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Cover photo: Arkansas Army National Guard soldiers with the 1036th Engineer Company from Jonesboro, Arkansas, detonate an M58 Mine Clearing Line Charge 16 August 2015 at the National Training Center, Fort Irwin, California. (Photo by Maj. W. Chris Clyne, 115th Mobile Public Affairs Detachment; photo also appears on page 9)

Foreword

Since the Soviet Union's fall in 1989, the specter of large-scale ground combat against a peer adversary was remote. During the years following, the U.S. Army found itself increasingly called upon to lead multinational operations in the lower to middle tiers of the range of military operations and conflict continuum. The events of 11 September 2001 led to more than fifteen years of intense focus on counterterrorism, counterinsurgency, and stability operations in Iraq and Afghanistan. An entire generation of Army leaders and soldiers were culturally imprinted by this experience. We emerged as an Army more capable in limited contingency operations than at any time in our Nation's history, but the geopolitical landscape continues to shift, and the risk of great power conflict is no longer a remote possibility.

Lt. Gen. Michael D. Lundy, U.S. Army
Commanding General, U.S. Army Combined Arms Center

While our Army focused on limited contingency operations in the Middle East and southwest Asia, other regional and peer adversaries scrutinized U.S. military processes and methods and adapted their own accordingly. As technology has proliferated and become accessible in even the most remote corners of the world, the U.S. military's competitive advantage is being challenged across all of the warfighting domains. In the last decade, we have witnessed an emergent China, a revanchist and aggressive Russia, a menacing North Korea, and a cavalier Iranian regime. Each of these adversaries seek to change the world order in their favor and contest U.S. strategic interests abroad. The chance for war against a peer or regional near-peer adversary has increased, and we must rapidly shift our focus to successfully compete in all domains and across the full range of military operations.

Over the last three years, the U.S. Army has rapidly shifted the focus of its doctrine, training, education, and leader development to increase readiness and capabilities to prevail in large-scale ground combat operations against peer and near-peer threats. Our new doctrine, Field Manual 3-0, *Operations*, dictates that the Army provide the joint force four unique strategic roles: shaping the security environment, preventing conflict, prevailing in large-scale combat operations, and consolidating gains to make temporary success permanent.[1]

To enable this shift of focus, the Army is now changing a culture shaped by over fifteen years of persistent limited-contingency operations. Leaders must recognize that the hard-won wisdom of the Iraq and Afghanistan wars is important to retain but does not fully square with the exponential lethality, hyperactive chaos, and accelerated tempo of the multi-domain battlefield when facing a peer or near-peer adversary.

To emphasize the importance of the Army's continued preparation for large-scale combat operations, the U.S. Army Combined Arms Center has published the seven-volume Large-Scale Combat Operations Historical Case Study book set. The intent is to expand the knowledge and understanding of the contemporary issues the U.S. Army faces by tapping our organizational memory to illuminate the future. The reader should reflect on these case studies to analyze each situation, identify the doctrines at play, evaluate leaders' actions, and determine what differentiated success from failure. Use them as a mechanism for discussion, debate, and intellectual examination of lessons of the past and their application to today's doctrine, organization, and training to best prepare the Army for large-scale combat. Relevant answers and tangible reminders of what makes us the world's greatest land power await in the stories of these volumes.

Prepared for War!

Note

1. Field Manual 3-0, *Operations* (Washington, DC: U.S. Government Publishing Office, October 2017), 2.

TABLE OF CONTENTS

September-October 2018

Volume 98 ◆ Number 5

Accelerating Multi-Domain Operations

Evolution of an Idea

Gen. Stephen J. Townsend, U.S. Army

This article was originally published by the Modern War Institute at West Point on 23 July 23 2018.[1] It has been edited by Military Review *for style.*

Multi-Domain Battle has a clear origin.[2] Stemming from the idea that disruptive technologies will change the character of warfare, it recognizes that the way armies will fight and win wars will also change. It also reflects the desire to replicate the success of AirLand Battle, which is arguably the most significant case of developing a concept and then materializing capabilities across the doctrine, organization, training, material, leadership education, personnel, and facilities spectrum. Origin stories establish the foundation from which lasting ideas emerge. However, for ideas to have a lasting impact they must evolve.

