, renders and receives a salute after completing a weeklong external evaluation 29 March 2019 at Fort Sill, Oklahoma. Commanders can now use an updated version of the Defense Organizational Climate Survey, or DEOCS 5.0, that provides evidence-based feedback to help them identify and intervene against a variety of areas critical to command climates including destructive behaviors such as sexual harassment, sexual assault, and associated retaliation. Climate assessment mechanisms like DEOCS are tools in a process toward building positive command climates. (Photo by Sgt. Dustin Biven, U.S. Army)

Embracing the Need for Command Climate Change

Maj. Gen. Christopher R. Norrie, U.S. Army

Lt. Col. Jaron S. Wharton, PhD, U.S. Army*

Editor's note: This article is a reprint of a Military Review Online Exclusive published 25 September 2022.

The Army is its people, and a strong, healthy, resilient, trained force is the most important indicator of our readiness.

—Secretary of the Army Christine E. Wormuth

Healthy command climates are essential to who we are and how well we fight. They underpin our effectiveness and endurance in combat.¹ Given the well-established relationship between positive command climates and the reduction in harmful behaviors, we must embrace the need to treat healthy organizational climates as a baseline condition to readiness.² This contemporary challenge is more pressing if we consider that future soldiers are also watching. Consequently, a full embrace of the need to build positive climates at scale is part of our “value proposition.”³

Part of the issue is how we address climate in fundamental processes. For example, we recently introduced a thought experiment to mid-to-senior-level leaders over a several-month period. We asked whether a unit *should* be able to claim a “trained” rating on a mission essential task (MET) if its command climate was poor. The near-unanimous sentiment was that a unit with a bad organizational climate was either not trained or that a near-term success was unsustainable. Yet, it was universally accepted that a unit *could* be assessed as trained under the current paradigm. It seems our assessments are divorced from the context of our people, thus providing an incomplete picture of readiness.⁴

There is a good reason why this may be the case. Command climates have largely been untethered to any evaluative mechanism until the inception of the command assessment programs. Results-at-all-cost attitudes have rewarded commanders for doing more with less, and in some cases, at the expense of their formations. We must continuously challenge how we assess, promote, and value positive command climates.

Consider first our historical treatment of command climate assessments. A Department of Defense-wide report last year captured a multitude of concerns, and we clearly lack a mechanism that

bolsters confidence in leaders and soldiers alike.⁵ Climate assessments have too often been diminished to a compliance exercise, with feedback underused and undervalued. Commanders have been frustrated by limited survey participation, a lack of timely results, and feedback from who they presumed was a disproportionate number of disenfranchised soldiers, some of whom were the subjects of appropriate administrative or disciplinary actions. Such an indictment of one's command can dampen the spirits of the most optimistic leaders, especially at the thought of climate assessments used as an input to their evaluation rather than considering broader context of their efforts to make appropriate, positive changes in light of, for example, issues that existed prior to their taking command. Alternatively, soldiers have been either unaware of the survey and its importance or were incentivized to provide feedback hurriedly and meet “go home” criteria. Unfortunately, others have been convinced that nothing they could say would drive meaningful change.

Taken further, there have been commanders who, despite negative feedback, still denied anything was wrong or argued there is a

Maj. Gen. Christopher R. Norrie, U.S. Army, is the director of the Army's People First Task Force. His most recent assignments include command tours at the 7th Army Training Command, Operations Group at the National Training Center, and 3rd Armored Brigade Combat Team, 4th Infantry Division. He is a Bucknell University graduate and holds advanced degrees from Embry-Riddle Aeronautical University and the National War College.

Lt. Col. Jaron S. Wharton, PhD, U.S. Army, is a Chief of Staff of the Army Senior Fellow at the Center for Strategic and International Studies. His most recent assignments include the People First Task Force, as commander of 1st Squadron, 75th Cavalry Regiment, and chief of staff to the Deputy National Security Advisor for Strategy. He is a United States Military Academy graduate and holds advanced degrees from Harvard and Duke University, where he earned his doctorate in public policy. **He is the principal author of this article.*



Maj. Benjamin Schneller, 1st Stryker Brigade Combat Team, 25th Infantry Division automations officer, uses a terrain model to demonstrate a proposed course of action during the Leader Training Program at Fort Irwin, California, 10 February 2014. (Photo courtesy of the U.S. Army)

zero-sum trade-off with a focus on readiness. We call this “command climate change denial” and believe that it remains present, if not pervasive, often masked in nostalgic comments about units past, hubris, or concerns over weaponizing climate assessment data. Repudiation of the problem is dangerous, and we must address it. Denial contradicts the prominent findings of the Fort Hood Independent Review Committee (FHIRC) and the department-wide Independent Review Commission (IRC).⁶

This article embraces the need for expansive measures to build positive command climates at scale that include linkages with readiness constructs. Significant reforms are already underway stemming from the FHIRC and the IRC. We argue that an opportunity exists to complement those efforts by elevating the importance of climate in routine processes to drive behavioral change. We begin by describing the connection between command

climate and leader competence before introducing suggestions for reform, some of which are projected for a pilot across our Army.

The Interdependence of Command Climate and Leader Competence

One can tell a great deal about a commander’s leadership style based on actions on a terrain model at a combat training center, especially if the commander gets bogged down in squad-level tactics during the rehearsal. Those formations, some of which arrive and depart with “trained” ratings, tend to degrade more rapidly than their counterparts during the rotation. A commander’s relative comfort in small unit tactics and focus on subordinate compliance can mask an inability to employ one’s formation well. The occasional subordinate command can still be successful, but it is disadvantaged as it fights almost autonomously. Its success is also short-lived



Senior leaders from across 1st Armored Division and Fort Bliss respond to questions during the sixth annual Sexual Harassment/Assault Response and Prevention (SHARP) Summit on 26 August 2008 at Fort Bliss, Texas. Dr. Gail Stern, the cofounder of Catharsis Productions and coauthor of the prevention program *Sex Signals*, highlighted the summit as the guest speaker and presented methods to better understand sexual violence and the impact that it has upon people. (Photo by Pfc. Matthew Marcellus, U.S. Army)

without the collective. We suspect that garrison behavior comports similarly.

Selecting the right leaders matters greatly, and we need leaders who are competent in warfighting and building the cohesive teams critical to success in the crucible of combat operations. Our view of competence is that it cannot be detached from command climate, and that a healthy climate buttresses the validity of any readiness construct.⁷ The common, static interpretation of success in a one-time iteration of a MET is inconsistent with sustained operations in almost any imaginative conception of future conflict. Instead, we must visualize what it takes for success in, for example, ten engagements over thirty days when a unit loses a routine percentage of the formation and gains a less-than-routine rate of replacements. Such a scenario pushes the limits of trust, discipline, and will. Even commanders with

the proper aim point on the terrain model and who struggle to bolster these indicators will only have fleeting success. Winning matters, but we cannot be successful without our people.

A Dichotomy in Putting “People First”

Following the tragic events at Fort Hood, the institution was justly subject to multiple review commissions. “Sunlight is said to be the best of disinfectants,” and commission reports revealed that the Army was woefully falling short.⁸ The challenges are complex, and addressing the multitude of shortcomings requires competent, open-minded leaders who recognize the relationship between positive command climates and reducing harmful behaviors.⁹

There have been many positive developments consistent with the secretary of the Army and chief of staff

both doctrine and regulatory guidance (e.g., Army Regulation 600-20, *Army Command Policy*; Army Doctrine Publication 7-0, *Training*; and Field Manual 7-0, *Training*) and capture existing requirements without being additive. They basically represent a reframing of what we expect from our leaders. The supporting tasks emphasize protective factors that are vital to achieving “a higher likelihood of positive outcomes, such as improved performance or readiness and higher retention and are also linked to a lower likelihood of negative outcomes such as suicide, sexual harassment, and sexual assault.”¹⁴ We believe this approach better addresses the gap in our readiness assessments. It also helps operationalize a response to the well-founded critique of climate and culture thematic in the reports from the FHIRC and IRC.

This incorporation of a MEC also stimulates command elements and higher headquarters to more frequently monitor the health of subordinate units’ climate with the appropriate level of attention. While a commander could theoretically skew his or her unit favorably, much like a traditional MET, the more senior commander benefits from additional information such as climate assessment data, serious incident reports, congressional inquiries, etc. The junior commander would have to justify his or her rating as part of the commander-to-commander dialogue. Lower-performing units might require an external evaluation during an audit analogous to an organizational inspection program or a staff assistance visit. Additionally, the field can share best practices and observations on building cohesive teams through a newly established “Army People Network.” The People First Task Force’s Cohesion Assessment Team is generally based on this concept already.

As we refine the MEC based on feedback from the field, there is an opportunity for universal application across the total force. We also see it ultimately impacting unit status reports. The MEC would lend teeth to

the generalized “personnel” category and context to the “training” category. Even if the new MEC is not included in the algorithm that produces a unit’s overall readiness rating, it would still inform more senior commanders on deployment readiness. For example, if a unit reports the highest readiness rating with a poor climate assessment, it might not be well-suited for an operational deployment. Regardless, it will reinforce the reciprocal relationship between the leader and the organization. As we have argued, a unit cannot meet our visualization of “ready” with a poor climate.

Evolve the Quarterly Training Brief to the Quarterly People and Training Brief

The Quarterly Training Brief (QTB) is a well-known doctrinal construct that results in a “training



Sgt. 1st Class Pedro Leon (right) provides career advice and counseling to Sgt. Kareena Collins 25 August 2014 during a deployment to Afghanistan. (Photo by 1st Lt. Morgan Perry, U.S. Army)

contract or agreement between the senior and subordinate commanders.”¹⁵ Although the contours are ubiquitous—mission essential task list crosswalk, discussion about a highlighted training event, and a leader professional development plan—there is no strict framework. While the lack of structure provides flexibility, these meetings typically miss the mark in addressing the human element in combat readiness. In some cases, subordinate commanders define success as meeting survival.¹⁶ Subsequently, we have designed a doctrinal adaptation that reframes the conversation during this keystone process to focus on people and build proficiency in the MEC.

Our transformed conception of the QTB, the Quarterly People and Training Brief (QPTB), is intended as a structured but candid discussion between commanders, so they each agree on the current state of readiness, the way forward, the resources needed, and the risk involved in their approach. It stimulates the senior-ranking commander to clearly provide his or her visualization for subordinate units and direct people-related focus areas. Doing so better helps a unit's leaders understand how their commander sees them in time and space—or in the context of the regionally aligned readiness and modernization model. It can also assist the senior-ranking commander in better operationalizing his or her command philosophy. These are departures from the status quo as outlined above.

This transformed meeting requires a degree of self-study from commanders at all levels and candor. For example, while arguments regarding the company-level degradation of unit training management have merit, a QPTB audits the publication of and adherence to higher headquarters' training guidance. We cannot expect companies to provide predictable training schedules if higher headquarters have not done its part. This turbulence is self-inflicted and occurs with impunity. Commanders might apply the same rigor to other focus areas in their visualization process.

Imagine if a brigade commander were to articulate a specific interest in the first-class reception and integration of soldiers and families or quality counseling. We would expect increased attentiveness applied by subordinate commanders. This dynamic can be expounded upon at echelon and perhaps negate redundancy with the commanders' ready and resilient council.¹⁷ The QPTB could reduce requirements and give commanders time back.

Importantly, we must also change how we leverage data in these meetings. The Army uses descriptive statistics daily, expecting command teams to leverage their experience to determine causality with precision on the fly. While we can do so when it comes to operations with a degree of success, there may be a capability gap in our ability to do so concerning people, where the causal chain is less evident, and experiences may belie judgment.

Part of the challenge is seeing ourselves. There is data available to commanders, but even more recent initiatives such as the



To view *People First Task Force: Integrating People and Training—Considerations and Concepts*, visit <https://api.army.mil/e2/c/downloads/2022/08/18/5be2ea41/22-06-672-people-first-task-force-handbook.pdf>.

commander's risk reduction tool kit are nascent and require maturation.¹⁸ Perhaps a more pressing challenge is teaching commanders how to have a more productive conversation with the data they have. We have proposed using a "people dashboard" to serve as an input to the QPTB and help drive these conversations, blending accessible quantitative and qualitative data. It can also integrate feedback from various assessment tools and risk management systems (e.g., Army Readiness Assessment Program [ARAP] and Enhanced ARAP, accident and accident reporting).

Such a dashboard can stimulate discussion about people-related issues usually relegated to "command and staff" venues and shift our focus away from compliance-related metrics. For example, consider our emphasis on the timely awarding Army Good Conduct Medals with little emphasis on "good conduct" per se or our historical focus on assigning sponsors without connection to actual quality reception and integration. The status quo is often an intellectual silo. An evolved QPTB, complete with a people dashboard, would replace the existing QTB and provide the venue to discuss a unit's now-comprehensive mission essential task list. Not only will this drive a meaningful discussion on training with the context of their people, but it might also improve the quality of training overall.

The QPTB recently underwent an initial active-duty pilot that undeniably led to a more fruitful discussion. A Center for Army Lessons Learned handbook titled *People First Task Force: Integrating People and Training—Considerations and Concepts* further describes these concepts and other tools that leaders can use to improve the integration of people and training.

Implement Command Climate Assessment Reform

The proposals thus far have been intended to enable a meaningful dialogue on climate assessment feedback and provide a tether to evaluative mechanisms.

We must constantly evolve our efforts to address climate. Doing so better equips leaders to understand and inculcate prevention, and ensures they have the tools to respond appropriately to support those within their unit. We believe that the success of these initiatives is contingent on climate assessment reform that also enables review longitudinally. Importantly, we conceptualize climate assessment mechanisms as *tools* in a *process*. The tools, which include the department-standard Defense Organizational Climate Survey (DEOCS) mainly, should be augmented by periodic checks (e.g., pulse surveys, sensing sessions) as part of a larger systemic process (e.g., MEC, QPTB, leader counseling) to drive change. How we measure climate matters, and again, the Army lacks a trusted measurement tool for organizational climate. There are things we can do internally and things we must continue to work with the Office of the Secretary of Defense to accomplish. Some of our proposals are under implementation now.

First, we have proposed adjustments to regulatory guidance (as shown in the table). Army Regulation 600-20, Appendix E (see figure, page 18), which describes intended survey audiences, is largely not adhered to. For example, many are surprised to hear that the only organization that is supposed to administer a climate assessment to its entirety is a company.

Table. Summary of Proposed Climate Assessment Reforms

- Update Army Regulation 600-20, Appendix E.
- Encourage localized policy letters to provide sufficient time to complete assessments and increase sample size.
- Enforce commander-to-commander counseling on assessment feedback and action plans.
- Enforce leader-to-soldier out brief of assessment feedback and action plans.
- Change assessment timing to occur before changes of command.
- Expand access to prior command climate assessments for the incoming commander.
- Add climate-related language to the OER and NCOER with an emphasis on the rater and senior rater narratives.
- Work with the Office of the Secretary of Defense on parallel reform.

(Table by authors)

Higher echelons of command are supposed to only administer the survey to subordinate command teams and staff elements. Units commonly distribute surveys beyond these parameters, leading to survey fatigue and noisy data that dilute attempts to establish meaningful thresholds.¹⁹ The thresholds will never be reliable or accommodate a comparison between like units if regulatory guidance is not followed uniformly.

If the premise is accepted that the arbiters of command climate exist generally at the battalion and below, then regulatory guidance must reflect more appropriate survey audiences (e.g., staff sergeant and above for battalions; every soldier for companies). The audiences for brigade-sized units and above should remain consistent with current regulatory guidance. This requires enforcement. Subsequently, localized policies should establish parameters for assessments that include expectations of providing sufficient time to complete assessments, increasing sample sizes, ensuring out briefs up and down the chain of command, and expectations of reporting any delays in the production of assessment results. There are examples of this already occurring (e.g., III Corps Policy Letter #19, “Command Climate Assessments and Action Plans,” 29 April 2021).²⁰

Next, we have recommended changing the timing of the DEOCS assessments to lead and not lag

E-2. Requirements and explanation of terms

See table E-1.

Command level	Frequency (days)	Requirements
Company or equivalent	<p>RA: 60 days and annually thereafter</p> <p>USAR: 120 days and annually thereafter</p>	<ol style="list-style-type: none"> 1) Inform the members of the organization of the upcoming assessment 2) Survey for entire organization (minus leadership team) 3) Use other assessment tools, as needed 4) Prepare CCA summary and action plan 5) Brief to commander or supervisor at next higher level (no later than 30 days (two MUTA (60 days)—4 for USAR) after receipt of survey results) 6) Conduct formal feedback session(s) with organization (same as requirement 5) 7) MEO professional enters data into MEO database (no later than 35 days (three MUTA (90 days)—4 for USAR) after requirements 5 and 6)
Battalion or equivalent	<p>RA: 60 days and annually thereafter</p> <p>USAR: 120 days and annually thereafter</p>	<ol style="list-style-type: none"> 1) Inform the members of the organization of the upcoming assessment 2) Survey for battalion staff element and company command teams 3) DRS roll-up of subordinate organization (companies or equivalent) survey responses and comparison of historical data 4) Use other assessment tools, as needed 5) Prepare CCA summary and action plan 6) Brief to commander or supervisor at next higher level (no later than 30 days (two MUTA (60 days)—4 for USAR) days after receipt of survey results) 7) Conduct formal feedback session(s) with organization (same as requirement 6) 8) MEO professional enters data into MEO database (no later than 35 days (three MUTA (90 days)—4 for USAR) after requirements 6 and 7) 9) Monitor compliance of subordinate organizations

(Figure from Army Regulation 600-20, *Army Command Policy* [2020])

Figure. Army Regulation 600-20, *Army Command Policy*, Appendix E

a commander's evaluation, providing one of many inputs to that evaluation. The climate assessments would be amplified by periodic pulse surveys offset from DEOCS. Additional surveys, such as the IRC's recommended "pulse," would be sequenced at intervals between DEOCS and on an as-needed basis.²¹ These unit-driven assessments would provide an azimuth check, enabling course corrections as needed while demonstrating to soldiers the importance of their feedback and resolve to address concerns.

The 2013 National Defense Authorization Act mandates conducting a climate assessment within 120 days of assuming command.²² This led the department to expand the use of DEOCS as a baseline.²³ However, while new commanders receive feedback on their organization's climate, that climate is either a by-product of the environment established by their predecessor or a confusing hybrid with their own. This dynamic exacerbates command climate change denial.

It also misses a feedback mechanism that would be useful in evaluating commanders' potential for future service and addressing climate-related issues through an

ongoing dialogue (e.g., Did a commander "move the needle"? Did the higher headquarters assist an overwhelmed commander?). Addressing these questions should be the focus of a renewed emphasis on commander-to-commander counseling that includes climate assessment feedback. It would be better to learn about red flags earlier in an officer's career and coach or develop that officer instead of having him or her learn about it during a command assessment program. Officer evaluation reports, and perhaps noncommissioned officer evaluation reports, should also include such language in the sections most relevant to promotion boards.

The timeliness of feedback in the current model is also too late to assist incoming commanders with establishing organizational priorities. Waiting for feedback several months in, as is the current practice, mortgages critical time. Not only should they have access to the most recent climate assessment, but we should also expand their access to at least the past five years' data, which current business rules prevent.²⁴ This access would better enable the incoming commander to understand an organization's culture. While there are numerous characterizations of what

constitutes the difference between climate and culture, a simple explanation is to consider climate as temporal, whereas culture extends over multiple commanders.

Lastly, while we can advance these changes as an institution, we must continue to work with the Office of the Secretary of Defense (Personnel and Readiness) to better represent the Army's needs in future DEOCS increments, shaping its development and implementation. We envision such efforts to include, at a minimum, exploring novel approaches to increase survey accessibility to soldiers and gaining expanded access to the Army's data to respond to senior leader inquiries. Aggregated protective risk scores, for example, might drive decisions on future resource allocations. We must also help develop a suite of tools to assist commanders build viable action plans. The Army's Center for the Army Profession and Leadership has already done tremendous work in this area with their "Command Climate Navigator."²⁵

Conclusion

We began this article by describing a thought experiment, and we will end with a counterfactual. What if we maintain the status quo? We believe that failing to place the requisite premium on organizational climate will impede our critical effort to prevent harmful behaviors. We will subsequently sustain a hollowness in our readiness assessments and risk our ability to attract future generations of soldiers. The stakes are high and

require a comprehensive approach beyond the recommendations discussed here.

We value results-driven leaders and, like all large organizations, are inherently resistant to change. We expect cynics to bemoan the connection between climate and readiness as if it is zero-sum. Again, command climate change denial takes many forms. We hear these assertions already, but we suspect this is because of the ambiguity in how soldiers and leaders interpret "People First." Simply put, "People First" means building cohesive teams that are highly trained, disciplined, and fit.²⁶ It does not mean "me first," but it requires humble leaders to recognize the vital linkage between competence and a command climate. People are the antecedent condition in any readiness construct—and they are our greatest strength. Otherwise stated, we cannot win without an enduring focus on them.

Our humble prescription in this article is to offer a series of reforms that elevate climate in keystone processes to drive changes in behavior. Initial feedback on the MEC and QPTB is positive. We recognize these ideas are not a panacea, but they can drive changes in behavior by establishing a tether to our evaluative mechanisms. We hope that they are met equally with commitment and resolve. ■

The views expressed in this article are the authors' and not the views of the United States Army or Department of Defense.

Notes

Epigraph. Christine E. Wormuth, "Message from the Secretary of the Army to the Force," Army. mil, 8 February 2022, accessed 26 August 2022, https://www.army.mil/article/253814/message_from_the_secretary_of_the_army_to_the_force#:~:text=We%20should%20strive%20to%20connect,important%20indicator%20of%20our%20readiness.

1. We thank Lt. Col. John Gabriel, who shared his thoughts on the mission essential task proficiency, climate, and endurance during large-scale combat operations over a series of phone conversations in November–December 2021.

2. Wormuth, "Message from the Secretary of the Army." Wormuth describes the reduction of harmful behaviors as "integral to sustaining a positive command climate at scale." There is also a significant body of literature reinforcing this relationship. See Dennis McGurk et al., "Destructive and Supportive Leadership in Extremis: Relationships with Post-Traumatic Stress During Combat Deployments," *Military Behavioral Health* 2, no. 3 (2014): 240–56, <https://doi.org/10.1080/21635781.2014.963765>; James

J. McGuffin et al., "Military and Veteran Help-Seeking Behaviors: Role of Mental Health Stigma and Leadership," *Military Psychology* 33, no. 5 (2021): 332–40, <https://doi.org/10.1080/08995605.2021.1962181>; Amanda L. Adrian et al., "Integrating New Soldiers: The Role of Leaders and Unit Members," *Military Psychology* 30, no. 2 (2018): 131–41, <https://doi.org/10.1080/08995605.2018.1425064>.

3. Center for a New American Security, "Virtual Fireside Chat: Honorable Christine Wormuth," YouTube video, 8 February 2022, accessed 26 August 2022, <https://www.cnas.org/events/virtual-fireside-chat-honorable-christine-wormuth-secretary-of-the-army>.

4. Jody Daniels, "Changing Culture: Moving from Metrics to Readiness," U.S. Army Reserve, 5 April 2022, accessed 26 August 2022, <https://www.usar.army.mil/Portals/98/Documents/CAR/Changing%20Culture%20FINAL%2004052022.pdf?ver=Kz91X-Qs2nuVg-IrGeqLRQ%3D%3D>.

5. Rachel Clare et al., *Defense Organizational Climate Survey (DEOCS) Redesign: Phase 1 Overview Report* (Alexandria, VA: Office of People Analytics, October 2012), accessed 26 August 2022, <https://www.opa.mil/research-analysis/quality-of-work-life/>

[workplace-climate/defense-organizational-climate-survey-deocs-redesign-phase-1-overview-report/](#).

6. *Hard Truths and the Duty to Change: Recommendations from the Independent Review Commission on Sexual Assault in the Military* (Washington, DC: Department of Defense, 2 July 2021), accessed 26 August 2022, <https://media.defense.gov/2021/Jul/02/2002755437/-1/-1/0/IRC-FULL-REPORT-FINAL-1923-7-1-21.PDF/IRC-FULL-REPORT-FINAL-1923-7-1-21.PDF>; Christopher Swecker et al., *Report of the Fort Hood Independent Review Committee [IRC]* (Washington, DC: Department of Defense, 6 November 2020), accessed 26 August 2022, https://www.army.mil/e2/downloads/rv7/forthoodreview/2020-12-03-FHIRC_report_redacted.pdf.

7. Everett Spain, Gautam Mukunda, and Archie Bates, "The Battalion Commander Effect," *Parameters* 51, no. 3 (2021): 101–14, accessed 26 August 2022, <https://press.armywarcollege.edu/parameters/vol51/iss3/10>. There is a significant body of literature on a leader's central role in creating a healthy work environment to drive organizational success. We also acknowledge there are examples of competent leaders who displayed toxic attributes and were able to achieve results. Recent research suggests that battalion commanders have an extensive influence in retaining high-performing officers and on the retention and attrition of their officers altogether. This influence, positive or negative, has a cascading impact on future formations.

8. Louis D. Brandeis, *Other People's Money and How the Banks Use It* (New York: Frederick A. Stokes, 1914), 92.

9. Center for a New American Security, "Virtual Fireside Chat: Honorable Christine Wormuth."

10. Paul Boyce, "Time, Trust are Teamwork Foundations for FORSCOM's Monthly Training Days," Army.mil, 8 December 2020, accessed 26 August 2022, https://www.army.mil/article/241497/time_trust_are_teamwork_foundations_for_forscoms_monthly_training_days.

11. Wormuth, "Message from the Secretary of the Army to the Force."

12. Gen. James McConville, quoted in Michelle Tan, "McConville: Army Stronger After 'Challenging' Time," Association of the U.S. Army, 12 October 2021, accessed 26 August 2022, <https://www.USA.org/news/mcconville-army-stronger-after-challenging-time>.

13. Jeremiah Gipson, "Mission Essential Task Zero: Place People First," From the Green Notebook, 15 February 2021, accessed 26 August 2022, <https://fromthegreennotebook.com/2021/02/15/mission-essential-task-zero-place-people-first/>.

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15. Field Manual 7-0, *Training* (Washington, DC: U.S. Government Publishing Office [GPO], June 2021), 3-6, accessed 26 August 2022, https://armypubs.army.mil/epubs/DR_pubs/DR_a/ARN32648-FM_7-0-000-WEB-1.pdf.

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Armor (Spring 2021), 19–25, accessed 26 August 2022, <https://www.benning.army.mil/armor/eArmor/content/issues/2021/Spring/2Escandon21.pdf>.

17. For more information on the CR2C, see "Commander's Ready and Resilient Council [CR2C]," Army.mil, accessed 26 August 2022, <https://home.army.mil/apg/index.php/about/CR2C>.

18. For more information on the CRRT, see "Army Publishes Guidance on the Use of the Commander's Risk Reduction Toolkit [CRRT]," Army.mil, 3 May 2021, accessed 26 August 2022, https://www.army.mil/article/245912/army_publishes_guidance_on_the_use_of_the_commanders_risk_reduction_toolkit.

19. "DEOCS: Frequently Asked Questions" (Patrick Space Force Base, FL: Defense Equal Opportunity Management Institute, 28 April 2021), accessed 26 August 2022, <https://www.tecom.marines.mil/Portals/90/SpecialStaff/Equal%20Opportunity%20Advisor/OPA-DEOCS-SurveyAdminFAQs-20210429.pdf>. Former versions of DEOCS thresholds were admittedly arbitrary.

20. "III Armored Corps/Fort Hood Policy Letters," U.S. Army Fort Hood, accessed 1 September 2022, <https://home.army.mil/hood/index.php/about/iii-corps-fort-hood-policy-letters>.

21. The pulse survey stems from IRC recommendation 3.7a. According to the IRC report, the "survey is not meant to replace the DEOCS, but rather to supplement it as a new means for leaders to conduct 'spot checks' with an on-the-ground look for timely action specific to sexual harassment and sexual assault. The pulse survey should be conducted between required administrations of the DEOCS." *Hard Truths and the Duty to Change*, 48.

22. Army Regulation (AR) 600-20, *Army Command Policy* (Washington, DC: U.S. GPO, 24 July 2020), 140, accessed 26 August 2022, <https://www.armyresilience.army.mil/ard/images/pdf/Policy/600-20%20Army%20Command%20Policy.pdf>. Subsequent climate assessments were directed to occur at least annually to prevent and respond to sexual assaults. AR 600-20 requires commanders to conduct a climate survey within "60 days and annually thereafter." Evidence suggests command climate surveys are not administered as prescribed by Appendix E.

23. "DEOCS: Talking Paper" (Patrick Space Force Base, FL: Defense Equal Opportunity Management Institute, March 2022), accessed 26 August 2022, https://www.defenseculture.mil/Portals/90/Documents/A25/OPA-DEOCS_Talking_Paper_20220328.pdf?ver=oFA31YZYg7811uLs4QyYw%3D%3D.

24. According to regulatory guidance, "The Military Equal Opportunity professional will secure copies of all command climate assessment executive summaries, action plans and results will be stored in a controlled container for 5 years." AR 600-20, *Army Command Policy*, 139.

25. "Command Climate Navigator," Center for the Army Profession and Leadership, accessed 26 August 2022, <https://capl.army.mil/Developing-Leaders/command-climate-navigator/ccn.php#/>.

26. *Posture of the United States Army, Before the Comm. on Armed Services, United States Senate*, 117th Cong., 1st Sess. (15 June 2021) (statements of the Honorable Christine E. Wormuth, Secretary of the Army, and Gen. James C. McConville, Chief of Staff of the U.S. Army), accessed 26 August 2022, [https://www.armed-services.senate.gov/imo/media/doc/20210615%20-%20HON%20Wormuth%20and%20GEN%20McConville%20-%20SASC%20Army%20Posture%20\(Cleared\)](https://www.armed-services.senate.gov/imo/media/doc/20210615%20-%20HON%20Wormuth%20and%20GEN%20McConville%20-%20SASC%20Army%20Posture%20(Cleared)).

Letter to the Editor

Army University Press
7 September, 2022

Dear Editor:

Although I agree with the concepts put forth in "Embracing the Need for Command Climate Change," I found there to be a greater issue.

I have discovered that no matter how bad the results of command climate surveys taken over substantial periods of time and with multiple agencies are, if the leader (in my case the senior civilian leader) is repeatedly singled out in writing and the senior leadership does nothing about it, there is the greater problem. Some senior civilian leaders get results at any cost and the senior leadership looks the other way, despite what the Soldiers and civilians have pointed out in multiple command climate surveys. As I articulated to the Secretary of the Army at the time, he valued perceived competence over character.

This, I think is a greater problem. I think that until the Army assigns accountability, even for its senior civilian leaders, it diminishes any progress made to achieve a good command climate.

Thank you.

Don Saio
Former Deputy Assistant Secretary of the Army for Military Personnel and Quality of Life

(Recipient of the "2015 Secretary of the Army Award for Diversity and Leadership" and led an organization to be named a "Top Workplace" by the Washington Post, the only organization recognized within the DoD)

Letter to the Editor from the Hon. Don Saio, Former Deputy Assistant Secretary of the Army for Military Personnel and Quality of Life

Cultivating a Coaching Culture

Maj. Christine S. Chang, U.S. Army



Maj. Don Kim (*right*), operations officer, 2nd Infantry Brigade Combat Team, 4th Infantry Division, listens to advice from Col. Scott Knight while participating in a combined arms rehearsal during the brigade's leadership training program 23 July 2019 at Fort Polk, Louisiana. During the combined arms rehearsal, lead planners talked through their unit or staff section's involvement during each phase of an operation in relation to the rest of the units. (Photo by Maj. Richard Barker, U.S. Army)

The 2018 *Center for the Army Profession and Leadership Annual Survey of Army Leadership* (CASAL) captured that “performance counseling is inconsistently applied by Army leaders and tends to be perceived as having little to no impact on leaders’ development.”¹ This observation demonstrates the common Army misconception that “counseling” is synonymous with “leader development.” The study also recommends that mentors fill the gap between counseling and leader development effectiveness and that fostering informal mentoring relationships can help mitigate the lack of counseling.² The study neglects the fundamental differences between counseling and mentoring and does not consider coaching as a solution. The key difference between coaching and counseling is that coaching focuses on the art of leadership and promotes behavioral changes to improve performance. In contrast, counseling evaluates performance “compared to established criteria.”³ Coaching is a critical aspect of developing leaders and should be the primary focus of leader development in the Army.

Army Field Manual (FM) 6-22, *Leader Development*, highlights that counseling, coaching, and mentoring are the “principal ways by which leaders provide others with knowledge and feedback.”⁴ It defines counseling as “occur[ing] when leaders review with the subordinate their

demonstrated performance and potential” and coaching as “when you guide another’s development in new or existing skills during the practice of those skills.”⁵ Put a different way, counseling becomes an evaluation of how the leader did and coaching explores what and/or how a leader needs to change to be a better leader or the leader they want to be. This difference is what makes coaching a vital and necessary component of leader development and what the Army requires to truly develop the leaders it is looking for.

Unfortunately, leaders do not commonly recognize coaching as a developmental approach. Most people usually envision sports coaching, where a leader trains a group of athletes toward the goal of winning through skills and teamwork development. Coaching for leader development, however, focuses on self-awareness, reflection, discussion, and guided execution where the goal is to become a more effective leader through behavioral change by addressing improvement in the art of leadership.

The Army cannot benefit from coaching until it incorporates broad education and training about how to coach, clarifies doctrine about the different developmental methods, and increases exposure to what coaching looks like and what it can achieve. By redefining coaching and developing a coaching culture, the Army can maximize its leader development approach and significantly increase leader commitment, competence, and character.

Gaps in Army Leader Development

The Center for Creative Leadership’s (CCL) *Handbook of Leadership Development* defines leader development as “the expansion of a person’s capacity to be effective in leadership roles and processes.”⁶ Based on this definition, current leader development practices in the Army focus on improving leader capacity but primarily address the science of leadership, having little impact on leader growth in the art of leadership. Presently, Army leader development takes many different forms depending on the leader or the organization, but these are limited by what aspects of leadership they address, how the methods are implemented, and who is implementing them.

Army developmental programs focus on building knowledge, whether it is studying tactics and doctrine or using literature and case studies to study successful

and unsuccessful leadership. These programs simply address technical expertise and the science, rather than the art, of leadership. While education and studies are also essential, what is missing is the bridge that connects the learning to individual development through internal reflection or behavioral change. Practicing the art of leadership requires more than just expert knowledge; it requires knowledge of oneself. Studying the actions of a historical leader offers a glimpse into effective leadership, but it does not teach how to implement it. No amount of studying Gen. Matthew Ridgway’s actions to reinvigorate the Eighth Army in the Korean War will allow a leader to implement the same techniques in the same way to achieve the same or similar results. Every leader has strengths, weaknesses, tendencies, insecurities, experiences, and histories, all of which contribute to one’s leadership ability to achieve authenticity as a leader. Without increasing self-awareness and exploring the perceptions these traits cause, whether one’s actions align with intent, or how underlying motivations inform decision-making, an individual will never be able to achieve the behavioral change necessary to truly become a better leader.

Another common pitfall is in the implementation of leader development methods. Leaders must drive the experiential learning process by creating the right opportunities to develop each subordinate. A subordinate leader’s lack of confidence can stem from a lack of knowledge, lack of experience, or an unhealthy level of self-doubt, each of which may require different approaches by the leader. Leaders must give subordinates tailored opportunities to develop specific skills or as a way for the individual to see themselves. For example, a leader may place a subordinate leader outside their comfort zone to increase confidence. Without

Maj. Christine S. Chang, U.S. Army, is the division transportation officer for the 4th Infantry Division, Fort Carson, Colorado. She studied coaching and leader development as part of the Eisenhower Leader Development Program at the United States Military Academy and Columbia University. She holds a BS from the United States Military Academy, an MA in organizational psychology from Columbia University, and an MPS from Pennsylvania State University.

proper coaching before, during, and after the experience, the intended result will not be achieved. Instead, the subordinate may think that they were punished by the experience, set up for failure, or tested in a negative way.

Oftentimes, leaders take for granted that subordinates can connect a given opportunity with an individual developmental need. The assumption that the lessons are obvious and that subordinates can draw these conclusions on their own relies on a level of self-awareness that is sufficient to facilitate growth. While the leader was intentional in creating the opportunity, what is less intentional is the follow-up to help make sense of it all. Increasing self-awareness and exploring influences and motivations to drive behavioral change requires more than just the standard after action review or an event-oriented counseling session. These do not explore why the subordinate leader made certain decisions; it only reviews what happened and how decisions should be different in the future—examining the why more thoroughly helps leaders explore what influences their leadership ability or style and their decision-making, and whether their actions align with how they envision themselves as a leader. Coaching addresses the why and achieves a level of exploration that enables subordinate leaders to discover positive and negative leader behaviors and initiate behavioral change.

Unfortunately, Army professional military education (PME) does not focus on what coaching is and why it is different, which brings up the last shortfall in leader development in the Army: a lack of information and education on the Army's leader development approach and on the role of coaching and how it enhances leader development. Coaching is not discussed or taught as a developmental method, while counseling is overemphasized as a critical and required interaction between a supervisor and a subordinate. This can partially be attributed to the fact that doctrine does not clearly define the differences between counseling, coaching, and mentoring methods. Although used throughout the manual, the terms are not specifically defined or delineated until the last chapter of FM 6-22 when discussing leader competencies. Even in earlier chapters that reference leader development programs and the fundamentals of development, the terms counseling, coaching, and mentoring appear quite a few times and do not have

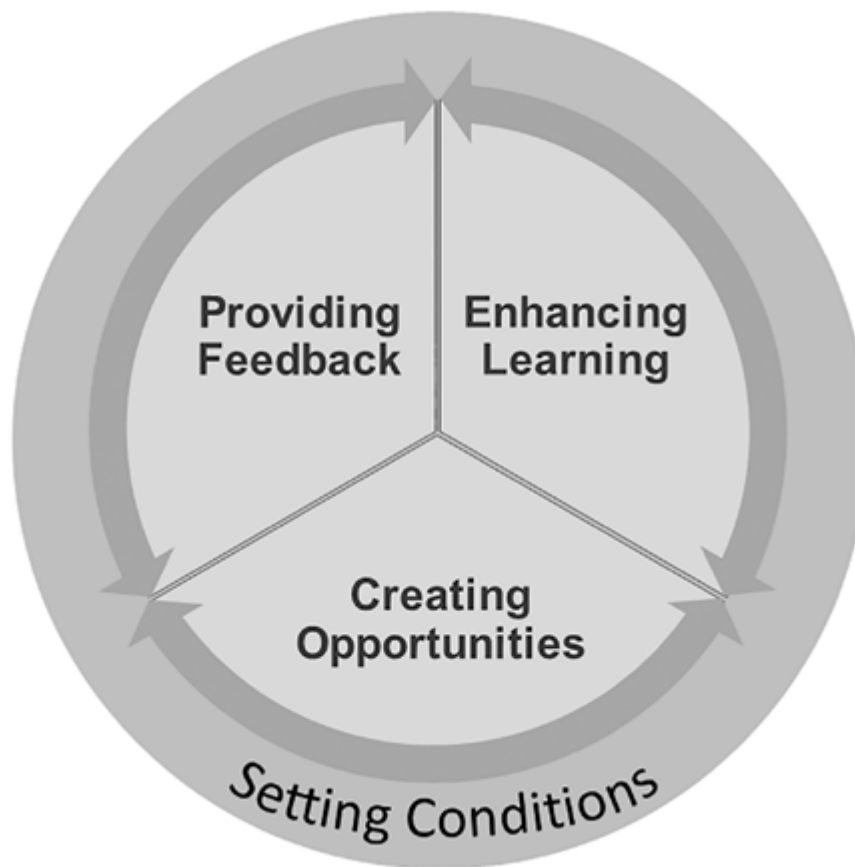
a clear definition. Clarifying these methods and their roles would allow leaders to understand and implement the best approach for development based on the situation.

Nevertheless, leaders do not always refer to doctrine when they establish leader development programs. The 2018 CASAL report found that “only 58% of leaders are rated effective or very effective in developing subordinates.”⁷ Many leaders use leader development methods that they have learned from their former superiors, others' shared ideas, or former senior leaders who have published books or articles about their approach to leader development. Most have not been formally taught how to effectively develop subordinates through coaching. It is not that leaders do not want to develop their subordinates; they do not have the appropriate training to do so.

Army Doctrine on Coaching

FM 6-22 outlines the Army leader development model that combines “education, training, and experience” as the means to producing leaders capable of leading soldiers, taking initiative, and exercising judgment and decision-making in critical situations.⁸ The Army champions experiential learning by putting leaders in leadership positions and roles, or through broadening opportunities and experiences that will enhance learning and preparation for the next level of responsibility.⁹ These ideas create the Army fundamentals of developing leaders from FM 6-22 (as shown in figure 1, page 25): setting the conditions, creating opportunities, enhancing learning, and providing feedback.¹⁰

The CCL's *Handbook on Leader Development* similarly emphasizes the value of experience; it aptly states that “leader development is a process that requires a variety of developmental experiences and the ability to learn from experience.”¹¹ Its framework of leader development specifies that the three elements of assessment, challenge, and support are required to make these experiences more meaningful.¹² To directly relate the Army fundamentals to the CCL's framework of leader development, setting the conditions and providing feedback represent assessment, creating opportunities generates experience, and enhancing learning provides the support necessary to make meaning of an experience and promote growth. While the Army achieves assessment through counseling and evaluations and



(Figure from Field Manual 6-22, *Leader Development* [2015])

Figure 1. Fundamentals of Developing Leaders

understands how to challenge leaders by creating opportunities, it could do better to promote support through developmental coaching.

To support growth through experiences, the Army's "enhancing learning" section consists of five parts: leader role models, mentorship, guided discovery learning, coaching, and study.¹³ Figure 2 (on page 26) provides excerpts from chapter 3, "Fundamentals of Development," in FM 6-22 that show how the Army views leader development based on its terminology.¹⁴

Of note, although counseling is not listed as part of the enhancing learning section, it is included in figure 2 to highlight the similarities and differences between the various leader-subordinate interactions.¹⁵ Counseling is listed under "setting the conditions," which would be part of assessment, not support. This is also important to note as part of the delineation between the practice of counseling and coaching. The Army currently focuses on

counseling as the primary means of leader development. Acknowledging that counseling merely sets the conditions and serves as a mechanism for assessment and providing feedback highlights the need for coaching as the primary means for support and enhancing learning.

Here are some of the critical discussion points based on the definitions in figure 2 and a holistic view of the doctrine:

1. Terms are used inconsistently throughout the manual causing the definitions to be indistinguishable.
2. The definition of coaching in the Army is an amalgamation of the definition of sports coaching and developmental coaching, which makes its purpose and benefits unclear.
3. Doctrine uses "counseling" as the all-encompassing term used to describe one-on-one development between supervisors and subordinates. It

Type	Activities	Desired Outcomes	Notes
Counseling (Setting Conditions)	Provide clear, timely and accurate information (feedback) concerning individual performance compared to established criteria	<ul style="list-style-type: none"> Identify strengths and developmental needs Design individual development plan (IDP) 	<ul style="list-style-type: none"> IDP is mostly goal oriented Counseling is heavily used to provide feedback and developmental counseling
Mentoring	A voluntary developmental relationship that exists between a person of greater experience and a person of lesser experience that is characterized by mutual trust and respect (AR 600-100)	<ul style="list-style-type: none"> Assists personal and professional development helps clarify personal, professional, and career goals helps develop actions to improve attributes, skills, and competencies 	<ul style="list-style-type: none"> Usually outside the chain of command Does not replace responsibilities of the superior
Coaching	<ul style="list-style-type: none"> Helps another individual or team through a set of tasks or with improving personal qualities. A coach gets the person or team to understand their current level of performance and guides their performance to the next level. 	<ul style="list-style-type: none"> Links feedback interpretation with developmental actions Advise the individual or team on what levels can be reached and what to do to reach them. 	<ul style="list-style-type: none"> Can draw on the guided discovery learning techniques Leader tailors how directive feedback and guidance are depending on the situation of those being coached and the performance level
Leader Role Models	Provide a role model that exhibits leadership behaviors that others should emulate	<ul style="list-style-type: none"> A role model to new leaders for their reception and integration. A role model for a particular skill or special expertise. An inexperienced leader to shadow a role model for a specified period. 	<u>Examples:</u> <ul style="list-style-type: none"> A role model to new leaders for their reception and integration. A role model for a particular skill or special expertise. An inexperienced leader to shadow a role model for a specified period.
Guided Discovery Learning	the senior leader engages the subordinate in effective two-way communication to deliver observations on actions and behaviors	<ul style="list-style-type: none"> Subordinate discovers learning needs through support from senior leader Leader guides subordinate through hints, direction, feedback, or modeling 	<ul style="list-style-type: none"> Leader uses open-ended questioning, multiple perspectives, cause and effect analysis, etc. Leader avoids prescriptive method and pure discovery learning
Study	an expectation for each leader to spend personal time seeking sources of knowledge and opportunities to grow and learn	leaders should develop distinct ways of studying their chosen profession and identifying ways to improve the unit	<u>Examples:</u> <ul style="list-style-type: none"> Professional reading Professional writing programs

(Figure by author; adapted from Field Manual 6-22, *Leader Development* [2015])

Figure 2. Excerpts from Field Manual 6-22, Chapter 3

- overemphasizes counseling, at times uses “counseling” when it really means “coaching” and implies that counseling is the most important aspect of development.
- Counseling is an evaluation of performance and potential, offering observations of the strengths and weaknesses of the subordinate by the supervisor. Counseling does not always explore what needs to change and how to make those behavioral changes.
 - Counseling can be negative or positive, but usually has a negative connotation, or an aura of judgment and critique. Due to its “evaluating” nature, it is not conducive to reflection and growth.
 - Feedback is linked to direct observation by the supervisor in relation to a specific event/place in time. Doctrine correctly associates feedback as occurring during counseling; however, it fails to connect how coaching is the method required to make the feedback meaningful.

7. Mentorship usually occurs voluntarily outside the chain of command; it is normally related to career advice or major decision points regarding professional growth. The same person can be a mentor and a coach, particularly in an enduring or closer relationship; however, doctrine should clearly delineate that mentoring is not coaching, and that mentors are not coaches, and vice versa.
8. Doctrine describes guided discovery learning as a technique to use within various leader development methods. Having this as a separate technique that can apply to different methods confuses purpose and desired outcomes for each method. Each method (counseling, coaching, and mentoring) should have sections for how to apply guided discovery learning techniques within those roles to align purpose and desired outcomes based on the intent for each method.
9. Study is a means of learning from others' examples and could be utilized to aid reflection. The sparse definition should also consider the use of study to enhance coaching and mentoring to make these practices more common and effective.

Overall, chapter 3 in FM 6-22 needs more clarity in describing the Army's approach to development. Interestingly, the more suitable definition and delineation of counseling, coaching, and mentoring is found in chapter 7, "Learning and Development Activities," when discussing the requirements for the leader competency of developing others.¹⁶ The interpretation of each of these methods and terms should be uniform throughout the doctrine. Providing clear definitions and delineation between the terms would help focus leaders on the appropriate method to apply in different situations. Developmental coaching also has its own forms and approaches leaders could apply, which could also be explained in doctrine.

Definitions and Types of Coaching

Several definitions have been suggested to describe coaching and its effects. While definitions may differ, they all propose coaching as a means for learning and exploration and, more importantly, a catalyst for change. Furthermore, coaching seeks "to align enhanced self-awareness, behavioral change, and strategic organizational objectives."¹⁷ It is not just about self-improvement but incorporates how individual

development also meets organizational needs. A couple of definitions for coaching are listed below; coaching is

a process of learning and development that leads to new perspectives, attitudes, behaviors, and skills ... A tool to support individual, team, and organizational learning, and as a lever for change.¹⁸

a process that fosters self-awareness and that results in the motivation to change, as well as the guidance needed if change is to take place in ways that meet organizational needs.¹⁹

Coaching exists in a variety of forms and approaches. Part of the power of coaching comes from its versatility. A point of emphasis in coaching is that different types of coaching may be more suitable for different situations or relationships. Some of the types of coaching that would be suitable for the Army are outlined below.

Cognitive coaching is one of the most widely used forms of coaching and is predicated on the assumption that behavioral change requires a change in perception, thought, or beliefs.²⁰ Cognitive coaching consists of three components: (1) a planning conversation; (2) an event, usually observed by the coach; and (3) a reflecting conversation.²¹ It can occur for one specific event or for a longer duration. The purpose of this type of coaching is to set goals together and visualize success (planning conversation), observation and data collection (event), and then review data to discuss whether goals and success were achieved (reflective conversation).²² The goal is to discuss perceptions, beliefs, and thinking to guide self-directed learning, which contributes to a larger goal of working effectively within systems and performing as a more effective organization.²³ This type of coaching is most similar to the Army's definition of coaching. Cognitive coaching best encompasses the meaning-making that occurs in experiential learning. Experiences drive learning, but to foster growth, the planning, end state, and follow-up must be deliberate and communicated between the leader and the subordinate to capitalize on the opportunities.

Appreciative coaching follows four stages revolving around a single topic. The topic is something that the coaching process will investigate or seek to explore, rather than a "goal" that has an idea of success or failure

attached to it.²⁴ The first stage is “discovery,” which is meant to explore positive experiences, strengths, and successes through some core questions.²⁵ The next stage is the “dream” stage and consists of reflecting on the answers to the questions from the discovery stage to describe a desired end state or future. In the third stage, the “design” stage, an experimentation plan helps lay out a way to utilize strengths and skills to achieve the dream. Lastly, the “destiny stage” is the implementation of actions that will lead to the realization of the dream. Appreciative coaching can either end after one cycle, continue with the selection of another topic, or expand the existing dream.²⁶ While mentorship may explore specific goals and paths to get there, appreciative coaching facilitates topics like transformational leadership or active listening, or even questions like whether one wants to be a battalion or brigade level commander. Appreciative coaching creates a more positive and enabling coaching environment which may be more appropriate in some cases.