For Multi-Domain Battle, there are two things driving the need to evolve the concept. First, ideas must evolve to ensure alignment with the strategic direction of the enterprise they serve. The 2018 National Defense Strategy lays out the missions, emerging operational environments, advances in technology, and anticipated enemy, threat, and adversary capabilities that the Department of Defense envisions for the foreseeable future.[3] It provides

U.S. Army paratroopers assigned to the 82nd Airborne Division, Fort Bragg, North Carolina, and British Army paratroopers assigned to 3rd Battalion, Parachute Regiment, Colchester, England, shake hands before jumping from a C-17 Globemaster III over Latvia 8 June 2018 during Exercise Swift Response 18. (Photo by Airman 1st Class Gracie I. Lee, U.S. Air Force)

direction for how the joint force must evolve to compete, deter, and win in future armed conflict. To this end, Multi-Domain Battle must reflect this strategy.

Second, when I took the reins of U.S. Army Training and Doctrine Command, I was specifically directed to *"operationalize Multi-Domain Battle"* by building upon the foundation created by my predecessor and accelerating its application. And, what I found was an incredible foundation. Gen. Dave Perkins brought together partners across the joint force, driving development of the concept to an articulated idea and a vision of how the Army fits into it. The key players are all here and are committed to building and improving the concept and finding real solutions. The concept is ready to grow.

But for that to happen, we need to confront some of the problems others have noted. Over the last eighteen months that Multi-Domain Battle has been out there for debate, there have been four consistent critiques. Some noted that the idea was "old wine in a new bottle."[4] I think the iPhone analogy articulates why that just is not true.[5] What the original iPhone *did* was not all that new, but *how* the iPhone did it fundamentally changed not just a market, but people's behavior. This is exactly what we seek to achieve with this new concept. Though the domains of warfare (air, land, sea, space, and cyberspace) are not new, how the U.S. Armed Forces will rapidly and continuously integrate them in the future is new.

Gen. Stephen J. Townsend, U.S. Army, is the commanding general of U.S. Army Training and Doctrine Command. He previously served as commander of 18th Airborne Corps and Combined Joint Task Force Operation Inherent Resolve. His combat and operational experience includes deployments in support of Operation Urgent Fury, Operation Just Cause, Operation Uphold Democracy, Operation Enduring Freedom, and Operation Iraqi Freedom. He is a graduate of North Georgia College with a Bachelor of Science in psychology and the U.S. Army War College with a master of strategic studies.

Another critique is that this is an Army-only concept.[6] However the Air Force and Marine Corps have been part of Multi-Domain Battle from the start, and recent reporting from numerous forums has made clear the Army's desire to listen, learn, and include our joint and multinational partners in the development of this idea.[7] Recently the Navy and the Joint Staff have also joined the discussion.

Albert Palazzo's series of articles in the fall of 2017 laid out a clear argument. To be successful, Multi-Domain Battle must translate into radical effects on the U.S. military's culture.[8] The concept must force us to reconsider fundamental tenets, like our industrial-age means of promoting, training, and educating leaders. It must also pull us from the comfort of our tactical-level trenches to develop capabilities that inform up to the strategic level of war.[9] Putting "battle" into the name both confines the possibilities and limits the result.

In battles, combatants can win time and space, and they allow one side to take ground, but they do not win wars. The world we operate in today is not defined by battles, but by persistent competition that cycles through varying rates in and out of armed conflict. Winning in competition is not accomplished by winning battles but through executing integrated operations and campaigning. Operations are more encompassing, bringing together varied tactical actions with a common purpose or unifying themes. They are the bridge between the tactical and the strategic.

In my first months of command at Training and Doctrine Command, it became clear that the use of the word "battle" was stifling conversation and growth of the concept. There are three concrete reasons why Multi-Domain Battle evolved to Multi-Domain Operations.

First, if the concept is to be truly joint and multi-service, we need clarity and alignment in how we talk. The Air Force talks of Multi-Domain Operations and Multi-Domain Command and Control, while we talk of Multi-Domain Battle—often covering similar, if not the same, ideas and capabilities. To this point, none of the many people I have talked to, including my predecessor, are wedded to the use of "battle"—it was what fit best in time, place, and circumstances. What they are committed to are the ideas of converging capabilities across the joint force with continuous integration across multiple domains.

Second, we cannot do this alone. The armed services can win battles and campaigns, but winning wars takes the whole of government. It helps the entire effort if our interagency partners are comfortable with and conversant in our warfighting concepts and doctrine. As

highlighted to me by a former ambassador at a recent forum, talking in terms of operations instead of battles brings together those who want to get things done—whether they are civilians or the military.

And third, it is never just about the fight. When it comes to combat, there is no one better than the combined weight of the U.S. military and our allies and partners. However, the operating environment is evolving and nation-state–level competition has re-emerged, as evidenced by recent actions by both Russia and China. Our National Defense Strategy highlights the importance of winning the "competition" that precedes and follows conflict. However, our use of Multi-Domain Battle seems to indicate our concept was only for the conflict phase. While there are battles within competition, winning them is pointless if they are in isolation to the larger context of deliberate operations supporting national strategy.

Multi-Domain Battle served its purpose—it sparked thinking and debate and it created a foundation. But, what we need now is Multi-Domain Operations, and the next revision of the concept to be released this fall will reflect this change.

Language is important. It conveys meaning. This change is not cosmetic—it is about growing an idea to its greatest potential in order to change the way we fight today and ensure overmatch against our adversaries of tomorrow. To do this we need clarity and alignment across the joint force, whole-of-government inclusion, and perspective that reinforces our need to compete effectively outside periods of armed conflict. Changing the name does not do this by itself, but it communicates a clear vision of what we need to accomplish and where we are headed. ■

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Notes

1. Stephen Townsend, "Accelerating Multi-Domain Operations: Evolution of an Idea," Modern War Institute at West Point, 23 July 2018, accessed 8 August 2018, https://mwi.usma.edu/accelerating-multi-domain-operations-evolution-idea/.

2. Kelly McCoy, "The Road to Multi-Domain Battle: An Origin Story," Modern War Institute at West Point, 27 October 2018, accessed 8 August 2018, https://mwi.usma.edu/road-multi-domain-battle-origin-story/.

3. Office of the Secretary of Defense, "Summary of the 2018 National Defense Strategy of the United States of America" (Washington, DC: Department of Defense, 2018), accessed 8 August 2018, https://www.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf.

4. Bob Scales, "Battle For Army's Soul Resumes: Lessons From Army After Next," Breaking Defense, 28 March 2017, accessed 8 August 2018, https://breakingdefense.com/2017/03/battle-for-armys-soul-resumes-lessons-from-army-after-next/; Shmuel Shmuel, "Multi-Domain Battle: Airland Battle, Once More, With Feeling," War on the Rocks, 20 June 2017, accessed 8 August 2018, https://warontherocks.com/2017/06/multi-domain-battle-airland-battle-once-more-with-feeling/.

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9. Albert Palazzo, "Multi-Domain Battle: Getting the Name Right," Small Wars Journal, 2018, accessed 8 August 2018, http://smallwarsjournal.com/jrnl/art/multi-domain-battle-getting-name-right.

ARMY UNIVERSITY PRESS

THE QUIET PROFESSIONALS

Historical Case Studies in Special Operations in Large-Scale Combat Operations

On 19 February 2019, the Army University Press will release the eighth book in its Large-Scale Combat Operations (LSCO) series, titled *The Quiet Professionals: Historical Case Studies in Special Operations in Large-Scale Combat Operations*, edited by Dr. Robert Toguchi.

This collection features twelve articles detailing special operations support to diverse LSCO operations and campaigns in a wide variety of scenarios to include support to the European and Pacific theaters in World War II, the Spanish Civil War, the wars in Korea and Vietnam, British and Arab operations in the Levant, Israeli responses at the outbreak of the Yom Kippur War, and support to the Coalition 2003 invasion of Iraq.