Executive coaching has been emerging as a specific practice for corporate executives that improves leadership effectiveness through self-awareness. An examination into current behaviors and perspectives through coaching allows higher-level managers to acquire “new skills, perspectives, tools, and knowledge through support, encouragement, and feedback in the organizational context” that the leader may not otherwise be able to discuss or talk about.²⁷ An executive would utilize this type of coaching to transition from a lower to higher level (growth-minded) or to provide the leader an opportunity to work on specific “barriers to performance” (change-minded) to increase organizational impact.²⁸ Executive coaching is not necessarily a different way of coaching but rather takes into account the level of leadership. The burden of leadership increases as leaders ascend the ranks, and often can be difficult to be shouldered alone. Executive coaching gives senior leaders an opportunity to speak frankly or honestly and to get different perspectives on topics that they may not be able to engage others about.

Coactive coaching incorporates much more than just the professional aspect of the client-coach relationship. Coactive coaching embraces a collaborative method of coaching where the client and coach share all aspects of the client’s life, personal or professional, to identify friction between competing demands and help achieve more balance to become more effective both

as a person and as a leader.²⁹ The client leads a coactive coaching relationship and determines what they want the coaching sessions to accomplish. The coach helps identify a way forward and stay on path. Coactive coaching is the most comprehensive coaching approach and most closely related to how Army supervisors get to know their subordinates. While this type of approach may seem somewhat invasive, the nature of the Army profession requires a lot of personal sacrifice from its soldiers and leaders need to be aware of how these sacrifices may weigh on other aspects of a subordinate’s life. Coactive coaching uses this awareness to connect how those life factors influence leadership capacity and capability.

Coaching is much more than a conversation or a relationship. Different types of coaching should be applied with different subordinates to address their individual developmental need at that point in time. Developing a coaching relationship enhances the level of engagements and approaches to developing subordinates. The above coaching methods give a glimpse into different ways coaching can benefit Army leaders and achieve different results from counseling. The individual and organizational impact of coaching highlights the need to increase coaching in the military.

Coaching in the Military

Recent programs in the Army, such as the Battalion Command Assessment Program (BCAP) and the Colonels Command Assessment Program (CCAP), highlight the Army’s efforts in finding the best qualified candidates to lead its soldiers. They also represent the current Army Coaching Program, which was started in 2019 and utilizes external coaches to allow officers in either command assessment program, regardless whether they are deemed ready to command, the opportunity to work with a coach.³⁰ Unfortunately, both of these assessment programs occur much later in an officer’s career, when it is seemingly too late for a significant change to result in a productive impact for the individual’s career or for the Army to benefit.

These programs look beyond an officer’s evaluations and focus on the officer as a leader, including their authenticity as perceived by both subordinates and peers. Many have been impressed with the assessments taken during the program, especially as the results are interpreted and presented by an operational psychologist. One officer

referred to the results as an opportunity to see “how others view you and discover how external perceptions affect your leadership and your unit writ large.”³¹

In another example, a lieutenant colonel offered her reflection on her two attempts at selection during BCAP.³² The first time she went through the program, she was found not ready for command based on—in her estimation—her peer and subordinate evaluations. BCAP offered her a coach, and she took the opportunity to reflect and learn more about herself. The coach helped her identify and explore her personality, tendencies, and past experiences to discover herself and what and how she could change. Her self-awareness allowed her to implement small changes to how she led and interacted with others. A year later, she attended her second round of BCAP and was selected as an alternate to command. Despite her challenges, she stated that she was more confident in herself as a leader and believed in the program.

The above anecdotes of coaching and its success in the Army indirectly reveal the gap in the system. Senior majors in these examples, who have had a multitude of different leaders, evaluations, leader development programs, and counseling sessions in almost fifteen years in the Army, were still surprised by what these assessments revealed about them as leaders. How could, or would, they have benefited from a culture of coaching throughout their careers?

To start, the Center for the Army Profession and Leadership has implemented programs like the Project Athena Self-Development Tool, which allows leaders at all levels to take online assessments that convey how they think or decide, and about the traits and attributes that contribute to their leadership.³³ Students take these assessments at every level of resident PME.³⁴ Based on the assessment results, there are various online resources that provide developmental tools or more information on how to improve. These assessments increase self-awareness and identify areas that need more attention or opportunities to excel, but follow-on improvement is up to the individual. The Athena assessments are primarily for individual development but lay a great foundation for a coaching relationship. While individuals can share these results with their supervisors and mentors to discuss and gain assistance with formulating a plan for change, many leaders will still not know how to conduct effective

coaching to incorporate the feedback in a manner that will result in growth or change.

The Air Force has also recognized the power of coaching and implemented ways to achieve a coaching culture through education. One of the many efforts is a “coaching culture facilitator course” that is designed to “equip leaders with a coaching skillset to enable and enhance the development of Airmen.”³⁵ The director of Force Development for the Air Force, Russell J. Frasz, stated, “The goal for this course is to support the creation of an organizational culture that understands, values and uses formal and informal coaching to amplify the development of Airmen.”³⁶ He also explains the Air Force’s view of coaching: “A mentor talks to you, and a coach talks with you.”³⁷ This course was established in cooperation with an external contract partner, Flatter Inc., to certify leaders as coaches, earning them a coaching certificate and committing graduates to conducting one hundred hours of coaching during a two-year utilization period. The pilot course launched in April 2021 for a selected audience, and depending on its success, the Air Force will widen the audience to other ranks and populations.³⁸

As of February 2022, the Army has partnered with the Air Force to allow an Army cohort in the Air Force coaching course in a step toward developing Army coaches.³⁹ While this is a move in the right direction, the scope and size of the Army would likely require a combination of this type of concentrated approach to create experts and a broader approach that teaches basic coaching skills at different levels of PME to create a coaching culture.

The Army has already seen some of the benefits of coaching and has received positive feedback from those that have been exposed to coaching. Nonetheless, the Army has yet to embrace those results and take actions to broaden the impact of coaching across the Army. Adopting a coaching culture reinforces the Army’s commitment to leader development and would pay dividends in Army talent management and retention.

Benefits of a Coaching Culture

Gen. (Ret.) Gustave Perna wrote that “in organizations of all sizes, three traits have stood out as non-negotiable in leadership: competence, commitment, and character,” and that these traits create the foundation for growth.⁴⁰ A coaching culture emphasizes leader



Capt. Cydnia Jackson, a senior human resource advisor for the 3rd General Support Aviation Battalion, 2nd Combat Aviation Brigade (3-2 GSAB), coaches a newly enlisted soldier 15 September 2015 at the 3-2 GSAB office in Pyeongtaek, South Korea. (Photo by Chung Il Kim, 2nd Combat Aviation Brigade)

development through exploration of a leader as a person—their personality, how they were raised, key life experiences, attributes, etc.—to understand who they are and increase self-awareness while encouraging growth through reflection and behavioral change. Applying coaching as a primary method of development cultivates a coaching culture that can promote Perna's three key traits across all leaders in the Army.

Learning about coaching and how to coach builds leader competence, not just in developing others, but also in a leader's individual skills such as confidence, oral communication, listening, and reflection. The University of Worcester in the United Kingdom offered an introductory course on coaching to undergraduate students and measured the effects of learning about coaching. The study found that not only could students learn how to coach others, but also learning how to apply coaching increased communication skills, developed a commitment to self-development, and helped students understand themselves as individuals.⁴¹ It concludes that early exposure to coaching is beneficial for both practical skills development and lifelong application of coaching.⁴² Similarly, increasing training and education in the Army about how

to coach others can also increase a subordinate's commitment to developing themselves as a leader.

Another study into the effectiveness of executive coaching found that it affected positive change in corporate managers. Coaching specifically increased confidence, which facilitated "the adoption of new collaborative behaviors, openness to feedback, and acceptance of personal limitations."⁴³ Coaching acknowledges strengths and weaknesses equally, capitalizing on both to become a better leader rather than framing weaknesses as deficiencies. This leads to increased self-awareness and collaborative behaviors that increase productivity and organizational effectiveness, ultimately increasing the individual's commitment to the organization.⁴⁴

Those coached also demonstrated a heightened self-awareness that improved individual character.⁴⁵ Coaching relationships between leaders and subordinates promote transparency and genuineness, which fosters character and create a learning organization. The study also found that coaching conversations encouraged career development, indicating an investment into a subordinate's success.⁴⁶ This corresponded to a commitment to the organization, increasing talent retention.

Coaching addresses the art of leadership in ways that other methods do not. These are just two of many studies that demonstrate how coaching can increase competence, commitment, and character for an organization. A coaching culture melds the science and art of leadership together at the individual level, increasing authenticity in leaders and bettering the Army.

Recommendations

The current Army Coaching Program is specifically focused on “formal engagements between the coach and the [coachee] at key career milestones, such as professional military education.”⁴⁷ It does not include an approach to educating the force about coaching and how it can make a difference in leader development. Coaching is a skill that can be learned and applied by leaders; all Army leaders should be educated in a coaching approach to improve leader development. Implementing a

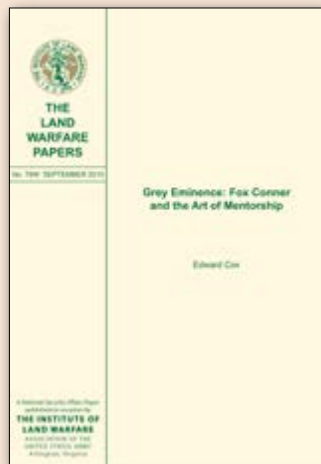
more comprehensive coaching program is necessary to maximize the benefits of coaching. The Army Coaching Program should include an early exposure to coaching, coaching education, and leader as coach training to initiate a culture of coaching within the organization.

Doctrinally, a reexamination of the leader development methods and how each is defined in doctrine and implemented in practice would clarify the roles of each method and how they contribute to leader development. More specifically, the roles of counseling, coaching, and mentoring should be delineated and explained more clearly in FM 6-22. A coaching pamphlet that outlines techniques and the different types of coaching would assist leaders in determining the best approach for different subordinates and giving them a starting point for initiating a coaching relationship.

When it comes to training coaches, education and exposure go hand in hand to promote coaching

Military Review

WE RECOMMEND



The AUSA Land Warfare paper *Grey Eminence: Fox Conner and the Art of Mentorship* fills out details on the personal influence the early twentieth century had on shaping the education and experiences of future key leaders of the Army, most notably then junior officers Dwight D. Eisenhower, George S. Patton Jr., and George C. Marshall. The mentoring approach used by Conner, including a demand for extensive reading on military subjects as well as detailed exercises in orders production, provide insight into the development of mentoring methodology that may be applicable to the challenges associated with mentoring officers and other soldiers in the current day. To view this paper, visit <https://www.ausa.org/sites/default/files/LWP-78-Grey-Eminence-Fox-Conner-and-the-Art-of-Mentorship.pdf>.

(Painting courtesy of the Collection of the Museum Division, Mississippi Department of Archives and History)

in leader development. Learning the basics of coaching would be a significant step in the right direction; however, the best way to learn about coaching is to experience coaching oneself to fully understand its value and purpose. An effective coaching education program would include an early and universal opportunity to experience coaching, leader as coach training, and continuing coaching education to develop a culture of coaching within the organization.

PME should include instruction on what coaching is and introduce how to coach to all officers for broader application. For example, for officers, exposure to coaching would occur during the Basic Officer Leader Course where every lieutenant is able to meet with a trained coach to discuss some or all their Athena Assessment results and increase their own self-awareness as new leaders in the Army. Not only would this introduce coaching, but it could also initiate a desire for self-improvement. Training as coaches would begin during the Captains Career Courses, where students learn the elements of how to coach and practice coaching with each other, enabling reflection of their experiences since Basic Officer Leader Course and discuss how their assessment results may or may not have changed. During the Command and General Staff Officers' Course, students could learn about transitioning how to be a coach as an organizational leader and understanding how to be a coach, particularly when they are not a supervisor. During the Battalion and Brigade Pre-Command Course and at the War College, students would be challenged to not only coach their subordinates but also how to develop leaders as coaches. Training outside of PME should also supplement education through refresher training that involves both instruction and practical exercises.

The Army also recently developed a professional development skill identifier, A3B, which is an Army coach, as part of the Army Coaching Program.⁴⁸ Not only will it take time to build a larger population of certified Army coaches, but the program will also not generate enough coaches to create a coaching culture across the Army. Accessibility to coaching should not be limited by the number of certified coaches. An all-encompassing approach to increase knowledge and application of coaching by Army leaders is necessary to change the Army's approach to leader development and promote a coaching culture.

Conclusion

The Army continues to train the next generation of leaders from within its own formations, which highlights the need to develop a level of commitment, competence, and character that will sustain leaders through each level.⁴⁹ Leader development is a continuous process that requires investment, particularly for organizations like the Army, where it grows its own leaders. Increasing the current role of coaching, introducing coaching as a developmental practice, and developing a coaching culture should be the desired end state for Army leader development.

Coaching already exists in the Army leader development approach, but a lack of education, training, and exposure prevents leaders from promoting growth in their subordinates in an effective manner. The CASAL results clearly indicate that there is a gap in what Army doctrine says about leader development and how leaders are executing it in their formations.⁵⁰ Developing a coaching culture in the Army is a critical component of advancing leader development and adopting a coaching culture should be the next step in enhancing the Army People Strategy. ■

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Soldiers participate in Southern Vanguard, an exercise designed to increase readiness and interoperability, 9 December 2021 in Resende, Brazil. (Photo by Pfc. Joshua Taeckens, U.S. Army)

Perception Is Reality

Redefining Capacity to Influence



Maj. Chris Adams, British Army

In January 2022, the United Kingdom was reeling from the realization that the government had hypocritically neglected to follow its own coronavirus guidelines.¹ Specifically, Downing Street staffers were at an illegal social event the night before Prince Phillip's

funeral, which was socially distanced and limited to thirty people.² The leader of the opposition declared that the prime minister had “lost the moral authority to lead.”³ In politics and wider society, authority is therefore something that is necessary to lead, and it

can be lost through perception of actions. In military leadership doctrine however, the concept of authority is conspicuous by its absence.

Leadership doctrine lacks an intuitive model that links authority, power, perception, and influence. This article first defines authority before explaining how authority relates to influence. Second, it challenges Gene Klann's model of independent personal and positional power. It then identifies perception as a key component of authority and develops a model that synthesizes this with power. Finally, it explores corollaries of this model across direct and organizational leadership. The result is intended to be a readily understandable model that leaders across the Army can visualize and apply to their actions.

What Is Authority?

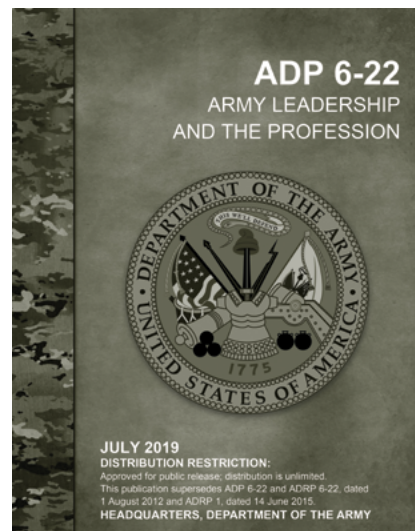
U.S. Army leadership doctrine, Army Doctrine Publication (ADP) 6-22, *Army Leadership and the Profession*, uses the word "authority" sixty-seven times without defining it once. The word also does not appear in the U.S. Army's 108-page glossary of terms, Field Manual 1-02.1, *Operational Terms*.⁴ It does however appear indirectly in ADP 6-22's definition of command: "Command is the authority that a commander in the armed forces lawfully exercises over subordinates by virtue of rank or assignment."⁵ Authority is not the subject of the sentence, however, and is an assumed variable to help the reader understand command. Doctrine is therefore not much help.

In contrast to doctrine, sociology offers a much more robust definition of authority. In 1922, Max Weber defined domination as the probability commands would be obeyed.⁶ He identified authority as the foundation of legitimate domination and argues that it inherently requires voluntary compliance.⁷ Weber's authority comes in three types. Rational-legal is best exemplified by a traffic light, which only has authority because drivers comply with it. Traditional authority is the stomach full of adrenaline a private soldier feels when a drill sergeant shouts at him. Charismatic authority is fanatical obedience to one exceptional individual's will.⁸ Authority is consequently not the act of commanding, but the follower's choice to comply with commands. To summarize, authority is the capacity to influence.

But What about Power?

John French and Bertram Raven's 1959 study on the bases of social power provide the source for ideas such as expert and referent power.⁹ French and Raven describe referent power as a follower's aspiration to emulate a leader, embodied in the Ranger and Special Forces tabs, which so many soldiers strive to achieve. Similarly, they describe expert power as the perception of subject-matter expertise, in relative and absolute terms: expertise communicated by rows of ribbons on chairman of the Joint Chiefs of Staff Gen. Mark Milley's uniform. Gary Yukl and Cecilia Falbe build upon these ideas to argue that these bases of social power come from two independent sources, personal and positional.¹⁰ According to Klann, personal power comprises French and Raven's expert and referent power.¹¹ French and Raven's research is based on direct interaction between two people and "does not consider social influence exerted on a group."¹² It is therefore not designed for organizational leadership theory. Klann's synthesis with Yukl and Falbe's work is subsequently disingenuous.

Yukl and Falbe's independent sources of personal and positional power are flawed in a military environment. This is because personal and positional power within a uniformed organizational culture are inseparable. Rank and appointment infer a reverence, deference, and assumed expertise irrespective of personality.



Army Doctrine Publication 6-22, *Army Leadership and the Profession*, uses the word "authority" sixty-seven times without defining it once.

Maj. Chris Adams, British Army, is an Art of War Scholar at the U.S. Army Command and General Staff College. He holds a master's degree in physics from the University of Exeter. His operational deployments include Afghanistan and Iraq.

It does not matter who currently commands Seal Team Six, but by virtue of their appointment, they will generate the expert and referent power Klann ascribes to personal power.¹³ Combining French and Raven's research with Yukl and Falbe's power concept is therefore ineffective to describe capacity to influence in a military organization. Thus, power is formal and delegated from the commander in chief down to an individual through rank and position.

Perception Is Reality

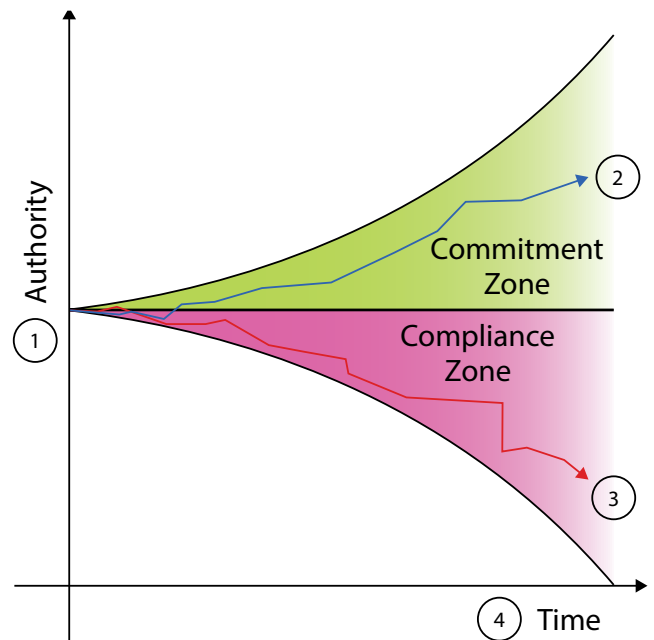
If the probability commands to be obeyed depend on the follower's choice to comply, then perception is reality. As such, authority is the combination of formal power and perception. It is important to note that perception can be positive or negative. Power, however, is either zero for a private with no command position, or extremely high for the chairman of the Joint Chiefs of Staff.

$$\text{Capacity to influence} = \text{Authority} = \text{Power} + \text{Perception}$$

Power and Perception over Time

Let us consider a brigade in which two previously unknown battalion commanders arrive on the same day: Lt. Col. Blue and Lt. Col. Red. By virtue of their rank and position, both have the same authority with the brigade staff and their subordinates. Lt. Cols. Blue and Red therefore both begin their time in command at point 1 on figure 1, because their authority comes from their rank and position. Over time, perceptions of Lt. Cols. Blue and Red crystallize in brigade, among the other battalion commanders, and within the battalions. Blue embodies the teachings of ADP 6-22, and she rapidly builds a significant positive perception. Her authority increases over time, beyond the level attained on the first day from rank and position. She elevates herself into the commitment zone at point 2. The zones on figure 1 are banded because caution, loyalty, and denial prevent perception-altering authority quickly at first, but the zones degrade over time. The potential for perception to impact authority therefore increases over time.

Meanwhile, Lt. Col. Red is a counterproductive leader. Those surrounding him build a negative perception. Subordinates within the battalion follow orders grudgingly. Malicious compliance becomes default as the climate collapses. Lt. Col. Red has sunk



(Figure by author)

Figure 1. Power, Perception, and Authority over Time

into the compliance zone at point 3. Eventually, negative perception cancels out the authority that comes from rank and position. This is where soldiers reach a point of distress and fracture. Subordinates refuse to follow Lt. Col. Red's orders at point 4, and Red's authority is directly challenged. A recent example of a leader's authority degrading to point 4 is the Russian commander who was supposedly "fragg'd" by his own troops in Ukraine.¹⁴

Perception of What?

Perception is based on several factors that are equally applicable to superiors, peers, and subordinates. Each is essential, and the aggregate of all these factors forms a holistic view. These five factors are referenced on table 1 (on page 37). The explanation of each factor is included within table 1.

Positive Perception without Power Creates Informal Leaders

Treating power and perception as orthogonal concepts also helps explain informal leaders. Table 2 (on page 37) shows how an individual without authority from rank or position can still be a leader.

Table 1. The Five Factors That Drive Perception in Direct Leadership

Factor	Description
Time	A combination of age and time within the organization. Someone who has served twenty years is likely to generate a positive perception without evidence of what those twenty years were spent doing.
Experience	Someone may have only served a brief time but have important technical or operational experience that affects perception.
Ability	Perceived ability is a strong factor in professional perception. An infantry leader that cannot shoot straight or look after themselves in the field despite time and experience will receive a negative perception.
Trust	Based on Hurley's trust factors such as shared values. Perception based on whether the experienced and capable twenty-year infantry leader cares.
Character	Ability to follow the values of the service. Hypocrisy in maintaining standards undermines perception.

(Table by author)

That person's authority can come entirely from perception, which compels others to follow his or her commands. On the right side of table 2 is a formal leader whose authority has degraded through negative perceptions. He or she is unable to lead effectively, and his or her subordinates are likely to only act through compliance. Finally, an individual without positive perception or the formal power is simply a follower.

To summarize the proposed model for direct leadership, authority comes from the combination of formal power and perception. Authority in sociology is the probability commands will be followed and is therefore the capacity to influence. Perception is built from time, experience, ability, trust, and character. The perception of those above,

alongside and below the leader, all matter. This is visualized in figure 2 (on page 38).

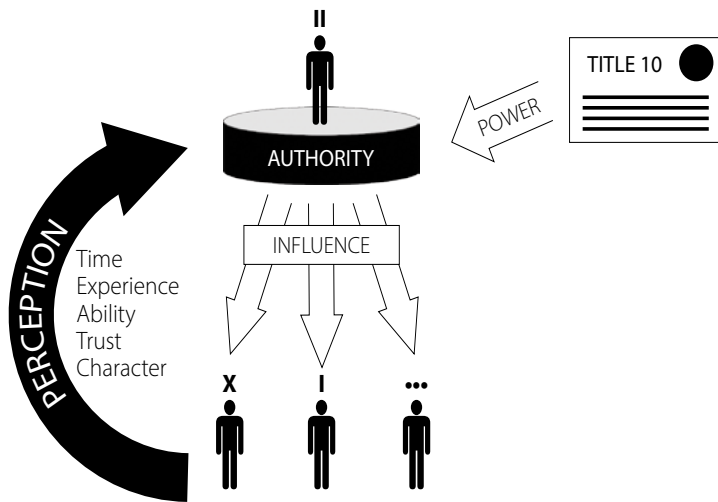
Perception is Equally Important to Organizational Leadership

To understand the importance of perception in organizational leadership, it is important to define the limits of perception in direct leadership. A squad leader will know his or her platoon leader, have limited dealings with his or her company commander, and probably know the battalion commander by name and reputation only. Similarly, the average battalion commander is unlikely to know every soldier within a squad. Therefore, the limit of direct perception is three up and three down. Figure 3 (on page 39) visualizes this for a battalion commander and platoon leader.

Table 2. Power Authority Matrix

		Perception?	
		Positive	Zero/Negative
Power?	Yes	<i>Formal, effective leader (Lt. Col. Blue)</i>	<i>No authority. Formal but ineffective leader (Lt. Col. Red)</i>
	No	<i>Informal, effective leader</i>	<i>No authority. Not a leader</i>

(Table by author)



(Figure by author)

Figure 2. Capacity to Influence = Authority = Power + Perception

Beyond this range, organizations are perceived as self-aware super-organisms. “Big Army decided to send me to Fort Polk” or “IV Corps made some terrible decisions on Warfighter” are good examples of this. Similarly, at an echelon above battalion, commanders cannot form a direct perception of each individual soldier. They will instead naturally form a holistic perception of “the little people,” a phrase adapted from K. W.

Cooper’s book *The Little Men* about a platoon in Burma.¹⁵ This begins to occur in echelon differences as close as two up and two down, but it is more pronounced the wider the gap between perceiver and organization.

Organizations therefore create perception in the same way as individuals, which affects their capacity to influence in much the same way (see figure 4, page 39). The same factors drive organizational perception, albeit with different descriptions. These are described in table 3.

Three Corollaries of Perception and Influence

The importance of perception to an organization’s ability to influence has three significant corollaries which merit further exploration.

First, commanders and staff are both responsible for the perception of their organization. To use the original vignette, it doesn’t matter whether the British prime minister was at the illegal parties his staff hosted in the heart of government, because the organization and the commander are both tarnished by public perception. Organizational culture inevitably colors perception, for better or worse.

Second, the decentralized execution that embodies mission command is wholly dependent on trust and

Table 3. The Five Factors That Drive Perception in Organizational Leadership

Factor	Description
Time	New organizations are typically perceived as ineffective until established. Similarly, very old organizations are sometimes seen as archaic and obsolete. A good example of the former is the U.S. Space Force.
Experience	Artifacts of experience can create a perception even if the individuals from that experience have all changed. For example, guards’ designations within the Russian army today based on experience in World War II.
Ability	Perception is affected by the reputation that an organization builds both at home and deployed. The “Rakkasans” in 101st Airborne build, maintain, and lean on the perception their actions create.
Trust	What does the organization value, and how does it look after its people? The negative perception of Fort Hood during the AIM2 process was based on a lack of organizational trust.
Character	Embodied by the commander and staff, this is the organizational culture. The British government violating its own coronavirus laws is an excellent example of failure.

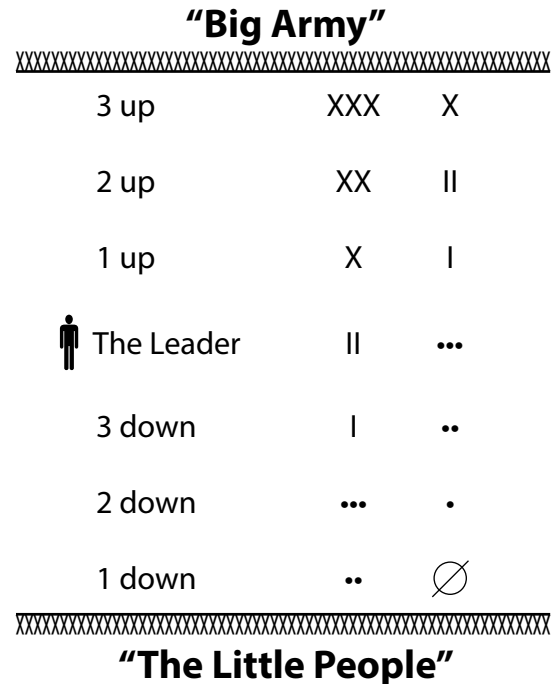
(Table by author)

shared understanding. This cannot happen in the compliance zone in figure 1, because grudgingly achieving the bare minimum through fear kills any disciplined initiative. Positive perception to build authority into the commitment zone is therefore essential for mission command to work. Leading by example, upholding values, and building trust and expertise are all prerequisites to effective mission command.

Third, if leaders across the Army learn to understand and reflect on the perception they generate, they will drastically increase their operational effectiveness. Self-reflection on perception generation will increase emotional intelligence and improve communication. The ability to manage perception also applies to adversaries. The Russian army has a different reputation one month into its invasion of Ukraine than it did a year ago.¹⁶ If leaders can control the perception they create, they can generate a disconnect between an enemy's understanding and reality. This is the essence of operational deception and surprise.

Summary

Perception is reality. Authority as defined by Max Weber in sociology is lacking in Army doctrine, yet “the probability commands will be followed” is essential to military leadership.¹⁷ Personal and position power are not independent within a military environment,



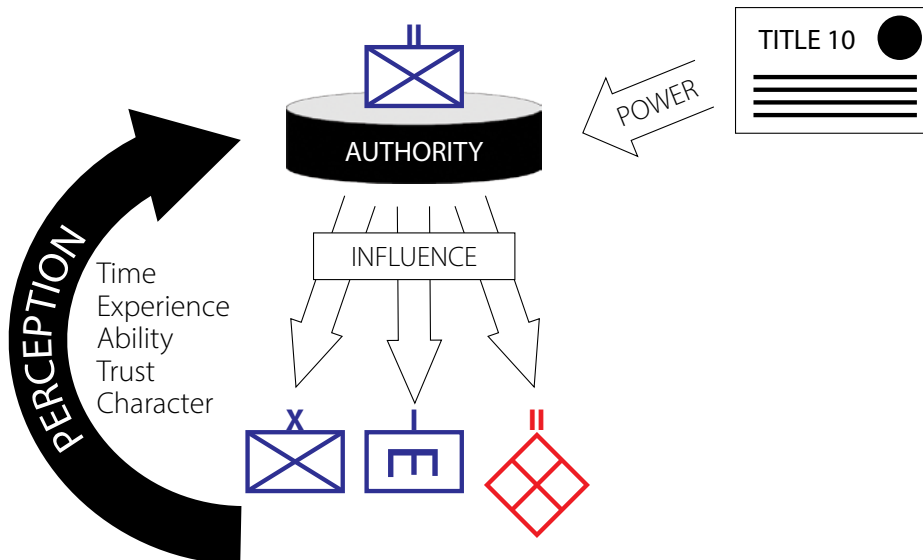
(Figure by author)

Figure 3. Limits of Direct Perception: Three Up and Three Down

because an individual's rank, role, and specialist qualifications can create an aura of reverence and perception of expertise regardless of what the individual is like.

Yukl and Falbe's model therefore does not fit military leadership, especially when applying Klann's misleading synthesis of French and Raven's research. Thus, the capacity to influence is authority, which is comprised of power and perception.

Perception has five component parts: time, experience, ability, trust, and character. A leader must build positive perception in these five areas to elevate his or her authority into the commitment zone. This equally applies to direct leaders and organizations as entities.



(Figure by author)

Figure 4. The Same Model Works at an Organizational Level

Moral authority derives from the perception of character, not just of the commander but also the staff. Character for an organization is embodied in its culture, which will always radiate outwards and influence the perception of subordinate, peer, and superior organizations alike. A collapse in character perception results in leaders losing “the moral authority to lead.”

Mission command and deception on operations depend on trust, shared understanding, and an ability to

understand and manage perception. If the Army could adopt a model where perception powered a leader or organization’s capacity to influence, it would promote self-reflection and build emotional intelligence across the force. This would improve command climates and employment of mission command everywhere. It would also allow formations in conflict to build a disconnect between enemy perception and reality, generating opportunity for deception and surprise to find relative advantage. ■

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(Artwork by Jim Orr)

The Battle of Tarawa, fought on a small atoll in the South Pacific 20–23 November 1943 during World War II, pitted approximately eighteen thousand invading U.S. Marines against a Japanese defending force of about five thousand. The action featured the first Marine amphibious assault in the Pacific, an attack that unfortunately was plagued with planning shortfalls and faulty reconnaissance that resulted in the force getting hung up on a coral reef five hundred meters from the island's shore. This compelled the attackers to disembark and wade into shore under the guns of the defenders. The Marines ultimately took the island at a cost of about 1,200 dead and many wounded. Of the Japanese defending force, most fought to the death; only seventeen survived.

And now...Tarawa

A place some said would easy fall
 This tropic atoll we recall
 Our first Pacific test we're told
 By elder brass; the wise, the bold
 So confident and sure were we
 Then thrust in craft upon the sea
 With smoke and tumult everywhere
 As rockets blistered through the air
 We hurdled forward wave by wave
 Toward ravaged shore, my brothers brave
 And prayed that day was not our last
 While to the Lord we held steadfast
 For strength into the battle fray
 Against a foe not far away
 Yet as we dashed into the fight

Our craft now wedged on coral tight
 The tide not high as thought to be
 Before the battle told were we
 So in the sea we all did go
 Five hundred yards from shores halo
 As comrades fell to left and right
 I did my best within the fight
 To reach the battered deadly shore
 With devastation, palms no more
 Then finally sand below my feet
 Determined foe I soon would meet
 And prayed that day I would not die
 While on the shore the wounded cry
 Then three days battle finally done
 The victory ours, the struggle won
 Yet still alive and standing tall
 So many brothers gave their all

—J. Michael Orr



Haunted by Clausewitz's Ghost

Moral Forces in the Collapse of the Afghan Military

J. B. Potter

The under-resourcing of Afghanistan was much deeper and wider than even I thought. It wasn't just about troops. It was intellectually, it was strategically, it was physically, culturally.
—Adm. Michael Mullen

With the West looking east to Ukraine, the war in Afghanistan seems like an episode from the distant past. Though they may be a fading memory, the chaotic scenes of desperate Afghans swarming planes on the tarmac at Kabul Airport are not even a year and a half old. Nine months after the U.S. withdrawal, in May 2022, the special inspector general for Afghanistan reconstruction (SIGAR) issued an interim congressional report on the Afghan National Defense and Security Forces (ANDSF). Titled *Collapse of the Afghan National Defense and Security Forces: An Assessment of the Factors That Led to Its Demise*, this seventy-page document concludes that “unless the U.S. government understands and accounts for what went wrong, why it went wrong, and how it went wrong in Afghanistan, it will likely repeat the same mistakes in the next conflict.”¹ To learn from its twenty-year experience in Afghanistan, the U.S. Army should consult one of the oldest friends of its profession, Prussian general and military theorist Carl von Clausewitz (1780–1831).

Ahead of his time, Clausewitz perceived that battlefields are decisively shaped by intangible moral forces. As a case study in this quintessentially

Clausewitzian idea, the end of the war in Afghanistan demonstrates that successful military operations and nation-building efforts must strike a balance between two approaches: war as a science and war as an art. By favoring the former over the latter, U.S. strategy in the Hindu Kush developed a major blind spot, one that the Taliban wasted no time exploiting when American troops withdrew. Because the art of war is the focal point of his writing, Clausewitz offers a perspective that was all too often neglected in U.S. policies toward Afghanistan.

Clausewitz's name is synonymous with his posthumously published magnum opus, the eight-part work *On War* (*Vom Kriege*). This tome is frequently boiled down to its most famous maxim: “War is simply the continuation of politics with other means.”² This adage overshadows other ideas in the first chapter of the first book that are essential to the Prussians' theory of war. In the opening paragraphs, for instance, Clausewitz defines war as “an act of violence to force the enemy to do our will.”³ With competing wills grounding his reasoning, he later claims that any theory of war, in order to have real-world applications, “should also consider the

Next page: Afghan refugees crowd into a U.S. Air Force Globemaster III C-17 for evacuation from Kabul Airport in Afghanistan on 19 August 2021. The evacuation resulted from a rapid withdrawal of U.S. military forces and the subsequent takeover of the Afghan government by the Taliban. The author contends that the United States failed in Afghanistan because U.S. strategists did not pay enough attention to the moral forces that are fundamental to the art of war. (Photo by Staff Sgt. Brandon Cribelar, U.S. Air Force)



human element.”⁴ Since “the art of war deals with living and moral forces”—that is to say, dynamic human actors with wills that wax and wane—Clausewitz admits that it “can never achieve absoluteness and certainty.”⁵ This disclaimer not only rejects overly rational notions of warfare but also reveals the lynchpin of *On War*. For Clausewitz, moral forces are the *je ne sais quoi* and the *sine qua non* of war, a combination of physical and psychological factors that are anything but static.

The hallmark of the art of war, moral forces do not fit neatly into a scientific conception of war, which is best exemplified by Clausewitz’s contemporary, the Swiss-born soldier turned French and Russian general Antoine-Henri Jomini (1779–1869). Although he freely admitted that war is, in part, an art, Jomini tended to scientifically scrutinize it. In contrast to Clausewitz’s understanding of armed conflict as a physical *and* a psychic phenomenon, Jomini’s prescriptive perspective is much more quan-

titative and materialist. To him, war is a numbers game. This data-driven approach to fighting is reflected in his writing and word choice—in the geometry-laden language he uses to give logistics pride of place in war. No stranger to engineering impressive organizational feats across the globe, the U.S. military operates according to doctrines that are unmistakably Jominian. Unsurprisingly, nation-building in Afghanistan found its clearest expressions in Jominian ways—e.g., financial backing, equipment maintenance, and physical infrastructure. Buoyed by this support,

J. B. Potter is a graduate student at Georgetown University in Washington, D.C. He studied history and German at Hampden-Sydney College and then served as a Fulbright English Teaching Assistant and worked as a translator in Mainz, Germany, where he earned an MA in German through Middlebury College’s C.V. Starr School at Johannes Gutenberg University. After his time abroad, he taught German and coached tennis at high schools in Virginia. His article about honor and justifications of violence in the 1980 Australian war film *Breaker Morant* was published by *Small Wars & Insurgencies* in July 2022.



Carl von Clausewitz (Painting by Karl Wilhelm Wach, *Carl von Clausewitz* [1780–1831] via Wikimedia Commons)

the ANDSF looked good on paper but ended up folding like a paper tiger. This unexpected turn of events occurred partly because, over two decades, mathematically minded policy makers gradually lost sight of what they could not see: moral forces.

By adopting too scientific of an approach to the war in Afghanistan, U.S. strategists did not pay enough attention to the moral forces that are fundamental to the art of war. Clausewitz reiterates this point in the third chapter of the third book, where he deems *moralischen Größen* (moral factors) among “war’s most important objects,” “the spirits that permeate the whole element of war and that align themselves with the will.”⁶ Despite the weight that moral forces carry, keeping track of them is no easy task. They are, by their very nature, incalculable; they can “neither be put into numbers nor into categories.”⁷ Unlike troops, weapons, and supplies, moral forces cannot be objectively counted. Instead, they must be subjectively gauged by observing how mind and matter interact. The relationship between body and soul looms large in *On War* because it allowed Clausewitz to chart the seismic shifts in geopolitics that he experienced

during the prime of his life and a dark chapter in the history of his homeland.

Moral forces haunt Clausewitz's writing because they animated France's decade of dominance in the Napoleonic Wars (1803–1813). Though it had numerous material advantages, the coalition opposing France was confounded by Napoléon's brilliance on the battlefield. Clausewitz discerned that there was more to this success than skillful maneuvering and resource allocation. The Revolution had triggered a psychic transformation in French society through the introduction of novel moral forces like conscription anchored in nationalism. With newfound national purpose, the common people gained a greater say in their political destiny by shouldering arms. In tapping into an emotional reservoir of patriotic fervor, the French gained an edge that made the difference on battlefield after battlefield. As a forward-thinking military mind, Clausewitz advocated for similar social reforms such as the then controversial creation of a popular militia.⁸ This change and others mentally primed people in German lands to physically resist the French following the Convention of Tauroggen, a revolutionary moment in Prussian history that Clausewitz orchestrated during the aftermath of Napoléon's disastrous invasion of Russia.⁹

In a Clausewitzian variation on a Cartesian theme, the fourth chapter of the fourth book outlines the physical and psychological dimensions of moral forces. The loss of the former, in the form of "men, horses, and guns," goes hand-in-hand with the loss of the latter, which includes "order, courage, confidence, cohesion, and planning."¹⁰ Although physical casualties are "difficult to estimate" during combat, the din of battle lays bare soldiers' mental states.¹¹ "Lost ground," for example, "is a measuring stick for lost moral forces."¹²

Judging by Clausewitz's standard, the physical withdrawal of U.S. troops from Afghanistan coincided with a psychic shock to a system of command and control that could not yet function without active American involvement, "in part because," as the SIGAR's report puts it, "the United States designed the ANDSF as a mirror image of U.S. forces."¹³ While the Afghan military could hold its own against the Taliban, it relied on American quartermasters and paymasters for logistical and financial backing. As Jonathan Schroden states in his article published by *War on the Rocks*, "While Afghan forces had been

doing the bulk of the fighting for years before the U.S. withdrawal, the United States had been performing nearly all of the behind-the-scenes management and support of those forces."¹⁴ Management and support are, of course, part and parcel of the science of war, not the art. The fact that the former does not necessarily translate into the latter became apparent to frustrated American leaders as they witnessed the ANDSF deteriorate in a matter of days.

After the Afghan military collapsed over two weeks, American leaders were quick to deem it too weak. In his speech on 16 August 2021, President Joseph Biden enumerated America's physical investments in Afghanistan. "We spent over a trillion dollars. We trained and equipped an Afghan military force of some 300,000 strong. ... We gave them every tool they could need. We paid their salaries, provided for the maintenance of their air force."¹⁵ Immediately after this Jominian logistical litany, he pivoted to the incorporeal core of Clausewitzian thought and portrayed Afghans as short on patriotism. "American troops cannot and should not be fighting in a war and dying in a war that Afghan forces are not willing to fight for themselves. ... We gave them every chance to determine their own future. What we could not provide them was the will to fight for that future."¹⁶

Retired Army Lt. Gen. Douglas Lute, who served as the deputy national security advisor for Iraq and Afghanistan before becoming the U.S. ambassador to NATO, echoed Biden's remarks and evoked Clausewitz in his analysis of the collapse of the Afghan military. In an Associated Press report on 16 August 2021, he was quoted as saying that "the principle of war stands—moral factors dominate material factors. ... Morale, discipline, leadership, unit cohesion are more decisive than numbers of forces and equipment. As outsiders in Afghanistan, we can provide materiel, but only Afghans can provide the intangible moral factors."¹⁷ Inseparable from these moral factors, as Lute said in an interview with CNBC the next day, is "the will to fight."¹⁸

Blaming the victims for lacking willpower distracts from a larger truth with a thousand faces. Schroden rightly points out that "the failure of Afghanistan's forces had many fathers, spanning the political and military leaders of the United States, its coalition partners, Afghanistan, and the Taliban."¹⁹ Among these actors, the Taliban merits mention in the context of



Army engineers from the 132nd Multi-Role Bridge Company prepare a bridge erection boat for employment on 7 November 2012 outside of Forward Operating Base Jackson in Helmand Province, Afghanistan. The 132nd “River Rats” provided construction and bridge repair support for Operation Golden Gate, a bridge-building operation allowing the Afghan population to cross the Helmand River safely from the Musa Qal’ah District into the Sangin District. Infrastructure improvement was one of the tools used by U.S. forces in their efforts at nation building. (Photo by Lance Cpl. Alexander Quiles, U.S. Marine Corps)

moral forces. Above all, this militant movement knew the physical and figurative lay of the land better than America. In playing the long game over two decades, it benefited from the moral forces that accompany fighting a defensive war. Fueled by fundamentalism directed against a nation that it could easily brand as a foreign occupier, the Taliban bided its time until a change of hearts and minds in Washington caused U.S. troops to be pulled out of Kabul.

The Trump administration prioritized an exit strategy in February 2020, when it inked a deal that the Taliban welcomed. During the subsequent year and a half, the organization took full advantage of the agreement’s new rules of engagement by waging “an effective campaign that isolated—both physically and psychologically—ANDSF forces and undermined their willingness to fight.”²⁰ This Clausewitzian line from the SIGAR’s report, which speaks to the Taliban’s intuitive grasp of

moral forces, underscores the failure of American policy makers to account for them. This oversight stemmed from an approach that was too scientific, one that did not anticipate the psychic consequences generated by the sudden withdrawal of U.S. troops.

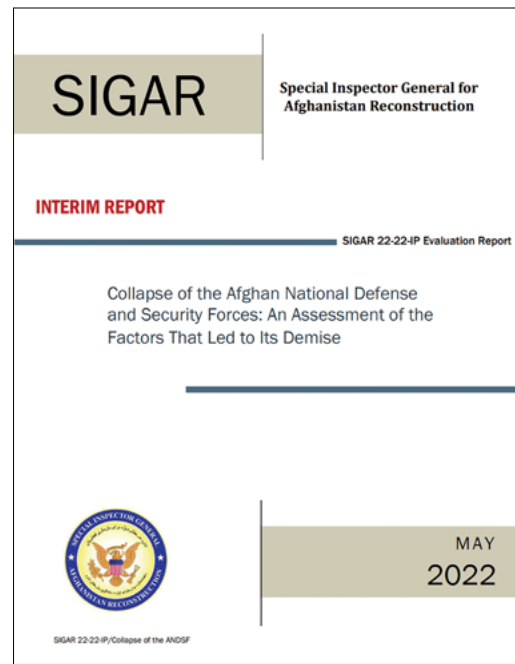
As evinced in the breakneck speed of the Taliban takeover, America was the keystone of security in Afghanistan, a foreign finger in a failing dike. Schroden reminds readers that “Afghan security forces had been slowly failing as an institution for years and the Afghan government had been steadily losing ground to the Taliban.”²¹ The absence of physical boots on the ground left psychological shoes that were too big for Afghan authorities to fill. In hastily pulling out, the United States created a situation that did not inspire the average Afghan to take up arms. As summarized in the conclusion of the SIGAR’s report, the “ANDSF, along with Afghans throughout the country, felt,” in a

word, “abandoned.”²² With war-weary Afghans forced to fend for themselves after years of U.S. support, desire to resist the Taliban understandably evaporated.

The disintegration of the ANDSF can also be interpreted as a disconnect between homegrown courage and imported convictions. It is, after all, hard to fault the Afghan military for not having the courage of America’s convictions, convictions that are largely foreign concepts to a society in which kinship and ethnicity shape political identity more than any national or democratic ideal. For this reason in particular, the Taliban managed to endure, the best efforts of the U.S. Army notwithstanding. Physically training Afghan troops to march and shoot was challenging, but the United States and its coalition partners were up to the task. It was, in contrast, a Sisyphean undertaking to persuade the Afghan people to risk their lives for the Islamic Republic of Afghanistan, a puppet state that was as financially corrupt as it was politically ineffective.

As alluded to in the opening paragraph of the SIGAR’s report, this corrosive combination ate away at the morale of the ANDSF. Between some leaders embezzling money and many in the rank and file being irregularly paid for years, enlisted men had increasingly less incentive to stand and fight.²³ The clear and present danger of Taliban reprisals against their families gave them yet another reason not to fire a shot. Undercut by the lack of paychecks and the threat of payback, any material advantages afforded Afghan troops by the American military were ultimately rendered moot because the Afghans were, in short, psychologically disarmed. This interaction between tangible and intangible factors is succinctly summed up in Clausewitz’s discussion of strategy. As he states at the beginning of the third book of *On War*, “The relationships of material things are all very simple; it is more difficult to grasp the psychological forces at play.”²⁴

The inability of U.S. policy makers and politicians to sufficiently grasp the significance of moral forces in Afghanistan constitutes a failure of imagination, a phrase made famous by the findings of the 9/11 Commission. With this idea bookending the two-decade conflict, the conclusion of American involvement in Afghanistan exposed a blind spot in the prevailing view of war in the United States. In the minds of many Americans, war is more of a Jominian affair. It is measured in lives lost and in dollars spent. Understanding



Read the Special Inspector General for Afghanistan Reconstruction's interim evaluation report 22-22-IP, *Collapse of the Afghan National Defense and Security Forces: An Assessment of the Factors That Led to Its Demise*, at <https://www.sigar.mil/pdf/evaluations/SIGAR-22-22-IP.pdf>.

war in these terms corresponds to a human need to quantify sacrifice—to demonstrate a level of dedication to a larger cause. As Clausewitz makes clear, however, men and materiel tell only part of the story. Intangible moral forces tell the rest because they explain why soldiers defend the colors or strike them.

In the final analysis, if future U.S. military operations coupled with nation-building are to transform dreams of democracy into the reality of a republic, American blood and treasure should not be expended abroad unless they can be translated into civic commitment and defensive determination among the people whom the United States seeks to help. To neglect these moral forces is to turn the U.S. Army into the political backbone of a fledgling government that cannot stand on its own. This lesson is the lasting lesson of the war in Afghanistan. American leaders would be wise to heed it, never mind take Clausewitz’s enduring insights to heart, the next time that they consider putting soldiers in harm’s way. ■

Nota bene: All translations from German are the author’s.