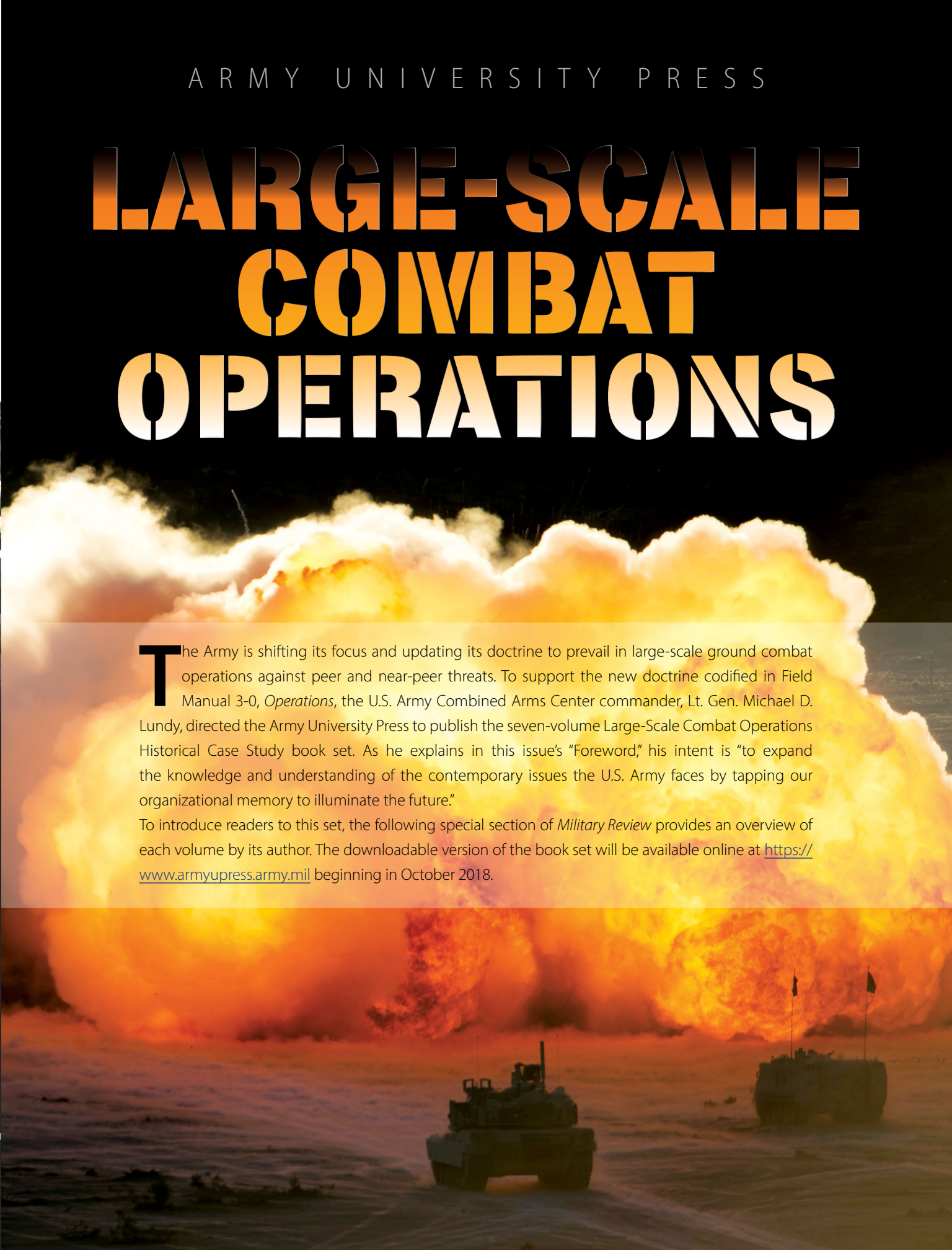
BOOK RELEASE COMING SOON!

Army University Press

Group of soldiers from Army of the Republic of Vietnam in September 1968 with Sfc. Norman A. Doney, 5th Special Forces Group Airborne, 1st Special Forces in Vietnam. (Photo courtesy of the U.S. Army Heritage and Education Center)

ARMY UNIVERSITY PRESS

LARGE-SCALE COMBAT OPERATIONS



The Army is shifting its focus and updating its doctrine to prevail in large-scale ground combat operations against peer and near-peer threats. To support the new doctrine codified in Field Manual 3-0, *Operations*, the U.S. Army Combined Arms Center commander, Lt. Gen. Michael D. Lundy, directed the Army University Press to publish the seven-volume Large-Scale Combat Operations Historical Case Study book set. As he explains in this issue's "Foreword," his intent is "to expand the knowledge and understanding of the contemporary issues the U.S. Army faces by tapping our organizational memory to illuminate the future."

To introduce readers to this set, the following special section of *Military Review* provides an overview of each volume by its author. The downloadable version of the book set will be available online at https://www.armyupress.army.mil beginning in October 2018.

A dummy tank being erected in 1942 at the Middle East School of Camouflage in Cairo. (Photo by Capt. Gerald Leet, British Army, via Imperial War Museum, HU 59574)

Weaving the Tangled Web

Military Deception in Large-Scale Combat Operations

Christopher M. Rein, PhD

Throughout the recorded history of warfare, military planners and commanders have sought to deceive their adversary as to the size, timing, or location of an attack in order to gain a decisive advantage. From the famous Trojan Horse to modern efforts to use the electromagnetic spectrum to "spoof" or jam sensors, deception in some form remains an essential component of military operations. Whether attacking an unsuspecting enemy on Christmas morning, as Washington did at Trenton, or emplacing "Quaker guns" (logs painted black to resemble cannons) to provide the impression of strength, U.S. forces have successfully built on a long legacy of military deception (MILDEC) in order to prevail in the Nation's wars. While technology continues to advance at a dizzying pace, threatening to render previous lessons obsolete, MILDEC operations have successfully withstood previous developments and even incorporated new technologies to continue to form an important part of combat operations. While in some cases MILDEC is potentially capable of enabling military forces to prevail without a fight, as the theorist Sun Tzu postulated, more often it confers an advantage that helps the side that successfully harnesses it prevail, often at a much lower cost than it would have otherwise.[1] Thus, MILDEC, and its long and successful history, remain an important, even vital, tool for any future leader.

Given the voluminous and excellent body of literature currently available on military deception, it is certainly worth asking why we need another volume on the topic.[2] *Weaving the Tangled Web: Military Deception in Large-Scale Combat Operations* is not intended to displace, even if it could, the deeply-researched and lengthy treatises on the long history of military deception operations. Rather, it is intended as a primer and a thought piece for how strategists, operational planners, staff officers and, ultimately, commanders have historically integrated military deception into large-scale combat operations, focusing on the last one hundred years of conflict. The individual chapters, while certainly excellent stand-alone treatments of the deception aspects of the operations and campaigns considered, likewise are of insufficient length to become the definitive works on their individual topics. Instead, they build upon the extensive secondary literature and, in several cases, primary sources in order to provide a comprehensive but accessible understanding of how military deception has successfully enabled victory on the battlefield.

If principles of war can be sifted out of military history, as the master, Carl von Clausewitz, attempted to do with Napoleon's campaigns, then these twelve case studies also ought to provide us with some "universal truths" regarding deception operations.[3] Admittedly, considering successful deception operations primarily involving the U.S. Army and its principal allies and antagonists may omit a number of relevant examples. But, these cases are sufficient to provide several enduring threads of continuity in successful operations that, most importantly, remain relevant for current and future practitioners.

One of the first is the importance of coordination in deception campaigns, especially since the addition of warfare in the third dimension (air warfare), which coincides with the beginning of this book. Many thought that the airplane, and later radar and satellite imagery, marked the end of successful deception by pulling back the veil that had shielded terrestrial armies for millennia. Instead, deception remained a key, if significantly more complicated aspect of many campaigns. While previously deception had to be coordinated between the military and political instruments of national power, now it also had to be practiced in multiple domains simultaneously. In what could be labeled multi-domain deception, these plans required close and careful coordination across the warfighting domains to ensure that lapses in one area did not undo efforts in other areas. A heavy bombing campaign focused exclusively on Normandy would have undone the ruse of an Allied landing at Pas-de-Calais, just as belligerent rhetoric from Egyptian political leaders would have undermined efforts to "lull" the Israelis to sleep prior to the 1973 Yom Kippur/6 October War. With the proliferation of warfare into space and cyberspace, the difficulty of coordinating a

Christopher M. Rein, PhD, is a historian with the Combat Studies Institute, Army University Press, Fort Leavenworth, Kansas. He earned his doctorate in history in 2011 from the University of Kansas and is the author of one book, *The North African Air Campaign*, published by the University Press of Kansas in 2012, as well as several articles. He is a retired Air Force lieutenant colonel and served as a navigator aboard the E-8C Joint STARS during Operations Enduring Freedom and Iraqi Freedom.

successful deception campaign has expanded exponentially and greatly complicated the efforts of its architects, but it has not made their task impossible.