Notes

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Leavenworth Papers Number 25

A Talent for Logistics
McClellan and Grant Sustaining the Army of the Potomac in 1862 and 1864

by Curtis S. King, PhD



Combat Studies Institute Press
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Military Review calls for short works of fiction for inclusion in the Army University Press Future Warfare Writing Program (FWWP) for 2023. The purpose of this program is to solicit serious contemplation of possible future scenarios through the medium of fiction in order to anticipate future security requirements. As a result, well-written works of fiction in short-story format with new and fresh insights into the character of possible future martial conflicts and domes-

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Teach as They Fight

Why Preparing Students for America's Future Operational Environment Requires Studying Britain's Military Past

Dr. Jacob Stoil

Dr. Daniel Whittingham

In any future non-nuclear large-scale combat operation (LSCO) against a near-peer threat, the U.S. military will face significant challenges before it can begin to contemplate taking the initiative in the decisive theater. The path toward understanding and mitigating these challenges may not lie in the history of the campaigns of Napoleon, the Franco-Prussian War, the U.S. Civil War, Normandy, Barbarossa, or the 1973 War. Rather, to anticipate and overcome the challenges of a future war, we should gear our curricula and studies to focus on those who have successfully faced and overcome similar problems—the British Empire.

Regardless of the precise location or cause of the next LSCO-style war against a peer or near-peer adversary, it is possible to make some assumptions about the future operating environment for the United States. Barring any drastic changes in the world, these assumptions will continue to hold true for the foreseeable future. The first among these assumptions is that the United States will not abandon its strategic commitments and continuing operations in the face of escalation elsewhere. The U.S. military currently deploys globally to provide strategic advantages to the United States and its allies. Many of these deployments result from commitments the United States made to allies and partners. Such deployments include maintaining

a presence in Europe in support of NATO, a significant presence in South Korea to deter North Korean aggression, and a force in Sinai as a condition of Israeli-Egyptian peace, to name but a few of many.¹

In the event of a war against a near-peer adversary, the alliances and partnerships that U.S. forces support will become even more important. Deciding to abandon preexisting commitments could hurt the U.S. strategic position during the war and would certainly hurt its position postwar. Therefore, it is unlikely that the United States would abandon these in the face of LSCO and certainly not much beforehand. Among other things, this means that one of the challenges of LSCO will be concentrating a globally dispersed U.S. military in the region of concern without abandoning its critical commitments.

This also leads to several subordinate assumptions: the first is that the U.S. military will, as it prepares for and potentially conducts LSCO, continue to engage in a wide variety of operations including counterinsurgency, building partner capacity, domestic response, humanitarian response, and perhaps most critically during LSCO, deterring other threats. In short, the U.S. military cannot afford to prepare for just one thing. Another key assumption about the future operating environment is that while the war may have effects that



Seven representatives of the Commonwealth Armed Forces (*from left to right*)—soldiers from India, East Africa, South Africa, and New Zealand; a Canadian airman; an Australian soldier; and a Royal Navy sailor—march alongside of a Union Jack flag. (Attributed to Lucas, *The British Commonwealth of Nations-Together*, lithograph, 1017 mm x 1520 mm; courtesy of the Imperial War Museums)

reach the U.S. population, the primary locus of combat will be at a great distance from the continental United States. This will have dramatic effects on the capabilities available to commanders as well as the timing and tempo of operations. Additionally, the critical requirement for such a war lies in the maritime domain. The United States will have to move large tonnages of supplies, materiel, and of course people along extended sea lines of communication (SLOCs) and will have to ensure their safety during transit. The scale of such an endeavor along with the increased lethality of the modern battlespace leads to one further conclusion: the current strength of the all-volunteer force (AVF) is unlikely to prove sufficient to win a LSCO war against a peer enemy, especially if such a war becomes a protracted conflict. This in turn means that should such a conflict occur, it will require the United States to rapidly expand the scale of the AVF and possibly reintroduce the draft without making significant sacrifices in the quality of the force. The factors are almost identical to

those that drove British campaigns through most of the history of the British Empire.

This set of challenges is largely though not entirely alien to the cases of France, Germany (or Prussia), Russia, and the United States during the Civil War often studied in Army professional military education (PME). While some of these countries, such as France, did at times find themselves facing similar dilemmas to those faced by future U.S. military planners, for the most part, the cases studied such as those of the Franco-Prussian War, the Western Front of the First World War, the Eastern Front of the Second World War, and any of the myriad campaigns of the American Civil War existed in context absent some or all of these key considerations. For the most part, the campaigns studied are those of fully mobilized nations, with some form of conscription, fighting close to home. Even the inclusion of cases such as the United States in the Second World War, while more useful, is still a case in the context of a mobilized

These are the emblems of the principal provinces which form the Dominion of Canada. Most of the emblems are included in the Dominion flag, give



BRITISH COLUMBIA



MANITOBA



ONTARIO



QUEBEC



NEW BRUNSWICK



NOVA SCOTIA



ST. LUCIA



ST. VINCENT



CAICOS AND TURKS ISLANDS



WINDWARD ISLANDS



LEEWARD ISLANDS



ORANGE RIVER COLONY

These are the emblems of most of the West India colonies, which cannot be shown in their proper places on the map.

THE FLAGS OF A FREE EMPIRE, SHOWING THE EMBL

on the map below.

These three flags form the Union Jack, the national flag of Britain.



PRINCE EDWARD ISLAND



ENGLAND
St George's Cross



SCOTLAND
St Andrew's Cross



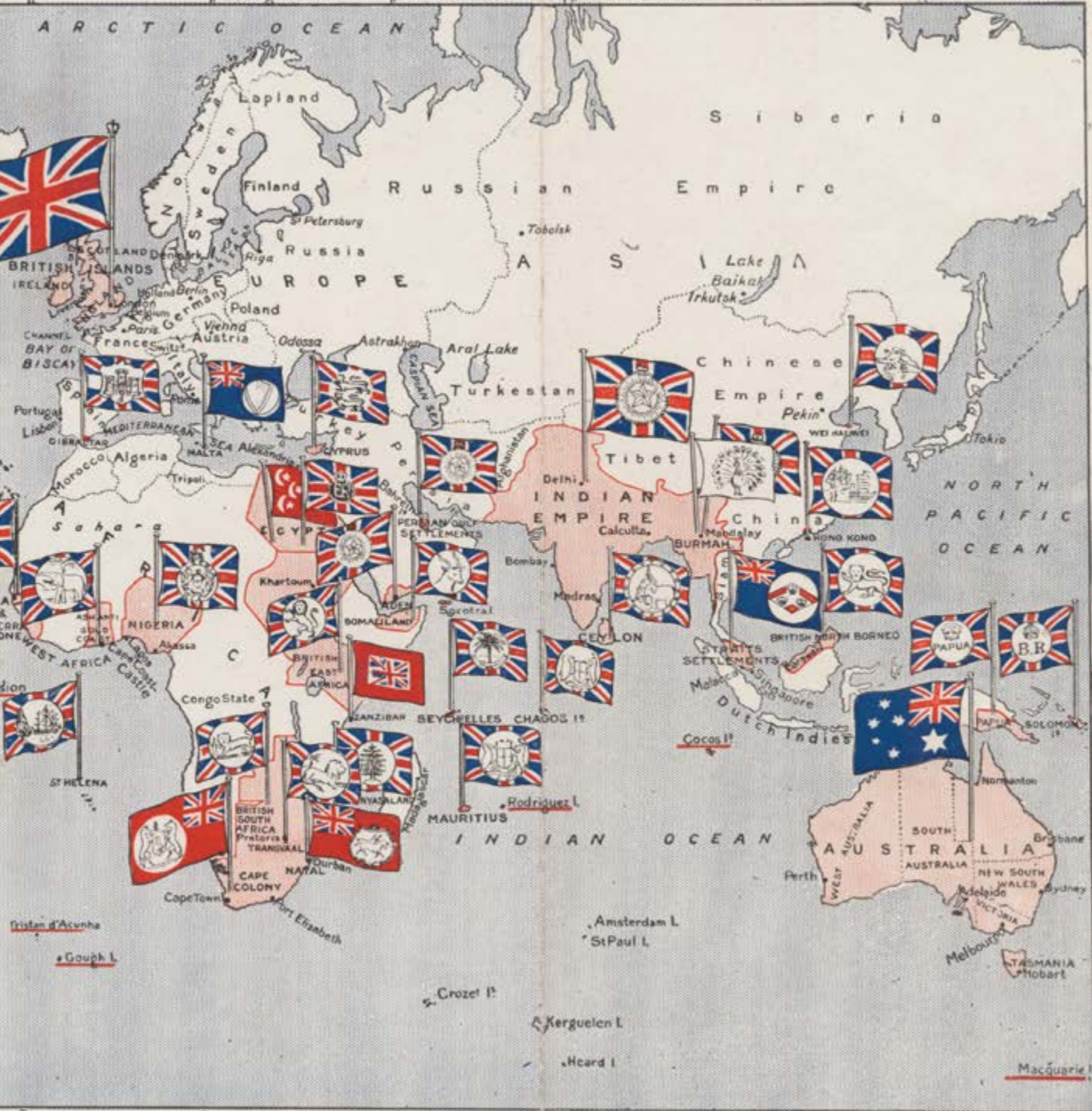
IRELAND
St Patrick's Cross



ISLE of MAN



CHANNEL ISLES
Oldest Possession



QUEENSLAND



NEW SOUTH WALES



VICTORIA



SOUTH AUSTRALIA



WEST AUSTRALIA



TASMANIA

These are the emblems of the separate colonies forming the Commonwealth of Australia. They fly over a whole continent, stamped on the Union Jack.

EMblems OF BRITISH POWER THROUGHOUT THE WORLD



The British Royal Navy's Grand Fleet sails for Scapa Flow in 1914 at the outbreak of World War I. (Photo courtesy of Great War Primary Documents Archive via Wikimedia Commons)

nation with a conscript military. While studying Napoleon's campaigns in Europe or Ulysses Grant's campaigns in the American Civil War teaches valuable lessons on operational art, they do so in a vacuum from the realities that American planners will face. These factors alone change the practice of war and the requirements on planners.

One of the reasons for the focus on continental powers may be to align with theorists such as Carl von Clausewitz and Antoine-Henri Jomini with whom the Army is comfortable. It is true that Britain lacks any such theorists in the immediate post-Napoleonic period, but there is a good reason for this. In the British view, their military system won. While the resurgent French state may have threatened Britain, the wars between 1789 and 1815 proved that the British model of relying on a strong navy and a small professional expeditionary force, which they augmented by mass recruitment and a shifting system of alliances, worked. There was no crisis with the paradigm and no feeling of defeat, which required the balm of explanatory theorists. In the same way the continental theorists of the post-Napoleonic period ignored the experience of Britain, they also failed to incorporate those

features of its global strategy and the significance of the maritime domain in their work. In their absolute neglect of global perspective on the wars of the period, such thinkers fail to explain the efficacy of the British military during that period, and in doing so, limit their applicability to the future of the operations of the United States and Britain.

As a survey of some of the cases from British history will show, the need to prioritize SLOCs, the requirement to bring resources to the fight, the global nature of Britain's commitments, and the need to maintain while at times expanding the AVF shaped every aspect of the conduct of campaigns and the practice of operational art. Moreover, the valuable lessons on tactics, logistics, planning, and operational art that these cases may teach can also be taught through the study of their military, which better reflects the challenges ahead for the United States.

Between 1815 and 1914, Britain fought only one war against a European opponent: the Crimean War against Russia. The war began in 1853 as one of a series of Ottoman-Russian conflicts, with Britain and France joining on the side of the Ottoman Empire in 1854. Britain's objectives were to prevent Russian expansion

Previous page: The image depicts the range of the British Empire throughout the world in 1910. However, by displaying oversized flags of British possessions, this map artificially increases the apparent size and scope of the Empire. (Map by Arthur Mees, *The Flags of a Free Empire*, 1910, 14 cm x 28 cm, Persuasive Cartography: The PJ Mode Collection, Cornell University via Wikimedia Commons)

at Ottoman expense and to reduce Russian naval power.² It was this latter consideration that encouraged policy makers to decide to target the Black Sea naval base at Sevastopol in a “grand raid,” following the Russian evacuation of the Ottoman territories of Wallachia and Moldavia.³ The Anglo-French attack on Sevastopol led to a long and costly siege (1854–1855), but ultimately the city fell. Despite the name by which the war is now known, it was a far wider conflict, with British attacks on Russia on other fronts, especially in the Baltic.⁴

The British military system did not show itself at its best in the Crimean War. The conflict is perhaps most famous for the Charge of the Light Brigade at the Battle of Balaclava on 25 October 1854 and for Florence Nightingale’s nursing work in the hospital at Scutari (Üsküdar in modern-day Istanbul). However, it makes for a useful case study for PME for several reasons. Britain’s war was fundamentally based on sea power. It involved a combination of blockade, amphibious operations (the Sevastopol campaign was based on British SLOCs), and threats against targets vulnerable to attack from the sea. By so doing, the British and French avoided repeating Napoleon’s disastrous land invasion of Russia in 1812. Britain’s ability to fight the war at a distance allowed it to wage war on a relatively more limited footing than Russia was able to do.⁵

Britain’s achievement of its objectives can only be properly understood by appreciating the wider coalition, diplomatic, and imperial contexts. French manpower grew increasingly important as the conflict wore on, and by 1855 most of the troops in the trenches around Sevastopol were French. Furthermore, the Russians were isolated diplomatically. The threat of intervention by Austria helped force Russia to the conference table, and the Treaty of Paris was signed in March 1856. The Crimean War also needs to be understood in relation to Britain’s global commitments. The war occurred in a decade in which Britain fought a series of major conflicts against non-European opponents. To wage these campaigns, Britain drew on several strengths, including the resources of an industrial economy, and the manpower it could draw from India. The end of the war with Russia was followed by the Anglo-Persian War (1856–1857) before British rule in India was rocked by the mutiny of an estimated seventy thousand soldiers of the Bengal Army in the Revolt of 1857.⁶ The

insurrection took two years to suppress. Meanwhile, Britain also fought against China in the Arrow War (1856–1860), again with French support. That Britain was able to sustain so many military commitments conflicts across the globe, some of which overlapped with each other, offers an instructive parallel for the U.S. armed forces today.

The largest war fought by Britain between 1856 and 1914 was the South African War (1899–1902). Although better known as the Boer War, the term “South African War” better encapsulates the conflict’s geographical scope and its impact on the regional population. Britain went to war against the two Boer states, the South African Republic and the Orange Free State, to maintain its paramount position on the subcontinent of South Africa. The war can best be understood as having three phases. In the first phase, the Boers laid siege to the towns of Ladysmith, Kimberley, and Mafeking. British attempts to relieve the sieges led to a series of notable battlefield failures: Modder River (28 November 1899), the battles of “black week” (Stormberg, Magersfontein, Colenso) in December, and Spion Kop (24 January 1900). In the second phase, the British gained the upper hand: Kimberley was relieved, and four thousand Boers forced to surrender at Paardeberg on 27 February.⁷ The British also relieved the sieges of Ladysmith and Mafeking. These successes allowed the British to take the war into Boer territory, and they occupied the Boer capitals at Bloemfontein (March) and Pretoria (June). The last set-piece battle took place at Bergendal (27 August).⁸ The second phase overlapped with the third phase at Kroonstad on 17 March 1900, a Boer war council decided to change tactics. Thereafter, the Boers waged a guerrilla effort, forcing the British to adapt to fight a protracted counterinsurgency campaign.⁹ The British annexed the Orange Free State and South African Republic in 1900, but two further years of attrition were required before the Boers who remained in the field agreed to terms.

Once again, the South African War did not show the British military system at its best, especially in the first phase. The war administered a profound shock, which encouraged several sweeping reforms; among these was the creation of a British General Staff, which was officially constituted in September 1906.¹⁰ The South African War therefore offers an example of a

global superpower fighting a conflict that developed into a large-scale counterinsurgency campaign far from home, followed by an extensive effort by a number of British officers to examine what they saw as its main lessons. It also provides a useful comparison to the United States' own war in the Philippines, which was fought across the same three-year span.

As with the Crimean War, the South African War can only be properly understood in a wider context. First, although Britain was diplomatically isolated, no Great Power came to the aid of the Boers, despite its hopes for external support. There was plenty of Anglophobia, especially in France and Germany. France had been forced to climb down in the Fashoda Crisis (1898) but was wary of a possible Anglo-German rapprochement.¹¹ Germany, as politician Friedrich von Holstein put it, acted in a friendly manner even though it spoke in an unfriendly one.¹² The Russians made no effort to threaten India, in spite of the Tsar's hostility.¹³

The imperial context is also fundamental to understanding the conflict. The British Empire was a maritime empire, and again it was British sea power that allowed the prosecution of a major colonial conflict six thousand miles from home. The Boers were unable to

attack Britain's SLOCs and therefore could not stop the buildup of troops. The Boers might have pressed their attacks home at the war's outset and attacked British infrastructure rather than halting to besiege the three towns, but they did not do this.¹⁴ Britain made good use of its imperial resources. In addition to 50,000 men from South Africa, the imperial war effort included 16,415 Australians and 6,500 each from New Zealand and Canada in what was a precursor to the mobilization of imperial manpower seen in the First World War.¹⁵ The backbone of the British force was provided by the regular army. However, this was buttressed by recruitment into the Volunteers and Imperial Yeomanry: 108,849 were recruited in this way during the war. In total, Britain was able to use 448,435 men in South Africa, with a peak of 240,000 deployed there in May 1901.¹⁶ Although Britain itself was largely denuded of troops, India remained garrisoned by the Indian army, and Britain was able to sustain simultaneous operations elsewhere using local forces. An example is West Africa: during the years 1899–1902, imperial forces launched several expeditions to defend or extend British imperial interests. One such interest was the Anglo-Ashanti War of the Golden Stool in 1900,

which resulted in the annexation of Ashanti (in modern day Ghana).¹⁷ The South African War therefore shows several of the features relevant to the United States: the importance of SLOCs, the mobilization and deployment of resources over vast distances, and the expansion of the army (including use of local forces).

For Britain, as for many of the other belligerents, the First World War required an unprecedented effort. Britain drew on the resources of the empire to increase rapidly the size of its army; by the end of the war, some 5.7 million men had served.¹⁸ What had begun as a Balkan War in July 1914 became a world war from the moment the global powers joined the struggle. Moreover, the conflict



British infantrymen engage the enemy with rifle fire during the Second Boer War (1899–1902) in southern Africa. (Photo by William Skeoch Cumming, courtesy of the Imperial War Museum)

spread from Europe across the world to new theaters, which involved British imperial interests. Britain relied on sea power to pursue its global strategy. However, it is also vital to bear in mind the coalition context: Britain relied on French manpower on the Western Front, especially in the first two years of the war, and the infusion of American manpower in 1918 also made a crucial impact.

The British army was committed to a continental war in August 1914, but it was small compared with the French and German armies. The regular army comprised 247,432 officers and soldiers in August 1914, with reservists (340,303) and the Territorial Force (245,779) taking its total strength to 733,514.¹⁹ Yet, by the end of the war, some five million more had served.²⁰ Until 1916, the army stuck to voluntary recruiting. Only when the numbers volunteering dropped in 1915 did the British government turn to conscription (and only then after extensive debate). Lord Herbert Kitchener, the secretary of state for war, had hoped that the expanded British army could be the decisive element in the contest.²¹ However, the pressures of war forced the British to play their part much sooner than he had expected. 1915 was the bloodiest year for the French army, and the British stepped up to fulfil their obligations as a coalition partner. The British army launched major offensives on the Western Front in concert with its French allies: Loos (September 1915), the Somme (July–November 1916), and Third Ypres (July–November 1917). The German Spring Offensive, launched on 21 March 1918, pushed the Entente powers back, but the coalition's counter-offensive—now with U.S. troops involved—forced the Germans to seek an armistice.

The western front was undoubtedly the main theater for Britain; the war's outcome ultimately

hinged on what happened against the German army there. However, Britain's status as a global power made the war a global one from the very beginning. The Royal Navy cleared German surface vessels from the world's oceans, though this did not occur without some early problems (such as the defeat at Coronel on 1 November 1914). By early 1915, it was clear that the biggest threat to Britain's control of SLOCs would come from German U-boats. The German waging of unrestricted submarine warfare in 1915 famously included the sinking of the *Lusitania* on 7 May, while the campaign of 1917 helped to precipitate the entry of the United States. The German High Seas



Boer guerrillas during the South African War circa 1900. The Boer Commandos were volunteer military units of guerrilla militia organized by the Boer people of South Africa. (Photo courtesy of Wikimedia Commons)

Fleet remained confined to port for most of the war. Although the Battle of Jutland (31 May 1916) proved disappointing to the British (spawning an acrimonious postwar debate), there can be no doubt as to the outcome: the German navy had assaulted its jailer but was still in jail.

Britain was therefore able to use sea power to maintain campaigns in new theaters as the war expanded in geographical scope. In so doing, it was able to defend vital interests, especially those relating to its SLOCs. The first and last shots of the war (for the British) were in fact fired in Africa, where Britain waged several campaigns against German colonies; most notably, in German East Africa. Although operations in East Africa developed a momentum of their own, the initial rationale behind the African campaigns was fundamentally maritime. As Julian Corbett wrote in the official history of naval operations, all “were to be regarded primarily as designed for the defense of our maritime communications and not for territorial conquest. The single object was to deprive the enemy of his distant coaling and telegraphic stations.”²²

The Ottoman Empire joined the Central Powers at the end of October 1914, opening the Middle East theaters of war. Here again SLOCs were vital: British Empire troops

Dr. Jacob Stoil is an associate professor of military history at the U.S. Army School for Advanced Military Studies, adjunct scholar of the Modern War Institute at West Point, senior fellow of 40th ID Urban Warfare Center, and assistant director of the Second World War Research Group (North America). Dr. Stoil received his doctorate in history from the University of Oxford. He holds a BA in war studies and an MA in history of warfare from the Department of War Studies at King's College London.

Dr. Daniel Whittingham is a lecturer in the history of warfare and conflict in the Department of History at the University of Birmingham, UK. He is the author of *Charles E. Callwell and the British Way in Warfare* (Cambridge University Press, 2020), and, with Dr. Stuart Mitchell, *Counterinsurgency: Theory and Reality* (Casemate, 2020).

held the Suez Canal against an Ottoman attack in early 1915, though Entente forces tried and failed to capture the Dardanelles Straits (February 1915–January 1916).²³ Britain's offensives against the Ottoman Empire were ultimately successful in capturing the cities of Baghdad and Jerusalem in 1917. These operations involved extensive land campaigns, and here the British made use of their imperial resources.²⁴ Australian and New Zealander troops underwent their baptism of fire on the Gallipoli Peninsula in 1915.²⁵ The Egyptian Expeditionary Force, which took the offensive from Egypt into Palestine in 1917 and on to Syria in 1918, consisted of British and imperial troops. Manpower pressures on the Western Front in 1918 meant that Indian soldiers replaced British troops in the Egyptian Expeditionary Force, and these were gradually integrated during the year.²⁶ Britain's imperial resources were also deployed on the Western Front, along with the bulk of the British divisions; Canada, Australia, India, and New Zealand all provided formations to reinforce the British Expeditionary Force in France and Flanders. Overall, the First World War was, for Britain, an imperial and coalition war *par excellence*.

As with the First World War, the United Kingdom entered the Second World War with a relatively small volunteer army and global commitments. From Africa to the Pacific, the British army was actively engaged in stability and counterinsurgency. There were significant combat deployments in the Palestine Mandate, Somaliland, India, and Iraq, among others. The bulk of the armies of the British Empire were in India. As the war dawned, the British had to increase greatly the size of their army while at the same time not sacrificing the combat efficiency of the force developed during the all-volunteer period. They knew they could never match the numbers of their European adversaries, so they had to continue to develop a high-quality force. Additionally, early on, the British Empire embraced the integration of special operations, by-with-through methods, and information operations to create asymmetric advantages where possible.²⁷ In every campaign in the war, the British Empire had to play an “away game” reliant on SLOCs, and committed to fighting a global war. In some campaigns, Britain fought LSCO at the end of extended SLOCs while in others, it turned its global presence and maritime nature into strengths to win the global fight and shape the decisive theater.

The Fall of France in 1940 is an often-studied campaign, at least as far as studying the French and German perspectives are concerned. The campaign serves as an example to talk about the changes in tactics, armor, and air power brought to the battlefield, as well as the number of elements of operational art. Unlike the French, the British army retained its combat power and successfully leveraged its professionally honed forces to execute a rear passage of lines retrograde to ports of embarkation. Through it all, the commanders and officers of the British Expeditionary Force (BEF) had to consider preservation of the force as they knew replacements might be delayed and that the global force would need time to concentrate. They also had to consider their ability to maintain contact with the ports on which they relied. The need to coordinate with the naval element not only shaped their tactics but the entire campaign as well. The planning considerations that determined the activities of the BEF are the same that will prove critical for the United States in the future. By changing the focus of any campaign studies of the early phase of the Second World War to consider the BEF, PME institutions can achieve the same goals as before but with the added benefit of considering the very circumstances that U.S. officers will face in a future LSCO.

From the fall of France in 1940 through the entry of the United States into the war, the British Empire stood alone. On the strategic level, it had to leverage its global position, irregular warfare experience,



Soldiers of the Indian Expeditionary Force, a component of the World War 1-era British Expeditionary Force (BEF), dig trenches on 9 August 1915 near Fauquissart, France. The BEF was originally a six-division force under command of the British army. In addition to British homeland forces, it would ultimately include Commonwealth expeditionary forces from India, South Africa, Canada, New Zealand, Australia, and Newfoundland (not yet part of Canada), and also included the non-Commonwealth Portuguese Expeditionary Corps. (Photo by H. D. Girdwood via the British Library/Wikimedia Commons)

and maritime capabilities to shape the global fight to win the LSCO in which it engaged. Any number of campaigns would serve to help PME students think about the future fight. For example, in the Middle Eastern theater, before the British could prevail in the decisive campaign in North Africa, they first had to engage in several campaigns elsewhere in the theater.²⁸ A focus on the operational level of decision-making



British troops of the 11th East Africa Division march on the road to Kalewa crossing near Sagaing, Burma, circa November 1941 in the early stages of the Burma Campaign. (Photo courtesy of the Imperial War Museums via Wikimedia Commons)

and planning that went into these is more relevant to considerations students from war colleges and schools will face than a study of any given campaign on the eastern front fought between two large conscript-based land powers near their home soil. These “peripheral campaigns” were in themselves decisive as they secured the global lines of supply and SLOCs to the British army in the Western Desert while denying global resources to the Axis.²⁹ This allowed the British Empire to bring its global power to bear in North Africa at the same time as the Axis resources stretched to their breaking point. At the strategic and

operational levels, this ability to think creatively about how to leverage regional positions and global maneuver space to achieve effects in a “decisive” theater in this manner are the skills that the future operational requirement will require of U.S. planners.

In campaigns in Iraq, Syria, Lebanon, Somaliland, and Ethiopia, the British Empire benefitted from the local relationships built during the ongoing stability missions to leverage indigenous forces, which meant that not only could they readily defeat the Axis force present but could do it while maintaining these as economy of force campaigns.³⁰ In all these campaigns,



A soldier with U.S. Army's 1st Battalion, 23rd Infantry Regiment, goes over the specifications of the M249 Squad Automatic Weapon with a soldier from Indian army's 99th Mountain Brigade 24 September 2018 at Chaubattia Military Station, India. The activity was part of Exercise Yudh Abhyas 18, a bilateral training exercise designed to foster a shared tactical and technical understanding between the partnered military organizations. (Photo by Sgt. Jeff Hibbard, U.S. Army)

they had to integrate special operations forces (SOF) at every level. For most of the duration of the campaign in Ethiopia, SOF and indigenous forces were the primary effort with conventional forces in support. Small teams of SOF worked with tens to hundreds of thousands of indigenous fighters to shape the environment and win decisive engagements.³¹ Eventually, British conventional forces were able to enter the theater en masse, and the campaign switched to the integration of indigenous and SOF forces in support of the conventional LSCO fight.³² This is far from the only British campaign in the Second World War in which this occurred.

Despite the importance of SOF capabilities to the United States, force structure and the future operating environment, few if any of the campaigns that students encounter provide examples of planning for large-scale SOF operations and integrating them with conventional forces. Even fewer address campaigns in which conventional forces are not the main effort.

The British campaigns in places such as Ethiopia still have all the elements such as considering mechanized maneuver, air-land integration, and deep operations, all at large scales that make the Second World War a useful case for PME. However, they have the added benefit of providing examples not only of the planning considerations caused by expeditionary warfare and global position but also the integration of SOF and the successful employment of by-with-through operations. They offer lessons on how to turn global positions, dispersed deployment, and relationships built during the prewar period and counterinsurgency from a potential weakness to powerful advantage.

Following the Second World War, the relevance of cases from the British Empire declines as the United States replaced it as the main global expeditionary power. Even then, there is still much that the cases of the end of British Empire can provide. One of the challenges the United States repeatedly faces is how

to organize the end of its involvement in each conflict or region. There are significant planning challenges to such operations at every level, especially if conducted in the face of hostile forces or burgeoning civil war. There are number cases in in the post-Second World War period from the Palestine Mandate to India, Kenya, and Malaya that are worthy of inclusion in a curriculum that will help students in PME understand the critical planning considerations they may face in Iraq, Afghanistan, or following the next major conflict.

From the U.S. Marine Corps' expeditionary advanced base operations concept to the renewal of Army major combat capabilities, the entire U.S. military establishment is in the process of reorienting to the complexities and challenges of the future operational environment. Preparing students for this uncertain future requires teaching more history and not less, but at the same time, it requires a renewed look at the historical cases employed. By moving away from the wars of continental powers to the wars of global expeditionary

powers like the British Empire and the contemporary United States, faculty can keep the good that currently exists in teaching cases from each period of warfare while adding to the ability of students to understand and prevail in the environment that they will face.

While the phrase "those who do not learn from history are doomed to repeat it" may seem trite, by providing students with cases to consider replete with a full range of the complex challenges they might face as part of an expeditionary all-volunteer force, faculty can help students avoid some of the mistakes of the past. The purpose of PME is not just to teach history for its own sake or choose cases that are familiar and comfortable. The purpose of PME is to equip students to handle the operational challenges of the future and prevail in future wars. Substituting in cases such as those of the history of the British Empire that incorporate some of key hallmarks of the future operational environment will be an important step in fulfilling that most critical mission. ■

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Military Review Recommends



The March-April 2022 *InterAgency Journal* highlights the complex relationship of diplomacy to branches of the U.S. government with a collective interest in national security as well as the need for increased sophistication and experience in dealing foreign nations. It can be found at <https://thesimonscenter.org/publications-post/interagency-journal-12-1-2022/>.

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Four-Dimensional Planning at the Speed of Relevance

Artificial-Intelligence-Enabled Military Decision-Making Process

Col. Michael S. Farmer, U.S. Army

Having a computer partner meant never worrying about making a tactical blunder. The computer could project the consequences of each move we considered, pointing out possible outcomes and countermoves we might otherwise have missed. With that taken care of for us, we could concentrate on strategic planning instead of spending so much time on laborious calculations. Human creativity was even more paramount under these conditions, not less.

—Garry Kasparov, *Deep Thinking*

Decision-making has long been the centerpiece of warfare. Recent increases in the tempo, scale, opacity, nonlinearity, and connectivity of warfare increasingly challenge the contemporary decision-making process. Into the future, this change will simultaneously increase the importance of timely and effective decision-making while further exacerbating many commanders' cognitive and decision-making challenges. Commanders' will search for solutions to ill structured, high-complexity problems extending through the six domains of air, land, maritime, information, cyber, and space. The future state of

affairs poses a potential growth to complexity that will increase at an exponential rate as new technologies and applications are realized. Human learning and even the ability of the most-seasoned commander to intuit will not keep pace with the evolving character of war. To shepherd battle-winning insight into the future, there must be an improvement to human cognition, the decision-making process, or its *augmentation*.

The cleaving of decision competence and available support has created a widening capability gap among the analytical decision-making process, commander's intuition, and effective decision-making. The current and future environments demonstrate the need to develop more agile decision support tools that can stem the gap and regain a decisional advantage for commanders. The ability to effectively forecast several engagements ahead in an opaque and complex environment will be essential to success. Simultaneously, the ability to understand and react first in a dynamic environment capable of rapidly invalidating previous plans will be essential to seizing and retaining the initiative.¹

The science of complexity and study of chaos have wrestled with similar problems and provide relevant



Author and strategist Peter Singer (*left*) discusses new technology with an officer and a Department of Defense civilian on 1 November 2018 at an unnamed Air Force facility. Advances such as artificial intelligence and brain-machine interfacing will change the way the Army conducts war. (Photo courtesy of U.S. Army Acquisition Support Center)

insight to the military commander's emergent challenge. Work with computer modeling and artificial intelligence (AI) has made great gains. In many games, computers have eclipsed a human's ability to make decisions.

Adapting and evolving from AI dominance, human-machine teams in chess have achieved a new pinnacle of decision-making, combining the tactical excellence of algorithms that evaluate future moves several turns in advance with humans' strategic ability. Current U.S. defense efforts related to AI and decision-making appear focused on big data and data analytics. Predictive analytics, however, cannot be capitalized on in the absence of an improved military decision-making framework. Otherwise, increased data and analysis will only exacerbate the challenge of understanding an increasingly complex and dynamic operating environment.

The military decision-making process (MDMP), while analytically sound, is not structured in a way that

will keep pace with the future environment. The pace of conflict will outpace a staff's ability to process an analytical contribution.

Modifying and augmenting MDMP with AI will create a process that generates understanding of the environment grounded in a framework of physical information at a far superior speed. Course of action development will not originate, as it does now, from a desired end-state worked backward, applying ways and means in theoretical hindsight to create an imagined future. AI-enabled MDMP will work forward from the current state. It will explore forward through the possible branches of friendly and adversary decision trees toward a gamut of environments and adversary courses of action, brought to life as adaptive agents by means of a minimax-style decision tree.² Alternative operational futures will be built through the emergence of feasibility, completed

through optimization of the contributions of war-fighting functions, inherently distinguishable, then judged by the human component of the man-machine team to be suitable and acceptable. Reenvisioned man-machine MDMP will keep pace with the future operating environment, maintaining relevance by operating at near machine speed, enabling superior vision through a thickening fog of war.

Commanders, while supported by their staff, ultimately use their own faculties for decision-making. When commanders are conducting problem solving to formulate guidance for their staff or subordinates, they are essentially conducting “means-ends analysis, a process of searching for the means or steps to reduce the differences between the current situation and the desired goal.”³ Even intuition, a sudden insightful interpretation of an event or data, works in a similar method. “Despite the apparent sudden flash of insight that seems to yield a solution to problems, research indicates that the thought processes people use when solving insight problems are best described as an incremental, means-ends analysis.”⁴ Leaders recognize similarities and make connections to personal and studied history that leads to insight. Psychologist, economist, and Nobel Laureate Daniel Kahneman explained the internal, often semiconscious process with the description that “the mental work that produces impressions, intuitions, and many decisions goes on in silence in our mind.”⁵ Mathematical physicist, philosopher of science, and Nobel Laureate Roger Penrose described an unconscious development of ideas and a conscious judging of those ideas.⁶

Col. Mike Farmer, U.S. Army, is an operations officer in J-35, Joint Staff. His recent assignments include cavalry squadron commander, professor of military science and leadership, and observer controller/trainer. He holds an MS in joint campaign planning and strategy from the National Defense University, an MA in defence studies from King's College of London, and a BS in mechanical engineering from Lehigh University.

MDMP has a similar and no less human dynamic. The staff generate options through course of action (COA) development, and the commander decides. However, during the generation of options within the COA development process, just as

in means-ends reasoning, heuristics, used to simplify calculations as well as some neuropsychological flaws, limit options and inject subjectivity. Ultimately, the current COA development process within MDMP still requires brainstorming a great deal of the solution.

In contrast to the subjective development of options is the development of options based on measure and calculation that an AI-enabled process would perform. With some calculations based on the available information and data from past conflicts, it is possible to contrast the recommendations AI-enabled MDMP would have provided.

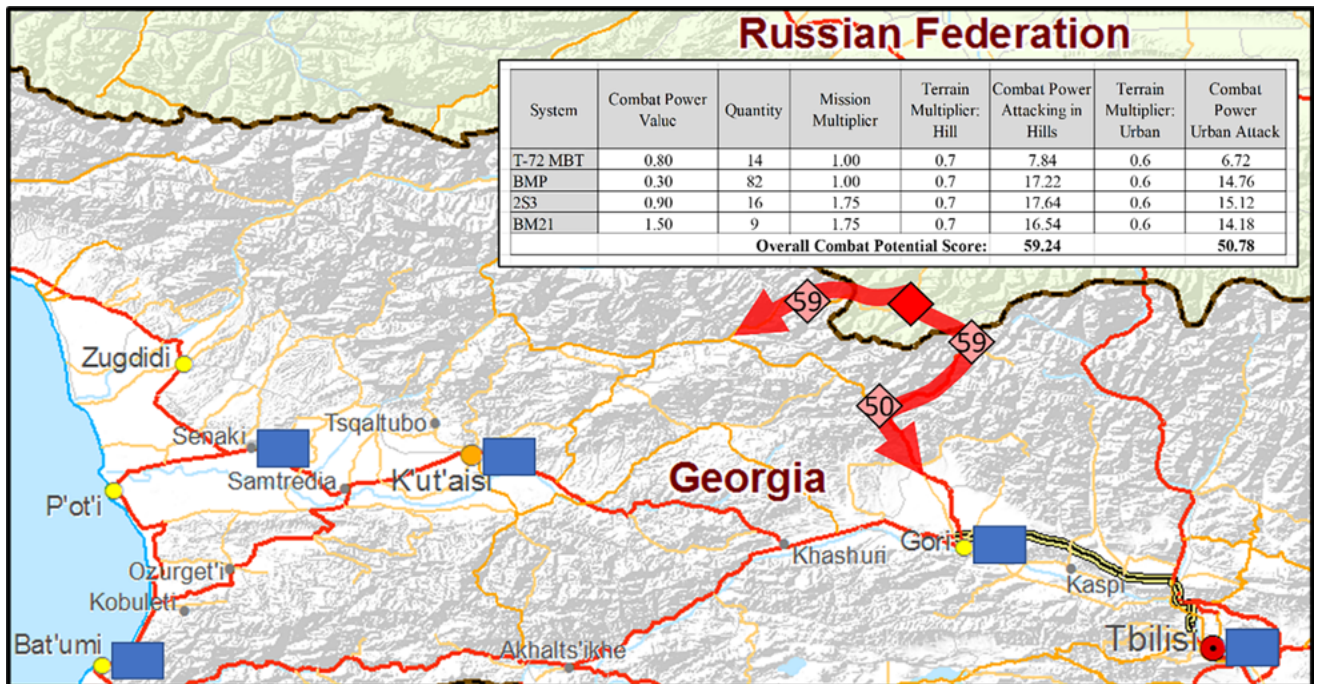
Evaluating decision-making and planning during the 2008 Russo-Georgian War provides insight into the benefit of AI-enabled MDMP when contrasted with historical decisions, actions, and outcomes. What follows is the logic and process behind AI-enabled MDMP.

If intelligence is to drive maneuver, as the saying goes, then the outputs of intelligence preparation of the battlefield must serve as a starting point for COA development, enabling the creation of a friendly COA that achieves asymmetry against the adversary and executes the actions that are most advantageous against the adversary's actions.

From the assessment of enemy forces, it is possible to determine the friendly force required based on the specific mission variables. To do this, a method of measuring the adversary's combat power is required. There are many methods of varying complexity to determine a value to represent combat power.

An AI program can make even the most tedious systems feasible, so it is not limited by complexity as staffs are, especially when time is constrained. While this example uses the theater analysis model (TAM), the TAM is not the point. Whatever the commander, staff, or doctrine recommends can be used.

Prior to the onset of the 2008 Russo-Georgian War, Russian forces were staged in North Ossetia. These forces can be translated to a combat power value by location. For example, Russian forces in vicinity of the Mamison Pass can be tallied by their component pieces such as personnel, T-72 main battle tanks, 2S3 self-propelled artillery pieces, and BM-21 multiple launch rocket systems.⁷ Performing correlation of forces and means calculations on that force yields their relative combat power based on type of mission and terrain, resulting in a value of 59 when conducting a deliberate



(Data adapted from author, with data from Alexandros F. Boufesis, *The Russia-Georgia War of 2008*; calculations based on David R. Hogg, *Correlation of Forces: The Quest for a Standardized Model*)

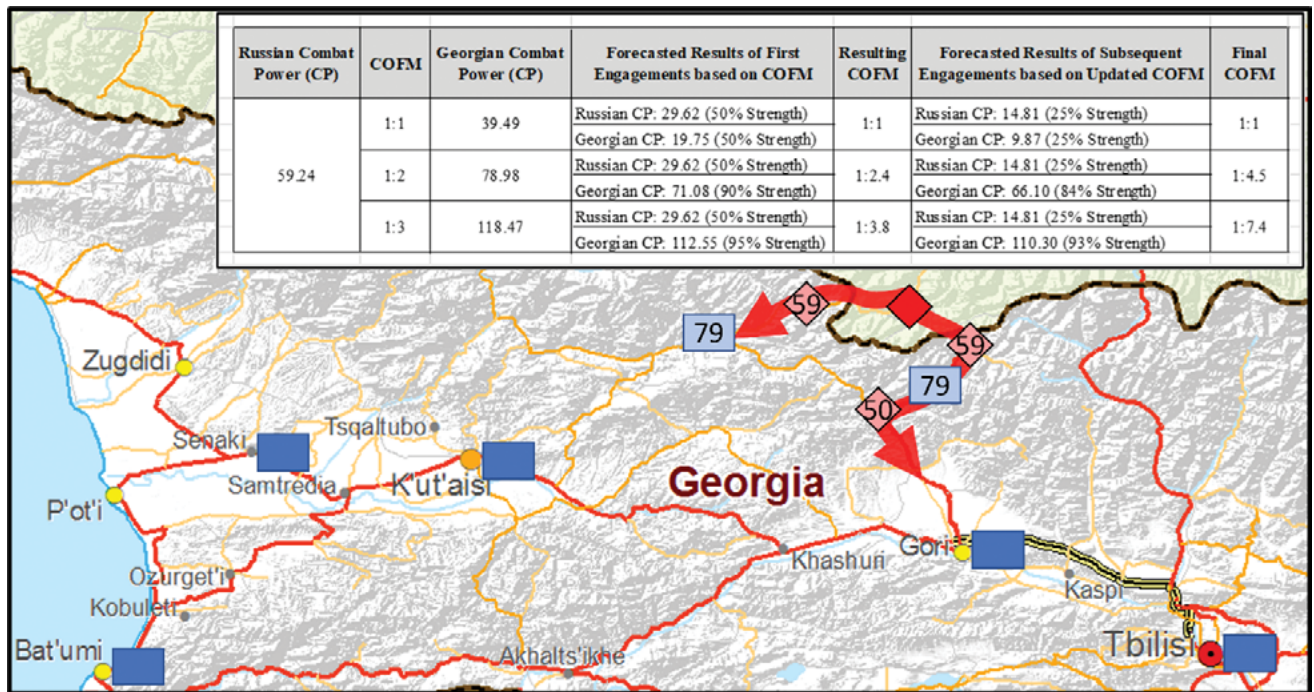
Figure 1. Russian Forces Combat Power Calculation

attack through the rolling terrain south of the Roki Tunnel or 50 when conducting an attack into the city of Tskhinvali.

The range of combat power shown in figure 1 can inform the required combat power, originating from the Georgian force locations, annotated by blue rectangles, to defeat this Russian force in various potential scenarios. The two depicted scenarios in figure 1 are the Russian use of the Mamison Pass to the west or the Roki Tunnel to the east (red line with arrow points).

Like combat power calculations, a calculation derived from computer modeling can be used to forecast casualties based on the corresponding correlation of forces and means.⁸ In the algorithm used here, combat power was adjusted for each capability or system based on terrain and type of mission. Once adjustments were made to combat power, the model described equal distribution of casualties at a 1:1 ratio of forces, with a nonlinear curve that flattens out at a roughly 4.4:1 combat power ratio, showing a rough point of diminishing returns.⁹ This calculation does not provide a percentage chance of “mission success” but can provide iterations of expected battle damage and casualties,

which shows how the combat power of both sides is affected over time. Assumptions must be made about the loss of combat power that will result in a defeat or withdrawal, but this is a great example of where human insight can be forced to provide specificity. The beginnings of insight that emerge from these calculations is that a 1:1 ratio remains attritional, while a 2:1 is likely to grow to a 2.4:1 then a 4.5:1 over two iterations. This creates a mechanism to seek favorable combat ratios in time that can decisively tip the balance. This is not a crystal ball, but are the best estimates available, able to be worked out methodically by a staff, or at machine speed by a program. Since warfare is a distinctly human endeavor, additional modifiers could be included for morale or other factors not included in this example. This appreciation for the application of combat power over time provides a key insight and can inform decision-making on the allocation of forces. At this point, an advantageous combat power requirement for friendly forces corresponding to specific locations can be generated. Figure 2 (on page 68) highlights a desirable combat power for Georgian forces if defending in rolling terrain on either Russian invasion route.



(Data adapted from author, with data from Alexandros F. Boufesis, *The Russia-Georgia War of 2008*; calculations based on David R. Hogg, *Correlation of Forces: The Quest for a Standardized Model*)

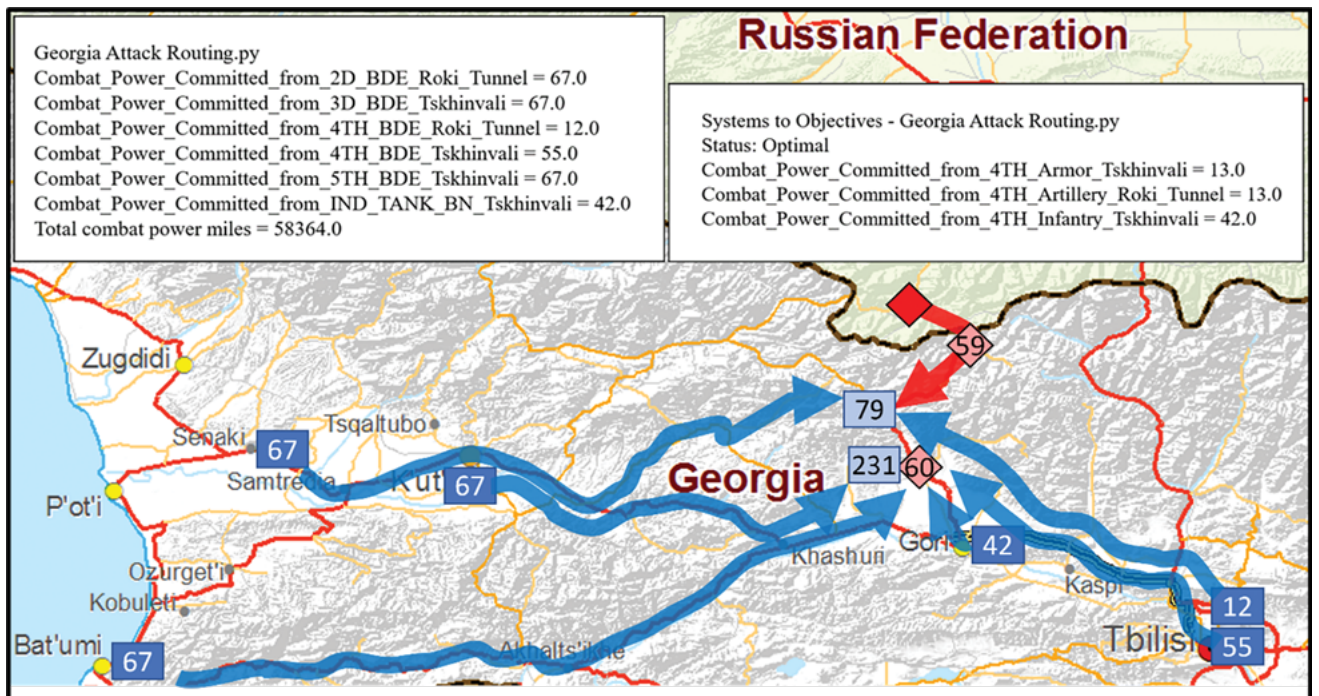
Figure 2. The Positive Feedback Loop of Force Ratios

With escalation of the situation in South Ossetia, Georgian President Mikheil Saakashvili defined three objectives for the military on 7 August 2008. He directed them “first, to prevent all military vehicles from entering Georgia from Russia through the Roki Tunnel; second, to suppress all positions that were attacking Georgian peacekeepers and Interior Ministry posts, or Georgian villages; and third, to protect the interests and security of the civilian population while implementing these orders.”¹⁰ As the secretary of the Georgian National Security Council, Alexander Lomaia, later testified, “The logic of our actions was to neutralize firing positions on the outskirts of Tskhinvali and try to advance closer to the Roki tunnel as soon as possible by circling around Tskhinvali.”¹¹ This directive and the logic that underpinned the Georgian military response provide a helpful contrast to the continued development of an AI-enabled COA in this article.

The previously analyzed Russian forces from figure 1 accounted for the first echelon forces that would later attempt to enter Georgia through the Roki Tunnel. The forces described as firing on Georgian forces

and villages were operating in vicinity of Tskhinvali and consisted of Ossetians aided by the Russian and Ossetian “peacekeeping” battalions, which were increased in number to 830 soldiers, approximately 300 mercenaries, and more substantial artillery.¹² Because of their considerable infantry, different mission, and terrain of hastily defending from the urban center of Tskhinvali, their combat potential through the same method used previously is calculated at 60.