Also emerging from the narrative is the "Magruder Principle," the idea that it is easier to convince an adversary to hold onto a preexisting belief than to convince him or her of a new one.[4] This obviously depends heavily on both intelligence collection to understand an opposing commander's estimate of the situation, and cultural competency to understand what key assumptions commanders, militaries, and nations are likely to hold most dear. Once planners have accurately divined an enemy's strongly held beliefs, they can then use this knowledge to achieve their goals. Just as a practitioner of the Japanese martial art of jiu-jitsu uses the momentum of an opponent's punch or lunge to continue movement in a certain direction but well past the intended point, deception campaigners can use adversaries' assumptions against them by reinforcing those beliefs while simultaneously planning an unexpected operation that catches an adversary off balance or out of position. While difficult to successfully accomplish, this remains the closest thing to an enduring principle in military deception operations, and it forces planners to "mirror image" themselves and ask what preconceived notions they have that an adversary might turn against them. One of the most famous of the humorous "Murphy's Rules of War" postulates that "The enemy diversion you are ignoring is his main attack," which accurately characterizes the initial German response to the successful Operation Overlord invasion of Normandy.[5]

Ghost Army insignia, circa 1944. The Ghost Army was a 1,100-person unit established during World War II to deceive German intelligence as to the size, identity, location, and capabilities of Allied military units, especially as forces were massing in Great Britain for the invasion of Europe. The unit recruited members who could contribute to these deceptions from a variety of backgrounds such as artists, actors and set designers from theater groups, radio broadcasters, design engineers, and architects. The unit successfully misled German forces in a coordinated effort that included the creation of fake units, complete with shoulder insignia; the use of decoy tanks, trucks, artillery, and aircraft made of rubber; employment of large speakers to mimic the sounds of personnel and equipment; construction of fake motor pools and other buildings; the broadcast of fake radio transmissions; and the distribution of fake documents. (Image courtesy of the Institute of Heraldry, U.S. Army)

Careful readers of the accounts in this book will notice that weaker powers tend to favor the use of deception to overcome a stronger opponent. Just as jiu-jitsu enables a smaller fighter to use a larger or more powerful adversary's strength against him or her, successful deception operations can enable a weaker force or nation to prevail against a stronger one by dispersing effort or creating a tempo of operations to which a less agile opponent is unable to respond. Thus, smaller nations, or those with smaller manpower reserves such as the United Kingdom, have historically been the most successful developers and employers of deception in order to achieve decisive effects. Additionally, deception might also enable the forces of politically fragile, casualty-averse nations to succeed at a much lower cost, preventing an adversary from using attrition to achieve strategic aims. In any event, through long experience, some nations and cultures, from China to Russia to the United Kingdom, have become especially skilled at military deception and thus offer a wealth of talent and insights for potential allies or warnings for adversaries. Stronger nations that have typically relied

Previous page: A soldier from the 23rd Headquarters Special Troops, also known as the Ghost Army, uncovers speakers mounted on a half-track that were used as a form of sonic deception during World War II. Sounds that were recorded and mixed to fit specific situations to help deceive the enemy could be heard fifteen miles away. (Photo courtesy of the National Archives via Princeton Architectural Press)

Australian troops carry a dummy tank 17 September 1918 that was built to mislead the Germans during the following day's attack on Le Verguier and the Hindenburg Outpost Line by the 1st and 4th Divisions. (Photo courtesy of the Australian War Memorial collections database, E04934)

on overwhelming force or less-sophisticated assaults to achieve military objectives through brute attrition would do well to leverage this expertise in their own campaigns and operations.

But, these observations are not the sum total of insights within these pages. Readers may identify concepts that escaped the authors or editors, or find new inspiration from the efforts of earlier campaigns. While the speed, range, lethality, and scale of warfare are constantly increasing, military theorists argue that its fundamental nature is not, though they often engage in spirited debate on what exactly comprises the nature of war. Future practitioners must study their craft in order to first gain and then share their own insights, and the authors hope this book will provide a useful roadmap for the journey.

The book begins with the U.S. Army's first successful deception operation in a major conflict. As Mark Grotelueschen convincingly argues, the "Belfort Ruse" successfully enabled American, and therefore Allied, battlefield success in the First World War by influencing German troop dispositions in France. While relying heavily on its European allies, the U.S. Army demonstrated it was a quick study and incorporated deception operations in almost all of its subsequent combat operations. Brian Drohan continues the focus on the First World War by examining British forces in Palestine that leveraged deception operations to first outflank Ottoman dispositions on a weakened flank and then used their adversary's tendency to expect a repeat of this tactic to drive through a weakly held coastal sector. The two operations at Beersheeba and Megiddo remind planners that, like poker players and baseball pitchers, they develop their own "tells" and tendencies, and, by identifying these and then varying their plans, they can successfully catch their opponent off guard.

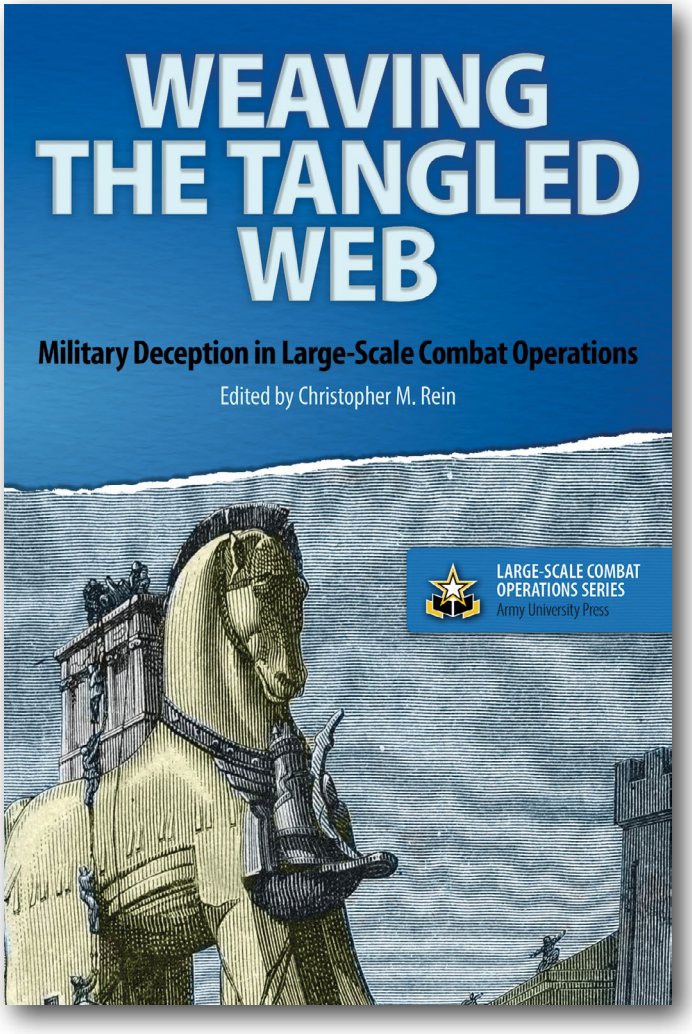
A worker inflates a model of a Russian T-72B tank next to an inflatable dummy of a SU-27 fighter jet 8 April 2009 at the compound of the RusBal balloon manufacturer outside Moscow. The small firm produces infrared- and radar-reflective inflatable dummy targets in 1:1 ratio that are designed for the Russian military and the international defense market. (Photo by Thomas Peter, Reuters)

Gary Linhart keeps our focus on the shores of the Mediterranean but shifts forward in time to examine the intricate British deception campaign at the Battle of El Alamein that enabled Montgomery's defeat of Rommel's vaunted Afrika Korps during World War II. While exploring in detail the technical aspects of the campaign, Linhart's analysis of Operation Bertram also reveals British efforts to use Rommel's tendencies against him. Knowing that the "Desert Fox" would both use, and therefore expect, a flank attack through the desert, Montgomery fed this belief while developing a strong attack on the most likely avenue of approach that enabled him to break the Axis cordon. The episode reveals the continued British expertise in deception that significantly enabled the Allied victory in the west. Greg Hospodor extends this analysis to subsequent campaigns in the Mediterranean, demonstrating how an elaborate, theater-level deception enabled construction of a fictitious order of battle that far exceeded in scale the forces actually available, forcing the Axis powers to distribute forces all along their threatened shore and ensuring that a strong landing at any one point had a much better chance of success. While the famous, if macabre, efforts of "The Man Who Never Was," inspired books and motion pictures, Hospodor reminds us that it succeeded only because it was part of a layered, detailed, and well-coordinated deception campaign that continually evolved to maintain a position of relative advantage for the western Allies.[6]

Alan Donohue shifts our focus to the Eastern Front, one of the most significant theaters of ground combat in World War II. By successfully reinforcing Soviet perceptions that Moscow remained the focus of German attacks in 1942, *Fall Kreml* (Operation Kremlin) facilitated a German drive that extended well into the Caucasus and might have cut off Soviet oil supplies had Hitler not become first distracted by, and later obsessed with, the city of Stalingrad. Kyle Vautrinot's analysis of that detailed operation demonstrates that tactical, operational, and strategic

deception played an important role in the counterattack that rescued the city and destroyed Germany's offensive capability for the remainder of the war.