Turning to the Georgian forces and the continued development of their most favorable course of action, the combat power and locations of the Georgian 2nd, 3rd, 4th, and 5th Infantry Brigades, as well as a separate tank battalion in Gori, serve as the start point for calculations. Their distances and travel times to Russian forces, or key terrain, can be calculated. Combining this information with the previously outlined Russian forces and the previously discussed knowledge of force ratios enables goal programming to be used to mathematically optimize the combat power routed from each Georgian location to either the Roki Tunnel or Tskhinvali to meet favorable force ratios while minimizing the overall



(Original programs by author)

Figure 3. Results of Combat Potential Optimization Python Program and Recommended Split Task Organization of 4th Brigade

distance travelled and thus minimizing both time and logistics requirements.

The results of an optimization program included in the top left of figure 3 allocate Georgian combat power sufficient to reach a 2:1 force ratio against attacking Russian forces. For the 4th Infantry Brigade, which is recommended to split combat power between objectives, a follow-on optimization was run to determine the quantities of different combat systems by warfighting function to each objective, shown in the top right of figure 3. What results is a rational choice solution grounded in doctrine and formed through the type of calculations reserved for adjudicating wargames in the later MDMP step of COA analysis. What AI-enabled MDMP has achieved is the use of detailed analysis to inform the initial development of the course of action, preventing future path dependency on a suboptimal COA.

This output is like analyzing data to create information. Merging these component pieces of information can create knowledge, to which the commander or staff can apply wisdom. Instead of possessing an element of inexplicability, as intuition would inject, this approach

is explainable and can be modified with specific commander's planning guidance.¹³ In this case, the effectiveness of armor, infantry, and artillery in both the attack and defense, as well as hills and urban terrain, were factored into the optimization, and the output prioritized artillery to the Roki Tunnel. This recommendation, while originating algorithmically, abides by human military judgment that would recognize the comparative difficulty of employing artillery in a city as well as the relative advantage of infantry. Not surprising, after action reviews noted the effectiveness of Georgian artillery when employed against the advancing Russian columns in the hilly terrain.

Again, the types of calculations that are ordinarily reserved for the later step of COA analysis are applied in the initial development of the COA in this modification. As Garry Kasparov described the benefits of teaming with a computer, so too can humans apply operational art to a concept that has already incorporated the science.

One example of the many calculations that can be integrated into a program that will reduce cognitive

burden and allow staffs to progress to higher-level human analysis is travel time. For each of the travel legs recommended, a calculation can be performed to determine a more accurate travel time based on the number of vehicles and other variables.

Comparing the output of a rudimentary man-machine-developed COA described above with what the Georgian National Security Council articulated about its general course of action highlights the advantage AI-enabled MDMP could provide. The AI-enabled recommendation directed a more formidable Georgian force to the Roki Tunnel simultaneous to the commitment of forces toward Tskhinvali. It is likely that an earlier and more significant commitment of forces to a defense in vicinity of the Roki Tunnel would have significantly disrupted the invading Russian forces, which were already canalized, as well as prevented them from moving their rocket systems within range of Tskhinvali and ballistic missile batteries through the tunnel to range further into Georgia, which proved decisive for the Russians.¹⁴

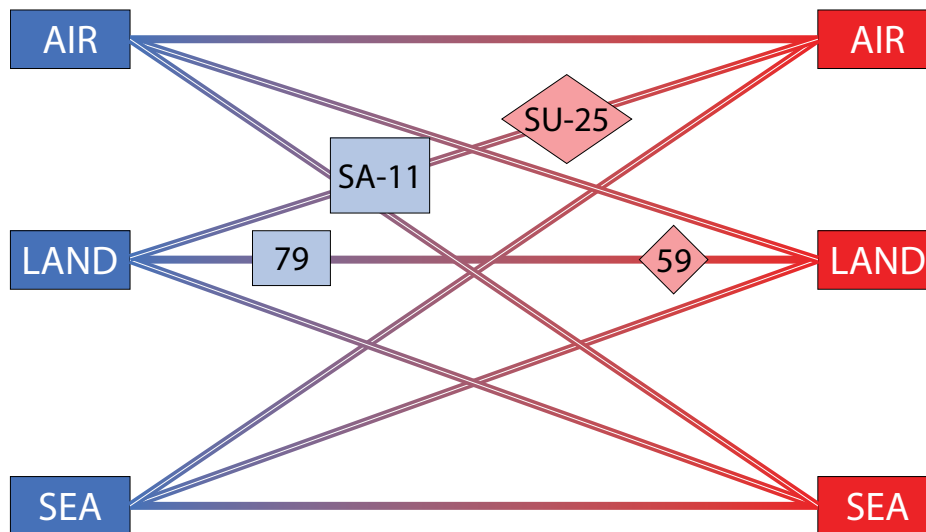
The modified method thus far has established a way to develop the “next move” based on an appreciation for friendly and adversary combat power by location, how that combat power is affected by mission type and terrain, and the time relationship between forces both during movement and maneuver in contact. These examples of ground forces must naturally extend to the application of combat power and effects from all domains. This technique enables simultaneous analysis of individual domains and provides a mechanism for the integration of cross-domain effects. Sorties of close air support may be integrated into the ground domain to provide a better combat power ratio at key locations and times in the ground fight. Additionally, air-to-air combat calculations can be carried out with ground-based air defense assets factored into the air-to-air calculations. Figure 4 (on page 71) shows the combat power for Russian ground forces attacking through the Roki Tunnel and recommended Georgian ground forces, and additionally highlights how the Russian SU-25s or Georgian SA-11 systems could be incorporated. This creates a multidimensional framework for combat operations conducted within and across domains and provides a method for synchronizing convergence. As conditions in one domain change, the impact on other domains and operations can be carried through at a level of complexity that begins to greatly outpace staff calculations.

With the core COA developed, the best integration of each warfighting function can be algorithmically identified. For example, with routes and distances to objectives, as well as burn rates and other planning factors, elements of the concept of support can be calculated.

This example has shown the ability to integrate planning for all warfighting functions across multiple domains. With sufficient detail accounting for the completion and the breadth of the COA, the explanation can now turn to depth. To create a COA at the operational level that has depth in both time and space, it must forecast several engagements ahead to achieve positions of relative advantage and seek to achieve a defeat mechanism that translates to success. Whereas the previous processes have largely been creations of algorithmically linking existing military doctrine or scholarship, they struggle to make the leap beyond immediate decisions and create operational art. For this, existing artificial intelligence provides applicable examples.

The basic minimax used in chess AI scores all board dispositions two moves ahead, action and reaction, and then compares the scores based on the program.¹⁵ The one with the worst score is pruned as an option. Having eliminated the worst future option two moves ahead, the best remaining option is selected. The pruning and eliminations process prevents a scenario where one could take a low-value piece in the immediate move but would then lose a high-value piece on the next move. The algorithm repeats the process based on each subsequent move. In many programs, the algorithm analyzes many more moves ahead, exponentially adding board dispositions to evaluate and rank potential moves.¹⁶ To ease calculations on the computer, a process known as alpha-beta pruning can remove branches when it becomes clear that they will not be the best option and stop evaluating them. Based on the demonstrated ability to value military formations based on their correlation of forces and means, it is possible to see how even simple chess AI methodology could form the basis for developing operational art.

When using a decision tree and the minimax algorithm for chess AI, the program appraises the board for most, or all, alternative futures and generates a comparable value. Russian forces initially attacking over the Mamison Pass to the west instead of the Roki



(Figure by author)

Figure 4. Multi-Domain COFM Framework

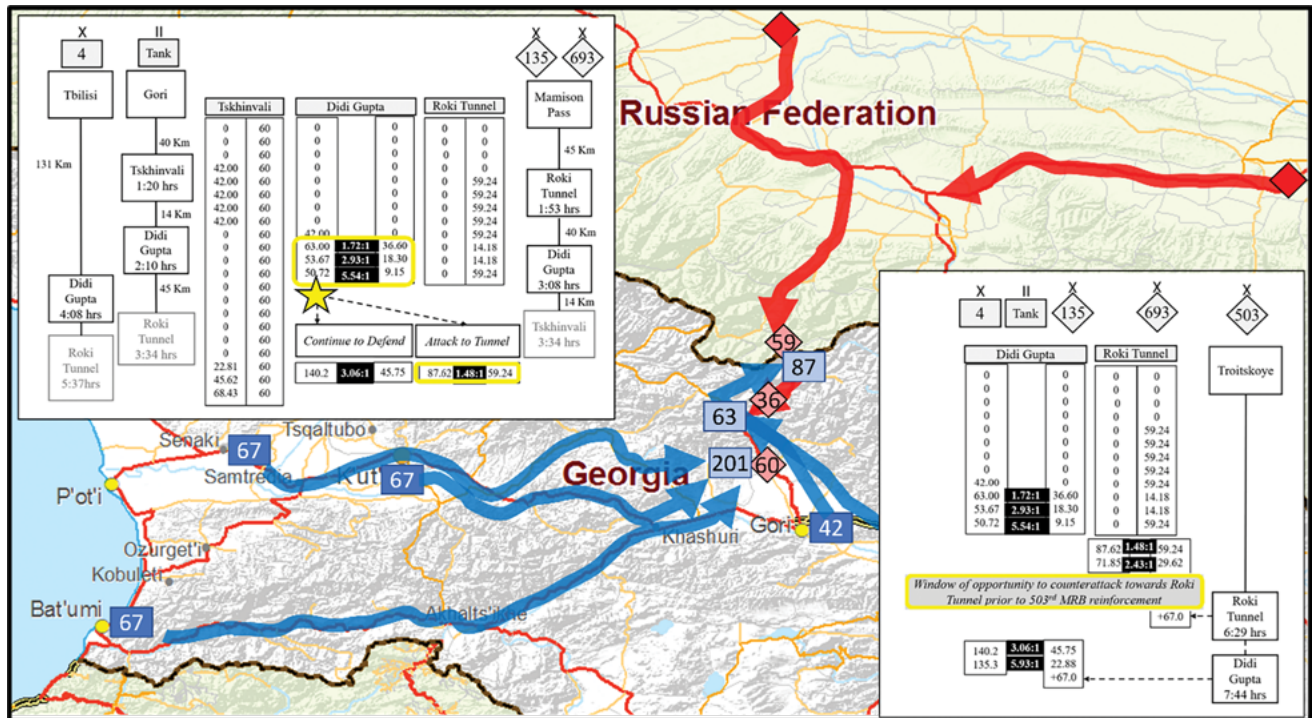
Tunnel to the east is an example of an option. This would have created a different move that Georgian forces would have needed to react to. In addition to the aggregated value of pieces in chess AI, modifiers for positions are also often used. The method of valuating the remaining pieces for each side is conceptually like the TAM calculations of combat power previously used to analyze the Russian and Georgian forces. Instead of values for individual chess pieces, combat power of military formations would be considered. This mechanism design at first appears to be attrition focused, preserving friendly combat power, removing the opponent's, and prioritizing based on value. The remarkable trait that emerges from what looks very mechanical at first is the creation and linking of favorable force ratios in time and space, which achieve asymmetry to heavily attrit the adversary and preserve friendly combat power. In short, it creates operational art.

When multiple Georgian COAs are compared in this fashion, a course of action different from what was depicted in figure 3 emerges. Due to variations in

travel time toward the Roki Tunnel and how engagements were forecasted to unfold down their respective decision trees, a change to the units directed to the Roki Tunnel was identified and is depicted in figure 5 (on page 72).

When the AI-enabled COA development process continues to search even further ahead, the Russian 503rd Motor Rifle Regiment (MRR) in Troitskye and the 42nd Motor Rifle Division and 50th Self Propelled Artillery Regiment in Khankala are identified as Russian combat power to be considered. In minimax fashion, this event further along the decision tree is considered prior to the initial decision of allocating forces between the Roki Tunnel and Tskhinvali. Once an understanding of forces in time and second- and third-order effects emerge, a nonintuitive decision to attack toward the Roki Tunnel with the tank battalion in Gori and the 4th Brigade in Tbilisi is identified due to forecasted actions with respect to Russian second echelon forces further in the future.

The original disposition of Georgian forces as depicted in figure 3 could not get to the Roki Tunnel



(Data adapted from author, with data from Alexandros F. Boufesis, *The Russia-Georgia War of 2008*)

Figure 5. Combined Russo-Georgian Decision Tree and Evolution

in time to defend there should the Russian forces commence movement at the same time. However, a favorable force was able to defend in vicinity of Didi Gupta or Java when employing the tank battalion in Gori or 4th Infantry Brigade, keeping Russian forces canalized in the hills, with sufficient combat power to forecast a defeat of the Russian attack. This defense could withstand the 503rd MRR from the Russian second echelon, but not the 42nd Motorized Rifle Division, which would be on the heels of the 503rd, depicted in the top right of figure 5. Because of this, the Georgian defense needed to counterattack to the tunnel prior to the 503 MRR's arrival to defend at the heavily canalizing tunnel if they were to accomplish their mission. With these connections emerging from the complexity, Georgian leadership could think in time and generate battle-winning insight.

The algorithmic process for establishing available COAs goes a long way to mitigate the gap created by insufficient time while introducing a level of academic rigor to MDMP that may have otherwise amounted to little more than subjective assessment,

with all the implicitly unknown dangers buried within such an assessment.

In the present operating environment, there is often no time available to develop multiple COAs, wargame all developed COAs, apply COA evaluation criteria, then identify a recommended COA. With AI-enabled MDMP, COA analysis and comparison are baked in and take maximum advantage of available technology, all before a conventional staff could gather the tools.

Merging and modifying the COA development step through the COA analysis and COA comparison steps to take advantage of the speed, power, and insights of current AI capabilities will enhance the ability to forecast multiple alternative futures and choices, enabling the commander to not just think in three dimensions but in time. Understanding time, given its increasing rarity, and having the tools to work with and through it in multiple domains, may be the greatest advantage AI provides.

Artificial intelligence tools in other sectors already demonstrate their aptitude for the task of providing quick, consistent, and accurate calculations.

To be of value, AI does not need to operate autonomously or replicate a sentient being. AI only needs to bridge the widening gap between the suitability of the current planning and decision tools and the effectiveness of human cognition in complex adaptive systems. A modest improvement to handling complexity, even one that merely reduces cognitive burden that leads to errors, will ensure a decisional advantage over unaided commanders.

Taking the implications of AI-enabled MDMP even further, AI could complete MDMP semi-autonomously following the first iteration, conducting the full MDMP process near continuously, without fatigue, incorporating every new development. A continuous AI-run MDMP would provide feedback about the current positions and actions of forces. Near real-time feedback

would enable the tracking of subordinate units with respect to current operations, control measure compliance, and progress.

Second, near continuous MDMP can anticipate branches by evaluating what COA should be executed based on the current conditions, and even forecast the setup of future decisive engagements as conditions change. Continuous AI-enabled MDMP will fight the enemy and not the plan. An AI-enabled process will have the additional benefit of integrating resources for any emerging COA, synchronizing and optimizing effects from all domains, and making the transition to a new branch plan more feasible. Such an ability would make incredible progress toward enabling forces to rapidly adapt to thrive at the edge of chaos in a volatile future environment. ■

Notes

Epigraph. Garry Kasparov, *Deep Thinking: Where Machine Intelligence Ends and Human Creativity Begins* (New York: PublicAffairs, 2017), 245.

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2. Rune Djurhuus, "Chess Algorithms Theory and Practice" (PowerPoint presentation, Oslo, NO: University of Oslo, 2013), slides 6–12, accessed 5 July 2022, https://www.uio.no/studier/emner/matnat/ifi/INF4130/h13/undervisningsmateriale/chess-algorithms---theory-and-practice_ver2013.pdf.

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5. Daniel Kahneman, *Thinking, Fast and Slow* (New York: Farrar, Straus and Giroux, 2013), 4.

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7. Alexandros Fox Boufesis, *The Russia-Georgia War of 2008: Russia's Geostrategic Ascension* (Ann Arbor, MI: Nimble Books, 2015), 45.

8. Reiner Huber, Lynn F. Jones, and Egil Reine, eds., *Military Strategy and Tactics: Computer Modeling of Land War Problems* (New York: Plenum Press, 1975), 113.

9. Modifying combat potential by terrain and mission type shows where the typical force ratio heuristics of attack at a 3:1 or 5:1 in urban operations, as well as the ability to defend at a 1:3, comes from.

10. Svante E. Cornell and S. Frederick Star, *Guns of August 2008: Russia's War in Georgia* (Oxford, UK: Routledge, 2009), 169.

11. *Ibid.*

12. *Ibid.*, 73–74.

13. The desired and acceptable range of correlation of forces and means is a great example of a commander's planning guidance.

14. Cornell and Star, *Guns of August 2008*, 174.

15. Djurhuus, "Chess Algorithms Theory and Practice," slides 6–12.

16. Bart Selman, "Foundations in Artificial Intelligence" (PowerPoint presentation, Ithaca, NY: Cornell University, 2014), slides 21–50, accessed 5 July 2022, http://www.cs.cornell.edu/courses/cs4700/2014fa/slides/CS4700-Games1_v5.pdf.

Enhancing Situational Understanding through Integration of Artificial Intelligence in Tactical Headquarters

Maj. Benjamin Scott, U.S. Army

Capt. André Michell, U.S. Army

We cannot be an Industrial Age Army in the Information Age. We must transform all linear industrial age processes to be more effective, protect our resources, and make better decisions.

—Gen. James C. McConville,
40th Chief of Staff of the U.S. Army

To meet the demands of modern battlefields, the Army must enhance tactical command posts by integrating artificial intelligence (AI) into its systems. AI presents tremendous opportunities to provide corps, division, brigade, and even battalion command posts with quantitative and qualitative advantages in situational understanding relative to potential threat formations and commanders. Properly developed, tested, and fielded AI capabilities will better consolidate, prioritize, and relate information to enhance situational understanding and enable more effective decision-making. Multi-domain operations (MDO) on modern battlefields require commanders and their staffs to fight in a multidimensional battlespace. This will challenge even the most adept staff

officers, and already units are dealing with an overwhelming amount of information. Well-designed AI algorithms and AI-enabled applications will help U.S. maneuver units better understand their operating environment and will enable a more robust common operating picture.

“Enable decision-making” is a core task within information advantage activities, and execution of this core task will enable commanders, staffs, and formations to gain and maintain information advantages. Enhanced situational understanding is a necessary but insufficient condition for commanders to achieve decision advantages; enhancing situational understanding is both imperative and achievable in the short term with currently achievable technology. AI integration into this core task will indirectly contribute in varying degrees to Army capabilities within all core tasks of information advantage activities. This article details specific current needs and recommendations for integration of AI into extant systems and networks over the next three years. The article does not and is not intended to provide detailed proposals for further development or fielding of nascent capabilities with longer-term timelines. Instead,



Capt. Sarah Miller and Tech. Sgt. Carrol Brewster, 834th Cyber Operations Squadron, discuss options in response to a staged cyberattack during filming of a scene for an Air Force Reserve Command mission video at Joint Base San Antonio-Lackland, Texas, on 1 June 2019. (Photo by Maj. Christopher Vasquez, U.S. Air Force)

the authors' feet are firmly planted in the realities of the present, immediate needs and available technology.

In the future, AI-enabled sensors, fire-control systems, delivery assets, and algorithms may create battlefields of incredible velocity and lethality where humans on the loop struggle to keep pace with machines meant to do commanders' bidding. Swarms of collection and delivery assets may someday autonomously execute missions and dynamically act to accomplish collection, delivery, and assessment while making continuous adjustments to react as events unfold. These systems and events in physical domains will be accompanied by similarly advanced employment of AI-enabled capabilities in the cyberspace domain as friendly, neutral, and threat systems interact. Such capabilities are currently not available for widespread fielding and employment, and the underlying AI technologies are not robust enough for us to seriously consider their introduction in the immediate future. In the meantime, the Army must begin integration of AI in a manner that is feasible, timely, and effective.

As *The U.S. Army in Multi-Domain Operations 2028* asserts, "The key to converging capabilities across all domains, the EMS [electromagnetic spectrum], and

the information environment is high-volume analytical capability and sensor-to-shooter links enabled by artificial intelligence, which complicates enemy deception and obscuration through automatic cross-cueing and target recognition. The intelligence refinement required for disintegration depends on five interrelated systems."¹ The five systems are as follows: wide-area surveillance, penetrating reconnaissance, standoff surveillance and reconnaissance, expendable surveillance and reconnaissance, and human networks. Each of these five systems could benefit from immediate development, experimentation, and employment of AI-enabled systems in tactical headquarters through improvement of situational understanding. Such integration would not automate decision-making but instead would enable better decision-making by human commanders and staffs. As stated in *The U.S. Army in Multi-Domain Operations 2028*, "Man-machine interfaces, enabled by artificial intelligence and high-speed data processing, improve human decision making in both speed and accuracy."²

The authors reaffirm integrating AI into the tactical headquarters and more broadly into systems

within maneuver units at large to improve human decision-making. As the Army moves to achieve this vision of warfighting by 2028—or, depending on the referenced publication, years earlier—the authors identify two key gaps in the doctrine and leadership guidance offered to set conditions for this upcoming revolution in military affairs. First, the Army lacks a means to evaluate its progress in achieving AI-enabled MDO. Second, no practical guidance has been issued to maneuver units in how to prepare for the integration of AI-enabled systems. After addressing these two gaps, the authors also propose a system the Army could build with currently available technology to enhance situational understanding in tactical command posts.

If the Army is to integrate AI into MDO, and if we are to provide a way to evaluate AI readiness, we first need to understand what AI is. In this article, the authors use the National Security Commission on Artificial Intelligence’s (NSCAI) definition referenced

in its final report and originally published by senior Carnegie Mellon

Maj. Benjamin Scott, U.S. Army, serves as Security Cooperation Division chief at U.S. Army Cyber Command after completing assignments as operations officer for the 1st Battalion, 27th Infantry Regiment, executive officer for 2nd Squadron, 14th Cavalry Regiment, and as a future operations planner for the 25th Infantry Division. Scott is an infantry officer and received his commission after graduating from the University of Tennessee. He holds an MA in military operations from the U.S. Army Command and General Staff College. His operational assignments include multiple tours in Iraq and Afghanistan as well as a humanitarian assistance mission to Liberia.

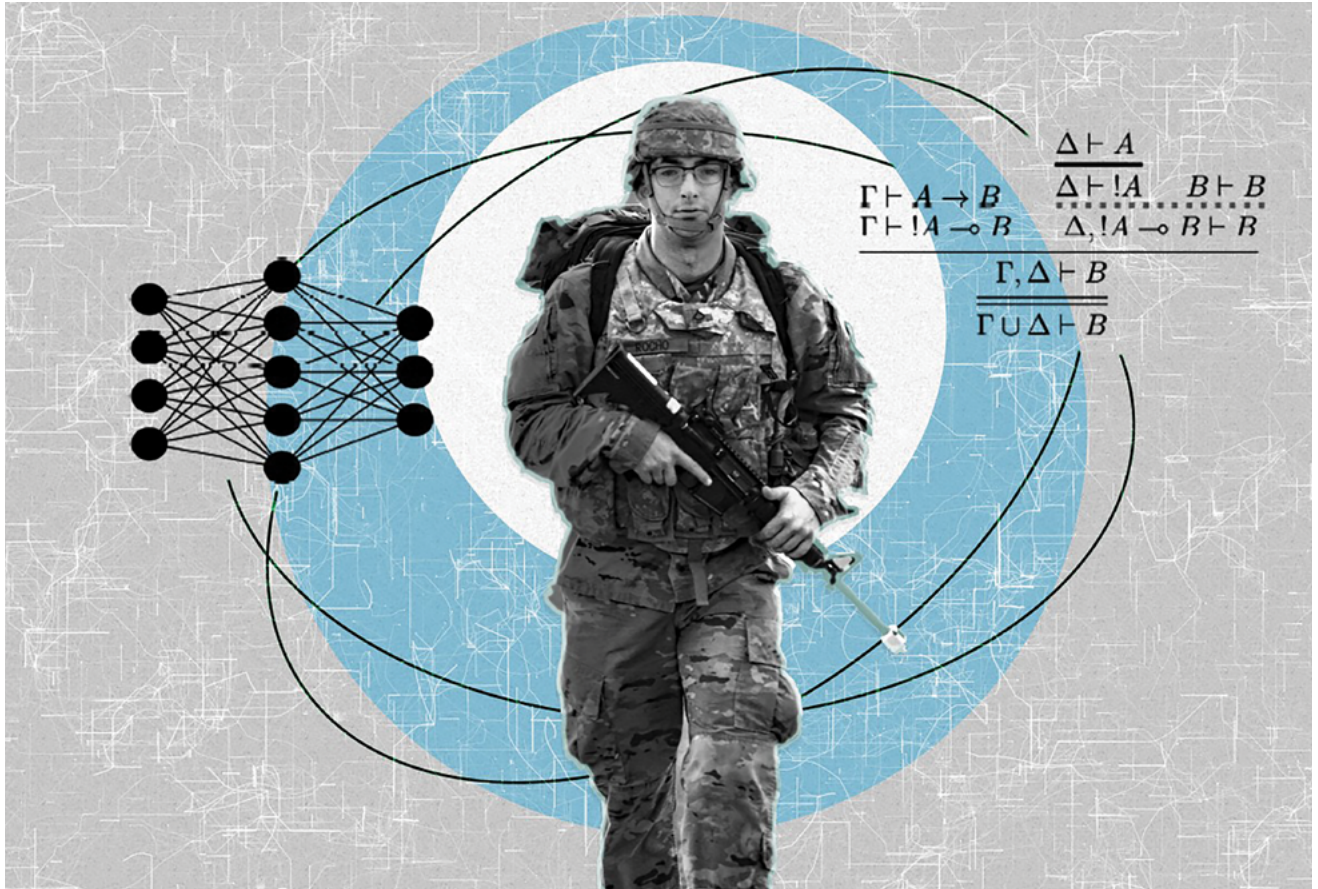
Capt. André Michell, U.S. Army, serves as a data engineer at the Artificial Intelligence Integration Center, Army Futures Command, after completing an assignment as an artificial intelligence scholar at Carnegie Mellon University. His previous assignments include serving as a platoon leader and plans officer in 1st Battalion, 27th Infantry Regiment, on Schofield Barracks, Hawaii. Michell is an infantry officer who received his commission from the U.S. Military Academy at West Point and holds an MS in computational data science from Carnegie Mellon University.

University current and former faculty members. Moore et al. define artificial intelligence as a “stack” or collection of technology layers requiring “talent, data, hardware, algorithms, applications, and integration.”³ The NSCAI’s final report places greater importance on the talent who will drive adoption and implementation of AI-enabled systems and the data that will enable its included algorithms and models.⁴ This article encourages early adoption of recommendations in the same areas because they align with current Army capabilities.

Beyond AI’s components, it is important to understand what an AI-enabled system offers a user. Using algorithms designed specifically to train AI, the AI component of an application is “taught” to identify patterns within vast amounts of data such that it can categorize or predict additional information about new data. This is intentionally broad and ambiguous; it is an abstract process that can be applied to many situations. It is limited by the need for vast amounts of *labeled data* and the need to continuously collect more. Labeled data is data enriched with identifying information about the category or value an AI component can learn to predict. Labels must be related to the desired predictive capability. For example, building an AI that can identify a tank within satellite imagery would require a dataset of satellite images labeled to identify if they contain a tank or not. A more detailed prediction will require more detailed labels, meaning if we want to predict the model of tank, labels would need to include the type of tank in the image. The quality of any artificial form of intelligence is directly related to the quantity of high-quality data available to that system.

Fielding and developing an AI-enabled system is a process, and the authors propose evaluating AI readiness in the Army similarly with four phases. These are adapted from the four phases proposed by Eric Nyberg of Carnegie Mellon University for how an organization can evaluate its readiness for and use of AI.⁵ They focus heavily on data management and organizational processes that are the foundation for creating and implementing an effective AI-enabled system. While these steps insinuate a progression, changes in circumstances beyond a unit’s control can cause it to move backward or forward in the process of AI-enabling.

The process begins with being *data science ready*. An organization is data science ready when relevant data sources are identified, accessible, and consistently



According to the U.S. Army Development Command, "Army researchers develop[ed] an artificial intelligence architecture that can learn and understand complex events, enhancing the trust and coordination between human and machine." (Photo illustration by Rudi Petry, courtesy of the U.S. Army)

managed. Leaders in an Army unit at this stage will be able to access relevant personnel, logistics, training, intelligence, and tactical data in a reliable, timely, and contextually relevant manner. Critically, a maneuver unit must consider how to do this in a combat environment. Units will need to establish processes for organizing, normalizing, and storing information in training and combat. Furthermore, data must be integrated between systems and warfighting functions. In this phase, data is complete and soldiers with skills in statistical analysis can use this data to better describe their environment, actions, and subsequent outcomes. Army units that are data science ready will have engaged leadership who understand how data is collected, maintained, and shared within their organization.

A data science ready organization will strive to become *data science enabled*, the second phase. An organization is data science enabled when correlations between multiple data sources are identified and

predictive models created from organizational data are employed to improve workflows and decision-making. Army units that are data science enabled will use data they collect, maintain, and access to enhance situational understanding, contextualize enemy and friendly actions, and predict future behaviors. Data science enabled maneuver units will collect, clean, and organize data in tactical command posts during field training exercises, command post exercises, and combat training center rotations. Soldiers will employ predictive analytics developed during preparatory training to identify enemy behaviors and react more quickly to highly dynamic, complex battlefields. Army units that are data science enabled will have invested leadership who integrate large volumes of data into the military decision-making process and rapidly adjust to changing conditions.

After using data science to enable better performance, units will pursue becoming *AI ready*, phase

three. In this phase, organizations use data science as a part of operational processes and have integrated software applications that modernize their workflows to integrate computing techniques. Leaders who will employ AI understand what processes and requirements will be used to enhance, and they are able to communicate directly with AI engineers to design and implement relevant solutions. Army units will have a practical understanding of the capabilities and limitations of AI as a weapons system. Maneuver units will collaborate with units in Army Futures Command such as the Software Factory or the Artificial Intelligence Integration Center (AI2C) to develop AI solutions that enhance their mission readiness and capabilities. Data will be shared with sister organizations and made accessible in both tactical and garrison environments, and software updates created in the rear can be pushed over Army networks to applications at the tactical edge. Army units that are AI ready will have informed leadership who command their data presence and drive the requirements process for future AI-enabled software and applications.

Finally, an organization will become *AI-enabled* when it deploys AI systems and is able to directly measure their impact on mission success. These units can employ AI in tactical environments to automate processes and deliver mission success. These systems work on mission, and in critical environments and conditions. For Army units, these are resilient applications that can adapt to dynamic network conditions and provide value when enemies disrupt or deny communications networks. Organizations at this phase are characterized by highly resilient processes and systems that adapt to changing situations quickly to achieve decision dominance on a multi-domain battlefield. These systems display critical multidimensional data and insights in a timely manner. Data collection will grow in scale and velocity as modern systems both generate and consume immense volumes of information. AI-enabled Army units will have empowered leadership who use AI to lead complex missions with innovative solutions derived from interactions with man-machine interfaces.

It is intimidating to realize maneuver units are not even data science ready today, and the process of becoming AI-enabled will require a massive transformation. This is the nature of technological advancement

as revolutionary as AI and represents an incredible opportunity for small units to embrace and influence the future of AI in the Army. Maneuver units should begin a practical response today to match the policy and doctrinal emphasis provided by Army and Department of Defense leaders. AI is an asymmetric capability wherein a relatively small investment can have outsized impacts. While this can harm large, slow-moving organizations, it can also provide opportunities for individuals and small units to have an outsized, positive influence on the entire organization. By encouraging and supporting innovative solutions from small units and their leaders, the Army can react nimbly to the disruptive impacts of AI in military affairs. An early step in encouraging this innovation is preparing the data environment for AI.

The Army also has a unique opportunity to learn from the mistakes of the larger AI community, specifically when it comes to data. As a team of AI engineers at Google wrote last year, the lack of focus on “data work” has been a significant detriment to large companies and AI pioneers who have suffered notable gaffs and missteps in deploying AI-enabled systems.⁶ By focusing organizational and cultural change first in modernizing data management processes, the Army will naturally immunize itself against some of these concerns. The nature of the Army’s mission and the dangers associated with AI-enabled systems’ mistakes exacerbate the impact of undervaluing data quality in the Army.

Similar to how the Army directs maintenance activities through exercises such as a maintenance terrain walk, units can prepare the data environment through a data health evaluation. This is an appropriate evaluation for a theater command to perform in subordinate divisions. It may also be appropriate for corps headquarters to perform a similar evaluation in its subordinate brigade combat teams. These evaluations consider how well units steward the data they generate and to which they have access. Evaluating data health is, next to talent development, the best place to begin preparation for AI-enabled systems in maneuver units.

While evaluations should be unique and planned with special knowledge of the units to be evaluated, the general concepts would be similar across units. The data health evaluation asks the following question: How well does this unit collect, clean, and manage data about everyday operations in garrison and tactical



"Tomorrow's operating environment will be filled with smart autonomous devices and platforms that create diverse and complex information signatures," according to the U.S. Army Development Command. (Image courtesy of the U.S. Army/Shutterstock)

environments? Data collection should be complete in that it describes the context, environment, action, and result of unit activities. Units will collect data well when collection is automated and integrated into all processes. Data is clean when it is consistent in its architecture, types, format, and storage location. Clean data is ready for descriptive analytics and can be understood readily through well-adhered-to documentation. Data is well managed when it is accessible, persistent, and reliable. Units that do this well will have considered how to apply the data they gather into systems and processes. Part of a thorough data health evaluation will also consider how much information is visible across staff sections and working groups. Broadly shared data encourages collaboration and builds shared understanding. Some specific behaviors this evaluation could consider follow.

Performing a data health evaluation requires, above all other priorities, an honest assessment of unit readiness in this area. As Leonard Wong and Stephen Gerras of the Strategic Studies Institute share in their

report and the authors of this article can anecdotally ratify, the Army struggles with competing requirements and incentive structures that lead to units sometimes knowingly reporting inaccurate information to meet readiness requirements.⁷ AI-enabled systems will be particularly sensitive to these challenges and as such, the Army's data health evaluation must include a mechanism to evaluate the veracity of the data it has collected. One mechanism for this can be removing some elements of human intervention. For instance, a vehicle, aircraft, or cannon can be instrumented with sensors that identify if it is functioning properly or has faults in components of its system. This has the significant challenge of adding to the complexity of these systems. Another mechanism that is in line with industry best practices would be to randomly subsample data points to reevaluate. Examples include selecting units to perform simple actions that validate their equipment's condition such as executing crew drills on a 155 mm Howitzer, conducting a



The U.S. Army is seeking intelligent vehicles to ease soldier burdens in multi-domain operations. (Image courtesy of the U.S. Army/Shutterstock)

convoy with all functioning vehicles to a rally point in the training area, or executing a no-notice record qualification on individual weapons. Requiring these alert activities to validate the accuracy of the data a unit has stored are excellent ways to ensure our AI-enabled systems are outfitted with high-quality data. Army leaders must create the space for units to report this information truthfully without fear of retribution. The Army's ability to effectively fight in an AI-enabled multi-domain battlefield depends on changing this element of Army culture.

Beyond setting conditions for and evaluating accurate data collection, there are steps units can take today to prepare for the integration of AI-enabled systems. The following recommendations apply to units at all echelons. They are firmly grounded in capabilities available today and represent the initial steps in preparing the data environment for AI-enabled systems. These recommendations will help units become data science ready.

Maneuver units must appreciate the value of the data they interact with each day by immediately stopping deletion of data from shared file systems. These "shared drive" or SharePoint systems enable collaborative efforts within and across units but also hold within them a treasure trove of unit behaviors, training exercises, and reports. Files on these systems are often deleted when units run out of space to maintain the records from previous years. To create effective intelligence, Army data scientists and AI engineers will require access to many tens of thousands of labeled data points for each AI-enabled technology they develop. This represents a relatively small dataset in the AI community, and the Army cannot afford to lose more data by thoughtlessly deleting old files. Units should direct discretionary spending funds to purchase external hard drives and perform intermittent backups of their shared file systems; to do this, units must be enabled with specific additional funding and requirements. Additionally, all officers should have the ability to read

nonsensitive files from all units at least two echelons above and adjacent to them. This will encourage collaboration and introduce immediate efficiencies while transforming our data culture to a sharing culture. When receiving support from a data scientist or AI engineer in the future, these devices should be offered as context to help create effective intelligence for the unit.

Organizations should restructure how they collect information from their subordinate units to increase the use of tabular formats like Excel. These formats are already standard for many status, logistics, and maintenance reports as well as inspection documents. Collecting this data in a tabular format will provide immediate benefits to units by enforcing data completeness in the near term. Doing so will also enable future computer-based methods to process and train AI more readily. In a tactical environment, the structure of a tabular format will help standardize documents such as intelligence collection, fires support coordination, and operations synchronization matrices. It will also create more useful and reproducible products for Army staffs while providing future computer-based systems with rich, comprehensible data about Army operations. When practical and effective, any documents or tools units use—like those described above but that currently reside in a document- (Microsoft Word) or slide- (Microsoft PowerPoint) based format—should be immediately replaced with a tabular document (Microsoft Excel). When collecting data in Excel, units should specify consistent column header names and consistent data types (numerical, time series, or text) within the documents. This transition will directly result in more robust and accurate AI systems and is a critical step to making decisions quickly. This transition is enabled when standard Army forms and documents are better structured, easier to use, and provide more useful information to users and consumers of data.

To guide AI development and requirements generation, units should collect and document how time is spent in garrison and in field training exercises. This can be a challenging, onerous task and the authors recommend two different ways units could do this. The first is to collect anecdotal information about areas or processes where data is manually copied between systems or humans are relied upon for coordination between data sources. This might be particularly useful in the tactical command post to identify areas where we rely

on soldiers to coordinate between disparate systems. The second option is for commanders to direct the chief information officer/G-6 to install and collect data via keystroke loggers and application monitoring devices on Army computers. Data scientists and AI engineers can use this information to identify inefficiencies and time-consuming computing activities to develop systems against. The raw usage data and anecdotal examples of data inefficiencies can be shared with organizations in Army Futures Command such as the Software Factory or AI2C that can then work with units to rapidly develop and field solutions.

All Army systems in the future and many of the recent past generate immense amounts of data which must be made accessible immediately. First, for any program of record that the Army considers acquiring that will generate data, the authors recommend instituting a data accessibility and storage review. The purpose of this review would be to evaluate the ability for Army personnel to access data collected and stored by this system. It is unacceptable that all but a few Army systems lack a commonly available application programming interface and the ability to support programmatic system access. Further, historical data stored by these systems is the property of the U.S. Army and as such must be made available to its soldiers and officers through industry-standard methods without requiring any civilian intermediaries. The current data environment of these systems is prohibitively difficult to develop AI-enabled systems within.

Second, the Army should initiate a review of current systems that fail to meet this standard and reconsider the requirements specified for these programs. By revising acquisition processes and reviewing currently awarded contracts, the Army will establish itself as a leader in government and private sector organizations for its standards of data quality and accessibility.

At professional military education courses, the U.S. Army Training and Doctrine Command should immediately introduce appropriate instruction in data management and usage strategies. As part of the Basic Officer Leader Course, data education should include such topics as general data collection strategies, organization of unit- and branch-specific information, and modern data visualization tools. These tools will enable logisticians to better organize unit maintenance data, intelligence officers to better synthesize diverse intelligence sources, and

maneuver officers to better report and collect data. The core principle of such education must be relevant; teach students about how this directly applies to their next job. In the Captains Career Course, this can be built on by including instruction in how to manage multiple data sources and establishing a culture of data collection. The Command and General Staff College ought to introduce a data collection elective course to educate field-grade officers in integrating authoritative data sources, managing a common operating picture, and the infrastructure required to support data collection and management. The Army War College should educate senior field grade officers to identify strategic gaps in data collection strategies and prepare them to lead with computer augmented situational awareness. Additionally, brigade, division, and corps commanders and chiefs of staff should be provided the opportunity to complete the AI2C's senior leader education program to understand and appreciate how to lead organizations with AI-enabled systems. The Army needs to adapt officer education in data collection and management techniques to prepare for the changing requirements of combat in MDO.

Combat training centers provide an excellent place to develop and implement AI-enabled systems for tactical applications. By storing labeled data on unit rotations and providing the opposing force with early versions of AI systems created for tactical command posts, combat training centers can be at the heart of AI development in the Army while also providing rapid feedback for complex systems that will be challenging to fully test and implement until the Army faces a near-peer adversary in combat. Similar opportunities exist within training conducted by the mission command training program for command post exercises.

While there is value in synergy and common lines of effort across large organizations, the Army will benefit from different units independently considering and adopting these recommendations. Over time, these independent ideas will form a stronger foundation for AI-enabled systems from the natural sharing and mixing of ideas as people move and change positions. The Army can model its creation of an environment for AI in MDO after the open-source software community sharing ideas and learning rapidly from one another's unique approaches. By developing unique solutions locally and then collaborating over time, units will identify common

challenges while also reducing the likelihood of overlooking specific characteristics or mission-specific unique elements.

Concurrent to efforts detailed above, the Army should develop, experiment with, and employ state-of-the-art technologies to enable tactical headquarters' operations. To accomplish this, the Army could begin integration of AI in training during command post exercises conducted by the Mission Command Training Program and training rotations at combat training centers. This would begin by recording data from computers used in control systems, voice from participants, and location data from combat systems. Such data would then be available to data scientists with access to operational data from a controlled environment. Using AI and natural language processing combined with details and timings of events and opposing-force actions, this data could then be analyzed to identify trends where current processes fail to meet the demands of combat. Anomalies from these trends with optimal or better performance could then be further studied to identify successful tactics, techniques, and procedures. This would fuel development of improvements to existing systems and development of additional tools to enable warfighting. An example would be analysis of a brigade combat team's reaction to activation of an opposing force's air-defense radar system. By capturing all data associated with the event and knowing precise details about the opposing-force actions, after-action analysis could be more robust to understand the technical method and details of friendly detection, communication within the staff and friendly units (both content and methods of transmission), actions taken, and effectiveness in targeting including assessment. Done iteratively with numerous units, this would enable accurate understanding of capabilities, gaps, and effectiveness of Army units. With the quantity and variety of events inherent in command post exercises and training rotations, there is a tremendous and underused mountain of available data to enhance Army warfighting capabilities.

The goal for near-term AI integration into tactical headquarters would be production of an enhanced common operational picture (COP) for echelons from brigade through corps. This will reduce friendly cycle time in operations and targeting processes while increasing decision quality for commanders. An enhanced COP would provide more accurate and detailed friendly-force

information, provide enhanced situational understanding of operational and mission variables, and enhance commanders' ability to see through the fog of war. This would be accomplished through integration of various and currently disparate systems within tactical operations centers including the Command Post Computing Environment, the Advanced Field Artillery Tactical Data System, the Air and Missile Defense Workstation, Electronic Warfare Planning and Management Tool, Distributed Common Ground System-Army, and Global Combat Support System-Army. Currently, these systems do not provide a sufficiently integrated COP on a single human-machine interface. Additionally, priority must be assigned to development, experimentation, and fielding of software and hardware that ingests data on mission and operational variables to analyze data and prioritize time-sensitive data for analysis and action by staffs and commanders.

This system, and others like it, will synchronize and integrate Army data to enable faster decision-making in complex, dynamic environments. It is a necessary advancement to fight in a modern war; however, it will also introduce more risk. In terms of system complexity, AI components are significantly more complex than software components and bring additional challenges.⁸

No AI can explain why it made the prediction it did, and the best performing forms of intelligence unfortunately are also the least understandable. State-of-the-art AI systems can provide only measures of effectiveness and accuracy to justify their use. Furthermore, the real world cannot be wholly modeled by the data an AI engineer uses when training on intelligence and there is no clean, labeled dataset for combat. This data bias must be accounted for with ethical software engineering and intimate knowledge of both the Army and AI. Current efforts to bring this technology to the Army are staggeringly small in comparison to similarly ambitious products from private sector companies. In 2022, the Army graduated and began to employ twenty AI professionals. By comparison, Google in 2016 employed approximately a full-strength corps, 41,456 people, of just software engineers.⁹ Of that number, two divisions worth, 27,169 people, are dedicated just to research and development.¹⁰ Since 2016, Google's overall number of full-time employees has more than doubled.¹¹ If the Army is to modernize its workforce by developing and fielding the AI-enabled systems it needs to fight in MDO, then it must start preparing the data environment today. ■

Notes

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Members of the 2503rd Digital Liaison Detachment (DLD), U.S. Army Central, work out of a simulated austere location 9 February 2019 during a command post exercise at McCrady Training Center, South Carolina, where they joined members of the 206th DLD, South Carolina Army Reserve, and the 151st Expeditionary Signal Battalion, South Carolina National Guard. The training provided an opportunity for these units from three different Army components to apply the Total Army concept as they established connectivity and tested their mission command systems. The sister 2501st and 2502nd DLD units provide similar support to the Eighth Army and the Republic of Korea Army. (Photo by Staff Sgt. Matt Britton, U.S. Army Central)

Mission Essential

Digital Interoperability during Multi-National Joint All-Domain Operations

Col. John Bonin, PhD, U.S. Army, Retired

Lt. Col. Mark Balboni, U.S. Army*

As attacks by multiple North Korean army divisions across the border are reported by the diverse spectrum of American intelligence assets, the situation in the bunkers at Camp Humphrey's is one of confusion. While the United States Forces–Korea (USFK) commander attempts to assess the situation, a state of confusion reigns about what is happening with the Republic of Korea (ROK) forces along the military demarcation line. Although the joint chiefs of staff of the Republic of Korea are responsible for the initial defense against North Korean aggression, the presidents of the Republic of Korea and the United States are already on the phone agreeing to the activation of Combined Forces Command (CFC) to execute its assigned defensive mission. The USFK commander's frustration skyrockets as he asks his staff about the situation at ROK's Ground Operations Command (GOC), which also serves as CFC's Ground Component Command (GCC). The USFK staff tries to explain to the USFK commander that they are awaiting a phone call from the liaison officer (LNO) to GOC/GCC, but the USFK commander is less than thrilled with that answer. In frustration, as he looks across his diverse digital capabilities displaying U.S. reporting, the USFK commander asks, "Why do I not have a digital capability to see exactly what the GCC commander sees? Why am I depending on a phone call to know what is going on like this is 1950?"

The answer to the commander's question is simple. In the name of saving less than one hundred manning positions, the U.S. Army gave away its dedicated ability to synchronize land operations immediately on the Korean Peninsula.

But long before the first North Korean troops crossed the border, the trust between ROK and U.S. forces had already been on a downward trend. The slow departure of U.S. ground combat forces had cut into the ROK military's faith that the United States remained committed to the defense of the ROK. The removal of the two digital liaison detachments (DLDs) had only been the latest in what was seen by ROK military as a lack of commitment by the United States. Until the DLDs inactivated, ROK Army senior leaders held to the belief that even though they did not have access to large numbers of American infantry and armor units, they were at least digitally connected with what they really needed from the Americans—enablers. Despite having one of the

largest armies in the world, the lack of enablers within the ROK Army is a limiting factor for their combat effectiveness. Instead of having a complete suite of communications systems to integrate U.S. enablers, the ROK Army will be forced to try to communicate the best it can with whatever means available, eventually reverting to unsecure phones and emails as the limited availability of the Combined Enterprise Regional Information Exchange System-Korea (CENTRIXS-K) below the GOC/GCC level begins to cause a logjam of communications. This interoperability issue raised itself recently in the Russian invasion of Ukraine, as Russian forces used any communication means available to try to communicate with Donetsk and Lugansk separatists as well as Chechen National Guard and Wagner group forces.¹ Communication will still occur; it just will not be secure if it is not a focused effort during peacetime.

Joint and Combined Warfighting

In developing an Army of 2028 that "will be ready to deploy, fight and win decisively against any ad-

Col. John A. Bonin, PhD, U.S. Army, retired,

is a consultant in the Strategic Landpower and Futures Group, Center for Strategic Leadership at the U.S. Army War College. He holds a BS from the U.S. Military Academy, a master's degree in military history from Duke University, and a PhD in military history from Temple University. He is a retired infantry officer with over thirty years of service and a retired professor of concepts and doctrine and Distinguished Fellow of the U.S. Army War College. He was one of the principal designers of the modular force and digital liaison detachments in particular.

versary, anytime and anywhere, in a joint, combined, multi-domain, high-intensity conflict, while simultaneously deterring others and maintaining its ability to conduct irregular warfare," the U.S. Army will

Lt. Col. Mark Balboni, U.S. Army, is a strategist serving as an instructor with the Command and General Staff College's Department of Distance Education Advanced Operations Course. Balboni's previous assignments include the 1st Cavalry Division, U.S. Army War College, and Combined Forces Command in the Republic of Korea. *He is the principal author of this article.



Eighth Army's 2501st Digital Liaison Detachment leaders present a leader professional development lecture to the First Republic of Korea Army (FROKA) commanding general and his staff at FROKA headquarters in Wonju, South Korea, 21 October 2014. The topic of the lecture was the U.S. Army warfighting functions—specifically intelligence, sustainment, and their respective centers of excellence. (Photo courtesy of U.S. Army)

remove its capability to conduct joint combined operations at a moment's notice from the active force as it removes the Active Component DLD from the Middle East and on the Korean Peninsula.² These digital capabilities have been critical in understanding U.S. partners and providing daily coordination with its allies. The capability will not be completely lost as the Army Reserve and Army National Guard will retain several of these vital digital capabilities. But who knows what the future holds? Maybe the Army will be extremely fortunate, and the North Korean regime will provide at least a month's notice to allow the Army to activate a Reserve or National Guard DLD so it can mobilize, fly personnel and digital equipment across the Pacific Ocean, and integrate with allies with whom it has never worked to execute those functions. Of course, these units will not have the developed relationships that the current Korean DLDs have, but at least they will have the digital capabilities to connect ROK and U.S. forces.

The ability to communicate and coordinate within military coalitions has been essential to martial success in Western warfare since Greek forces united under Spartan commands to defeat the Persian forces

under Xerxes.³ If communication is an obstacle, then a leader cannot effectively employ the coalition as one force, and those units become separate elements sharing the same battlespace. The integration of alliance forces under a unified command allows for the optimization of the combined force to operate as a cohesive unit. In today's modern age, this means digital connectivity between organizations to share information rapidly and efficiently across the warfighting functions. Homogenous organizations that only consist of US Army units do not require additional communications infrastructure to communicate within its organizational structure as the systems are designed to work together. But when allies are added to the force, the additional communications structure is required if there is any intent for the organization to function as a collective unit. Because each nation buys its own digital systems to meet its individual requirements, there needs to be a digital bridge that connects the U.S. digital systems with the digital systems of its allies and partners.

The U.S. Army currently utilizes DLDs to fulfill the functions of crossing the digital divide. DLDs

Table. Levels of Interoperability

Level	Risk
Level 0 (Not interoperable)	Unified action plans (UAPs) have no demonstrated interoperability. Command and control (C2) interface with the Army is only at the next higher echelon. UAP formations must operate independently from U.S. Army formations and operations.
Level 1 (Deconflicted)	U.S. Army and UAPs can coexist but do not interact. Requires alignment of capabilities and procedures to establish operational norms, enabling UAPs and the U.S. Army to complement each other's operations.
Level 2 (Compatible)	U.S. Army and UAPs are able to interact with each other in the same geographic area in pursuit of a common goal. U.S. Army and UAPs have similar or complementary processes and procedures and are able to operate effectively with each other.
Level 3 (Integrated)	U.S. Army and UAPs are able to integrate upon arrival in theater. Interoperability is network-enabled to provide the full ROMO capability. UAPs are able to routinely establish networks and operate effectively with or as part of U.S. Army formations.

(Table created from Army Regulation 34-1, *Interoperability* [2020])

are table of organization and equipment units that have larger strategic implications. Not only do DLDs provide essential systems integration with U.S. allies to drastically improve digital operational awareness, but they also show the commitment of the U.S. Army to its partners that it is willing to share what it knows and that it is ready to support its operations as part of its coalition. The communication also works the other way as well, as U.S. forces gain a better appreciation for what the allied force sees.

Displaying commitment to a partner nation is essential to interoperability. Seeing the DLDs' equipment set up and the soldiers working hard to support U.S. allies reinforces that the United States is committed to their success. Partner forces who have access to DLDs are quickly able to understand that they also provide a secondary benefit of having a stronger advocate for the partner nation in U.S. forces. LNOs are fantastic but often do not carry the same amount of weight with a partner as the commander of a DLD and his supporting staff. Green tabs mean something in the Army, and they do to U.S. allies as well.

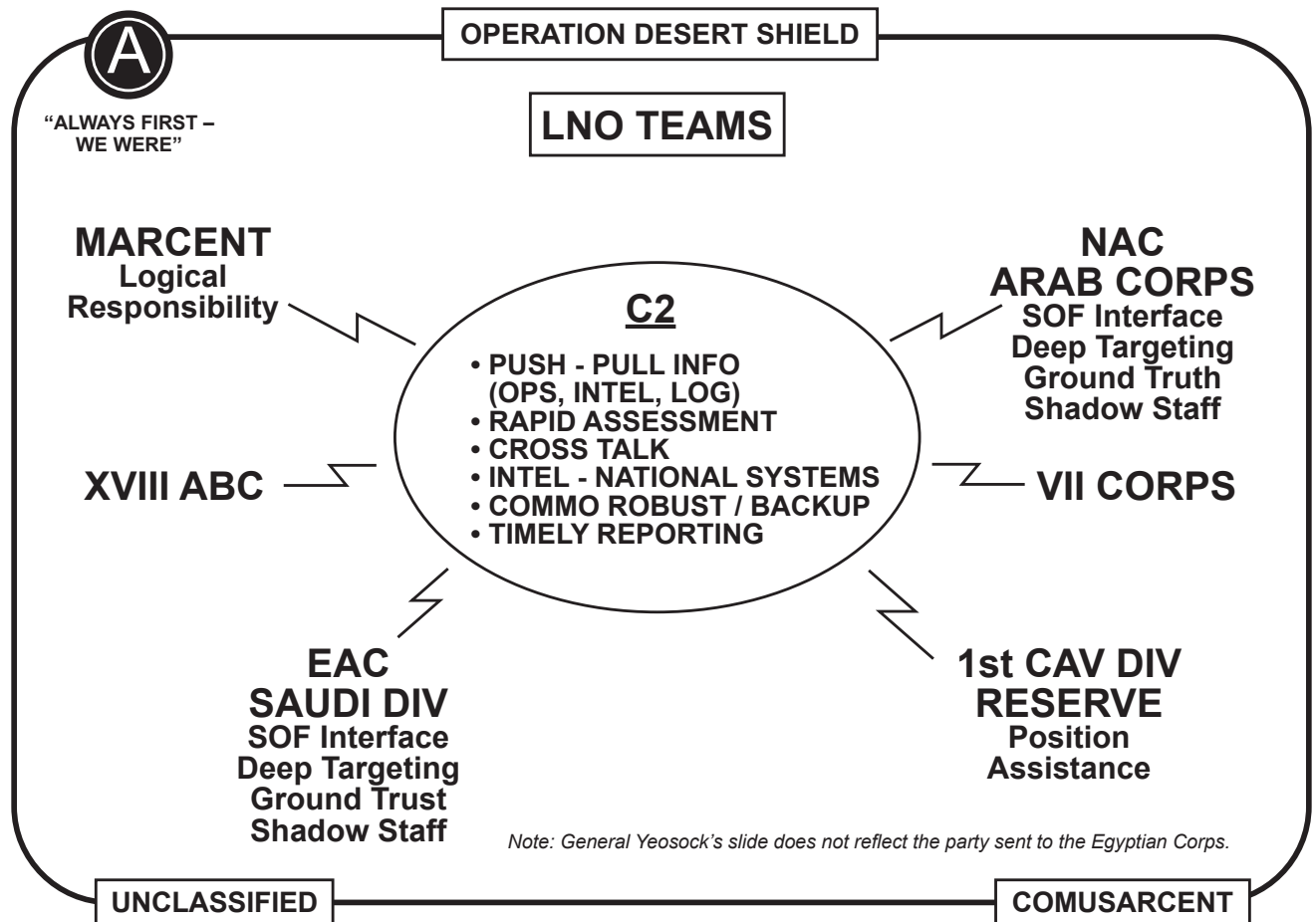
The DLD is the Army's current method of enabling digital interoperability to enhance operational understanding. But what are DLDs? Why are these little-known units so important to the Army's ability to ensure interoperability during combined operations? Why is it essential that this digital capability remain within the Active Component? Because if the Active Component does not conduct the function, then it often does understand and appreciate it

because it cannot have it today. This results in DLDs becoming afterthoughts until they really need those functions to conduct combat operations. But by then, it will be too late, and the United States will have wasted time, effort, and opportunity that it will not get back.

The Mission and Functions of Digital Liaison Detachments

The requirement to provide digital support functions is directly aligned with Army Regulation 34-1, *Interoperability*, and how the Army plans to integrate with its partners.⁴ While the ideal would be a "plug and play" of like systems, this is still a connectivity aspiration for the far future. Using the levels of interoperability as a guide, it becomes quickly evident for the requirement of digital liaison functions in level 1 (deconflicted) and level 2 (compatible) as we move toward integration (see the table).⁵ We are likely to see slow progression up the levels as we work through the national digital connectivity, national caveats, and trust challenges that stand in the way. This is not surprising as our current digital architecture barely has the Active Component level 3 (integrated) with the Army Reserve and National Guard, let alone with the other services or other nations.

Army Techniques Publication 3-94.1, *Digital Liaison Detachment*, describes the mission of the DLD, which is to provide digital liaison capability to Army units with allied and multinational forces as well as other U.S. services. DLDs also provide functional area expertise, digital



- C2**—command and control
- EAC**—echelons above corps
- MARCENT**—Marine Corps Forces Central Command
- NAC**—Northern Area Command
- SOF**—special operations forces
- XVIII ABC**—XVIII Airborne Corps

(Figure from Richard Swain, "Lucky War": Third Army in Desert Storm [U.S. Army Command and General Staff College Press, 1994])

Figure. Operation Desert Shield Liaison Teams

information management, communications interface, and thirty highly qualified U.S. Army subject-matter experts, and any required additional signal personnel, who are capable of further enabling interoperability by providing access to U.S. Army mission command systems as well as advice and guidance on both the systems and how the U.S. Army doctrinal functions. DLDs ensure interoperability by performing the liaison function provided by traditional liaison officers but further enabled by its crossfunctional staff who can advise across the warfighting functions. They serve as the information exchange and coordination center for bringing U.S. Army capabilities to the partner organizations.

The Genesis of Digital Liaison Detachments

While the use of liaison officers has been a long military tradition, the modern use of liaison teams equipped to provide systems capabilities comes from the Persian Gulf War. As the American military became more technologically driven, it needed to be able to share its vision of the battlefield with its partner nations to improve the overall coalition common operating picture. Designated by Third Army (now U.S. Army Central Command [ARCENT]) as mobile liaison teams, these ad hoc mobile liaison teams provided combat and combat support functions to decrease confusion and misunderstanding across

the coalition.⁶ Not only did they help frame U.S. operations for their coalition partner commanders, but they also showed the willingness and commitment of Army resources directly to the support of coalition partners. They allowed ARCENT to have a better understanding of the units that the mobile liaison teams were supporting as well, completing the information loop on ground truth from ARCENT's perspective instead of what the coalition partners were saying in the higher-level briefs. The organization of the mobile liaison teams were viewed by Lt. Gen. John Yeosock, then ARCENT commander, as one of the essential elements for the coalition's success during the Persian Gulf War (see the figure on page 88).⁷

Because of the success of these mobile liaison teams, the Army decided to permanently maintain the capability to provide liaison support to its allies and sister services when conducting joint and combined operations. The use of the mobile liaison teams with added digital capabilities started to spread across the Army as commanders wanted that capability within their organization to support and encourage digital information sharing. Eighth Army in Korea did not need this capability because it was already there, long before the Persian Gulf War.

Since the 1970s, combat support coordination teams were part of the table of distribution and allowance organizations assigned to Eighth Army with the added benefit of joint augmentation.⁸ Each of the ROK's three field armies had a combat support coordination team assigned to provide coordination and liaison back to U.S. Forces Korea, Eighth Army, and eventually in 1979, Combined Forces Command. The First and Third ROK Armies that would eventually become GOC/GCC were tactically focused on defending against North Korean threats, while the Second Field Army transitioned to the Second Operational Command with rear area force protection and sustainment missions of the combined rear area. The combat support coordination teams provided coordination between ROK and U.S. forces but without digital equipment until they were dissolved in 2008 to make way for the current DLD structure.

How They Are Different from Normal Liaisons

As we look across the levels of interoperability, the need for digital connectivity with our partners

is clear. Level 0 (I-0) is the normal level when the U.S. Army is operating with most armies around the world in which we do not have a long-standing relationship and coordinated processes for digital communication transfer. Only through national-level engagements, usually through the theater army, is there any command-and-control connectivity with a partner nation. Since each sovereign nation's military's duty is to execute its own national policy, the hope that they will all be utilizing U.S. Army standard communication equipment is a fantasy at best and negligence at worst. Normally, small liaison teams exist here as they coordinate to assist in developing strategic and upper operational situational awareness, but they lack the digital systems required to provide a more complete view of both the partner military and U.S. military operations, especially at the tactical level.

DLDs help bridge the gap with level 1 (I-1) and level 2 (I-2) where they serve as the crossover between the partner nation's systems and the U.S. Army systems so basic situational awareness and understanding can be achieved. Even if the partner does have rudimentary digital systems, the challenge of utilizing systems that can communicate across national caveats and restrictions ensures that U.S. Army forces often cannot directly talk to its partners on any system with even the most basic of security protocols. This quickly leads to the threat of operational security leaks as the Nation's attempts to communicate through any means necessary to ensure that the communication get through, even if unsecure. DLDs help prevent the undesired spillage of information by providing that secure means of communication between U.S. allies and the United States while preparing for and then conducting combat operations.

The DLDs can cover the communications gap by utilizing the mission command systems that are dedicated to the DLD to ensure communication access across the warfighting functions. The capabilities of these systems to bridge the digital divide provide an essential function that the LNOs by themselves cannot. Even more important than the digital systems themselves are the trained operators who are subject-matter experts in their assigned systems. Instead of trying to piece together whatever equipment and personnel are

available from an already understaffed headquarters, the DLD has its own dedicated personnel and equipment that do not pull from the U.S. Army headquarters they are supporting. This prevents the DLD from being an afterthought as a liaison team within a larger headquarters in which they need to compete with the theater or field army staff leads for personnel and additional equipment to provide a like capability. Currently, the 2501st DLD's integrated digital mission command systems are essential in providing near real-time situational awareness to the ROK GOC/CFC GCC as the supported headquarters.⁹ Those mission command systems cross the gamut of warfighting functions and include operations/maneuver (Command Post of the Future and Blue Force Tracker), intelligence (Distributive Common Ground System-Army), fires (Advanced Field Artillery Tactical Data System, and Air and Missile Defense Workstations), and sustainment (Battle Command Support and Sustainment System). This information is vital to decision-makers throughout USFK and the CFC as it assists in closing the system's interoperability loop between partners in a challenging environment.

Korean Peninsula-Specific Challenges

The functions that the DLDs provide are essential in the Republic of Korea. The 2501st and 2502nd DLDs are daily clear indicators to our ROK allies that the United States is just as committed to defending the Republic of Korea as it has ever been. Because the families of all South Korean military personnel live within artillery and rocket range of North Korea, ROK personnel can view that the United States is not as committed because their families are not directly threatened as well. By sharing our digital capabilities, we are not only enhancing our digital interoperability, but we are reinforcing that we are committed to the safety and security of the ROK as a room full of digital mission command systems is more comforting than an LNO team at their individual laptops.

Another issue that arises is the technological capability and systems architecture of the ROK Army's tactical formations. While the ROK is one of the most technologically advanced countries in the world, the majority of the ROK Army consists of conscripted light infantry forces that lack digital compatibility within

their own formations, let alone with their U.S. partners. While unlikely that the U.S. Army will ever be able to field and provide a DLD to every ROK division due to the sheer number of divisions, the United States has utilized DLDs within division formations when exercising with some of its NATO allies. While all ROK divisions may not get them, there may be select times during combat operations when a ROK division would need to be augmented with a DLD to support the accomplishment of specific missions that require extensive use of U.S. enablers. While the DLDs currently in ROK would likely be overwhelmed with their current taskings, activated and deployed Reserve DLDs could easily excel at that type of task.

Overtasking of the Multitasked Eighth Army

By removing the DLDs, the responsibility for conducting liaison coordination will revert to an already task-saturated Eighth Army. What is the actual likelihood that an overwhelmed Eighth Army is going to be able to maintain the existing digital interoperability if it must do it out of its own hide? What are the chances that Eighth Army is going to be able to put the talent and equipment required to ensure the successful coordination with ROK forces while it tries to accomplish its own overwhelming requirements?

Every senior U.S. headquarters assigned to USFK already fulfills multiple roles, and Eighth Army is not any different. Executing both administrative and tactical functions, Eighth Army is already overtasked and does not need the additional requirement of providing members and equipment of its own undermanned staff to support the digital liaison functions currently conducted by the existing DLDs. As the Army forces (ARFOR) headquarters, Eighth Army is responsible for the administrative support of every Army member on the Korean Peninsula, including the downtrace units such as 2nd Infantry Division and its brigades as well as all other Army units and the Army personnel assigned to USFK, UNC, and CFC. This accounts for roughly two-thirds of all U.S. military personnel on the Korean Peninsula. Eighth Army is also responsible for the coordination back to Headquarters, Department of the Army, which it works through U.S. Army Pacific. It is through this relationship that Eighth Army coordinates for resources to conduct and support its assigned tasks



The 2503rd Digital Liaison Detachment (DLD) and its Army Reserve counterpart, the 206th DLD out of Columbia, South Carolina, work together for the first time on 2 March 2018 at the Mission Training Center on Shaw Air Force Base, South Carolina. These units provide equipment and personnel to ensure digital interoperability between U.S. forces and foreign allies. (Photo by Staff Sgt. Jared Crain, U.S. Army)

that it receives from its multiple higher headquarters.¹⁰ This connection is a vital relationship to the success of Eighth Army and of USFK, but it does take time and effort to ensure the success of this coordination to ensure that Eighth Army has the personnel and equipment required to support and execute both its peacetime and wartime roles.

This brings us to the wartime missions that Eighth Army will have to accomplish. While its workload will include the tactical missions it is assigned as a field army or a joint task force, Eighth Army will also face a drastic increase in administrative responsibility from Eighth Army's vital role as the coordinator of the reception, staging, and onward movement of all Army assets deployed to the Korean theater of operations. And, the administrative responsibilities that Eighth Army does every day will not magically disappear but must be maintained even during combat operations but with more personnel and more challenges.

One of the huge challenges with tasking Eighth Army to provide separate LNOs to replicate the digital interoperability function is that the unit is already massively overtasked with its current responsibilities. A simple understanding of the roles of the Eighth Army commander can show how U.S. forces in the ROK are already an economy of force mission even before the active DLDs inactivate. First, start with the three previously mentioned roles of field army commander, JTF commander, and ARFOR commander. Then add on the Eighth Army commander's individual additional responsibilities he has as the deputy commander for GCC when CFC is activated. And then add to the joyous confusion with the Eighth Army commander also as the CFC chief of staff. With these responsibilities already consuming all the Eighth Army commander's time, when is he or she supposed to focus on selecting and ensuring the training of part of his or her staff to take over the digital liaison functions from the DLDs when they inactivate?

Cooperation between the ROK Army and U.S. Army

DLDs are some of the cheapest methods for maintaining positive military relations between the U.S. and ROK forces in terms of the cost and benefit to the U.S. Army. While requiring only minimal human and material support, the DLDs raise alliance situational awareness and reinforce U.S. commitment to the ROK. This vital asset consistently goes unappreciated, especially when things are going smoothly. As already stated, one of the issues is that Eighth Army, USFK, and CFC are all so incredibly busy doing their day jobs that they have little time to appreciate the coordination that the DLDs are doing. The only time that the DLDs are remembered is during the biannual exercises or U.S. key leader visits to their ROK headquarters. Once the great work of the DLDs is congratulated, it is just as quickly forgotten until the next exercise or visit.

Underappreciated is that the DLDs routinely have a better understanding of what is going on in their partner headquarters than just about any other organization because they see their ROK partners every day. DLDs can provide detailed answers that LNOs by themselves are not going to be able to answer with as much depth because they lack both the mission command systems and the technical and tactical expertise to engage with their ROK partners across all warfighting functions. This relationship also provides a benefit for the ROK side as well. ROK organizations with an attached DLD can establish relationships with U.S. Army personnel who can provide instantaneous digital awareness beyond discussion-focused LNOs. While they can hold conversations with their ROK partners, LNOs often lack the digital infrastructure to provide extensive situational awareness. Verbally explaining U.S. operations to ROK Army leaders is drastically less effective than explaining the situation to them in great detail using the most up-to-date common operating picture for U.S. forces in the Republic of Korea on actual U.S. mission command systems.

When compared to units such as a brigade combat team or a THAAD battery, the DLDs also provide reassurance at minimal political cost. While DLDs won't be shooting down North Korean missiles, they do provide peace of mind to the ROK Army, ROK JCS, and the ROK people that the United States is committed to the defense of the ROK. While additional U.S. combat forces and THAAD batteries are touchy subjects regionally,

there have not been any known complaints from regional competitors regarding the deployment of the DLDs on the Korean Peninsula.

Maintaining Situational Awareness of the Main Effort (The ROK Army)

It must be remembered that during peacetime, ROK JCS has command of all ROK Army units through Ground Operations Command (GOC). The USFK commander has no authority over GOC as that it is a ROK JCS subordinate unit. Likewise, the USFK commander has no authority over CFC's Ground Component Command in his role as the USFK commander, though that same headquarters fulfills the role of the GCC for the CFC commander. Outside of exercises and planning, CFC is purposefully limited in what it can do during armistice so there is limited CFC oversight of GOC/GCC. The GOC/GCC commander is a ROK Army four-star who has a ROK GOC deputy and a U.S. Army three-star, the Eighth Army commander, as his GCC deputy.

The current strength of the ROK Army is its size. While efforts to upgrade and modernize the capabilities within the ROK Army are ongoing, the bulk of the force remains some twenty-five divisions, primarily light infantry. These organizations are light on communications technology compared to their American counterparts so the ability and requirement to communicate across domains with ROK forces are pushed to higher echelons of command. That information is then centralized through the currently eight, but soon to be six, corps headquarters to GOC/GCC. It is at this level where the true coordination to achieve interoperability occurs between ROK and U.S. ground forces.

What Will Happen When the Korea-Based DLDs Inactivate

Trust is the fundamental challenge in conducting combined operations, and interoperability is never easy. Even in the best of circumstances where nations share a common language, there are still cultural gaps that must be bridged to minimize friction. Within the context of the Korea challenge, drastic cultural differences and language barriers add to the confusion.

Alliances are always tricky, even more so when most of the U.S. personnel are on short-duration assignments; they only have a limited amount of time to grasp and

understand Korean culture and develop relationships with their Korean counterparts. Trust with anyone is earned and not a given right—even more so when the lives of their fellow soldiers, their country's sovereignty, and even their own families are on the line with every decision made.

Internal to the U.S. Army, an issue will arise with the loss of the Active Component DLDs. With the inactivation of the two DLDs in the ROK and the CENTCOM-focused 2503rd DLD, there will be no DLDs within the Active Component. This will likely result in a cascading repercussion on the DLDs overall. The Korea-based DLDs are arguably the most established of the DLDs as they have developed relationships and interactions with their coalition partners daily in a mature theater. This allows for the testing and adaption of tactics, techniques, and procedures for how the DLD is employed with partner forces. Reserve and National Guard DLDs do a fantastic job of accomplishing their assigned mission, but there tends to be little time for reflection on continuity of operations as units transition on and off exercises and the personnel are on to the next mission.

Penny Wise but Pound Foolish

As *Chief of Staff of the Army Paper #2* discusses, competition requires investment.¹¹ The long-standing support of the United States to the Republic of Korea has continued to pay huge dividends in developing a reputation that the United States is a willing partner, but it must be constantly reinforced through deliberate investment of vital Army resources. This becomes even more important as the Army continually adapts its force posture in Korea. Organizations such as DLDs provide unique functions and leverage with our ROK allies that LNOs by themselves do not bring to the table. DLDs are force multipliers far beyond their individual numbers in one of the only places in the world where the United States does not provide most of the ground forces to a combined force. And if the ROK is the best-case example of working with an integrated partner, what happens when the United States is suddenly forced to conduct

joint multi-domain operations with a nation that it has not worked with before?

When the U.S. Army considers its role regarding cooperation and competition in Korea, it seems to focus on units that look impressive tactically but have limited cooperation value and almost nothing to do with actual interoperability instead of on units that support interoperability daily. The advantage to the forward-stationed DLDs is that they currently have set mission requirements so they can be tailored to fit those requirements. The other digital liaison detachments do not have the luxury of focusing on a single mission.

The DLDs have not drastically evolved since originally approved in 2009, so there is an opportunity to enhance interoperability in fields that have been neglected but are vital to interoperability success. Maybe instead of inactivating the DLDs, the Army should consider expanding DLD capabilities to include cyber, aviation, engineering, and SOF personnel to further enhance interoperability across multiple areas. At the end of the day, maybe the DLD is not the answer to solving the digital coordination challenge. Maybe the existing DLDs need to morph their structure to better meet the constantly evolving interoperability challenges. In the Korea scenario, perhaps the 2501st DLD becomes the Combined Digital Operations Liaison Center to coordinate CFC operations and enhance defensive and offensive interoperability. Maybe the 2502nd DLD evolves from its current standard DLD structure to focus on being the Combined Digital Rear Operations Center to support the functions of 2nd Operational Command in securing and maintaining the combined rear area.

As we move forward in our interoperability efforts for the future force, the DLDs may not be the long-term answer. But whether the active DLDs disappear in the future or not, the requirement to conduct the essential digital coordination to enable interoperability in the conduct of strategic landpower will not be going away any time soon. We can either invest ahead of time and set ourselves up for success or we can play catch up after the bullets start flying. ■

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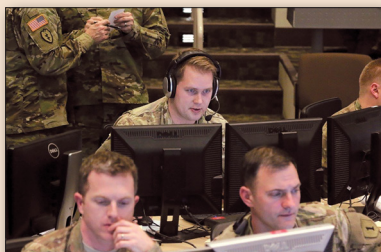
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A 1st Infantry Division battle captain sees Command Post of the future during a division command post exercise 27 January 2016 at Fort Riley, Kansas. (Photo by Master Sgt. Mike Langley, 1st Infantry Division (RMC))

Building Digital Lethality

Capt. Jonathan Stafford, U.S. Army

The staff's primary means to affect the battlefield is the with an M2 heavy machine gun. It is called the Ready Fighting Vehicle. Instead, the staff bring to bear traditional skills and experience enhanced by a mix of digital systems to aid the commander in the exercise of mission command.

While there are many differences between traditional lethal weapon systems and digital systems, a key distinction is that there has not been a program established for digital systems to take untrained individuals and train them to operate to standard as a crew, section, and unit.

To remedy this gap, the Mission Command Center of Excellence (MCCCE) at Fort Leavenworth, Kansas, developed a framework of ten digital training tables. The 1st Infantry Division (1ID) took those tables and created a "digital gateway" program that led to a dramatic increase in the unit's ability to support the commander's exercise of mission command. The plan focused on using command emphasis and fostered an environment that encouraged continuous and integrated digital systems use in training to prepare for operations. The training significantly enhanced 1ID's proficiency in mission command.

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For those interested in additional information on digitizing initiatives, see "Building Digital Lethality" from the January-February 2017 edition of *Military Review*, available online at https://www.armyupress.army.mil/Portals/7/military-review/Archives/English/MilitaryReview_2017228_art015.pdf.

Modernizing Tactical Military Microgrids to Keep Pace with the Electrification of Warfare

Maj. Nicholas Barry, U.S. Army
Surya Santoso, PhD

The genius and inventor Nikola Tesla best described the end state of the ongoing electrification of warfare near its inception. In 1900, he said, “The ideal development of the war principle would ultimately lead to the transformation of the whole energy of war into purely potential, explosive energy, like that of an electrical condenser. In this form, the war-energy could be maintained without effort; it would need to be much smaller in amount, while incomparably more effective.”¹ He described the logistical, efficiency, and effectiveness improvements promised by the electrification of all aspects of warfare.

The process began thirty-five years prior to his statement, with the adoption of the telegraph during the U.S. Civil War. For the first time, leaders could receive near real-time reports across a wide battlefield, a revolutionary development. In those days, burning coal provided the energy for electricity generation. Since then, electricity has fundamentally altered human society and warfare. Today, the electrification of warfare is accelerating at an undeniable rate. The burning of diesel fuel and consumption of disposable

batteries power today’s military electronics. The U.S. Army recognizes the critical logistical vulnerabilities, pollution, and inherent limitations associated with these dependencies. Thus, the U.S. Army seeks to divest its dependence on diesel fuel and disposable batteries while simultaneously continuing the enhancement of its capabilities. Wonderous innovations such as augmented reality vision devices, autonomous resupply robots, artificial intelligence, electric combat vehicles, and directed energy weapons are in various stages of research, development, and deployment. To support these innovations, the U.S. Army’s electrical power systems require modernization. Among these innovations, electric combat vehicles and directed energy weapons will prove to be the most disruptive to the U.S. Army’s current energy systems.

In 2020, the U.S. Army Futures Command started developing a plan to create electric combat vehicles (ECVs).² ECVs offer the advantage of fewer moving parts, improved reliability, and reduced maintenance costs. They also offer instant torque, useful for traversing rough terrain and reduced thermal and acoustic signatures.



An engineer works on a hybrid power system on 16 June 2020 at Aberdeen Proving Ground, Maryland, as part of the Army's ongoing research in tactical microgrids, which will provide resilient and efficient power for soldiers in the field. (Photo by Daniel Lafontaine, Department of Defense)

However, ECVs introduce a new challenge for military electrical systems, an exponential growth in the demand for electrical energy at the forward edge of battle.

Directed energy weapons (DEWs) are also desirable for many reasons. Once constructed and deployed, they are inexpensive to operate, do not require additional ordinance to fire, and eliminate the need to store dangerous explosives.

Supporting the energy demands of these emerging technologies requires a significant modernization and development of the U.S. Army's microgrids. A microgrid is an independent energy system, which at a minimum consists of electrical generation and distribution assets. The stationary microgrids of the Global War on Terrorism, built on forward operating bases, are not up to the demands of maneuver-centric multi-domain conflicts. This new generation of microgrids must be highly mobile, integrate a diverse array of generation

assets and energy storage systems, and employ sophisticated control systems to meet the modern warfighter's energy demands. Microgrids will provide the mobile electrical power required for DEWs and ECVs to integrate into multi-domain operations.

This article focuses on modernization recommendations for the U.S. Army's existing mobile microgrids to prepare them for the inclusion of DEWs and ECVs. The recommendations are backed with modeling and simulation studies of microgrids using open-source electric power distribution simulation software.

Today's Tactical Microgrids

Today's mobile command posts, which vary in size and complexity from the battalion to division levels, are microgrids. They are highly mobile electric islands providing electrical energy for communications, planning, operational management, and logistics. In a

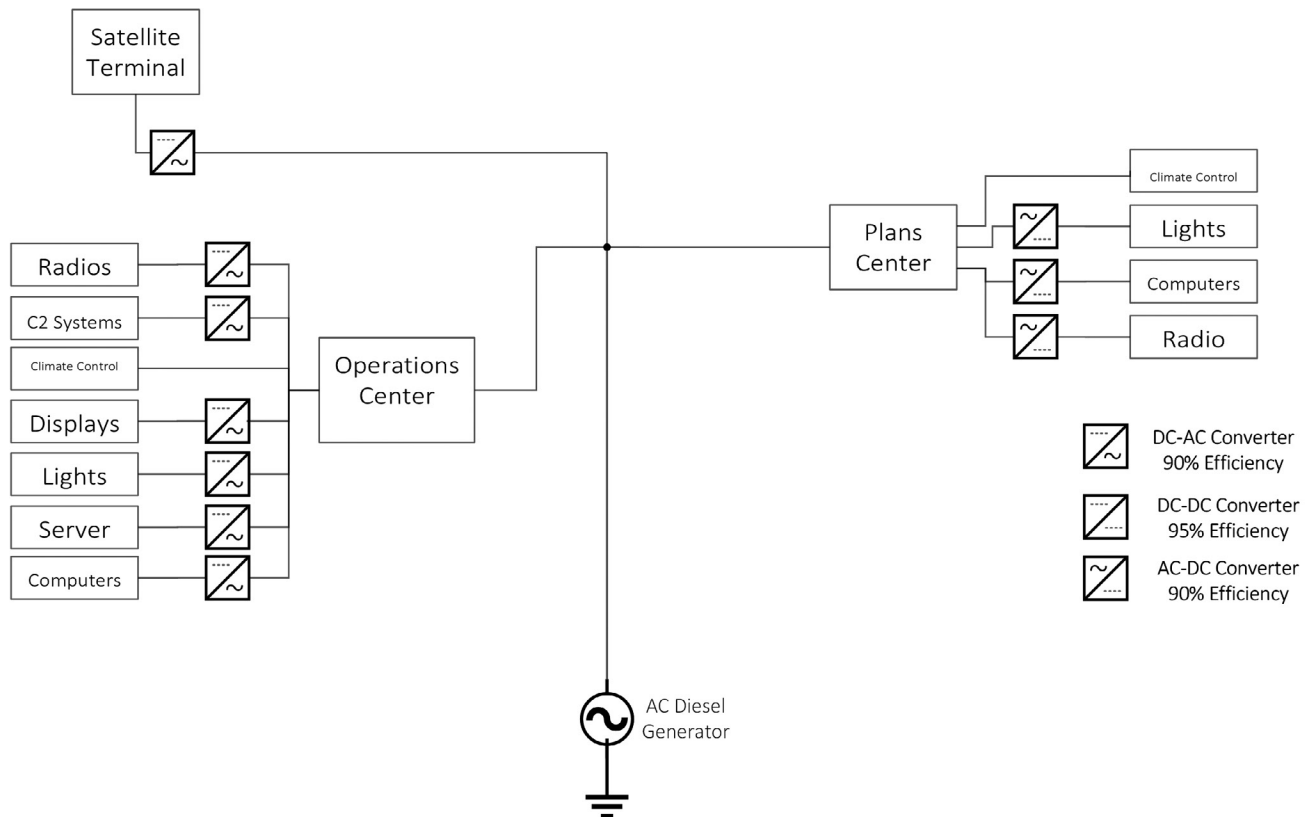
modern near-peer conflict, these command posts must move every twenty-four hours to ensure their survivability.³ They typically have one system voltage level (no transformers are used for power transmission) and are powered by one diesel generator. Units often hold an additional generator in reserve, and while technically possible, cooperative generation is extremely rare in practice. Typically, the diesel generators are rated at less than 25 kW, and the microgrids include no energy storage or renewable generation. In their present form, these grids are ill-suited to support the products of the electrification of warfare. Figure 1 shows an example electrical diagram of a battalion command post.

Current and Emerging Challenges Facing Military Microgrids

The entire U.S. military relies primarily on diesel fuel for energy production, distribution, and storage. It has an expansive logistics network, supporting its annual 3.65 billion-gallon fuel consumption.⁴ Fuel distribution under combat conditions is very risky, with up to

one casualty incurred every twenty-four fuel convoys during the Iraq war.⁵ This dependence on diesel fuel is a critical vulnerability shared by both combat vehicles and command posts. Fuel supplies cannot be guaranteed in near-peer, maneuver-based conflicts.

Furthermore, today's military microgrids have only one method to produce electrical energy: the humble and ubiquitous diesel generator. Universally oversized, these generators suffer from wet stacking (when unburned fuel passes through a generator and accumulates in the exhaust system) due to underloading. A recent study determined that most U.S. Army generators run at 30 percent of their rated capacity.⁶ Wet stacking leads to poor fuel economy and increased maintenance requirements. The lack of redundancy, except in the form of a backup diesel generator, presents a serious risk to electricity production. Additionally, there is no protection against a disruption in fuel supplies. Forward units depend upon fuel tankers, which will not travel the battlefield with impunity under contested airspace.



(Figure by author)

Figure 1. Example Battalion Command Post Electrical Diagram

Today, there is no renewable energy penetration for these microgrids. The chief advantage of renewable energy generators is their fuel independence. However, they are non-dispatchable, meaning they are entirely dependent on ambient resource availability to produce energy (solar panels do not produce energy without sunlight). The power and energy requirements of directed energy weapons and electric combat vehicles are orders of magnitude larger than that currently required from U.S. Army command posts. Current generators cannot provide the near instantaneous high-power requirements of DEWs.

The military's continued dependence on diesel fuel is a key vulnerability and undermines many of the advantages introduced with ECVs and DEWs. This dependence is exacerbated by the continual increase in energy demands from the warfighter. For example, the U.S. Army's Integrated Visual

Maj. Nicholas Barry, U.S. Army, graduated with honors from the United States Military Academy in 2006 with a BS in electrical engineering and commissioned as an engineer officer. In his most recent assignment, he served as the executive officer of 4th Squadron, 3rd Cavalry Regiment. His civilian education includes an MS in engineering management from Missouri Science and Technology and an MS in electrical engineering from Rensselaer Polytechnic University. He is also a certified project management professional.

Surya Santoso, PhD, is a professor and holds the Engineering Foundation Centennial Teaching Fellowship in Electrical Engineering No. 2 in the Department of Electrical and Computer Engineering at the University of Texas at Austin. He earned his BS in electrical engineering from Satya Wacana Christian University, Salatiga, Indonesia, in 1992, and an MSE and PhD in electrical and computer engineering from the University of Texas at Austin in 1994 and 1996. He was a post-doctoral fellow under the auspices of Electric Power Research Institute in 1997. He was senior power systems and consulting engineer with Electrotek Concepts in Knoxville, Tennessee, from 1997 until 2003. He joined the faculty of the University of Texas at Austin in 2003.

Augmentation System promises to improve soldiers' situational awareness by integrating thermal and infrared imaging with digital communication systems in an augmented reality environment.⁷ Portable radios, flashlights, targeting lasers, and many weapon systems such as the Javelin missile require portable electric energy. Soldiers also carry a suite of electric warfare, chemical, radiation, and biological agent detection devices. They are all powered using diesel fuel or disposable batteries. In their current form, military microgrids are simply not up to the task of supporting the electrification of warfare.

The Ideal Military Microgrid

Improved military microgrids can address these current and emerging challenges. The conceptual improved microgrid

- would not require fuel resupply,
- would have a diverse selection of power generation assets,
- would have a high volume of energy storage,
- would provide or absorb high power levels on demand, and
- would feature resilient distribution systems, all while maintaining its mobility.

Many of these desired aspects are not technologically feasible today. However, there is much research and development into technologies to begin improving toward the ideal military microgrid. The required developments follow broadly into two categories: energy generation and energy transport.

Energy Transportation

One of the biggest challenges of transitioning from diesel fuel is transportation of energy to the warfighter. High-voltage transmission across large battlefields is not feasible, so this energy must be stored for transportation to the ECVs. The storage and transport of this energy may take many forms, such as portable batteries, hydrogen fuel cells, or energized fluids. Of these, batteries are the most mature technology. They can be either swapped or discharged to energize ECVs. Assuming a 96 percent efficiency, the charge-discharge-charge cycle required results in 88 percent of energy reaching the ECV. For comparison, today's diesel generators are typically about 40 percent efficient at converting the chemical energy contained in diesel fuel to electrical energy.

Another challenge for battery-based energy transfer is slow charging time. Today, battery charging times are relatively slow compared to a transfer of fossil fuels, but much research work is underway to develop rapid chargers. The energy density of diesel fuel is approximately 11,600 Wh/kg and the density of lithium-ion batteries is approximately 100 Wh/kg. Multiplying each by the percentage of energy converted to electricity at the point of use means diesel is about five times more energetic per kilogram. Thus, converting to a battery-based distribution system will require approximately five times as many “battery trucks” to replace today’s fuel trucks. Other methods of transport, such as energized fluids for flow batteries or compressed hydrogen, will likely require less distribution support due to higher energy densities. However, these technologies require further research and development prior to widescale deployment.

Renewable Generation

Renewable generation is the most mature technology with potential to reduce diesel fuel dependency. However, the non-dispatchable nature of renewable generation, such as wind and photovoltaic, make it difficult to rely on these as the sole sources of energy for military operations. Military operations often occur in inhospitable climates that may not be consistently well suited to renewable generation. Using typical U.S. based capacity factors, every ten ECVs would require a 625-kW rated photovoltaic (PV) array, (covers approximately one acre of land) a 440-kW rated wind plant, (stands 70m high to the central hub with a 50m rotor diameter) or a 207-kW rated geothermal plant (requires about 250 square meters, similar to a nuclear power plant, and the proper geophysical conditions in the Earth’s crust).⁸ For now, the best use of renewable generation is small-scale integration into diesel-centric microgrids to reduce fuel consumption.

Nuclear Fission Generators

Modular nuclear reactors could provide a reliable source of energy for ECVs, and the Department of Energy has several modern designs under consideration. Project Pele has much promise to develop mobile nuclear power for future Department of Defense needs. The energy must still be moved to the ECVs, incurring the same limitations to electrical energy

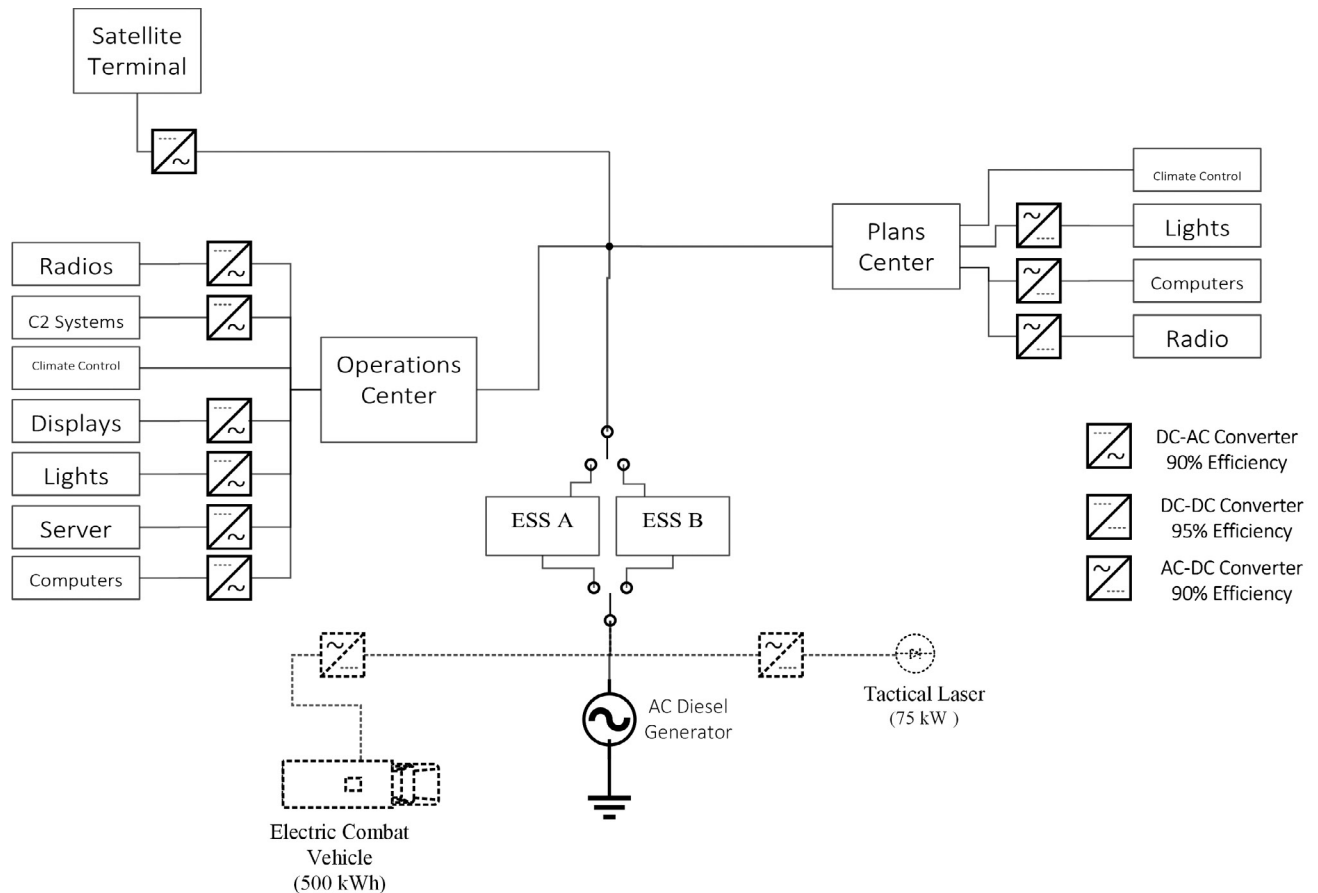
transfer and fossil fuel delivery. Assuming a continuing expeditionary nature for U.S. military operations, it is too dangerous to keep active nuclear power plants close to the front lines. Additionally, a nuclear power plant would require extensive protection from attack, committing valuable resources, as well as a team of highly trained technicians. Assuming a capacity factor of 92.5 percent, and with 88 percent of energy reaching the vehicles, every ten ECVs would require approximately 170 kW of rated nuclear generation, enough to power forty U.S. homes.⁹

Space-Based Photovoltaic Energy

Space-based PV satellites in orbit could wirelessly transmit energy as radio waves to ground antennas for collection by energy storage systems and ultimate transfer to ECVs. Proper orbital placement and constellation arrangement can produce energy without weather or diurnal cycle impacts. The U.S. Air Force’s Space Solar Power Incremental Demonstrations and Research Project attempts to develop the required technology.¹⁰ However, U.S. military dominance in space is not yet guaranteed in future conflicts. Additionally, large ground-based antennas are required to convert the radio frequency energy transmitted from orbiting satellites to earth into electrical energy for storage and movement to forward vehicles. Assuming a capacity factor of 85 percent, due to interruptions from solar weather and heavy cloud cover, a satellite with a continuous ground power rating of 180 kW is required for every ten ECVs. If demonstrated at the proper scale, space-based PV will remain an expensive option for powering ECVs and is probably best reserved for special missions with low power requirements rather than mainstream ECV support.

Radioisotope Thermoelectric Generators

Radioisotope thermoelectric generators (RTGs) may offer one of the most effective solutions to this problem. U.S. Army Futures Command leadership recently alluded to RTGs as a possible power generation solution.¹¹ RTGs have long been used for power in space. NASA’s latest RTG has an energy density of 2.4 electrical Wh/kg, compared to lithium-ion batteries, which have at least 100 Wh/kg.¹² If each ECV had its own internal RTG, with a capacity factor of 10 percent, a 96 percent



(Figure by author)

Figure 2. Improved AC Microgrid Electrical Diagram

charging efficiency for the battery, and a charging power of 20.83 kW (twenty-four-hour self-charge for a 500-kWh battery), each ECV's RTG would weigh approximately 8,700 kg. This is prohibitively large for a moving vehicle, and the temperature differentials required to produce that power level in space are not typically attainable on Earth. However, with increased research focus and funding from the Department of Defense, significant improvements are possible. Self-powering vehicles would not only eliminate the military's dependence on diesel fuel, but also significantly reduce support logistics requirements without the need for highly vulnerable energy production sites or energy transport infrastructure. Self-powered vehicles with DEWs could further reduce ordnance requirements.

Enhancing Today's Microgrids

While there is not yet a mature technology to completely rid the U.S. Army of its diesel fuel dependency,

modernizing the military electrical microgrids is the pivotal first step to supporting the electrification of warfare. In the short term, intermediate modernization can be accomplished by integrating energy storage systems and adding small photovoltaic generators. This modernization drives the evolution of current command post microgrids into microgrids suitable for the incorporation of directed energy weapons and electric combat vehicles.

The integration of energy storage systems (ESS) has been proposed as an intermediate improvement. An ESS is a bank of batteries used to store energy. For command posts and combat outposts, ESS integration facilitates the elimination of wet stacking, the introduction of redundant generation, the ability to store renewable energy, and redundant, silent generation with a low thermal signature.¹³ Generator and ESS operations can be coordinated to minimize signatures during threat windows. To modernize the command post microgrid,

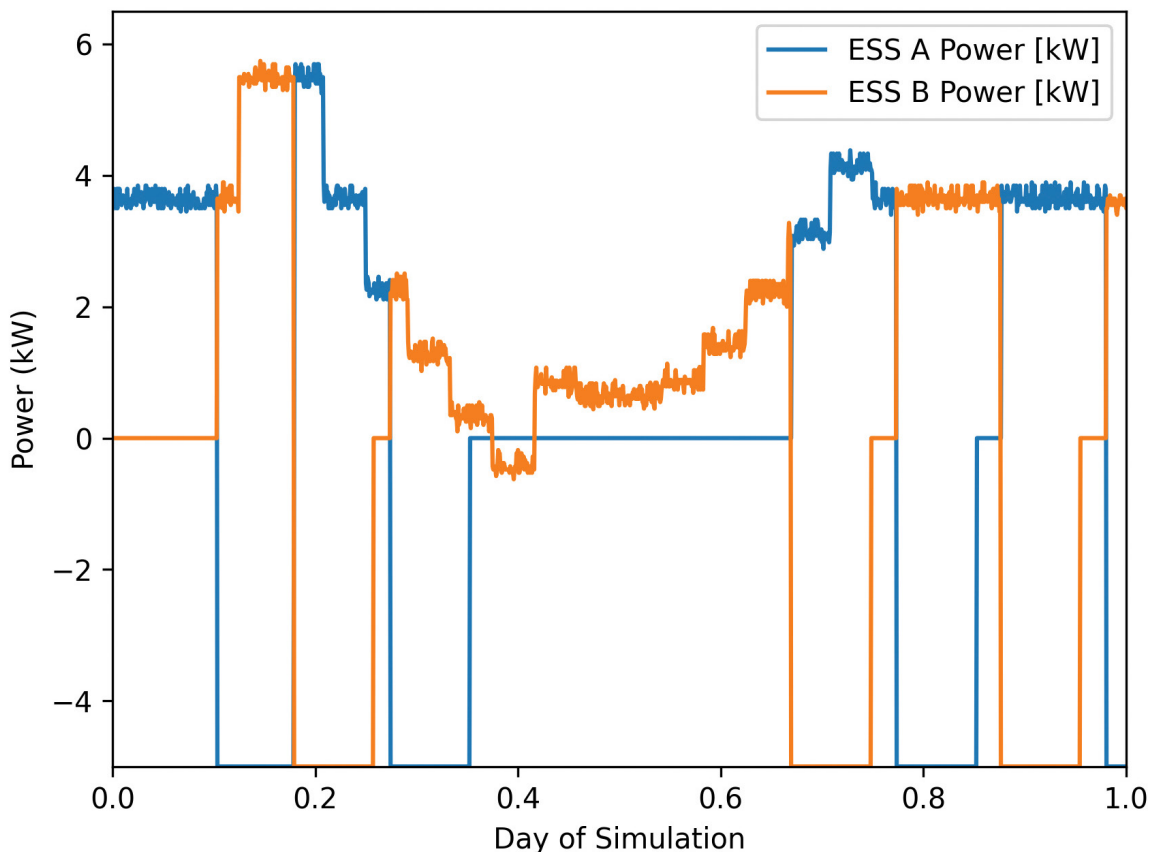
a dual unit ESS concept is recommended. This ESS stores energy which can power DEW rapid discharge or charge ECVs.

The addition of an ESS allows for the integration of PV generation into U.S. Army microgrids. A small array, 5 kW for example, can significantly reduce fuel consumption. However, there are numerous drawbacks to PV generation in tactical power systems worth mentioning. Array size is limited by mobility and set-up and tear-down time constraints under combat conditions. PV panels are highly reflective and easily detected using ground radar systems. Additionally, panel orientation is extremely important for achieving maximum PV generation, and the terrain and other tactical circumstances may not always allow optimal orientation. Solar radiation levels vary by location, climate, and weather. PV systems may not always be an effective power production source.

Intermediate Improved Microgrid Configuration

Figure 2 (on page 100) shows an improved AC microgrid configuration, with a 5 kW PV generator, and an ESS. It retains its functionality as a battalion command post but is postured for the emergence of DEWs and ECVs, which are shown as dashed lines. This microgrid could serve as the model for the power systems required to support ECVs and DEWs. For this initial analysis, a synthetic load profile for a battalion command post operating at the National Training Center is used. A subsequent analysis will include ECVs and DEWs.

To demonstrate the value of intermediate improvements, an evaluation analysis is conducted using OpenDSS to simulate fifty-six days at the National Training Center for the original microgrid (figure 1) and the improved AC microgrid (figure 2). OpenDSS



(Figure by author)

Figure 3. ESS Simulation Results, Showing ESS Power with a 10-kW System

Table. Analysis of the Microgrids with Intermediate Improvements

System	Fuel (Gal.)	Wet Stacking (%)
Original	307	24
Improved AC	199	0

(Table by author)

is an open-source electric power distribution system simulator. It is ideal for the complex analysis of unbalanced and multiphase microgrids. The analysis uses an ESS storage rating optimization algorithm, with an ESS one-way efficiency of 96.5 percent.¹⁴ The ESS consists of two subunits, ESS A and ESS B.

The improved AC microgrid has a 5-kW rated PV array, consisting of 14 x 360 W PV panels, each with a microinverter with a 95 percent efficiency. The analysis covers fifty-six days, containing two weeks of each season at Fort Irwin, California, to account for seasonal variations in PV production and climate control power demands. The solar radiation data and surface temperature data used in the simulation were observed data from 2018.¹⁵

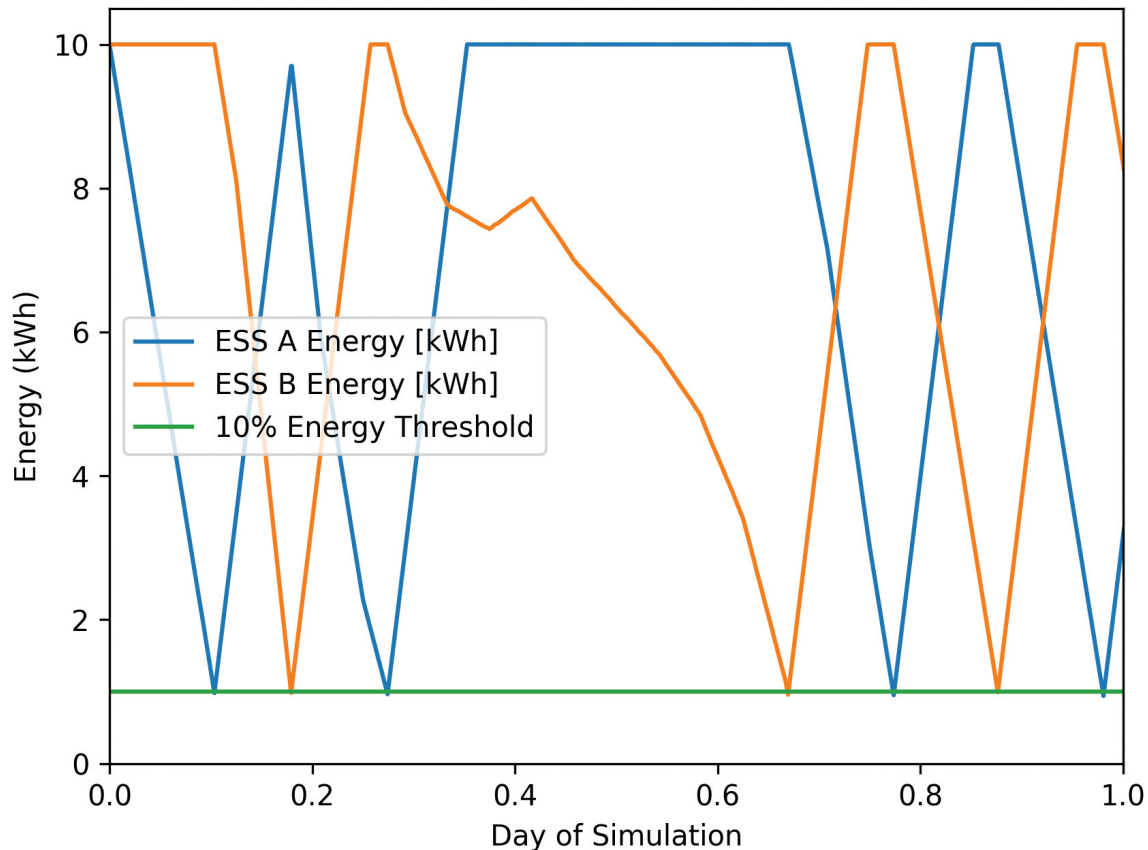
Demonstration of Intermediate Improvements

The table shows the results of the analysis of the microgrids with the intermediate improvements. In the original system (figure 1), the diesel generator wet stacked for 24 percent of the fifty-six-day simulation. Wet stacking occurs when diesel generators are underloaded, 30 percent or less of their rated power output in this simulation. The addition of the ESS allows the generator to run only at its most fuel-efficient operating point, its rated power. The generator can shut down during load loading as the ESS powers the microgrid along with the PV system if sufficient irradiation is available. This eliminates wet stacking and reduces engine wear and maintenance requirements. The AC improved microgrid (figure 2) eliminated generator wet stacking and created a 35 percent reduction in diesel fuel consumption from the current microgrid. With a fully burdened fuel cost in Afghanistan reaching to \$400 per gallon in some locations, the cost savings could be considerable.¹⁶ Much of that fuel consumption reduction is attributable to the integration of the PV generation.

Positive values show power provided by the ESS into the power system. Negative values indicate the ESS charging from the generator. Figure 3 (on page 101) shows the real power input and output for the dual ESS system for the DC microgrid over the course of one day of the simulation. At simulation initiation, ESS A and B were fully charged, as shown in figure 4 (on page 103). From figure 3, ESS B is initially idle from day 0.0 to day 0.1. During this same time, ESS A discharges, serving the load, until its energy is depleted at or below 10 percent of capacity, which can be seen at day 0.1 in figure 4. At day 0.1, ESS B comes online to meet load demand and the diesel generator switches on at its rated power and charges ESS A at its rated charging power. There is a time aligned increase in energy shown in figure 4. At day 0.18, ESS B is depleted, so ESS A switches to meet load demand and ESS B is charged by the diesel generator. The grid forming inverter on the ESS maintains grid stability and allows the maximum capture of PV energy. In all figures, negative ESS power values indicate charging and positive values indicate discharging.

Figure 4 shows ESS energy storage of the ESS set over the same one-day period of the simulation. ESS A initially discharges to serve the load until day 0.1, depleting its stored energy. ESS B is initially idle in both figures 3 and 4.

The impact of the PV generation is clear with the extension of ESS B's elongated energy depletion through the middle of the day. The PV generation extends this operation, allowing the generator and ESS A to sit idle from day 0.3 to 0.7. Figure 5 (on page 104) shows the generator is offline and idle during this time, reducing fuel consumption. For a brief period at day 0.4 the PV generation exceeds the microgrid power demand and charges the ESS serving the load, increasing its stored energy. The dual configuration



(Figure by author)

Figure 4. Simulation Results for ESS Energy versus Time

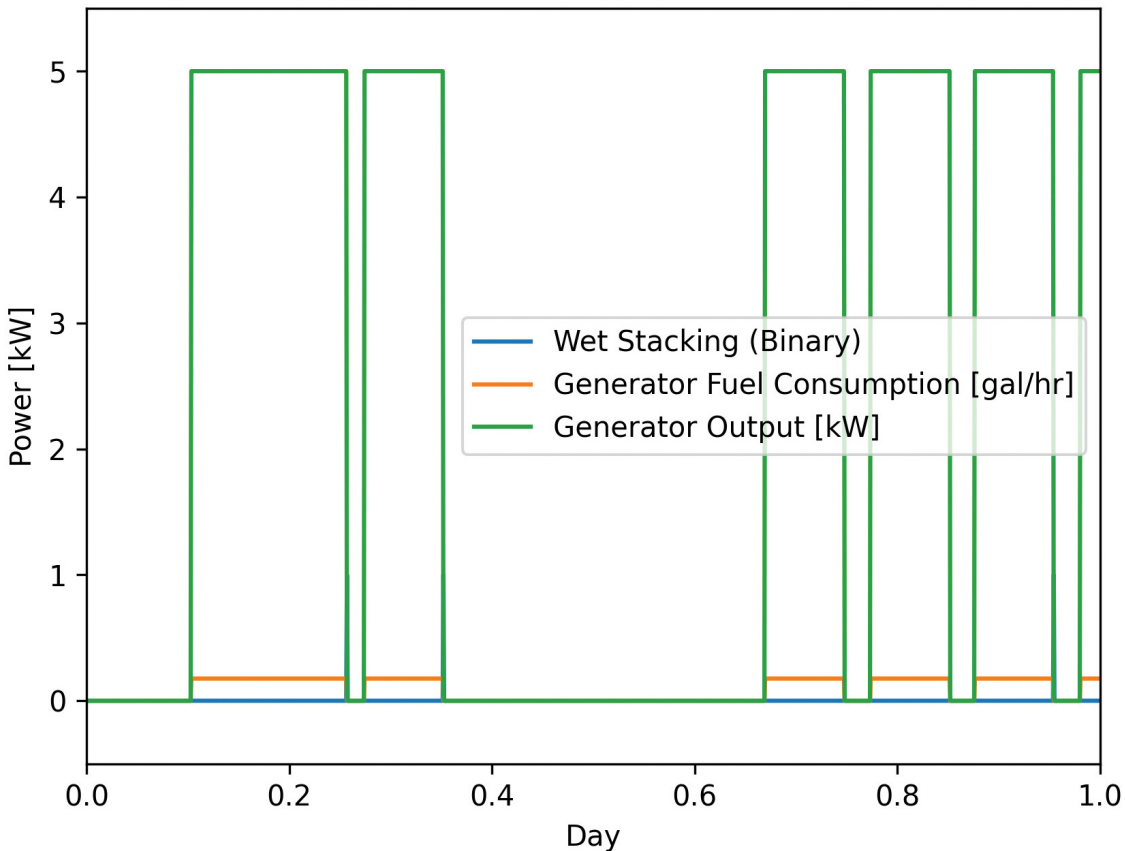
prevents the loss of any PV energy, should it exceed load demand at the time of generation. It also postures the power system for the integration of ECVs and DEWs.

Figure 5 shows the generator's real power output for one day of the simulation. The generator only comes on at its most fuel-efficient operating point, full-rated power. It rests idly in between, while the ESS meets load demand. There is a clear correspondence between figure 5 showing the generator operating at rated power and an increase in storage energy in the charging ESS in figure 4. As the generator only operates at its rated power, there is no wet stacking (blue line remains at zero). If the generator were to operate at less than 30 percent of its rated load, the chart would reflect that time step as a value of one for the blue line. The orange line shows fuel consumption, which corresponds to the generator's dispatch. At rated power, the generator consumes fuel most efficiently.

Stressing the Intermediate System with Emerging Challenges

The previous analysis clearly demonstrated the advantages of the improved command post microgrid system. Wet stacking is eliminated, and fuel consumption is reduced by 35 percent. Additionally, the system resilience is enhanced as the PV and ESS combination introduces a redundant generation source. If the generator is lost, the system can continue to function. The dual ESS also adds improved resilience through redundancy in energy storage. Additionally, the energy storage creates the ability to produce energy for a limited time with no thermal or acoustic signatures. Load curtailment can extend this operation.

The dual ESS system offers maximum flexibility for the microgrid. Having two independent units allows the simultaneous charging and discharging of energy storage, doubles available storage volume, and ensures



(Figure by author)

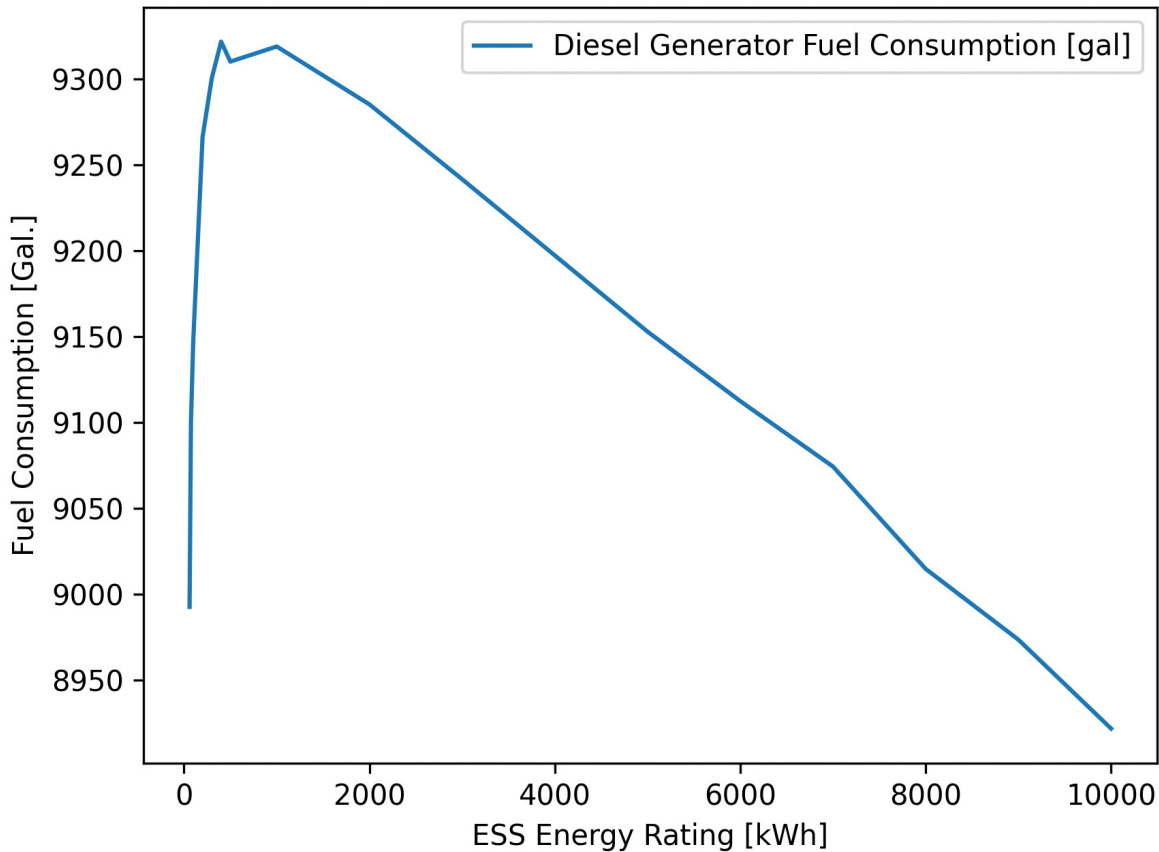
Figure 5. Generator Power Output during Simulation

the maximal capture of PV energy. Additionally, it postures the system to have double its rated power discharge in preparation for the expansion of high-power consumption devices such as DEWs and ECVs. For example, one ESS unit can meet command post demand, while another discharges to charge an ECV.

The tactical laser system under development by the U.S. Navy is modeled as the DEW for this analysis.¹⁷ It produces a 10-kW laser beam, effective for air defense against small munitions, unmanned aerial vehicles, and small boats or vehicles.¹⁸ The fiber laser's power requirement is 75 kW. In this simulation, the laser is directly connected to the microgrid's ESS and has a 1/256 probability of discharge at each time step, equating to about six shots a day. Its primary purpose is to destroy projectiles and small aircraft launched against the command post. This number derives from the assumption that a peer adversary's artillery battery has six cannons that shoot one salvo at the command post daily.

In this scenario, there are ten electric combat vehicles that support the command post. The charge rate for the ECVs was assumed to be 200A at 600V and each vehicle has a 500-kWh storage capacity. It is also assumed that one half of the ECVs required charging every twenty-four hours. That leads to an expectation of 16.67 charging hours per day, with a 70 percent chance of a vehicle starting charging at each time step (if no other vehicle is charging), if only one vehicle charges at a time. There is an 85 percent probability that a vehicle will complete charging once it starts. These probabilities were introduced to create some uncertainty in the models to improve realism.

First, A DEW was added the improved AC microgrid and analyzed with a 15-kW generator and 20 kWh capacity ESS. The lack of an ESS in the original system significantly undermines the effectiveness of the DEW, as a capacitor bank would be used to charge the weapon. This capacitor bank acts as a buffer to store sufficient energy to



(Figure by author)

Figure 6. Fuel Consumption versus ESS Energy Capacity for the Improved AC Microgrid with the Addition of Ten ECVs

fire the DEW at its rated power, which exceeds the generator's rated power. This charger would take time to build up the energy required to discharge the device, limiting its rate of fire and increasing its vulnerability to massed fires. For example, the 10-kW fiber laser will require approximately ten minutes to charge at 650 W.

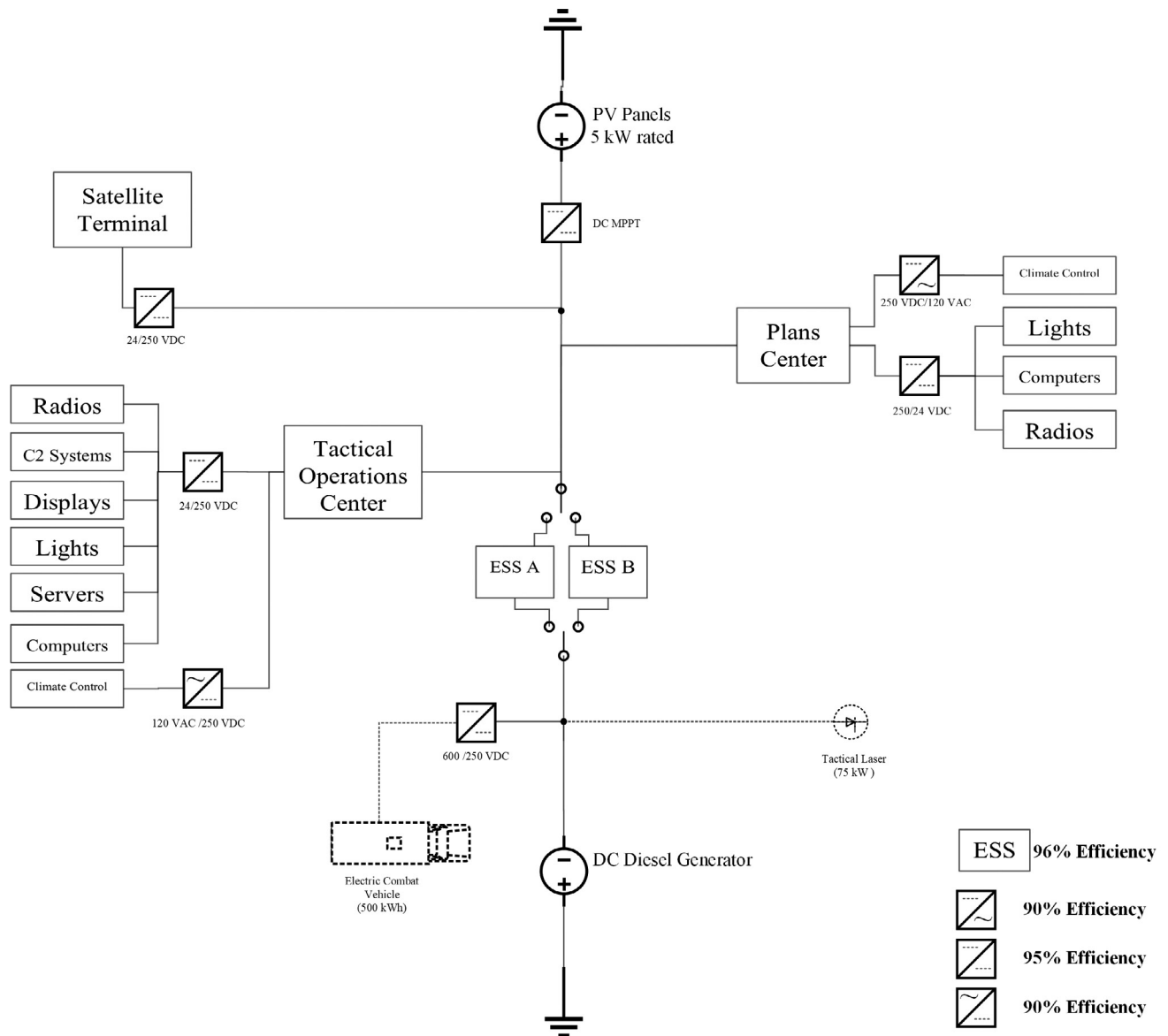
$$75 \text{ kW} \times 5 \text{ s} = \frac{375 \text{ kJ}}{10 \text{ mins}} = 625 \text{ W}$$

The fifty-six-day simulation previously introduced was repeated with the addition to the DEW into the improved AC microgrid. The simulation calculated that the fuel consumption increased to 278 gallons from the 199 gallons without the DEW. This is a marked increase in fuel

for inclusion of the DEW from the previous simulation. The addition to the ESS provides the power for a rapid firing of the DEW, a requirement for projective defense.

Next, the improved AC microgrid received a fleet of ten electric combat vehicles. The power consumption for these is orders of magnitude higher than that of the command post microgrid. For this analysis, the improved microgrids are assigned a fleet of ten electric combat vehicles as well as powering the battalion command post. The improved microgrids were updated with a 150-kW rated diesel generator and a 500-kWh energy capacity ESS (same as the ECVs) to equip them for powering the ECVs.

The simulation again covered the same fifty-six-day simulation period. During that time, the improved AC microgrid did not incur any wet stacking, the ESS incurred less than two hundred charge-discharge cycles,



(Figure by author)

Figure 7. Preliminary DC Improved Microgrid

and generator operated only at its rated power. The improved AC microgrid consumed 9,310 gallons of diesel fuel over the fifty-six-day simulation period.

Military generators have standard sizes, but battery power and energy ratings are more flexible. Figure 6 (on page 105) shows the impact of varying ESS energy capacity on fuel consumption in the improved AC microgrid. Since the batteries do not have 100 percent efficiency, there are losses in each charge and discharge cycle. Ignoring generator constraints and only considering the

ESS capacity, an 8,500 kWh ESS is the smallest capacity to break even with the same grid configuration without an ESS. With current battery technologies, this is prohibitively large for a mobile microgrid.

Requirements for an Intermediate Improved Microgrid

This section introduces general guidelines to shape the design of military microgrids to support the ongoing electrification of warfare. Total diesel generator rated

output should equal coincident peak demand. This can be determined by summing the nameplate rating of all connected devices if no detailed load data is available. This ensures that the generator can meet demand should the ESS be unavailable. The PV array is limited by setup time and transpiration constraints. A 5-kW system was used as it is possible to setup or take down fourteen PV panels on the ground within one hour. Since units move primarily at night, this allows ample time to set up and take down without loss of generation. The ESS power rating should match the largest of the expected peak demand, PV rated power, or generator rated power. To ensure maximum efficiency of the generator, redundancy in power supplies, and minimize degradation due to battery cycling, the ESS energy rating should be approximately two times the rated power. In addition to reducing fuel consumption, the intermediate improved AC microgrid scales to meet the developing demands for DEWs and ECVs.

Preliminary DC Improved Microgrid

U.S. Army command posts are modern command-and-control nodes. They contain a high density of computers and communications equipment that consume electricity. These devices all require direct current (DC) electrical power. The diesel generators produce alternating current (AC) electrical power. For end use in electronic devices, AC power requires conversion to DC power. Typically, an AC-to-DC or DC-to-AC conversion is 90 percent efficient and a DC-to-DC conversion is 95 percent efficient. With today's systems, the efficiency improvement of a DC transition is hardly worth the investment required. However, DEWs and ECVs are fundamentally DC devices, with significant power demands. Thus, conversion to a DC-based distribution system becomes economical. The U.S. Army uses a standard twenty-four-volt DC voltage for most equipment and vehicles; however, such a low voltage is not well suited to power transmission over hundreds of feet across a command power system. So, a DC distribution and generation voltage of 250 volts is proposed with a DC-DC conversion stepping it down to twenty-four volts at the point of use. This voltage is high enough for efficient transmission, but still low enough to relative safe handling for rapid connection and disconnection. Future devices such as ECV

chargers can use DC-DC converters to achieve the desired voltages.

There are two limitations to this proposal. The first is that it would require a significant retrofit of the diesel generators to produce DC power or the design and fielding of new generators. Secondly, not all devices commonly found in U.S. Army command posts are DC. Climate control units are typically AC devices, as they have a compressor that requires AC power. A DC-AC converter can accomplish this for this load. The portion of energy used for climate control is orders of magnitude smaller than the portion of energy required by DEWs and ECVs, both of which operate on DC power. Native generation, distribution, and consumption in DC could reduce fuel consumption by as much as 5 percent. The concept of a DC microgrid is preliminary and requires further study. Figure 7 (on page 106) shows a preliminary design for a DC improved microgrid.

Conclusion

The electrification of warfare will continue at an accelerating pace, improving efficiency while reducing the logistical requirements of warfighting. An immediate transition away from diesel fuel and disposable batteries is not technologically feasible today, but improvements to military microgrids can reduce their operational risk. U.S. Army Futures Command is already providing tremendous momentum to improving energy security by investing in and coordinating research to simultaneously improve energy efficiency and capabilities.

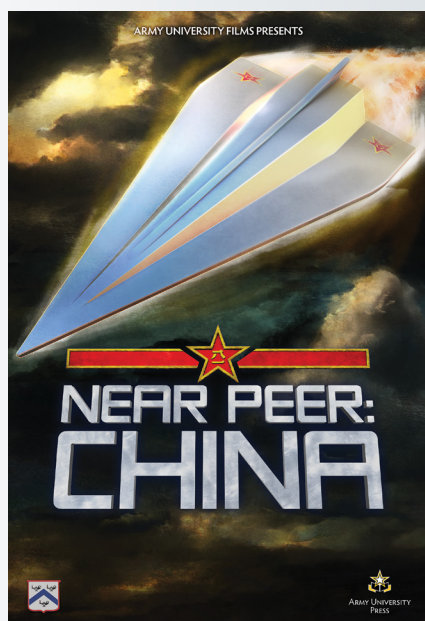
In the near term, the power demands of electrical combat vehicles and directed energy weapons will disrupt the U.S. Army's current electrical infrastructure. The tactical battalion command post can serve as the kernel of the mobile military microgrids needs to integrate ECVs and DEWs in brigade combat teams for multi-domain operations. Integrating energy storage and limited renewable energy generation is essential to supporting these emerging technologies and capabilities. The power and energy ratings of these devices impact their operation and require careful analysis and design. The inclusion of these innovations can significantly reduce fuel consumption and improve electrical resilience while also preparing to incorporate the emerging power demands of ECVs and DEWs. Reductions in fuel

consumption lower logistical demands. The mobile nature and reduced thermal and acoustic signatures of mobile military microgrids improve survivability. The elimination of wet stacking improves fuel economy and reduces generator maintenance

requirements. Improved mobile military microgrids give commanders flexibility to integrate diverse energy sources and storage, providing the energy flexibility needed for modern conflicts with near-peer adversaries. ■

Notes

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Latest Release from Army University Films

Near Peer: China is the latest release from the Army University (AUP) Films Team. Subject-matter experts discuss historical topics including prerevolution history, the rise of Mao, the evolution of the People's Liberation Army with discussion of advances in military technologies. *Near Peer: China* is the first film in a four-part series exploring America's global competitors.

The AUP Films Team was established in 2017 to make documentary films designed to augment teaching of current and emerging U.S. Army doctrine using historical case studies. The AUP documentaries make doctrine more accessible, understandable, and enjoyable for professional development at all levels. For those interested in reviewing the entire catalog of films produced so far, see the following website: <https://www.armyupress.army.mil/Educational-Services/Documentaries/>.



Marines with Marine Corps Forces Cyberspace Command observe computer operations on 5 February 2020 in the Cyber Operations Center at Fort Meade, Maryland. (Photo by Staff Sgt. Jacob Osborne, U.S. Marine Corps)

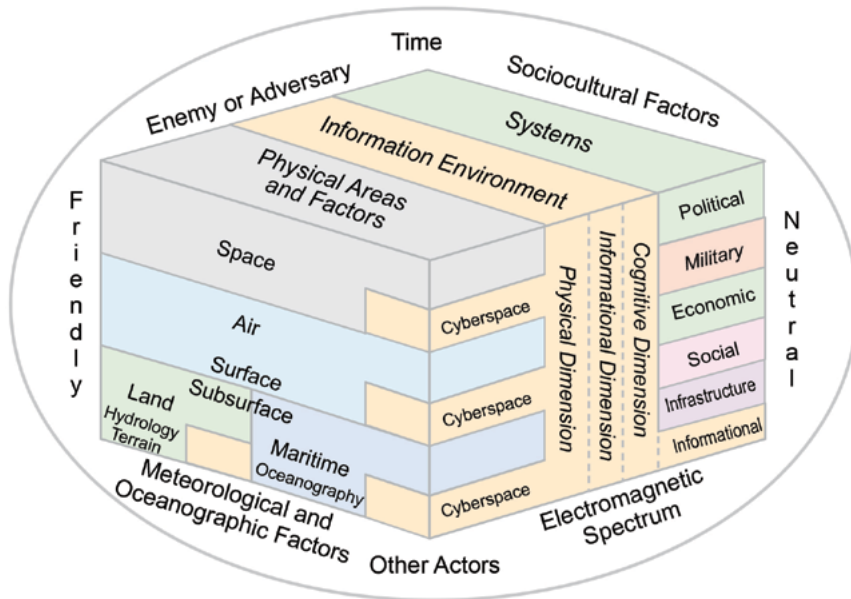
Conceptualizing Information Advantage Using Boyd's OODA Loop



Maj. Christopher Kean, U.S. Air Force

Editor's note: This article won the 2022 Armed Forces Communications & Electronics Association (AFCEA) Writing Contest.

Some of the more recent conflicts in the twenty-first century, such as Crimea in 2014, the second Nagorno-Karabakh war in 2020, and the unfolding Russo-Ukrainian War in 2022, have all demonstrated the importance of information on the



(Figure from Joint Publication 5-0, *Joint Planning* [2020])

Figure 1. Holistic View of the Operational Environment

operational and tactical levels. With the move to multi-domain operations (MDO), supported by forthcoming doctrinal publications—Field Manual (FM) 3-0, *Operations*, and Army Doctrine Publication (ADP) 3-13, *Information*—the Army is beginning to grapple with how to achieve information advantage to defeat enemy forces and achieve objectives.

To successfully meet the requirements demanded of MDO, namely decision dominance, information will need to become a central aspect of the planning process across all warfighting functions. To ensure this, the draft FM 3-0 presents a holistic approach to visualizing the operational environment

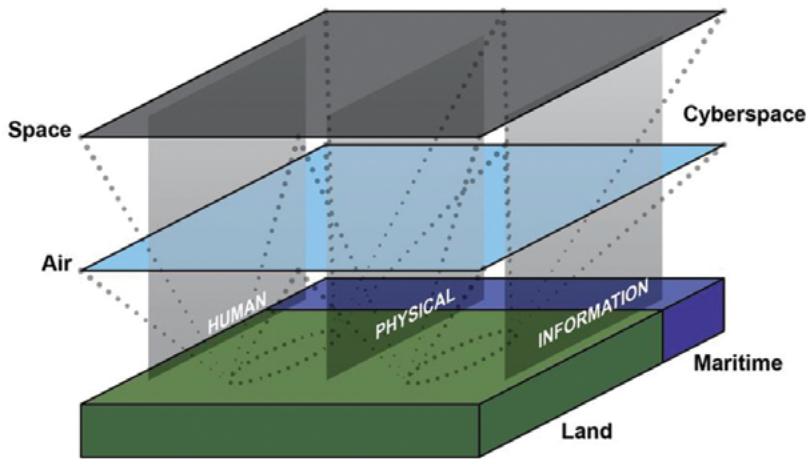
battlefield.¹ While understanding information is crucial across all levels of war and throughout the conflict continuum, it is a challenge to conceptualize at the

(OE). Moreover, the draft ADP 3-13 details how information advantage is achieved through five lines of effort. While the Army’s new model of the OE is

Table. Comparison of Joint/Service Definitions of Information Advantage/Information Warfare (IA/IW)

Service	General IA/IW Concept
Joint	Information advantage is a state wherein an actor possesses the initiative in terms of situational understanding, behavior, and decision-making with respect to another.
Air Force	Information warfare is the employment of military capabilities in and through the information environment to deliberately affect adversary human and system behavior and preserve friendly freedom of action during cooperation, competition, and conflict.
Army	Information advantage—A condition when a force holds the initiative in terms of the use, protection, denial, or manipulation of information to achieve situational understanding, improve decision making, and affect relevant actor behavior through the coordinated employment of relevant military capabilities.
Marine Corps	Information advantage is an exploitable condition resulting from one actor’s ability to generate, preserve, deny, and project information more effectively than another.
Navy	Information warfare is the integrated employment of Navy’s information-based capabilities to degrade, deny, deceive, or destroy an enemy’s information environment or to enhance the effectiveness of friendly operations.

(Table by author)



(Field Manual 3-0, Operations [forthcoming])

Figure 2. Emerging Army Concept of the Operational Environment

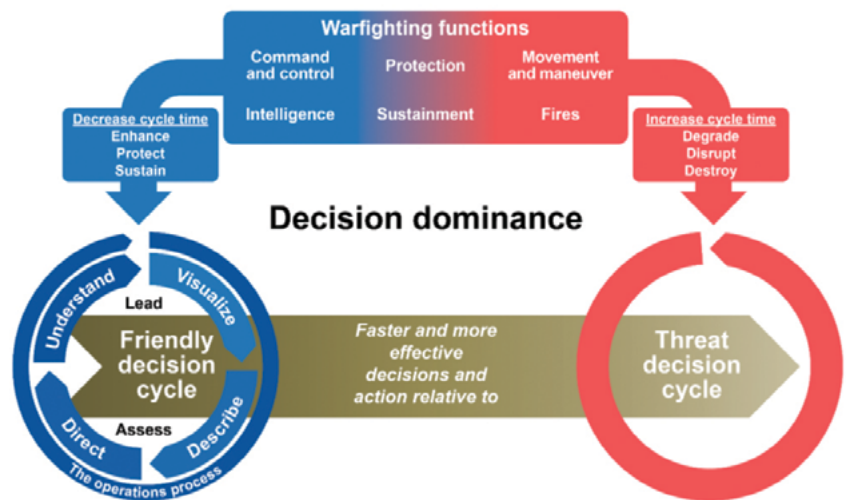
from the joint perspective is currently receiving an update with an upcoming release of Joint Publication 3-04, *Information*, in part spurred due to the addition of information as a joint function in 2017. This update does not change the core concept of how the joint force understands the information environment; however, there are minor changes.³ In contrast, the Army’s emerging concept of the OE is much more helpful in integrating information. As seen in figure 2, the Army model is truly holistic. Instead of a separate information environment, the Army sees physical, human,

an improvement from the joint force perspective, there needs to be a better way to conceptualize the role information plays in each warfighting function. Updating the Army’s framework allows for information to be integrated across warfighting functions while allowing agile and informed decision-making at all levels in accordance with the principles of mission command. This updated framework unleashes the full potential of information in the planning process and ultimately mission execution.

and informational dimensions as present in each warfighting domain. In other words, there is no need to have a separate information environment because information is present and persistent throughout each domain. While the idea that the information environment is completely integrated with the OE is expressed in the joint model, the deliberate removal of an explicitly named “information environment”

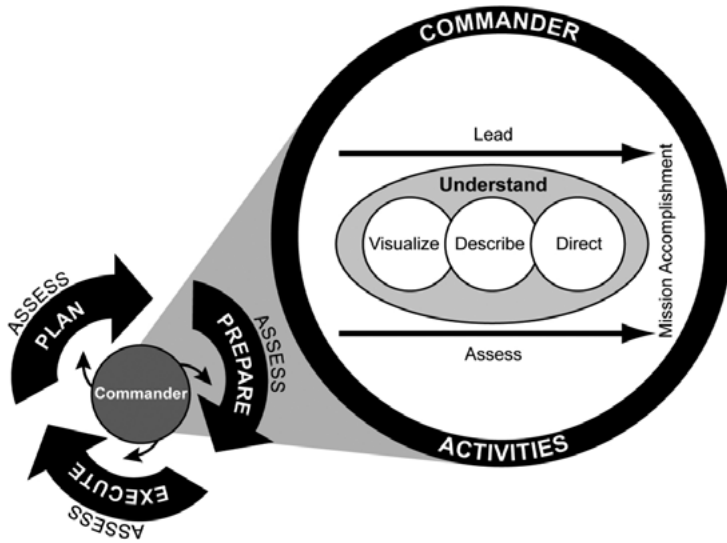
Understanding Information in the OE

The current joint view of the operational environment is best presented in Joint Publication 5-0, *Joint Planning*, figure 1 (on page 110). One important distinction is that in this model describes the information environment (IE) as a distinct portion of the OE. Additionally, the joint model breaks the information environment down into three dimensions (physical, informational, and cognitive) and encompasses the cyberspace domain.² Information



(Army Doctrine Publication 3-13, Information [forthcoming])

Figure 3. Decision Dominance and the Competition of Decision-Making Cycles



(Figure from Army Doctrine Publication 5-0, *The Operations Process* [2019])

Figure 4. The Operations Process

information advantage.⁴ The table (on page 110) shows the various approaches of the services and joint force in understanding information advantage.⁵

Despite the differences, at the heart of all these definitions is the idea that information is critical to the decision-making process. However, also important is that the definitions talk about decision-making in the context of competition with another actor. The ability to facilitate friendly decision-making while simultaneously disrupting the adversary's decision-making is the heart of information advantage. This idea of competition

by the Army helps to provide clarity and prevents stovepiped information capabilities. Ultimately during MDO, it is through these dimensions that the military can achieve relative advantage over the enemy, including information advantage.

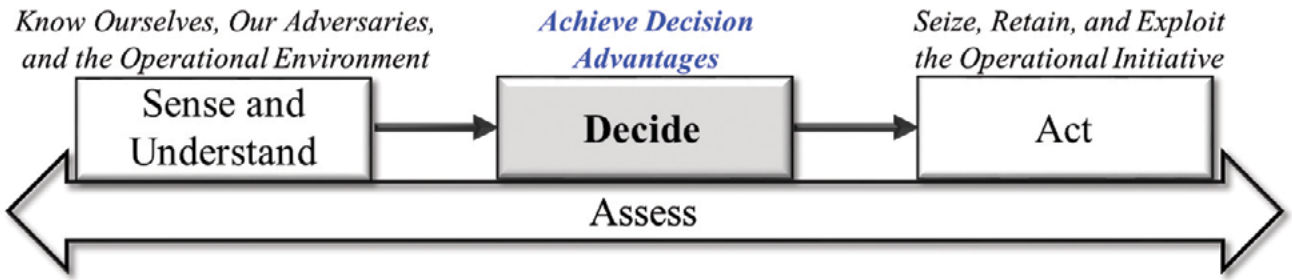
is clearly laid out in the graphic representation of the Army's concept of decision dominance as presented in the draft FM 3-0 and seen in figure 3 (on page 111).

As depicted, the Army approach uses the operations process, specifically the commander's role in the operations process (understand, visualize, describe, direct, lead, and assess, or UVDDLA), to describe this decision-making cycle. As ADP 5-0, *The Operations Process*, outlines, the operations process is the framework for command and control, with a central role of a commander being to "drive the conceptual and detailed planning necessary to understand their OE; visualize and describe the operation's end state and operational approach; make and articulate decisions; and direct, lead, and assess operations"; this can be seen in figure 4.⁶ Importantly, ADP 5-0 notes that a "goal of the operations process is to make timely and effective decisions and to act faster than the enemy."⁷ However, using UVDDLA in the operations process as the framework for information advantage is flawed for several reasons. First, and most importantly, while the heart of the operations process is about making decisions, the process itself gives no additional insights into how decision-making occurs. Therefore, the linkages to the warfighting functions, seen in figure 3 as either enhancing or degrading decision cycles, are not readily apparent. The warfighting functions are shown to have a role but left with no indication into how to fulfill that

Maj. Christopher Kean, U.S. Air Force, is a student at the School of Advanced Air and Space Studies. He was recently a student of the inaugural Information Advantage Scholars Program at the Command and General Staff College (CGSC). He holds a BA from the University of Washington, an MA from the University of Oklahoma, and an MMAS from CGSC. He is a senior electromagnetic warfare officer for the RC-135V/W reconnaissance aircraft and a graduate of the U.S. Air Force Weapons School.

Approaches to Information Advantage

Regardless of the approach to the OE or the IE, one thing is clear: information is a part of the planning process and is critical to effective decision-making. This can be seen in the definitions that all the services use to describe the role of information at the operational and tactical levels. However, just like the subtle differences of the joint and Army views of the OE, there are some clear distinctions between the joint force and the services into what constitutes



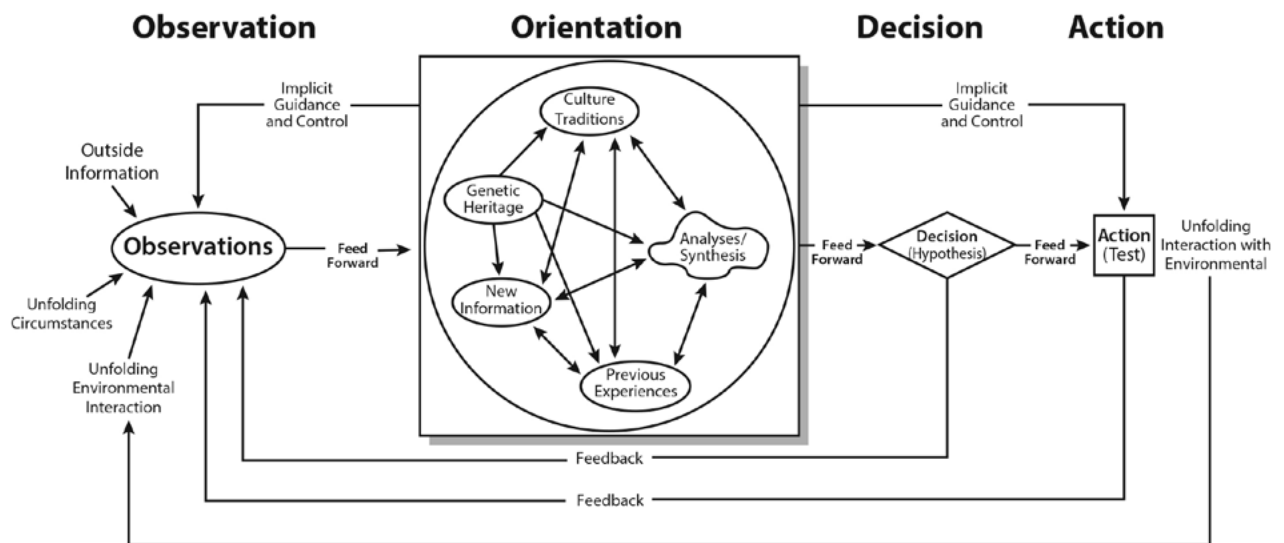
(Figure from AFC Pamphlet 71-20-9, Army Futures Concept for Command and Control 2028: Pursuing Decision Dominance [2021])

Figure 5. Sense, Understand, Decide, Act, Assess Framework

role. Finally, unlike other decision-making frameworks, the operations process is tied directly to the Army’s method of command and control. This lack of generalizability means that it does not have the flexibility to be mirrored and applied to understand the adversary’s decision-making process. It should be noted that in early iterations for the definition of decision dominance, the operations process was not what was used to describe the decision-making process. In his *Chief of Staff Paper #1*, Gen. James McConville notes that “decision dominance is a desired state in which commanders sense, understand, decide, act, and assess [SUDAA] faster and more effectively than their adversaries.”⁸ This SUDAA process is graphically depicted in the Army Futures

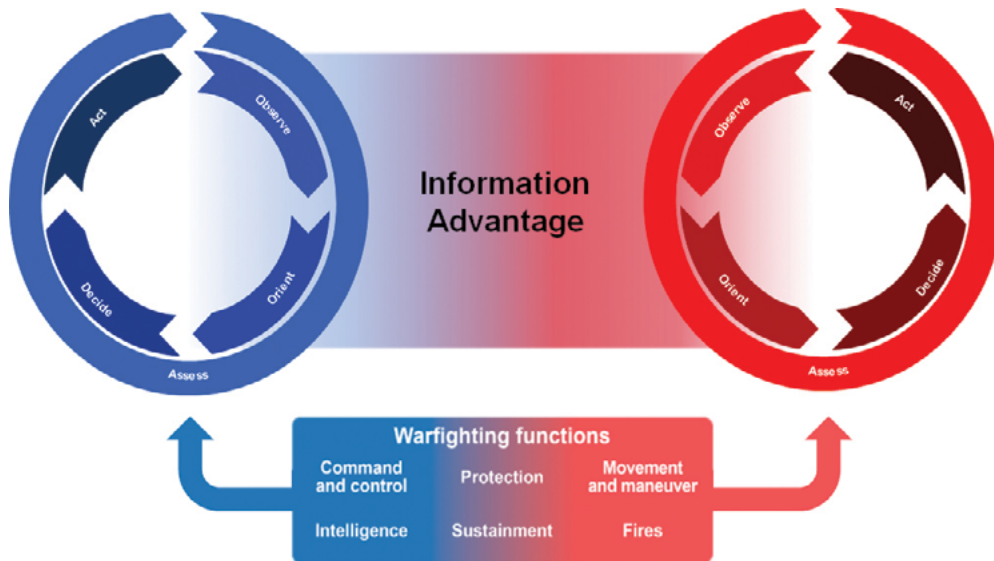
Command pamphlet on decision dominance and seen in figure 5. Using this definition has several advantages over using the operations process. First, the role of information into making more effective decisions is easily applied to the “sense and understand” portions of this process. Second, while the process itself used by commanders during command and control, the SUDAA process is less strictly tied to solely the commander.

Despite these improvements over the operations process, the idea of SUDAA is still unrefined. However, it clearly has inspiration from another decision-making framework that is more developed and can also be applied across warfighting functions and all organizational levels, the



(Figure from John A. Boyd, *A Discourse on Winning and Losing*)

Figure 6. Expanded Version of Boyd's OODA Loop



(Figure by author)

Figure 7. Updated FM 3-0 Framework with OODA Loop

orient-observe-decide-act (OODA) loop created by retired Col. John Boyd.⁹

Using the OODA Loop to Achieve Information Advantage

Boyd’s OODA loop is often simplified; however, the full version, seen in figure 6 (on page 113), highlights the complexity in decision-making. This complexity is concentrated on the orientation step, which Boyd referred to as the “big O.” The importance of the orientation step is summarized by Grant Hammond from the Air War College:

It is the amalgamation of genetic heritage, cultural traditions, previous experience, education, and new information and the analysis and synthesis that follows. These are a complex set of filters that condition action and reaction to various stimuli. In processing all this information a menu of responses is developed. These responses are then sorted, analyzed, and synthesized for a Decision on a preferred procedure.¹⁰

Also notice that the orientation step is guiding and controlling how people observe and act within their environment. The orientation as outlined nests perfectly with the Army’s understanding of the human dimension. As outlined in the draft ADP 3-13, “The human dimension encompasses individual reasoning, emotion,

and behavior as well as the broader social contexts of group interaction including culture, group identity, and societal power dynamics.”¹¹

By integrating the OODA loop framework into the existing idea of information advantage, the focus of information’s role in the decision-making process is clearer. This updated framework can be seen in figure 7. While the OODA loop has ongoing feedback between each step, information plays an outsized role in the observe and orient steps. Therefore, by focusing on these steps in particular, the Army is better able to conceptualize how to integrate the various warfighting functions into the planning process to achieve information advantage.

This framework allows for each warfighting function to see their role more clearly in enhancing or degrading decision cycles. For example, cyber electromagnetic activities can be used to degrade the observation portion of the adversary (e.g., electromagnetic attack to jam enemy radars) as well as the orientation step (e.g., cyber effects to manipulate data). As the above example shows, sometimes these roles are very clearly defined. No one in the intelligence warfighting function will be surprised by their impact in supporting the observe and orient steps of the friendly OODA loop. However, other warfighting functions have more subtle impacts in the information dimension. Take for example, sustainment’s impact on the adversary’s decision-making when the Army updates

its Army pre-positioned stocks (APS). It complicates the enemy's observation by making Army supply and movement more rapid. Similarly, the use of an APS can impact and enemy's orientation, as it requires them to now factor APS capabilities into their decision-making. These seemingly minor disruptions to the adversary's decision-making cycle might be enough to gain an advantage for a short period of time. Ultimately, incorporating the OODA framework means that during planning, each warfighting function should consider how they influence the observation and orientation steps.

Conclusions

To fully realize the requirements of MDO, the Army needs to understand how to achieve information advantage. This understanding begins with a solid framework. The update of FM 3-0 and the upcoming release of ADP 3-13 are the correct first steps. However, for any information advantage framework to be adopted, it needs to be clearly linked to the OE and the warfighting functions. Without this linkage, planning for information advantage

will remain stovepiped to those communities who are used to dealing with information, as opposed to across the entire force as demanded. While the Army's approach to the OE is an improvement over the current model used by the joint force, the draft ADP 3-13 falls short in offering a framework that clearly integrates information and the various warfighting functions. The Army needs an updated framework incorporating the decision-making theories of John Boyd and his OODA loop. Warfighting functions work to enhance friendly decision cycles or degrade adversary decision cycles. By framing the core goal of information advantage as an enabler to more effective decision-making, military members can conceptualize their impact in the information dimension regardless of warfighting function. This impact, and most of information advantage activities, are focused on the observe and orient steps of the OODA loop. This clear focus, nesting within a decision-making framework and linked to the imperatives of MDO, enables each warfighting function to effectively plan for information advantage in the complex operational environment. ■

Notes

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3. JP 3-04, *Information* (Washington, DC: U.S. Government Publishing Office [GPO], forthcoming). There is a minor change in verbiage from JP 3-13. The dimensions of physical, informational, cognitive are now referred to as the physical, informational, and human aspects of the information environment.
4. The Air Force uses the joint definition of information advantage, so its more widely known definition of information warfare is provided. Similarly, the Navy uses information warfare as its umbrella term for the ideas discussed.
5. Defined in the "Joint Concept for Information Advantage" available on SIPR, cited in Deputy Chief of Staff for Strategy, Integration, and Requirements (AF/A5/7), "United States Air Force

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6. Army Doctrine Publication 5-0, *The Operations Process* (Washington, DC: GPO, July 2019), 1-4, accessed 13 July 2022, https://armypubs.army.mil/epubs/DR_pubs/DR_a/ARN18126-AD-P_5-0-000-WEB-3.pdf.
7. Ibid.
8. James C. McConville, *Army Multi-Domain Transformation: Ready to Win in Competition and Conflict: Chief of Staff Paper #1* (Washington, DC: Headquarters, Department of the Army, 16 March 2021), 8, accessed 13 July 2022, <https://api.army.mil/e2c/downloads/2021/03/23/eeac3d01/20210319-csa-paper-1-signed-print-version.pdf>.
9. John Boyd, *A Discourse on Winning and Losing* (Maxwell, VA: Air University Press, 2018), 384. Of note, Boyd originally planned to use "sense" instead of "observe" but thought "SODA" Loop would have less credibility.
10. Ibid., 384-85.
11. FM 3-13, *Information Operations*, 2-8. The cited quote will remain the same in the forthcoming ADP 3-13, *Information*.



A Turkish military vehicle patrols near the Türkiye-Iran border on 21 August 2021 in Van Province, eastern Türkiye. Turkish soldiers and special operations police are hard at work tightening measures to ensure the security of the country's eastern border with Iran to prevent illegal migration inflow from other countries including Afghanistan. Afghans fleeing the Taliban have been crossing the Turkish border illegally from Iran into Van. (Photo by Ali Ihsan Ozturk/Demiroren Visual Media/ABACAPRESS.COM via Alamy)

A Balancing Game of Janus

Turkish Armed Forces' Border Security Measures

Col. Özgür Körpe, PhD, Turkish Army

Editor's note: The use of "Türkiye" in lieu of "Turkey" in this article is at the request of the author. Türkiye is now officially used by NATO.

Perhaps the most important side effect of irregular migration in the world today for any country that accepts it is the risk of destabilization. Today, Türkiye faces such a risk. Moreover, Türkiye's allies, especially NATO members, have been basically forcing it to face this problem alone—even with the massive uptick of irregular migration and refugees that occurred in 2015 with Russian intervention into the Syrian civil war. By way of comparison, the support given to Türkiye to assist with refugees and immigrants is nothing like the massive support provided to the neighboring countries of Ukraine that experienced a mass refugee migration due to the February 2022 Russian invasion. Moreover, Türkiye has had to deal with many more waves of people from different countries than Ukraine's neighbors.¹

Nevertheless, it is not possible to find a country that has been more competent or effective than Türkiye, both culturally and humanely, with regard to the challenge of dealing with the waves of irregular migration from Asia and Africa attempting to cross through its territory toward the West. However, Turkish society deserves and expects more empathy and more tangible support from its Western allies—especially members of NATO—to help deal with the issue of refugees and illegal migration.

Context for the Problem of Illegal Immigration

Today's world is drifting from a place composed of relatively predictable socio-political black and white spaces—where stable areas can be easily distinguished from unstable areas characterized by identifiable threat and enemy spaces—toward a dystopian future where complex and wicked problems have made the distinction between black and white spaces at once blurred and entrenched, increasingly evolving into gray areas where "man is wolf to man." Much of this blurring has resulted from a dramatic increase in uncontrolled mass migration across borders that is overwhelming many nations' ability to manage the flow while also threatening to dilute established national identities with popular state loyalties.

In the progressively more "Hobbesian state of nature" world environment, the limited number of states that have achieved a certain level of prosperity and sociopolitical/economic stability have increasingly become targets of mass global migration from less developed areas of the world accompanied by greater infiltration of these more stable states and areas by terrorist and transnational criminal structures. This situation is distressing the more developed states and thus multiplying the number of unstable areas around the world and decreasing the predictability of the states targeted. For example, according to the report of the United Nations, 77 percent of the citizens of more developed countries are worried that irregular migration will negatively affect their economic and social life, which is two points above the world average of 75 percent.² Moreover, the trend is self-promoting; an increase in the unchecked flow of people from unstable areas to stable ones, if unimpeded by an international effort, stimulates an even greater flow of irregular migrants. This puts stable states and their place in the current world order at much greater risk of instability, which in turn threatens to result in overall greater global instability.

Thus, many developed states have begun to look for ways to staunch the irregular waves of uncontrolled migrants crossing their borders that threaten their own internal stability and social welfare while cooperating with other states in their efforts to do the same. In short, it is now understood that it is no longer enough for countries to ensure the welfare of their native populations and internal stability alone. Today, many states perceive that while they themselves have achieved a certain level of prosperity and stability for their peoples, such conditions that may have made their nations islands of stability may have

Col. Özgür Körpe, PhD, Turkish Army, is an assistant professor of military strategy at Army War College, Turkish National Defence University, Istanbul. He holds a BS from the Turkish Military Academy, MA degrees from the Strategic Research Institute and the Army War College, and a PhD from Yıldız Technical University. His assignments include counterterrorism operations in different operational areas and tours as advisor/instructor in Kyrgyz Republic and Afghanistan.

also turned them into targets that attract migrants from a sea of neighboring unstable states and restive populations; some of these stable states, on the other hand, have to deal with the multilateral problem of preventing waves of migration from penetrating the islands of stability as they share their borders with many unstable neighbors.

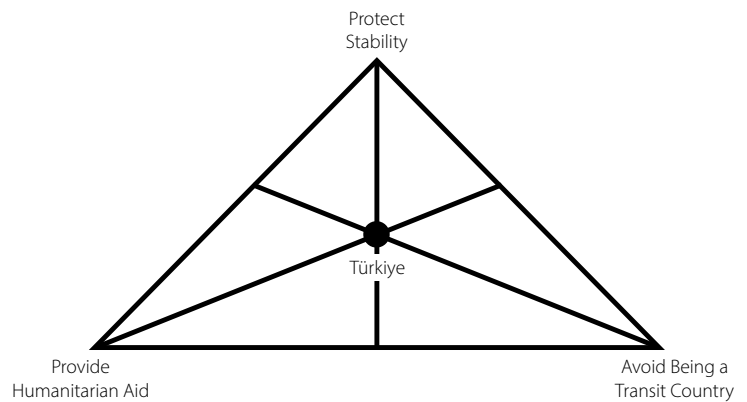
Like a gate guardian of a stable hemisphere, Türkiye is one such state struggling against uncontrolled migration from border neighbors such as Syria, Iraq, and Iran, as well as nonborder states such as Afghanistan, Turkmenistan, and Libya.³ Consequently, the measures it has taken to control illegal migration and mitigate its effects deserves closer examination by other nation-states for lessons learned.

Türkiye as the Janus of a Stable Hemisphere

Janus, who is considered the god of the gate in Roman mythology, is depicted as having two faces, one looking at those who come to the city and the other looking after those who leave the city and ensuring their safety. Mythological beliefs aside, the lesson we can draw from the Janus myth is that transitional countries should have a multifaceted sense of security. Therefore, for Türkiye, the immigration problem has turned into a trilateral balancing game (see figure 1).

In this balancing game, on one hand, Türkiye has to protect its own population's stability and, on the other hand, has to avoid being used merely as a transit bridge for populations fleeing their countries of origin to reach West European states, the prosperity and liberal laws of which serve as a magnet for refugees and illegal migrants. Consequently, Türkiye has adopted measures that are intended to be both humane but cautiously prudent in providing appropriate levels of humanitarian aid to the civilians victimized by conflicts in neighboring countries while also helping irregular migrants decide upon their final destination.

Of course, Türkiye's political and economic character is not limited to that of the gate guardian of a stable hemisphere. As of 2022, Türkiye has reached its seventieth year as a member of NATO. Consequently, from NATO's perspective, Türkiye should be



(Figure by author)

Figure 1. Trilateral Balancing Game of Türkiye

perceived, respected, and valued as constituting the southeastern border of NATO that shares the collective NATO goals of peace and stability with its other members and its neighbors. As a NATO member, its highly professional armed forces and proven commitment to its NATO obligations have resulted in its place among the most reliable of NATO partners, as it has assured the defense of NATO's eastern flank both during the Cold War as well as in the post-Soviet era immediately following the collapse of the Iron Curtain and the emergence of destabilized states, most notably Iraq and Syria.

Türkiye continues to be an invaluable member of NATO up to the present day, applying its experience in hybrid warfare and counterterrorism against insurgent elements to help stabilize the Middle East and some Asian nations with which it shares borders. Additionally, Türkiye has been especially effective in countering elements conducting cross-border attacks against its own national territory from Syria and Iraq by a range of adversaries that include separatist and religiously motivated terrorists.

Notwithstanding, unstable regimes in bordering nations continue to be the main challenge of the complex security environment that Türkiye faces today. The unpredictability of such instability on its borders is the primary factor shaping Türkiye's defense organization, tactical doctrine, and defense industry, and it is the main reason for Türkiye's interest in mitigating irregular migration using its territory.

Dealing with Border Security

The measures taken by Turkish Armed Forces (TAF) against the border security threats that it has faced in recent years will be described hereinafter in more detail. The military decision-making methods it has employed—such as operational design, factor analysis, and risk management—will be outlined for consideration by readers regarding measures against similar threats. To that end, a simplified and more understandable discussion to make the primary elements of the subject clear to the reader will be provided.

Irregular Migration and Terrorism

To begin, irregular migration and the associated terrorism problem affecting the border security will first be framed. Next, the effects of irregular migration on border security and the problems it causes will be defined. Finally, the measures taken by TAF to mitigate the challenges posed will be outlined.

It should be noted as a methodological limitation that the main problem is not the morality or legality of immigration and the political debate different views engender. The focus of this article is operational border security measures that can be taken to mitigate irregular migration and counter the use of such migration by terrorist groups. Research data is based on open sources but insight concerning the analysis derives from the author's personal experience and mindset.

Step 1. Framing the Problem

According to the International Organization for Migration's *Glossary of Migration*, irregular migration means "movement of persons that takes place outside the laws, regulations, or international agreements governing the entry into or exit from the State of origin, transit or destination."⁴

The phenomenon of irregular migration commonly emerges when underdeveloped countries are unable to provide sufficient social and economic opportunities for their populations, the individual security concerns of migrants (e.g., war, regional tensions, and civil war) cause them to seek a safer environment, or migrants think that they will not be able to have the opportunities that they desire in their own country in the future. Irregular migrants are further encouraged to travel to developed countries afflicted with labor shortages caused in part by aging populations that cannot meet labor needs. This

situation tends to favor lax enforcement of some developed states' migration laws.

Consequently, in such states, irregular migration is often perceived by the population as an "informal" rather than an "illegal" situation that can be overlooked if the social groups it affects and the impact it has on the social environment are deemed tolerable. Therefore, a large number of irregular immigrants working informally in the labor market in such receiving countries, who are technically illegal, are not perceived as criminal or illegal by ordinary citizens, which enables the migrants to maintain their presence in those countries. This popular perspective generally persists as long as it is limited to the labor market.

One other reason why irregular migration is not regarded with particular alarm by some governments and host-nation populations is that the characteristics of the immigrants and their status can change at any time. The presence of illegal immigrants is often seen only as temporary phenomenon because it is not possible to predict who they will be, or when, how, and in what direction they will act. Such migrants may choose without forewarning to attempt to move elsewhere or return to their home of origin.

These common perceptions apply within Türkiye, and many of Türkiye's native citizens have displayed remarkable tolerance and even a certain level of support for the irregular migrant presence. However, there have been emerging trends of concern that appear to show such tolerance is wearing thin. For example, due to the sudden influx of irregular migrants, Turkish labor markets in particular have experienced the relatively recent adverse effects of immigrants competing for jobs. More importantly, the waning passive tolerance for irregular immigration has gone a little further due to the emergence of different players exploiting such immigrants. As a result, the border security problems faced by Türkiye have five dimensions directly related to irregular migration:

- ◆ Unstable regions
- ◆ Geographical inevitability
- ◆ Multi-source migration
- ◆ Türkiye is not the final destination
- ◆ Türkiye's state tradition

First dimension: the unstable regions. The fact that countries are negatively affected by the problems arising from the unstable states around them is called

by some political science writers “bad neighborhood instability.”⁵ According to this view, instability becomes contagious when opposition groups successfully begin introducing and promoting hostile ideas across borders that directly challenge the established social narratives of a host nation by calling into question national identity and state legitimacy. In a related manner, Luisa Blanco and Robin Grier state that countries in “conflict regions” may be exposed to “bad neighborhood

problems such demands generate. It is very difficult to strike such a balance, but Türkiye is one of the rare countries that has taken active steps to balance opposing destabilizing internal tensions within its neighboring states while protecting its internal national interests. As it continues its operations against the PKK in northern Iraq, it follows the masked activities of its Syrian extension and informs both its Western allies and Russia. No other state in the world has had to ensure border

“Türkiye has to protect its own interests while establishing a fair balance between the demands of many actors and the problems such demands generate.”

instability” because certain states use refugees/illegal immigrants to intentionally violate and delegitimize borders while making territorial claims and also by enabling terrorist groups to use their territory as a base to launch cross-border attacks.⁶

I have highlighted the impact irregular migration has on regional political instability as a theoretical concept because Türkiye has been suffering from a problem of regional instability for many years that increasingly stems from irregular and illegal groups whose ideas challenge the legitimacy and sovereignty of the Turkish government. These groups sometimes include separatist terrorist organizations such as the *Partiya Karkerên Kurdistanê* (Kurdistan Workers’ Party, or PKK) and the closely associated *Yekîneyên Parastina Gel* (People’s Defense Units, or YPG), and sometimes religiously motivated terrorist networks such as al-Qaida and the Islamic State.

Therefore, the first dimension of the problem faced by TAF is recognition that the risk of instability has reached the borders of Türkiye with increasing severity after the Cold War.

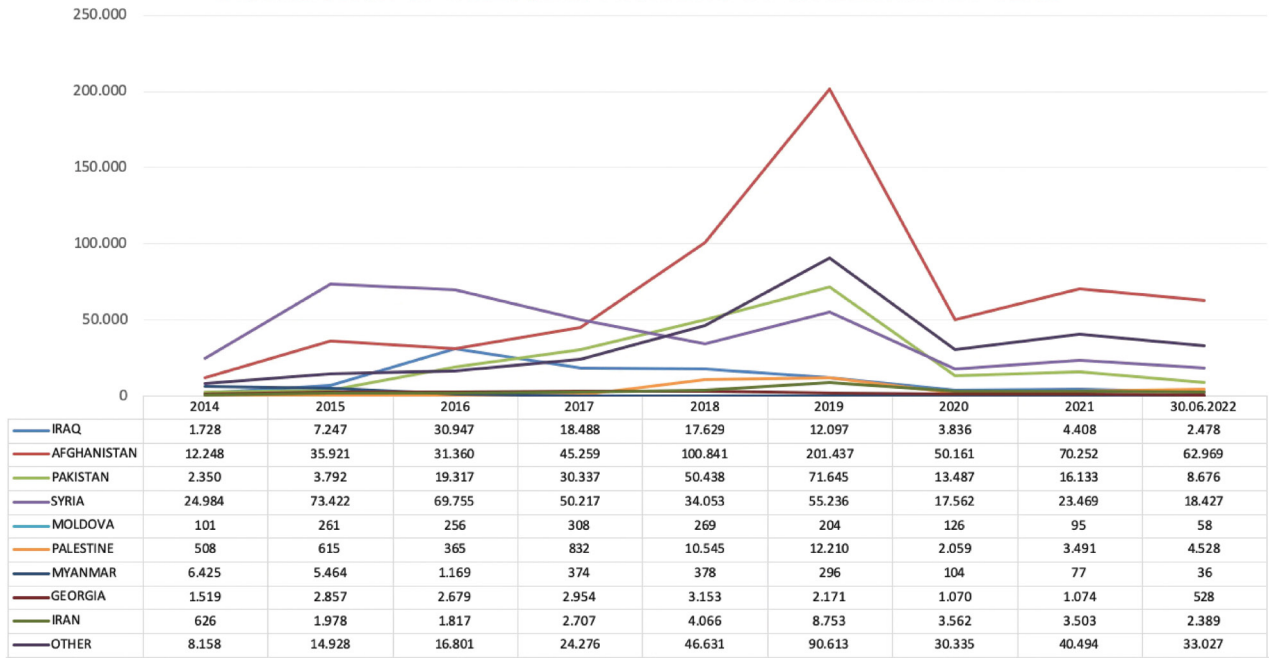
Second dimension: geographical inevitability. “Geography is destiny.” This quote is attributed by some to the famous Maghreb thinker Ibn Khaldun.⁷ This maxim can successfully be applied to what has happened to any state throughout history. In the case of Türkiye, its geographical location provides it with great advantages but creates certain tensions. For this reason, Türkiye has to protect its own interests while establishing a fair balance between the demands of many actors and the

security without escalating tensions with Russia, which has become a de facto border country, while pursuing common interests with its ancient allies.

Third dimension: the multisource migration. Since the civil war in Yugoslavia (1991–2001), Türkiye has been a safe destination for civilians from the states of the former Ottoman provinces to escape to and take refuge in during and after internal conflicts in those nations. Actually, this is nothing historically new. Türkiye has been the destination country of choice for many immigrant groups fleeing turmoil or persecution in other nations for nearly two centuries. For example, after the Russian Tsarist conquests in the Balkans, Crimea, the Caucasus, and central Asia in the nineteenth century, thousands of Crimean, Caucasian Muslims, and Turks immigrated to the Ottoman lands and were settled in eastern and central Anatolia.⁸

Also, after the 1912–1913 Balkan Wars, hundreds of thousands of Turks immigrated to Anatolia and were settled in western Anatolia. With the 1923 Treaty of Lausanne and 1930 Treaty of Ankara, the Greeks in Anatolia and the Turks in Greece were subjected to population exchange.⁹ One vestige of this migration is that the number of immigrant Turks still called “muhajir”—migrant—among the citizens of the Republic of Türkiye is quite high.

The immigration story of the Republic of Türkiye does not end with those instances. In another more recent example, after the Soviet Union’s invasion of Afghanistan between 1979 and 1989, many Afghan



*By the date of 30.06.2022

(Figure from the Presidency of Migration Management)

Figure 2. Distribution of Irregular Migrants by Citizenship by Year

citizens took refuge in Türkiye.¹⁰ However, undoubtedly, the most famous of the migrations during the Cold War years was that of the Bulgarian Turks who migrated to Türkiye in the 1980s, fleeing oppressive persecution by General Secretary of the Bulgarian Communist Party Todor Zhivkov.¹¹

Subsequent to the end of the Cold War, some motives for immigration have become very different. Except for the Yugoslavian Civil War, the number of malevolent terrorist groups mingling with the immigrants has increased considerably. For example, the PKK terrorist organization, taking advantage of the authority vacuum in northern Iraq after the first Gulf War, established its base in this region and infiltrated into Türkiye by hiding among tens of thousands of Peshmerga fleeing from Saddam Hussein’s persecution.¹²

Fourth dimension: Türkiye is not the last destination. Irregular migrants traveling on the Eurasian continent do not only single out Türkiye as a destination. As we are witnessing once again in Ukraine today, immigration has become a major phenomenon in the complex security environment of the twenty-first

century. The ultimate desired destination for most of the immigrants appears to be the western European states. Consequently, due to its geographical location bridging the Middle East with Europe, Türkiye appears at present to be regarded primarily as a transit state rather than a final destination for many of the irregular migrants.

Although Türkiye is today protected by the strongest defensive measures in its history, the density of people pushing against its doors has reached dangerous levels in recent years.¹³ Exacerbating the problem, the flow of people toward Türkiye’s borders does not only originate from its neighboring countries or those in the near proximity. There have been a significant number of irregular migrants and refugees from nonbordering regions for years from a great many regions experiencing instability and conflict such as Afghanistan, Southeast Asia, Africa, eastern Europe, the Caucasus, the Balkans, and recently, Ukraine.

Unlike the migrants in the history previously mentioned, many of whom selected Türkiye as a destination of choice because they shared the Islamic religion with Turks, the new migrants are often distinctively

different in terms of lifestyle and cultural traditions (see figure 2, page 121).

Fifth dimension: Türkiye's state tradition. It would be an incomplete approach to associate Türkiye's appeal as an important destination for irregular immigration in the last two centuries with just the advantages of its geographical location. Such an assessment would overlook the appeal of Turkish culture and state traditions. While Türkiye's approach to providing humanitarian aid is not a distinctive cultural characteristic different from other states, it is nevertheless important to emphasize that providing relief to and helping those fleeing from oppression is a Turkish national tradition independent of political tendencies. For this reason, it is important to point out that Türkiye is one of the rare nations that has sent aid to various parts of the world not directly affecting its interests or its borders, and it has accepted immigrants from many sources throughout history, sometimes even when such immigrants came from areas far away from having possible geographical influence on Türkiye's sociopolitical situation and interests. Moreover, sometimes Türkiye has provided migrant access even when it found itself in need of foreign help.

To illustrate Türkiye's long tradition of assisting migrants and refugees, after the 1492 Alhambra Decree by the Spanish Crown, many of the Jews and Muslims living in Spain and Portugal sought refuge in the Ottoman Empire.¹⁴ Similarly, during the Russian Tsarist conquest of central Asia in the 1860s, the destinations for many of the Turks fleeing from the Khanates of Kokand and Bukhara were the provinces of the Ottoman Empire.¹⁵ Examples of Turkish generosity are abundant, but Turkish empathy and support for irregular immigrants and refugees has often been more generous than that demonstrated by many other nations.

Step 2. Defining the Multidimensional Effects

Although it is possible to classify motives for migration according to certain general criteria such as reasons (forced and voluntary migration), purposes (work, asylum), and methods (legal, illegal) used to reach the goal, it is possible to also describe motivations spawned by other identifiable influences. Such include reasons rooted in ideologies stemming from such intellectual disciplines as economics, sociology, demography, geography, history,

psychology, international relations, and political science. Undoubtedly, irregular migration motivated by these factors might clash with and challenge the established sociopolitical order of the receiving state. This leads to four effects that can be derived from the aforementioned five dimensions of the problem.

- ◆ Increased risk of instability
- ◆ Geography becomes a target
- ◆ Whetting the appetite for illegal organizations
- ◆ Increased risk of sticking between two tensions

First effect: increased risk of instability. The flow of people from unstable regions to Türkiye poses risks to Türkiye's political stability. Apart from the economic and sociopolitical strain created by an influx of many new people, the main threat from irregular migration is the presence of outlaws intermixed with innocent people. Such outlaws benefit from the population blur created by chaotic disorder that makes malevolent actors hard to identify from others in the group.

Second effect: geography becomes a target. As a crossroads nation between states east and west as well as north and south, the geographical location of Türkiye makes it a favorite destination of irregular migrants who are not entirely sure in which direction they want to go. Therefore, as a result of how it is geographically situated, Türkiye historically has to take unusually strong countermeasures to control its borders.

Third effect: whetting the appetite of illegal organizations. As mentioned earlier, the local population tends to describe the crowds that come to their doorsteps for various reasons as irregulars, not illegals, to take advantage of the cheap labor potential that irregular migrants can provide. However, the drawback to such an attitude is that this lax and tolerant perception enables terrorists and other criminal organizations to mingle with such migrants as a device to infiltrate countries.

Moreover, where immigration and visa policies of developed states are more strictly enforced, criminal elements circumvent such policies using various human smuggling techniques such as

- ◆ making use of deserted land and coastal areas,
- ◆ using difficult terrains for crossing borders,
- ◆ creating artificial turmoil to distract border officials,
- ◆ crossing the border with a large crowd that the border security force is not able to cope with to create momentary infiltration points,

- taking advantage of the hidden parts of the vehicles,
- using fake IDs and passports,
- entering a country under false pretenses as a tourist and applying for asylum, and
- bribing border officers.

Among the methods noted, in Türkiye’s experience, using entrances and exits from deserted land and coastal areas constitute the majority of actions aimed at moving irregular aliens across borders.

Human smuggling. Migration itself has historically been an activity involving just two main actors: nation-states and immigrants. However, since the Cold War, “human traffickers” and terrorists have been added as actors via the process of human smuggling.¹⁶

When we consider human smugglers, we come across three different profiles. First, there are amateur traffickers who take part in only a part of the immigrants’ journey, such as conducting a river crossing, transporting irregulars from one point to another by vehicle, or merely by taking advantage of emerging opportunity arising from the evolving environment.

Second, there are professional traffickers, small groups of organized criminals who are more experienced than amateur smugglers and who have experience in orchestrating the most effective ways of transporting humans from one country to another.

Third are the international trafficking networks that can provide all types of documents that immigrants need, have access to a wide and developed net of social connections to meet the needs of residency in transiting through countries and other similar needs, are sophisticated in terms of remaining aware of quickly changing situations thanks to their officers on the travel route, and who are intimately knowledgeable of routes used for trafficking. Such trafficking routes often have already been established by international criminal organizations such as drug traffickers and are merely repurposed and adapted for the movement of people instead of products. (Not surprisingly, the repurposing of established drug routes explains why trafficked people and drugs are often moving simultaneously together.)¹⁷

Since these three elements all serve illegal migration, they are grouped for purposes of the article in the same bracket.

Terrorism. While human trafficking primarily exists to make money for the traffickers, the primary motivation of terrorist organizations is to use targeted violence to achieve specific political goals. Though terrorism is basically different from human smuggling/human trafficking in motivation, in key ways they are intertwined.

Terrorist organizations often exploit people’s grievances to position their operatives for their own political purposes. For this reason, there is a multidimensional and symbiotic relationship between terrorism and irregular migration. First, terrorists often personally conduct human trafficking to finance their organizations. Second, terrorist operatives use irregular migrants to infiltrate targeted countries by mixing with large migrant groups and posing as irregular migrants. Third, terrorist organizations actively attempt to recruit from irregular migrant groups, extract from the migrants other logistical needs, and obtain money from migrants by extorting them.

Fourth effect: risk of sticking between two tensions. The nature of being a transit country in irregular migration may leave Türkiye in the position of fulfilling the need for providing humanitarian aid while defending the stability of its own country. Seemingly every day, the world wakes up with a new international crisis that routinely results rapidly in migration waves involving tens of thousands of people. Such waves of victimized people often expect help and protection from states like Türkiye to reach their destinations.

As noted previously, perhaps the most important side effect of irregular migration is the risk of destabilization. Today, Türkiye faces such a risk and, as noted, does so lamentably with minimum assistance from NATO.

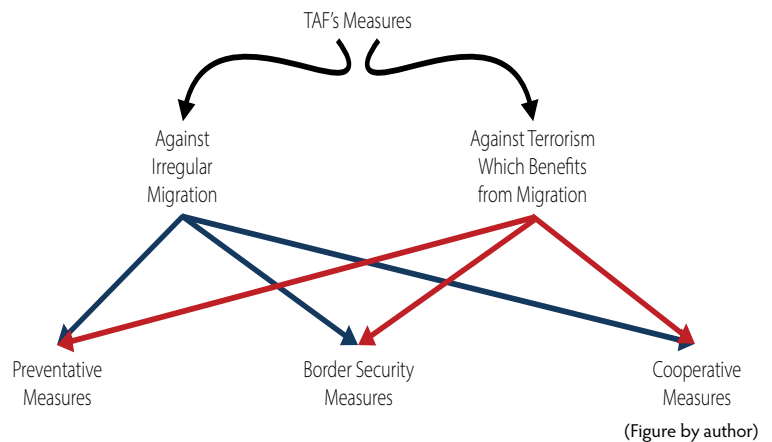
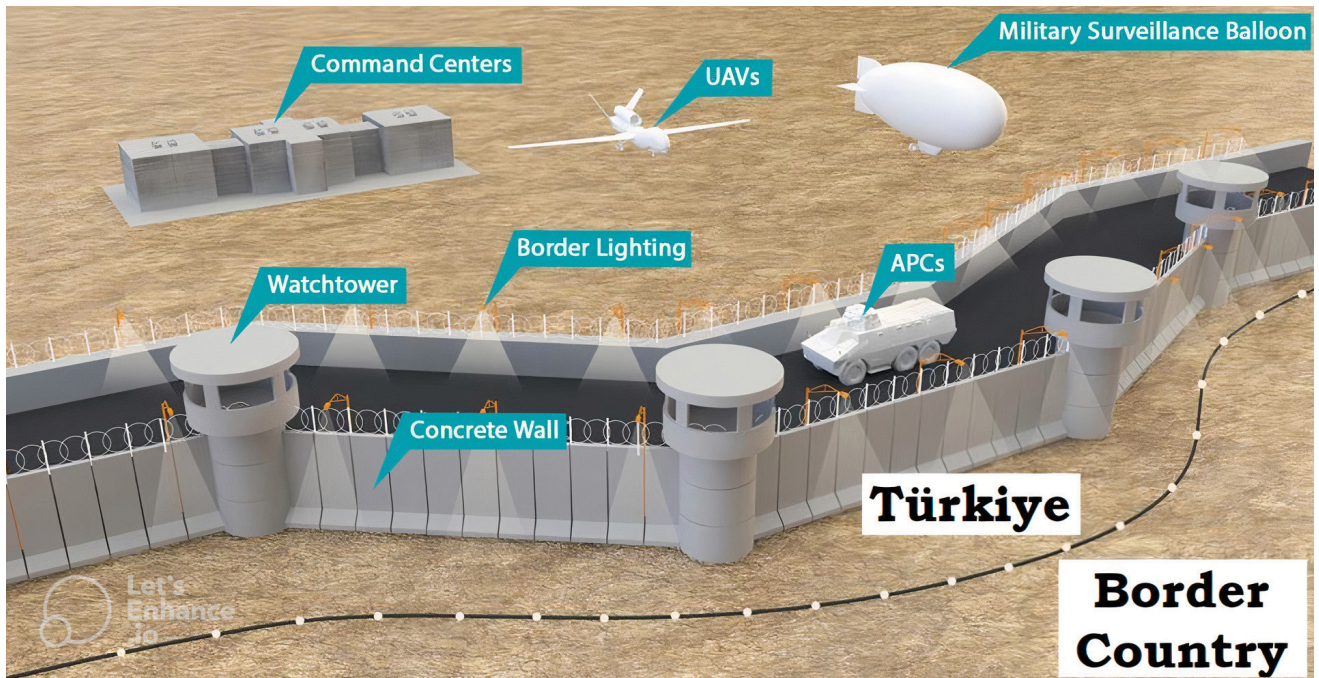


Figure 3. Turkish Armed Forces’ Multidimensional Border Security Measures



(Figure by author)

Figure 4. Physical Border Security System

Step 3. Turkish Armed Forces' Measures

In a situation where millions of people are on its borders, Türkiye does not have the luxury of waiting for its allies to get over their hesitation and prejudices and come to its aid. So, what kind of measures does TAF take, mainly without outside assistance?

TAF's measures for the immigration problem essentially are managed through application of a pragmatic cognitive process. Solutions to the problems produced by the regional instability are considered within the framework of this process to guide its actions through crisis situations. In this cognitive process framework, the measures are categorized for both irregular migration and terrorism under two main headings and six subheadings as shown in figure 3 (on page 123).

Step 3a: measures against irregular migration.

The issues posed by unstable neighbors and the environmental conditions in which these issues arise necessitate preventive measures taken across borders. Such measures can be applied in two ways. If the unstable neighboring state still has central control over its borders, TAF attempts first to come to an agreement with the government of that state. However, if that state has no

control over its own borders (which is often the case), it is necessary and appropriate for Türkiye, the violated state, to take action beyond the border.

In responding to uncontrolled areas beyond Türkiye's borders, the areas of interest are first monitored closely by technological systems and facilities such as military satellites, airborne early warning and control systems, unmanned aircraft systems, and modular temporary bases.¹⁸ It is important to note that whatever necessary actions are then decided upon, the neighboring state is informed about every measure taken.

The measures taken at the border line against irregular migration differ according to each situation, and there are challenges associated with tracking the means of illegal entry of foreigners into a country, the length of stay such migrants have in the country, the time and manner of exit from the country, and the type of unauthorized work performed while in the country. Because it is irregular migration, the migrants involved are largely undocumented, which makes the system harder to manage or control day to day.

The problem is made more complex because the transportation of immigrants from the source country to the destination countries is often provided by organized

Table. Symbiosis between Irregular Migration, Terrorism, and Smuggling/Trafficking

	Infiltration		Recruiting		Spread	
	T/S/T	IM	T/S/T	IM	T/S/T	IM
Mutualism	+	+				
Parasitism			+	-		
Commensalism					+	0
T/S/T: Terrorism, Smuggling, Trafficking				IM: Irregular Migration		
+	Benefit	0	Ineffective	-	Harm	

(Table by author)

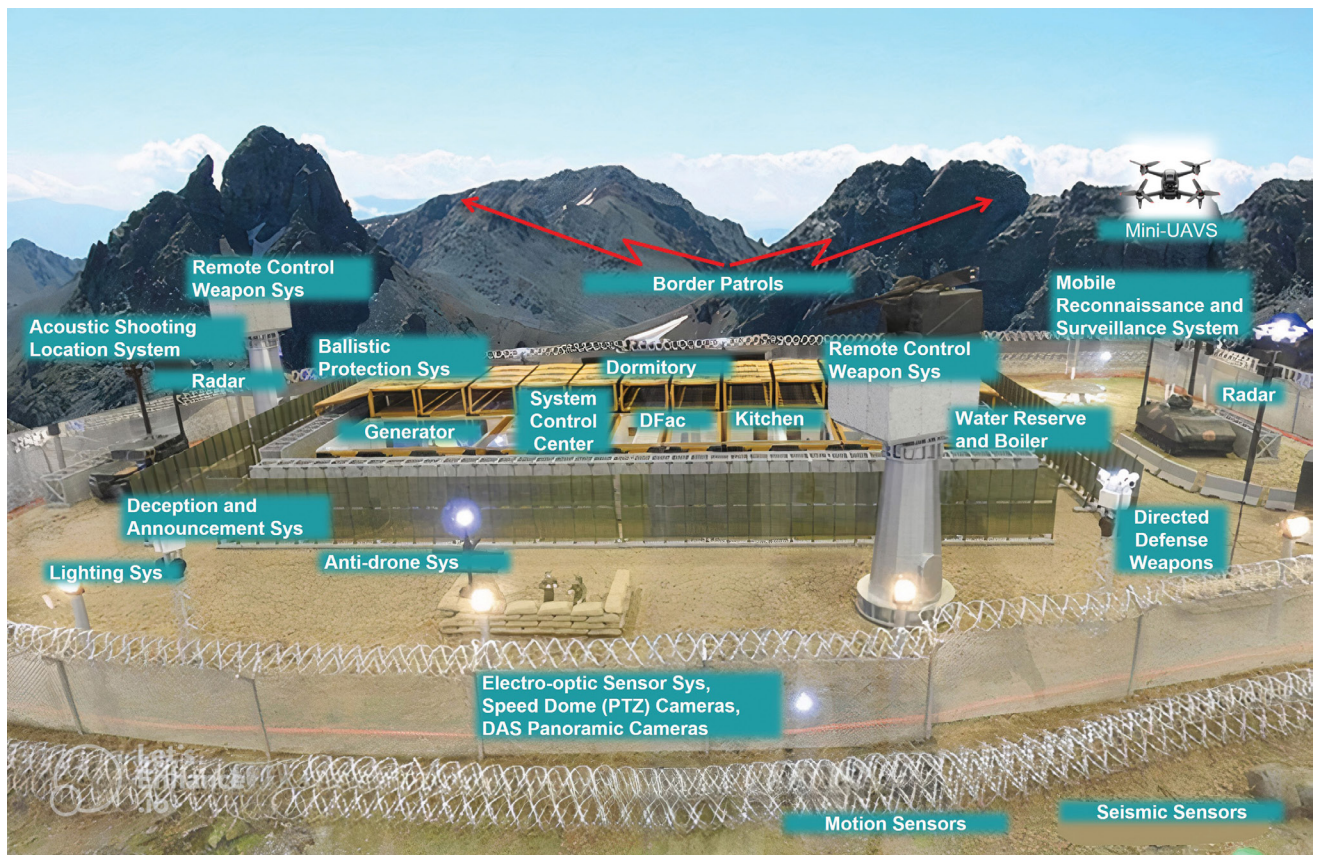
crime organizations, which are described as “immigrant smugglers.” Additionally, some migrant smuggling organizations pay a commission to terrorist organizations if they act as an intermediary in recruiting personnel to arrange the transfer of immigrants from conflict zones or regions within the borders of unstable states that remain under the control of those terrorist organizations.

In an effort to establish some measure of control, one mission of the border troops confronting large refugee movements arriving at the borders is to ensure that migrants are funneled through crossings at certain points in a controlled manner. This enables border troops to screen and assess irregular migrants following whatever principles and guidelines that are determined by the border authorities to be appropriate and necessary. Border troops may conduct body searches and disarmament to establish security at the crossing points. Additionally, border troop operations have been enhanced with advanced surveillance systems and other sensor-enhanced border security systems (see figure 4, page 124).

The cooperative measures among affected states against irregular migration are two-dimensional. While

cooperation with other states constitutes the first dimension, measures to be taken in coordination with other state institutions within the country constitute the second essential dimension of cooperative measures. These measures can include

- ◆ Sharing of irregular migrants with neighboring states;
- ◆ Sharing the financial burden among source, transit, and destination states in order to control irregular migration and stop it in certain regions;
- ◆ Making realistic readmission agreements between target and transit states that can compensate for the grievance of transit states and implementation of these agreements in good faith;
- ◆ Establishing temporary settlements in areas close to the political borders of countries that originate migration;
- ◆ Providing logistic and financial support from international organizations within the scope of humanitarian aid; and
- ◆ Convincing the source states to readmit their citizens.



(Figure by author)

Figure 5. Modular Temporary Base as a Practical Measure against Terrorism

Cooperation with state institutions. Effecting cooperation with and among internal state institutions is optimally achieved with the creation of an organization responsible for the management of migration and having the authority to coordinate cooperative measures. Thus, Türkiye established the Presidency of Migration Management under the Ministry of Interior in 2013, ensuring coordination among all state institutions. This office ensures cooperation and coordination on the issues regarding its borders with

- ◆ The official organization responsible for border security,
- ◆ The customs protection organization,
- ◆ The administrators of the border provinces,
- ◆ Law enforcement agencies,
- ◆ The justice organization,
- ◆ The health organization,
- ◆ The social aid organization,
- ◆ The education organization, and

- ◆ Humanitarian aid organizations such as the Red Crescent/Red Cross, disaster relief organizations, nongovernmental organizations, and international humanitarian aid organizations.

Cooperative measures do not end there. The armed forces should also be prepared to provide support to other public institutions in dealing with irregular migrants who have somehow managed to infiltrate the country. The authority and responsibilities of border units and other military units that will provide support to law enforcement should be guaranteed by detailed legal arrangements, leaving no room for hesitation or disagreement.

Step 3b: measures against international terrorism. Irregular migration facilitates the movement of terrorists who can mix with the people. This is a commensalistic relationship fed by the freedom of action and recruitment opportunities obtained from irregular migration; terrorists obtain significant benefits while irregular immigrants gain nothing. Additionally, the

advantages terrorists gain further enables terrorist groups to expand their spheres of influence through illegal immigration (see the table, page 125).

Border security measures are taken to prevent both irregular migration and terrorist activities. Preventive measures, depending on the geographical structure of the political border, determine the organization and equipment of both the border troops and the opera-

reason, TAF has to struggle with information pollution and manipulation. In this way, in addition to the measures within the scope of information operations, preventive security zones are formed beyond the borders as physical measures. As part of this, temporary surveillance and operational bases are established. Satellite, aircraft, and unmanned aircraft surveillance are utilized to the maximum extent. On the border line, outposts,

“ In order to render these deterrent methods useless and to nullify Türkiye’s legal efforts, terrorist organizations spread fake news against TAF and sometimes do not hesitate to shield civilians against military operations. ”

tional forces, and determine the center of gravity of the support to be provided to these forces. For example, in mountainous border areas, border troops are deployed to critical sections of terrain to control key avenues of approach. To compensate for the cover and concealment opportunities provided by the rough terrain to the terrorists, border troops are predominantly equipped with thermal surveillance systems. Additionally, since the mountainous borders are very difficult to control by deploying troops and land surveillance, the escape routes beyond and behind the border line are closed by ambush/patrol (A/P) and reconnaissance/surveillance operations (R/S).

Land surveillance in flat border areas is easier than in mountainous areas. Such borders can be controlled by a smaller number of troops if adequate physical precautions are taken. Several rows of high wire fences, modular concrete walls, covered patrol routes, sheltered watchtowers, and seismic sensors are some of the physical measures that can be taken. A/P and R/S operations on flat border sections are standard physical security measures. Action histories in the area are kept accurately and terrorist infiltration, tunneling, and harassment shooting sites are restrained by A/P, R/S operations.

As a preventive method, emergency fire support is used in all kinds of border sections and in all situations, in accordance with the rules of engagement. In order to render these deterrent methods useless and to nullify Türkiye’s legal efforts, terrorist organizations spread fake news against TAF and sometimes do not hesitate to shield civilians against military operations. For this

which have effective surveillance and fire facilities and which can act as logistic support bases for crossborder operations when necessary, are established. Until the outposts are established and their activities stabilize an area, modular temporary bases are established to cover certain transit-escape directions (see figure 5, page 126).

Mobile reserves composed of commandos and motorized units, border patrols, mini-unmanned aircraft, short wave infrared cameras, restricted vision cameras, seismic sensors, mobile reconnaissance and surveillance systems, and high-resolution smart cameras are also deployed to these modular bases. Additionally, ground surveillance radars and artillery and mortar detection radars are installed.

Cooperative measures against the threat from unstable regions requires military measures to be considered in two dimensions. The first dimension includes joint operations carried out only with national forces, and the second dimension includes operations carried out within the scope of the coalition formed with the participation of different countries. In line with needs and demands, the military units might carry out A/P and R/S operations in areas between the borders and the areas of responsibility of the law enforcement forces.

All types of operations, combined or joint, require phasing. Accordingly, the military operation should include the suppression and elimination of the terrorist threat in the first stage, the control of the unstable region in the second stage, and the execution of the stabilization operation in the third stage. Military professionals play an active role in this third-stage operation,

which can be called “peace building.” Just like in irregular migration, cooperation with other institutions gains importance in stabilization operations.

The essence of the measures taken against regional instability is based on pragmatic military planning that will ensure the correct determination of the threat, the task, and the effective management of the crisis. Such pragmatic planning requires broad-minded and intellectual military decision-makers who can act in coordination with as many national security institutions as necessary for the realization of the politically desired end state. To achieve this, intelligence-based and intelligence-guided operations are planned against the terrorist leadership cadre, critical personnel, critical facilities, and weapon systems located beyond the borders, in coordination with intelligence agencies and law enforcement forces.

Conclusion

One of the important factors creating and complicating the current security environment is irregular migration. This form of immigration is basically defined as foreigners entering, staying, leaving, and working inside a sovereign country illegally. Irregular migration alone poses a significant threat to economic, social, and national security. However, another problem stemming from such migration arises from its potential for aiding international terrorism that exploits its features. To mitigate both problems, military organizations should be involved

with and assigned different duties for dealing with large refugee movements headed toward the borders.

Türkiye is one of the main destination and transit countries of migration movements in the world due to its geographical location and political/economic and cultural characteristics. Recently, irregular migration has become one of the main areas shaping Türkiye’s relations with its Western allies. Finland and Sweden’s application to NATO membership after the threat they perceived from Russia has once again revealed the importance of Türkiye’s membership in NATO. The two newest countries, once in NATO, will provide new strategic opportunities to pacify international terrorism and mitigate irregular migration through cooperative relationships on many levels. For this reason, it is very important for these two countries to overcome Türkiye’s reservations about terrorism with tangible measures to achieve their membership goals.

Meanwhile, ongoing operational-level measures aimed at mitigating the impacts of irregular migration and international terrorism on Türkiye, which constitute the main problems addressed in this article, are carried out with devotion by TAF. At the same, while ensuring the border security of its country, TAF is making the utmost effort to fulfill the humanitarian requirements of irregular migrants seeking a better life, and hopes that its allies will support it in its endeavors, as it has been actively providing support to NATO for seventy years. ■

Notes

1. “Ukraine Refugee Situation,” UNHCR Operational Data Portal, 20 May 2022, accessed 21 May 2022, <https://data2.unhcr.org/en/situations/ukraine>; “Irregular Migration,” R.o.Tr. Ministry of Interior, Presidency of Migration Management, last updated 30 June 2022, accessed 15 May 2022, <https://en.goc.gov.tr/irregular-migration>. During the Russo-Ukrainian War, Poland has been the country that has received the most immigrants from Ukraine. As of 20 May 2022, 3,463,000 of the 6,444,000 Ukrainian immigrants have been accepted by Poland; the migrant situation in Türkiye is much more than that. According to the UN’s International Organization for Migration (IOM), there are 5,400,000 immigrants in Türkiye as of 5 May 2022. Approximately 3,600,000 of them are Syrians.

2. UN, *International Migration Policies: Government Views and Priorities (ST/ESA/SER.A/342)* (New York: UN Department of Economic and Social Affairs, Population Division), 99.

3. UN, *World Migration Report 2022* (Geneva: IOM, 2021), 26, accessed 21 July 2022, <https://digitallibrary.un.org/record/3951157/files/W/MR-2022-EN.pdf>; “Immigrants and Emigrants by Country of Citizenship, 2016-2019,” Turkish Statistical Institute, accessed

14 July 2022, <https://data.tuik.gov.tr/Bulten/Index?p=Uluslararası-Goc-Istatistikleri-2019-33709>. According to the 2022 report of the IOM, the Syrian Arab Republic-Türkiye corridor is the second largest migration corridor in the world after the Mexico-U.S. corridor. The twelve countries from which Türkiye receives over ten thousand people annually are as follows: Iraq, 83,829; Turkmenistan, 80,003; Afghanistan, 47,228; Syria, 43,190; Iran, 42,351; Azerbaijan, 26,563; Uzbekistan, 25,064; Russian Federation, 17,311; Egypt, 12,502; Libya, 12,082; Jordan, 11,268; Somalia, 10,290.

4. UN, *Glossary on Migration, International Migration Law 34* (Geneva: IOM), 116, accessed 21 July 2022, https://publications.iom.int/system/files/pdf/iml_1_en.pdf.

5. Luisa Blanco and Robin Grier, “Long Live Democracy: The Determinants of Political Instability in Latin America,” *Journal of Development Studies* 45, no. 1 (January 2009): 84.

6. *Ibid.*: 76–95.

7. Abd Ar Rahman bin Muhammed Ibn Khaldun, *The Muqaddimah*, trans. Franz Rosenthal (London: Routledge & Keagan, 1978), 233–39. Although there is no clear expression in his works as “geography is destiny,” it is known that Ibn Khaldun stated that

geography is a determining factor on human life. In *The Muqaddimah*, which includes Ibn Khaldun's views on the effects of geography on people, culture, and economy, he follows an approach in the form of "geography is a determining factor." In the book, Ibn Khaldun states that "umran" (civilization) and society, which is a necessary prerequisite for umran, emerged in a geography and a climate, and that this climate had the features predicted. In *The Muqaddimah*, the world was divided into seven climate regions and societies were tried to be classified according to these regions.

8. Justin McCarthy, *Death and Exile: The Ethnic Cleansing of Ottoman Muslims 1821-1922* (Princeton, NJ: Darwin Press, 1995), 23–58.

9. "Etabli meselesi," Atatürk Ansiklopedisi, accessed 21 April 2022, <https://ataturkansiklopedisi.gov.tr/bilgi/etabli-meselesi-2/>. After the Balkan Wars, in 1913, separate agreements were made among Türkiye, Bulgaria, and Greece on population exchange. In the Treaty of Lausanne, based on the 1913 agreements, the Greeks in the region extending from the Aydın Province to the Gallipoli peninsula, and the Muslims in the Macedonia and Epirus regions of Greece were accepted as "établie (settled)." The établie problem, which had gone through various stages since Lausanne, was resolved with the Ankara Agreement of 10 June 1930, and according to the tenth and fourteenth articles of the Agreement, irrespective of the date of their arrival and their place of birth, the Greeks of Istanbul and the Muslims of Western Thrace were accepted as "établie."

10. "The Resettlement Act Number 2641," *Resmî Gazete* (website), accessed 21 April 2022, <https://www.resmigazete.gov.tr/eskiler/2007/05/20070502-5.htm>. Türkiye officially met with Afghan immigration for the first time in 1982, but this was not about irregular migration. 4,163 Afghan citizens of Turkish origin who took refuge in Pakistan due to the occupation of Afghanistan by the Soviet Union immigrated to Türkiye legally with the Resettlement Act Number 2641, dated 19 March 1982, and have been living as citizens of the Republic of Türkiye for thirty-nine years.

11. "Bulgaria," Council of Europe, accessed 15 July 2022, https://www.coe.int/en/web/commissioner/country-monitoring/bulgaria/-asset_publisher/llCM6m5KhFKp/content/human-rights-of-children-and-minorities-in-bulgaria-need-better-protection. The Todor Zhivkov regime, which came to power in Bulgaria in 1956, oppressed the Turks in the country and started a campaign called "Revival" in 1984. The assimilation launched against Turks and Muslims living in the country with a population of 8.5 million aroused worldwide repercussions and reactions. Türkiye opened the Kapikule Border Gate on 4 June 1989. At least 360,000 Turks and Muslims immigrated to Türkiye with the immigration wave, which is still known as the "Big Excursion" in Bulgaria. The Bulgarian Parliament condemned the assimilation campaign in a statement approved on 11 January 2012. The statement said, "We declare the expulsion of more than 360.000 Turkish descendant Bulgarian citizens from the country in 1989 as an act of ethnic cleansing committed by the totalitarian regime."

12. "1988-1991 Iraklı Sığınmacılar Krizi," Türk Dış Politikası Krizleri, accessed 7 May 2022, <https://tdpkrizleri.org/index.php/1988-1991-irakli-s-g-nmac-lar-krizi/item/264-ana-say-fa-1988-1991-irakli-siginmacilar-krizi>. Around fifty thousand Kurds in the last days of August 1988 and around four hundred thousand Kurds in the last days of March 1991 fled the regime of Saddam Hussein and took refuge in Türkiye. The refugees were settled in temporary settlements established in Diyarbakır, Muş,

and Mardin in 1988, and in camps established on the Iraqi side of the Hakkari-Iraq border in 1991.

13. Presidency of Migration Management, "Irregular Migration."

14. Bernard Lewis, *The Jews of Islam* (Princeton, NJ: Princeton University Press, 1984), 120. There is mention of such immigrants at the beginning of the fifteenth century; some may have come even earlier. They were, however, dwarfed into insignificance by the massive immigration of Sephardic Jews from southern Europe, from the end of the fifteenth century, following the edicts of expulsion against the Jews of Spain in 1492 and of Portugal in 1496. From this time, they began to arrive in the Ottoman domains in ever-increasing numbers.

15. McCarthy, *Death and Exile*, 29.

16. Protocol against The Smuggling of Migrants by Land, Sea and Air, supplementing the United Nations Convention against Transnational Organized Crime, 15 November 2000, 2241 U.N.T.S. 480, accessed 21 July 2022, <https://www.unhcr.org/en-us/protection/migration/496323791b/protocol-against-smuggling-migrants-land-sea-air-supplementing-united-nations.html>. According to the Article 3a, "Smuggling of migrants' shall mean the procurement, in order to obtain, directly or indirectly, a financial or other material benefit, of the illegal entry of a person into a State Party of which the person is not a national or a permanent resident"; Protocol to Prevent, Suppress and Punish Trafficking in Persons, Especially Women and Children, supplementing the United Nations Convention against Transnational Organized Crime, 15 November 2000, 2237 U.N.T.S. 319, accessed 21 July 2022, <https://www.ohchr.org/en/instruments-mechanisms/instruments/protocol-prevent-suppress-and-punish-trafficking-persons>. According to the Article 3a, "Trafficking in persons' shall mean the recruitment, transportation, transfer, harbouring or receipt of persons, by means of the threat or use of force or other forms of coercion, of abduction, of fraud, of deception, of the abuse of power or of a position of vulnerability or of the giving or receiving of payments or benefits to achieve the consent of a person having control over another person, for the purpose of exploitation. Exploitation shall include, at a minimum, the exploitation of the prostitution of others or other forms of sexual exploitation, forced labour or services, slavery or practices similar to slavery, servitude or the removal of organs."

17. Andreas Schloenhardt, "Organized Crime and the Business of Migrant Trafficking: An Economic Analysis," *Crime, Law & Social Change* 32, no. 3 (1999): 203–33, <https://doi.org/10.1023/A:1008340427104>.

18. Turkish military satellites are called "Göktürk," referring to the Turkish state that ruled in central Asia between 552 and 744 AD; Turkish airborne early warning and control systems, which derived from a contract between Turkish Aerospace Agency and Boeing Co.-USA in 28 January 2004 is called "Peace Eagle." Türkiye is one of the few countries in the world with an airborne early warning system; Turkish unmanned aircraft system technologies, which have become popular in recent years, started to be developed as a national technology in the early 2000s. Today, many Turkish companies, especially TAI, ASELSAN, HAVELSAN, and BAYKAR continue to work in this field; ASELSAN has undertaken the main contractor of the modular temporary base project. Currently, there are modular temporary bases in Türkiye's international border line, and in the risky areas close to the border within the scope of the UN Charter art. 51.



Russian tanks on railway cars in Belarus on 24 February 2022 shortly before the invasion of Ukraine. (Screenshot from the Russian Ministry of Defence)

Russian Logistics and Forward Urban Defense in the Baltic States

Lukas Milevski, PhD

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On 24 February 2022, following a pattern it began in 2008 and continued in 2014, Russia proved once again that it was perfectly willing to start major war in Europe. Beyond the attention paid to its war, Russia has tangentially also pushed Baltic defense back close to the center of NATO's security agenda. Unlike prior considerations of Baltic defense, we now have an ongoing example of a major Russian invasion and military performance from which to work. This article therefore considers the plausibility of the urban defense of near-border Baltic cities in the context of Russian military and logistical performance in Ukraine. At the time of writing (prior to the Madrid Summit), this is not a probable Baltic defense plan despite likely increases to NATO forces in the Baltic states. In case of war with Russia, NATO remains oriented toward a fighting return to the Baltic states rather than an initial defense. Yet there are two reasons to consider such an operational plan seriously.

The first reason is political: it would be supremely politically difficult for the Baltic states to accept the loss of major population centers in the event of a Russian invasion, particularly after the modern, if vicarious, experience of the Russian invasion of Ukraine. Russia demonstrated in Ukraine that its occupation of foreign territory still brings with it looting, rape, deportations, murder, and cultural destruction—all on a massive scale. Vilnius is Lithuania's capital and leading population center, with about a quarter of the country's population. It would be politically intolerable for Russian war crimes to occur there again. For Narva in Estonia and Rēzekne and Daugavpils in Latvia, the political calculus differs, though the overall conclusion remains the same. These are cities often considered in the West, not necessarily accurately, to be among the most vulnerable due to their substantial Russian populations. If Estonia and Latvia were willingly to abandon these cities to invading Russians it would send a strong political signal to the Baltic Russian communities in these two countries that those communities are insufficiently Latvian or Estonian to be worth defending, plausibly not only undoing decades of slow integration but even actively pushing them toward Russia.

The second reason is logistical and is the focus of this article. Russian logistics have proven to be one of the major limiting factors to Russian operations in Ukraine. It is sensible to think about Baltic defense both to take advantage of and exacerbate Russian logistical weakness, particularly given Russia's self-evident logistical advantages in the Baltic states: "Russian army rail sustainment capability ends at the borders of the former Soviet Union"—which included Estonia, Latvia, and Lithuania.¹

The strategic environment contextualizes the prospect of urban defense of near-border towns and cities in the Baltic states in two ways. First, as T. X. Hammes has plausibly argued, the tactical defensive is becoming increasingly dominant as a result of a convergence in twenty-first-century technologies including commercial satellite networks, remotely piloted aerial vehicles, and the increasing exploitation of the electromagnetic spectrum.² This imbalance in favor of defense is likely to add to the political impetus to defend further forward, rather than in depth, for the sake of defending more people, more property, and more land—especially against a barbaric enemy such as Russia. Second, the world is in an era of smaller armies. As British professor Anthony King has suggested, historically "the smaller the armies, the more important cities become; urban warfare attains priority as military forces contract. By contrast, the larger the armies, the more likely that open warfare in the field will predominate over siegecraft. As cities expand, cities become less operationally significant. The frequency and importance of urban warfare is, therefore, substantially a function of the size of military forces."³ At any time, forces available for Baltic defense are likely to be small; as a result, to defend successfully against Russia, the defenders will have to (1) leverage the plausible defensive advantages of urban terrain

Lukas Milevski, PhD, is a tenured assistant professor at Leiden University, where he teaches strategic studies. He is the author of two books published by Oxford University Press: *The Evolution of Modern Grand Strategic Thought* (2016) and *The West's East: Contemporary Baltic Defense in Strategic Perspective* (2018). He completed his PhD in 2014 at the University of Reading, where he studied with Colin Gray.

to compensate for probably inferior numbers and firepower, and (2) deny Russian armed forces access to the infrastructure and services that urban centers provide—most notably key rail nodes.

This article first engages with Russian military doctrine and logistics, how the two intertwine, and their joint performance during the war in Ukraine. It then gives an overview of Baltic railway and highway networks, particularly those that lead from Baltic capitals to border crossings into Russia or Belarus. Finally, it considers the difficulties, purposes, and advantages of defending near-border Baltic urban centers in a hypothetical Russian invasion.

Russian Military Doctrine, Logistics, and Performance

First, one must necessarily understand Russian logistics, as far as the available evidence allows. The Russian army is a railway army, the result of a long military history in a spatially massive Eurasian geographical context. Its unique organization of ten rail troop brigades reflects this logistical orientation. Available to these rail troops are up to sixty-six thousand flatbed railcars; this was enough to move the entirety of Russia's ground forces simultaneously, even before Russia's losses suffered in Ukraine. If unimpeded, it is possible for Russia to move forces up to 1,200 kilometers within twenty-four hours.⁴ From the mid-nineteenth century onward, the Russian railway was designed with defense in mind; a wide rail gauge of 1520 mm (as compared to the 1435 mm standard gauge used elsewhere) prevented easy invasion at a time when the Russian empire was a status quo great power in Europe.⁵

Modern Russian military doctrine is defensive, reflecting both the reality of its railways and the military's perception of Russia's geopolitical situation and imperatives—the latter of which may differ from that of Putin and the rest of the Russian political leadership. Known as “active defense,” this doctrine is both military and nonmilitary and essentially focuses on instilling wartime deterrence by denial by degrading the opponent's ability to

employ his military effectively through the exploitation of asymmetric responses, resilient air defense, and ultimately seizing the strategic initiative.⁶ In future war, Russian military theorists have anticipated a fragmented battlefield with low force densities compared to the two world wars and therefore also without continuous frontlines. Such fragmented battlefields result in the importance of maneuver and the vulnerability of logistics.⁷

Yet such a fluid concept of tactics and operations is difficult to reconcile with fixed ground lines of communication based on railways. The overly complex logistical system Russia inherited from the Soviet Union was overhauled and ten material-technical support (*Materialno-tekhnicheskogo obespechenie* or MTO) brigades were created.⁸ Each MTO brigade is committed to supporting one combined arms army (CAA), with two in the Western Military District (MD), two in the Southern MD, two in the Central MD, and four in the Eastern MD.⁹ It appears that an



Soldiers participate in the “Best Specialist of the Railway Troops” contest 26 May 2015 in Russia's Western Military District. Railway troops are a special branch of the Russian armed forces that support logistical operations by executing all tasks related to the construction, maintenance, and defense of the Russian railway system. The Railway troops would play a key role in any military operation against the Baltic states by working to ensure the continuity and security of railway logistical support to forward-deployed forces. (Photo courtesy of the Russian Ministry of Defence)

eleventh MTO brigade was formed somewhat recently, possibly to serve the 1st Guards Tank Army in the Western MD. Each MTO brigade fields two truck battalions, each battalion comprising 408 transport vehicles (148 general freight, 260 specialized, with 48

trailers). Each battalion “can reportedly haul 1,870 tons of cargo (1190 tons of dry cargo, 680 tons of liquid).”¹⁰ Whereas an MTO brigade serves a CAA, an MTO battalion serves a division, and MTO companies serve regiments/brigades.¹¹

This in turn suggests that Russians can most effectively operate, particularly offensively in enemy territory, where railways and highways coincide in close geographical proximity. An army cannot simply invade hostile territory by rail. It must advance by road, even though a Russian army’s advance would certainly be sustained by rail. The Soviet army preferred to advance in column on a narrow front, a preference apparently

Nonetheless, Vershinin usefully observes that “[i]t is possible to calculate how far trucks can operate using simple beer math.”¹⁴ On undamaged and unobstructed road networks capable of sustaining mass wheeled traffic at forty-five miles (72.4 km) per hour, a single truck making a forty-five-mile journey might plausibly make three trips per day: an hour to arrive, an hour to unload, an hour to drive back. On a ninety-mile (144.8 km) journey, two trips are possible; on a 180-mile (289.7 km) journey, just one. U.S. Department of Defense sources provide Soviet supply depot distances for comparison: on the offensive, from the forward edge of the battle area, battalion supply depots were 4

“Although the Russians theorized a fragmented battlefield, their actual ability either to fight or to defend logistics on such a battlefield is demonstrably doubtful.”

still shared by the Russian army, given how it has been advancing in Ukraine. Lateral movement, widening any formation’s front, takes place only when combat is considered imminent.¹² Consequently, the farther apart the highways of advance and the railways of sustainment are, the more difficult and resource intensive it would be to secure the latter, let alone also the terrain in between, so that supplies moved by rail can reach their intended final destinations by truck. The Russian army’s performance in Ukraine has demonstrated the importance of the railway for its deep operations.

The full logistical capacity of an MTO brigade is probably not yet fully understood for several reasons. First, the present war is the first war in which the MTO organization is being put through its paces, and problems are undoubtedly and inevitably arising for the Russians, which they will seek to address. Second, in an otherwise excellent article, Alex Vershinin mistakes the truck count of a single MTO battalion for that of a full brigade (per Lester Grau and Charles Bartles), resulting in erroneous logistical mathematics—therefore, a single salvo of a CAA’s rocket artillery would require one quarter rather than one half of a full MTO brigade’s dry cargo truck force to replenish, that is, half of an MTO *battalion* would be required.¹³

km, regimental depots were 10 to 15 km, and divisional depots were 25 to 30 km.¹⁵ Moreover, Russian logistics operates on both a push and pull dynamic: higher-level MTO formations can use *their* own trucks to push supplies down to lower-level formations (brigade to battalion, battalion to company), but lower-level MTO formations can use their own trucks to pull supplies from higher-level formations (company from battalion, battalion from brigade). Although Russian doctrine seems to allow for MTO brigades to bypass the battalion level to supply MTO companies directly, it is probably only done in exceptional circumstances.¹⁶ This combined push and pull dynamic will inevitably interfere with any logistical beer math.

Unfortunately, we seem to lack knowledge of supply distances at army level for the Soviet era and present Russian militaries, although given Belgorod’s present role as a Russian logistical hub, it appears that army-level depots can stay well in the rear. Belgorod is about 230 km from the forces ultimately supplied at Izyum, but only about 150 km from Kupyansk by rail, which is probably the closest Russian railhead to Izyum. It seems likely that, throughout much of April and May, Russian logistics were transported from Belgorod to Kupyansk by

rail and from Kupyansk the final 80 km to Izyum by truck—which in this instance returns us nearly to Vershinin’s original forty-five miles.

Vershinin reminds us that his beer math represents an ideal of unobstructed logistics. Russia’s war against Ukraine demonstrates that this ideal appears well out of reach. First, although the Russians theorized a fragmented battlefield, their actual ability either to fight or to defend logistics on such a battlefield is demonstrably doubtful. At the time of writing, the Russians have lost 1,448 trucks, jeeps, and other vehicles as identified by Oryx, most of them undoubtedly logistical vehicles.¹⁷ This represents an aggregate loss of over two full MTO battalions’ worth of trucks, a staggering blow to Russian logistics. However, it is presently unclear how many MTO brigades are involved in the war. Second, as Trent Telenko has observed, from the open-source reporting of the war thus far, Russian logistics appear to be substantially nonmechanized. That is, the Russians appear not to be using pallets in any logistical capacity in Ukraine, even though they are arguably fundamental “to the mechanized movement of goods.” Yet pallets are what determine difference between a four-hour palletized and mechanized unloading task and a three-day non-palletized and nonmechanized but otherwise identical unloading task.¹⁸ Russia’s logistics are likely sabotaged to an unknown degree by their own gross inefficiency, particularly at points of transfer. The result of the low level of functionality in Russia’s logistical system in Ukraine is that it appears only to be able to sustain three battalion tactical groups in active combat on each axis of advance at a time—though it is presently unknown how many MTO brigades are actually sustaining the invasion force.¹⁹

The Baltic Rail and Road Networks

The Baltic rail network remains an old imperial Russian legacy, still on the broader Russian gauge and therefore more connected to Russia than to the European Union. The Baltic states, Russia, and Belarus are connected by rail at only a few locations: at or near Narva and Koidula in Estonia; Kārsava, Zilupe, and Indra in Latvia; and Šumskas, Šalčininkai, Kybartai, and Panemunė in Lithuania.²⁰

With the Narva River as the border, Narva, Estonia, sits across the river from Russia’s

Ivangorod-Narvskiy and Saint Petersburg as the ultimate stop in Russia. From Narva, this rail line goes through several towns and villages to Tallinn. Most of it is single track, except for dual track sections in the east between Oru and Vaivara, and throughout its western end between Tallinn and Tapa. Because most of the Estonian border with Russia lies within Lake Peipus, the only other rail crossing into Estonia is south of the lake, not far from the Latvian border. Here, Koidula faces across the border Pechory-Pskovskiye, with Pskov as the nearest connected large Russian city. Koidula is a crucial position, as the railway branches northward and westward. The first single track branch points north and passes through Tartu toward Tapa, where it joins the Narva-Tallinn line. The second branch heads west and southwest into Latvia, through Cēsis to Rīga. It is also single track except for a very brief length at Cēsis, between Sigulda and Vangaži, and then Krievupe to Rīga itself, at which point it is dual track. Koidula is the first defensive position for Estonia’s southern flank as well as Latvia’s northern flank. Both Narva and Koidula are right on the Estonian-Russian border.

In Latvia, the northernmost rail crossing into Russia is at Kārsava, with Privada opposite, then deeper into Russia, Ostrov, and again Pskov. This single-track rail line heads south by southwest to Rēzekne. Latvia’s only other railway into Russia is at Zilupe, with Zasitino across the border—and from there a straight shot to Moscow. It also leads along a single-track westward to Rēzekne. Due to the convergence of these two separate rail lines, this small Latgalian town is a crucial railway junction in eastern Latvia. From Rēzekne, the rail line continues southwest to Daugavpils, with brief dual track sections between Rēzekne and Pūpoli as well as between Krāce and Aglona. Yet another single-track branch heads directly westward toward Krustpils. At Krustpils, the railway splits, with one single track segment continuing west toward Jelgava and another heading west by northwest through Aizkraukle to Rīga; that final section is dual track Latvia’s final eastbound rail crossing is at Indra, into Belarus. This single-track line leads to Daugavpils. This small city emerges as another key railway junction, with one subsequent single-track branch heading northwest toward Krustpils,

another single track westward into Lithuania toward Mankišķiai, and a third southward to Vilnius, which turns from a single into a dual track at Bezdōnys. Daugavpils constitutes not only Latvia's southeastern flank but also Lithuania's northeastern flank.

Lithuania is unique among the Baltic states for having not just eastern crossings with Belarus but western crossings with Russia to its Kaliningrad oblast exclave on the Baltic Sea. The first crossing is at Ŝumskas, with Ganevo opposite in Belarus. This

These logistically relevant railway lines are likely to be operationally critical only when paired by nearby highways along which Russian forces can advance. The emphasis here is not on mere roads, but rather on true highways. The existing Baltic highway network influences the operational relevance of the Baltic rail network. In this context, the Narva-Tallinn E20 highway in Estonia runs virtually parallel to the railway, usually at no great distance. The main exception to this is around Tapa, where the railway detours south-

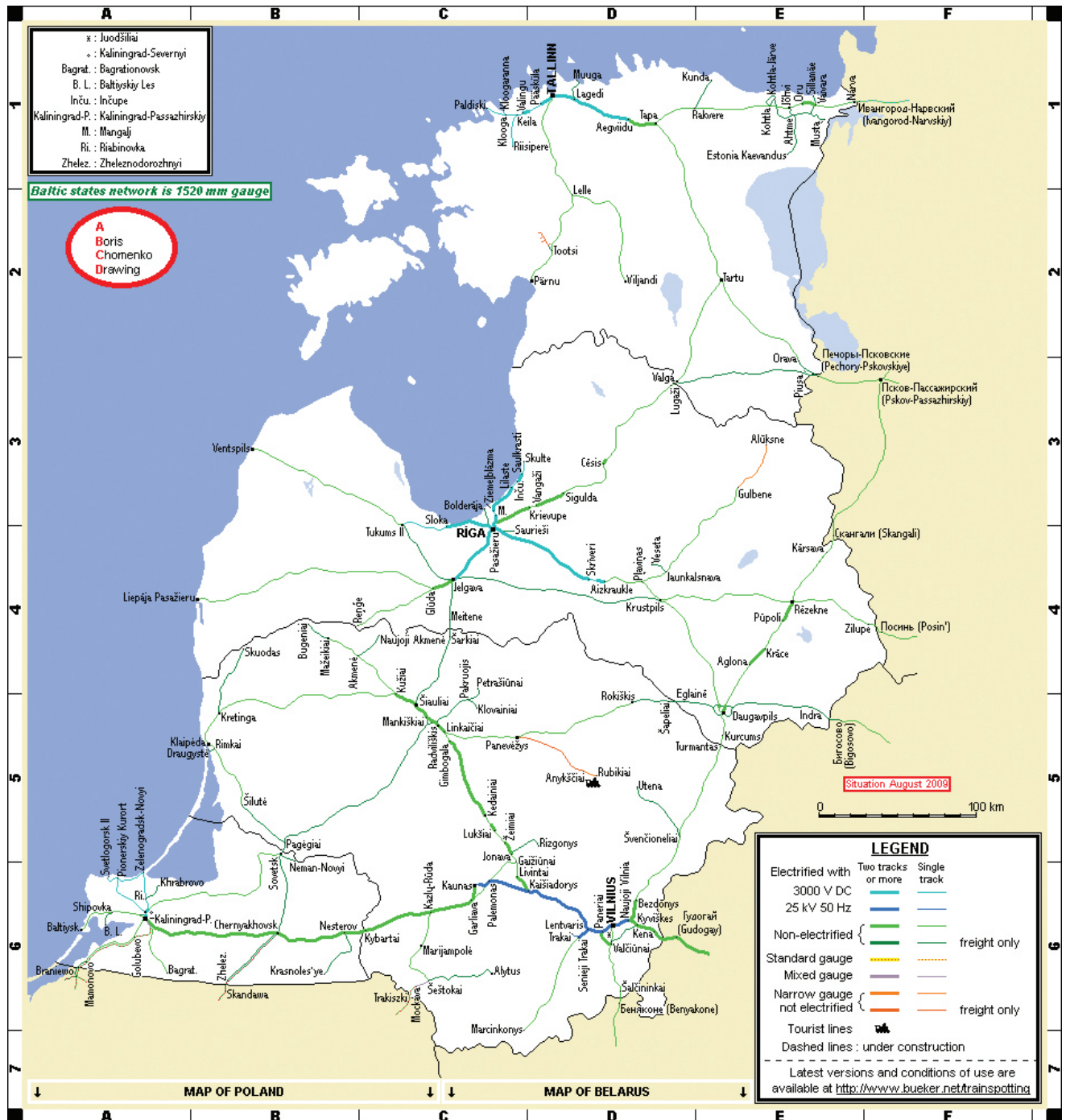
“Crucially, the single-track railways throughout the Baltic states barely allow for elaborate rail operation, requiring Russia to conduct predominantly end-to-end fleet operations.”

dual track continues on both sides of the border all the way from Vilnius to Minsk. South of Vilnius, a single track crosses at Ŝalĉininkai across the border from Byenyakoni. On Lithuania's southwestern border are crossings at Panemunė (Sovietsk opposite) and Kybartai (Chernyshevskoye opposite). The single-track railway from Kaliningrad through Panemunė splits into two branches, one heading northwest toward Lithuania's port Klaipėda and the other northeast toward Mankišķiai. The line through Kybartai, connecting Kaliningrad, Kaunas, and Vilnius, is throughout its length a dual track.

Crucially, the single-track railways throughout the Baltic states barely allow for elaborate rail operation, requiring Russia to conduct predominantly end-to-end fleet operations—as is sensible in a nonpermissive environment in any case.²¹ Crucially, Russian logistical bases for invasions of the Baltic states are likely to be well away from the border: plausibly Pskov for Latvia and plausibly Saint Petersburg itself for an invasion of Estonia, though Kingisepp may have sufficient rail wherewithal to sustain some sort of forward rail depot. Given the sabotage Russian railway logistics suffered in Belarus during the first month and a half of the Russo-Ukrainian War, the Russians may not be particularly amenable to major supply dumps in, or even major supply movements through, Belarus—which would reduce the threat to Vilnius and Daugavpils.

ward while the highway bends slightly northward. In southern Estonia, the railway-highway combination is notably inferior by comparison. The E77 highway between Pskov and Rīga crosses the southeastern corner of Estonia at a considerable distance from Koidula. The E263 highway which links up with the E77 near the Estonian-Russian border runs north-by-northwestward at significant distance from the railway line, joining up only when passing through Tartu, after which they split again as the highway bends further westward to head directly toward Tallinn. Based on the distribution of infrastructure, the southeastern route from Russia into Estonia is notably inferior to the northern route.

For Russia to invade Latvia from the northeast, the highways and railways match up only sporadically. The E77 is a straight shot from Rīga to Pskov, resulting in great distances between highway and railway throughout southern Estonia and northern Latvia until Āraiši, just south of Cēsis, from which point they run coincident to Rīga. However, the A3 runs along quite close to the railway from the Latvian-Estonian border until Valmiera, where the railway takes a sharp southern turn while the A3 continues running southwest toward Rīga. After passing through Cēsis, the railway is accompanied by the E77. For this northeastern route, the highway is most problematic for Russia in Estonia and somewhat problematic between Valmiera and Cēsis. For a southern route, two highways link Belarus to Daugavpils, a shorter southeastern highway and a longer eastern highway



(Map courtesy of Railways through Europe)

Baltic States' Rail Network

that runs vaguely parallel to, and mostly in close range with, the railway. For Latvia, Rēzekne is perhaps the most problematic as both railways are accompanied by broadly parallel and essentially nearby highways. Latvia's central border east and northeast of Rēzekne appears to be the optimal invasion route.

In Lithuania, highways and railways match up only in the southeast but in neither the southwest nor northeast. In the northeast, from Daugavpils, the railway toward Mankišiai has no corresponding highway while that from Daugavpils to Vilnius has a corresponding, but mostly distant, highway (from

Daugavpils the A13, which becomes the A6 and, to reach Vilnius, requires turning onto the A14). In the southwest, the railway through Panemunė northeastward diverges slightly from the nearby E77 while the branch of the railway which heads northwestward toward Klaipėda has no corresponding highway. The southern rail route from Kaliningrad through Kybartai to Vilnius does—mostly—have a nearby highway, either the A7 or the E67, but the match is not optimal. In the southeast, the two railway lines from Belarus toward Vilnius are broadly paralleled by the southward E85 and the eastward E28 highways. The preferred invasion route based on the optimal transportation networks should be through Lithuania's southeastern corner from Belarus, potential Belarusian sabotage notwithstanding.

Forward Urban Defense

The difficulties of defending near-border Baltic cities would be substantial, for reasons of their geographical and demographic size as well as their proximity to Russia, with its potential role as an absolute or limited sanctuary for Russian forces from NATO attack. Yet the strategic advantages for Baltic defense may balance or outweigh these disadvantages, as holding these cities would stop any meaningful Russian advance cold.

Potential Russian doubts about Belarus' logistical suitability notwithstanding, four Baltic cities stand out as crucial for forward urban defense to deny Russians use of Baltic railways and therefore to deny them access into the geographical depths of the Baltic states: Narva in Estonia, Rēzekne and Daugavpils in Latvia, and Vilnius in Lithuania. Narva is the road and rail gateway from Russia to Tallinn. Rēzekne plays a similar role in Latvia, while Daugavpils plays that role in relation to Belarus. Its connection to Belarus is also Vilnius' role in Lithuania, combined with its significance as the country's capital.

Of the four, Vilnius is the only sizeable city, with a population of about 707,000 and a metropolitan area of about 2,530 square kilometers. Daugavpils, with a drastic population drop, is nonetheless the next largest with a population of about 80,000 residents and an area of 72.4 square kilometers. Narva has a population of about 54,000 and an area of 84.5 square kilometers. Rēzekne is the smallest, with under 27,000 residents and an area of 17.5 square kilometers. Vilnius excepted, these are all small areas to defend with populations inadequate

to generate substantial territorial defense forces—even before taking demography into account, such as that Narva's population is nearly 88 percent ethnic Russian, which may or may not be a factor in the hypothetical event of invasion. Even if populations remain predominantly loyal, it is always possible to encounter plausible traitors. By comparison, Sumy, one of the smaller Ukrainian cities to hold out, encircled and besieged for a month and a half against the initial Russian offensive, had a pre-war population of nearly 260,000 and an area of 145 square kilometers. Izyum, which Russia successfully captured after a four-week battle, had a prewar population of nearly 46,000 and an area of 43.6 square kilometers. From the outset, these figures and comparisons suggest that the odds of decisive success are likely to be long.

The odds are worsened by the strategic implications of Baltic-Russia proximity, most notably the potential problem of Russia as a sanctuary. That is, to what extent would NATO forces be able to engage targets across the border? Would NATO forces themselves be able to cross the border? To what extent would the Kremlin see either option as an unacceptable escalation that might result in recourse to nuclear weapons, and would the prospect deter NATO from crossing the border or engaging targets across the border? That is, would NATO essentially allow Russia a strategic sanctuary safe from engagement?²² In the absence of good answers to these questions, which will never be forthcoming, prudence dictates considerable, if not complete, restraint. The only available evidence on Russian attitudes toward the prospect of cross-border engagement stems from their war with Ukraine, in which Ukraine has plausibly waged a covert campaign of sabotage against Russian fuel and supply dumps in and around Belgorod, including the use of helicopters.²³ Russia has apparently not escalated in response, which plausibly suggests that Russian sanctuary may not be absolute and that targets may still be engaged by air power. Yet Russia may react differently to NATO, as opposed to Ukrainian, strikes. Ukraine has not crossed the border; thus, it is impossible to know how Russia would react to such a contingency. Nonetheless, NATO in Baltic engagement may have only limited opportunities to interfere with Russian logistical movements in Russia itself, although Pskov's proximity to the Latvian and Estonian borders would inevitably make any Russian supply depots there tempting targets.

Western military doctrines have not seriously engaged with urban defense in decades. Joint Publication 3-06, *Joint Urban Operations*, for example, has hardly anything to say about the subject; the implicit assumptions throughout are that cities will be operating environments for expeditionary operations and defense is only relevant in the context of foreign internal defense against violent nonstate actors.²⁴ The subject has been similarly neglected in NATO's unclassified publications, though the Balts at least began tentatively thinking about defensive urban warfare after Russia's invasion of Crimea. Beyond this lack of doctrine, the identified crucial urban centers are all situated in varying geographical contexts. Narva sits upon the border, behind a river, and contains the only crossings over the Narva River between Estonia and Russia—though it can be outflanked by Russian river-crossing operations south of the Narva Reservoir, as occurred in 1944. The challenges and opportunities differ significantly for Rēzekne, which is situated at a distance from the border and at the end of long railways and highways from Russia, resulting in open Russian flanks vulnerable to the raiding tactics employed by the Ukrainians in the north during the first phase of the war. Lithuania, although in principle flanked on two sides, may have an easier time, as Russian forces in Kaliningrad are unlikely to have substantial offensive capability if the Poles pressure them and if Belarus remains logistically untrustworthy in Russian perception.

Notwithstanding the differences between Ukrainian and Baltic near-border urban centers, the Ukrainian experience demonstrates that the defending forces may not have to be huge to succeed—though they may have to be heavier than those deployed in the Baltic states thus far. Chernihiv was successfully defended by the 1st Tank Brigade and local territorial defense forces.²⁵ Russian forces have proven themselves consistently unskilled at attacking urban areas in Ukraine, and each of the main towns and cities identified—Narva, Rēzekne, Daugavpils, and Vilnius—have their own geostrategic defensive advantages, whether rivers, distance and open flanks, or suspect Belarusian railway services, to help mitigate the force of any Russian attack.

The political and humanitarian purpose of forward defense is clear: to protect a larger portion of Baltic populations from barbarism and atrocity as compared to a defense in depth. This Baltic political perspective may be inevitable in a hypothetical Baltic war and its impact on operations must be considered. As Carl von Clausewitz argued,

War is not an independent phenomenon, but the continuation of politics by different means. Consequently, the main lines of every major strategic plan are *largely political in nature*, and their political character increases the more the plan encompasses the entire war and the entire state ... But the political element even extends to the separate components of a campaign; rarely will it be without influence on such major episodes of warfare as a battle, etc. According to this point of view, there can be no question of a purely military evaluation of a great strategic issue, nor of a *purely military* scheme to solve it.²⁶

Yet defending the near-border cities, rather than conducting a defense in depth, makes more than simply political sense. Defense in depth would be useful along plausible secondary axes of advance, from Pskov into southern Estonia or northern Latvia, where every kilometer traded to the Russians translates into two kilometers their limited MTO units and fleets of trucks would have to cross to sustain a further advance. Along such axes, with the nearest reasonably sized rail centers at Tartu and Cēsis, respectively 148 and 201 kilometers from Pskov along the most direct roads, possibly an entire MTO battalion would be required to sustain even just three battalion tactical groups on each axis—which seems like too great a logistical commitment for what remain logistically unpromising axes.

However, along the hypothesized main axes of Russian advance into the Baltic states, defense in depth is unlikely to have an adverse effect on a Russian advance from a logistical point of view. Giving up cities such as Narva, Rēzekne, or Daugavpils would give the Russians solid rail hubs to use as railheads within the Baltic states and so could improve Russian sustainment and enable further advances. Denying such crucial rail yards to the Russians may require them, in the absence of any sufficiently major rail hubs near the borders (with the plausible exception of Kingisepp, only about twenty-six kilometers east of Narva), to push and pull supplies from Pskov and perhaps even Saint Petersburg *by truck*, further stretching their MTO formations and inhibiting Russia's military and strategic performance on the outskirts of Daugavpils, Rēzekne, and even Narva.

Conclusion

As a result of the Russian invasion of Ukraine in February 2022, Baltic defense is again standing near

the limelight for NATO. Russian military and strategic performance during its Ukraine war appears to be substantially weakened by their shabby logistical capabilities, among the many other apparent flaws of the Russian military. Given what we now seem to know about Russian military capabilities, together with what is known from open-source information about Baltic rail and highway networks, there are clearly identifiable optimal axes of advance: Narva-Tallinn and Rēzekne-Riga or Rēzekne-Daugavpils-Riga. Vilnius may or may not be a center of gravity, depending on whether the Russians trust the Belarusian railway system after the sabotage their logistics suffered during the attack on

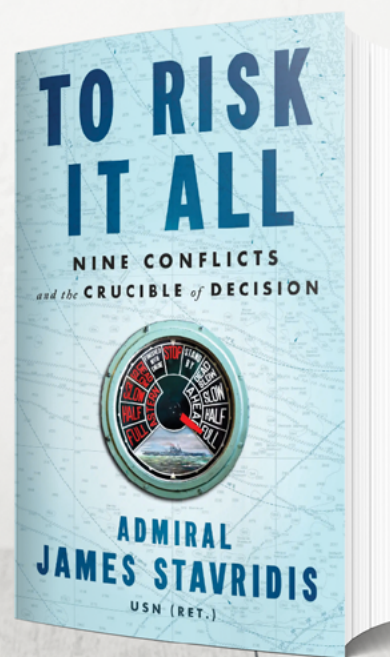
Kyiv in February–March 2022. Given these obvious axes, it appears most strategically sensible to conduct forward defenses of key urban centers to deny the Russians the ability to develop their logistical and sustainment efforts on Baltic soil, with defense in depth reserved for secondary lines of advance where the Russians would have only limited opportunity to rely on railways for logistical purposes. This option remains strategically sensible even if the purpose of such forward defense is only to buy time, whether for civilians to evacuate to safer places or for NATO to make a fighting return to—or, much more optimistically, reinforce—the Baltic states. ■

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To Risk It All

Nine Conflicts and the Crucible of Decision



James Stavridis, Penguin Press, New York, 2022, 352 pages

Mark Montesclaros

Even the most ardent landlubbers will benefit from the valuable insights contained in a new book by James Stavridis, a career naval officer and prolific writer. In *To Risk it All: Nine Conflicts and the Crucible of Decision*, he demonstrates his powers of analysis and critical thinking stemming from his affinity for naval history and tempered by his own experiences in command positions at sea and ashore. This is not a coffee table book about “famous naval heroes” but a serious analysis of character and decision-making by nine different sailors in a variety of challenging contexts spanning over 240 years of naval history. The result is a highly readable, educational, and insightful look at those who made critical decisions that risked both themselves and their shipmates. More than just a collection of potential “lessons learned,” Stavridis’s book will provide valuable perspectives, particularly for its nonmaritime readership, on the Navy culture and the uniqueness of decisions made at sea, both in peace and in war.

The book is similar in design to *Sailing True North: Ten Admirals and the Voyage of Character*, the author’s previous effort.¹ Packaged very nicely with nine stand-alone chapters, *To Risk it All* is bookended by an introduction that provides the overall context for the work and an effective conclusion that provides additional personal observations from the author. In contrast to *Sailing True North*, which examines the character of admirals of different nations spanning two millennia, Stavridis limits the scope of this

book to nine American sailors who face difficult choices in a variety of challenging situations. The author’s subjects represent an eclectic mix. The first six face the crucible of naval combat and are perhaps recognizable to this publication’s general audience. These include ship’s captains (John Paul Jones and Stephen Decatur), squadron and fleet commanders (David Farragut, George Dewey, and William “Bull” Halsey), and an enlisted crew member (Doris “Dorie” Miller). Together they span conflicts from the American Revolution to the Second World War and are generally exemplars of courageous decision-making under fire. The seventh subject, Lloyd Bucher, garnered attention during the Cold War as his ship, the USS *Pueblo*, was seized by North Korea during the Cold War. Michelle Howard, the eighth, commanded the combined task force that rescued Richard Phillips, captain of the commercial vessel *Maersk Alabama*, after his much-publicized capture by Somali pirates in 2009. Finally, Stavridis scrutinizes the case of Brett Crozier, captain of an aircraft carrier whose crew was stricken by an early outbreak of the COVID-19 virus. How all nine of these sailors responded under duress is at the crux of *To Risk it All*. The author himself considers the book “a historical meditation on the nature of decision-making under stress ... and a resource for any reader who must make hard decisions in his or her work and life.”² For the nonsailor, the book illuminates the nature of Navy culture and in particular those factors that drove the subjects of *To Risk it All* to make the choices they did.

The author arranges the book chronologically and the chapters follows a uniform pattern. Stavridis begins by explaining his personal connection to each of his subject sailors and how he “interacted” with them at various points during his long and distinguished naval career. His affinity for naval history is clearly evident, as is his skill in telling their tales. Next, the author provides insight into the personality of each figure, focusing on character, skills, and attributes rather than a litany of dry biographical details. He is quick to point out the bad as well as the good; most of his subjects are flawed in one way or the other but are quick to advance through the ranks despite these shortcomings. Stavridis then explains the context and events leading up to the “hard decision” each sailor made, whether during the crucible of combat, the Cold War, or in the current operational environment—doctrinally known as the “competition continuum.” In each case, the stakes varied but were high—the fate of a fleet, a ship, an individual, a career. The core of the analysis is next. Stavridis dissects each case, discerning the factors that had the greatest impact on the sailor at the time of the decision. These could include skills, attributes, or character traits previously mentioned, or perhaps a new aspect that came to light based on the exigencies of the crisis each sailor faced. He concludes each chapter with an analysis of each figure’s legacy on the modern Navy, especially earlier stalwarts such as John Paul Jones, Stephen Decatur, and David Farragut. He then makes some final observations on how he personally applied “lessons learned” in his own decision-making processes, again returning to his own experiences as a leader throughout various touch points in his career. Thus, each chapter stands alone, purposely crafted by the author to emphasize the “so what” of each case study to establish relevance for the reader in multiple ways.

While beyond the scope of this review to examine each chapter in detail, it is appropriate here to make some broad observations regarding the book in general and then add some specific comments on the case of Adm. William “Bull” Halsey in chapter 6. First, the book shows the exigencies of naval command, particularly in the case of combat. In *The Mask of Command*, eminent British historian John Keegan wrote: “The first and greatest imperative of command is to be present in person.”³ While Keegan referred to leaders of land forces, the same principle applies to command at sea, where captains are expected on the bridge and to lead by example. There is nowhere to hide at sea. All the sailors in the book exemplify Keegan’s dictum of the importance of being there when it counts and making decisions under

pressure. Second, based on the title of the book, one might assume that there must have been some element of “throwing caution to the wind” in each character’s calculus that figured in their decision to risk everything. Indeed, in his excellent study of the admirals who achieved five-star rank, historian Edgar Walter Borneman noted, “Commanders make educated decisions based on facts, experience, and gut-level instinct, but at some point, a willingness to roll the dice takes over.”⁴ Perhaps one of the author’s key points is that that each leader must strike a balance between emotion and reason, tempering “gut instinct” with rational calculus.⁵ Said another way, the author states that this “sixth sense” must be accompanied by a careful consideration of options and risk, “versus simply deciding to cut the Gordian knot and move out.”⁶ This is a central theme in *To Risk it All* as each sailor in the book approached his or her “wicked problem” in a different way. Finally, the book provides insight into the immediacy of decisions made at sea and reinforces notions such as “the captain goes down with the ship” or “the ship is the captain,” concepts that might be foreign to this publication’s general readership. There is an intimacy between captain and crew and between captain and ship that is reflected in many of the cases in the book. Thus, a non-Navy reader of *To Risk it All* will achieve a greater appreciation of this sister service and the unique pressures placed on maritime leaders in crisis situations.

A case in point is Halsey, particularly noteworthy for his aggressive heroism, temper, and singular focus—the latter of which impeded his ability to make sound decisions at crucial times. The author observes that Halsey was the epitome of naval fighting spirit, yet made critical errors during the Battle of Leyte Gulf that placed him under great scrutiny, both during and especially after the war. During the Battle of Leyte Gulf, Halsey, in his haste to destroy the Japanese main fleet, failed to adequately protect U.S. landing forces, making them vulnerable to attack by a Japanese task force. Halsey was questioned by his superior Adm.

Mark Montesclaros

is an assistant professor in the Department of Joint, Interagency, and Multinational Operations at Fort Leavenworth, Kansas. A thirty-year Army veteran, he holds a BS from the U.S. Military Academy, an MA in Latin American studies from the University of Texas at Austin, and an MSS from the U.S. Army War College. He has served on the Joint Staff, taught strategy at the Army War College, and served as defense attaché to the Republic of Panama.

Chester Nimitz, who sent the now-famous dispatch regarding the location of the fleet that was supposed to protect the landing force: “WHERE IS RPT WHERE IS TASK FORCE THIRTY FOUR RR THE WORLD WONDERS.”⁷ Naval historian Ian Toll observed, “In effect, Nimitz was fixing blame on Halsey for letting the Japanese sneak up on the Seventh Fleet.”⁸ Halsey later corrected the error—which he later admitted. The landing force was spared, not due to American action but based on the timidity of the Japanese naval commander in the area, who lacked Halsey’s instinct for aggression. The case of Halsey is particularly instructive because it reinforces the author’s point that a combat leader must balance emotion or “gut instinct” and logic. Indeed, the author concludes that “Halsey’s persona is not the right model for every situation, but his determination, resilience, and confidence are often key ingredients for victory.”⁹ Halsey is thus an imperfect hero who has survived the test of time, overcoming criticism for his actions at Leyte Gulf as well as in response to two typhoons. One of the more compelling figures in the book, Halsey’s case is representative of the nine sailors in *To Risk it All*.

Not all readers may agree with the author’s approaches in the book. Some might be surprised when he states, for example, that John Paul Jones got inside the “OODA” loop of his adversary, applying a modern doctrinal principal developed by the U.S. Air Force to “orient-observe-decide-act.” He also pulls no punches on where he stands regarding the sailors in the book. For example, he advocates for the awarding of the Medal of Honor to Doris Miller, an upgrade to the Navy Cross he received for actions at Pearl Harbor. Stavridis also disagrees with the Navy’s general take on Lloyd Bucher, who bucked Navy tradition and gave up the USS *Pueblo* without firing a shot—the antithesis of the sailors portrayed

in the first half of the book. Although he was not court-martialed, Bucher was vilified by many for not resisting the North Koreans. The author is empathetic, arguing that Bucher made the best of a very bad situation, and faced the toughest decision of anyone in the book. Aside from these comments, some may like to see the author’s take on other sailors in other “crucibles;” one such suggestion is Adm. Ray Spruance during the Battle of Midway, a decisive point in the World War II’s Pacific theater. It would be interesting to see Stavridis dissect Spruance’s decision to “risk it all” against the Japanese main force before all the facts were in. Was it based on gut instinct or careful calculation? As Toll states, “He [Admiral Spruance] ...decided to make the strike “all or nothing,” launching every dive- and torpedo-bomber, so that the Japanese would be hit simultaneously by a concentrated mass.”¹⁰ The example of Spruance seems tailor-made for inclusion in the book. These comments attest to the fact that *To Risk it All* is bound to spark discussion on a number of topics, whether historic or contemporary, among its readers. This is the mark of a successful book that contributes to the professional discourse.

To Risk it All is highly recommended to military professionals of all services, but particularly to the non-Navy readers of this publication. The book will provide valuable insight into the Navy’s culture of decision-making during war and peace, and especially when the fate of ships or fleets could be determined in a manner of minutes. *To Risk it All* would be ideal for undergraduate or graduate studies in leadership, and its format would make it ideal for professional development sessions in any of the services’ academic institutions or operational units. The book is highly accessible, thought-provoking, and a worthy addition to one’s professional library. ■

Notes

1. In *Sailing True North: Ten Admirals and the Voyage of Character* (New York: Penguin Press, 2019), James Stavridis examines ten admirals of different nations, each of whom made singular contributions to the maritime domain. The cases span over two millennia in time.

2. James Stavridis, *To Risk it All: Nine Conflicts and the Crucible of Decision* (New York: Penguin Press, 2022), xxvi.

3. John Keegan, *The Mask of Command* (New York: Penguin Books, 1987), 329.

4. Walter R. Borneman, *The Admirals: Nimitz, Halsey, Leahy, and King—The Five-Star Admirals Who Won the War at Sea* (New York: Little, Brown, 2012), 376.

5. See Edgar F. Puryear Jr., *American Admiralship: The Art of Naval Command* (Minneapolis: Zenith Press, 2008), 51. In his

excellent study of high-level naval leadership, Puryear noted that the most effective leaders had a “sixth sense,” or a “feel” for their commands that helped leaders in their decision making. This combines “gut instinct” or intuition, with a natural feel for the officers and sailors under one’s command, based on familiarity and trust.

6. Stavridis, *To Risk it All*, 155.

7. Ian W. Toll, *Twilight of the Gods: War in the Western Pacific, 1944-1945* (New York: W. W. Norton, 2020), 278.

8. *Ibid.*, 279.

9. Stavridis, *To Risk it All*, 185.

10. *Ibid.*, 234.

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Farewell Colonel Jacob Brown



Military Review bids farewell to Col. Jacob Brown, the director of the Army University Press (AUP) and the editor in chief of *Military Review*, as he retires from military service after twenty-five years. His leadership was a stabilizing influence during the COVID pandemic and enabled *Military Review* to continue publishing during those exceptional challenging times. In addition to shepherding numerous projects to completion for the various AUP teams, his input and guidance contributed greatly to the publication of *Military Review's* one hundredth anniversary edition.

Col. Brown expressed great pride in his service to our country when he said, "The journey of service to the Nation has allowed me to travel the globe with my family and command some of the greatest soldiers and leaders in the free world. It has been a great ride, and I look forward to the next chapter of life." He plans to continue serving at Fort Leavenworth, Kansas, as a Department of the Army civilian instructor at the Command and General Staff College. We wish him the best of luck in his future endeavors.

Thank You