Soviet deception, known as *maskirovka*, continued to evolve through the remainder of the war; most significantly, as Curt King points out, in Operation Bagration, when successive and overlapping deception operations kept the Germans constantly off guard and unable to respond to sequential Soviet thrusts. This resulted in the destruction of the German Army Group Center and the liberation of Soviet territory taken by the Germans in 1941. But Scott Farquhar's analysis of the D-Day deception plans reveals that the Soviets were not the only masters of deception in the Second World War. By 1944, the Allies had developed the staff and, most importantly, the expertise, to successfully execute an intricate and large-scale campaign that ensured the safety of the Normandy landings and the following breakout and liberation of France. During the course of the war, Germany went from deceiver to deceived, largely as a result of deficiencies in its intelligence apparatus and its vulnerability to codebreaking, demonstrating the enduring importance of superiority in the information domain to enable ground combat.



In chapter 9, Geoff Babb welcomingly provides both an example from an "Eastern" adversary and a case in which a Western coalition succumbed to deception with catastrophic consequences. Babb's account of Chinese deception on the Korean peninsula offers a stark warning for future commanders of how their preexisting beliefs and notions, if unchallenged, can lead them to disaster.

Tal Tovy follows with another successful case of deception, one that spanned the military and diplomatic arenas, delayed Israeli awareness of an impending Arab attack, and impacted Israel's response—though, fortunately, without disastrous consequences. It also offers a connection to previous chapters, demonstrating how Soviet sponsors successfully exported *maskirovka* to client states, and how they successfully used a massive training exercise as cover for an invasion, a still-favored tactic in the post-Soviet world.

Steven Paget's account of the British liberation of the Falkland Islands brings the study forward into a compelling case of multi-domain operations requiring both a high degree of coordination among the military domains as well as synchronization with the media and other instruments of national power. Operating in an environment with a ubiquitous media presence, some of which may be hostile, presents a new challenge for military commanders, whether those media are state-based or "nationless" entities such as WikiLeaks, which has collected and published sensitive military information electronically.[7] Maintaining a successful deception campaign may require the active support of sympathetic media and exclusion of hostile media, presenting a further challenge in democracies where freedom of the press has been enshrined in their founding documents. Don Wright's account of the First Gulf War, Operation Desert Storm, brings the book into the current operating environment,

highlighting how air, land, and naval forces successfully cooperated to conceal, or at least delay, recognition of the bold coalition strategy to liberate Kuwait. While the coalition was certainly strong enough to overwhelm Iraqi forces in a frontal assault, the deception plan's key contribution was to spare coalition lives, thus maintaining popular support.

In his conclusion, Conrad Crane reminds us that much has transpired in the quarter century since Desert Storm, including leaps forward in technological capabilities that significantly increase the difficulty of a deception planner's mission. Seemingly innocuous advances in personal electronics now have the ability to reveal the location of clandestine military operating sites.[8] Coordination challenges have increased exponentially, while the proliferation of social media makes it difficult to control a popular narrative, and therefore public and global opinion. At the same time, commanders and staffs have become highly reliant on systems subject to denial or, worse, false injects, leading to the potential for paralysis or action based on false information, potentially easing the deceiver's task. He makes clear that military deception will continue to be a vital part of military operations and an essential area of study for leaders at all levels.

This collection of essays seeks to highlight current thinking and areas of doctrinal development to stimulate the study and development of military deception operations. The authors and editor hope that *Weaving the Tangled Web: Military Deception in Large-Scale Combat Operations* will provide a jumping-off point for professionals new to the topic and a resource for instructors seeking to educate and train the next generation of practitioners of military deception. While not a comprehensive treatment of the subject, the twelve excellent essays and thought-provoking conclusion provide ample grist for the mills for those who design military deception efforts and a reminder of the importance of critical thinking for all who guard against the many would-be deceivers weaving their tangled webs. ■

LSCO

Notes

1. Sun Tzu, *The Art of War,* trans. Samuel B. Griffith (New York: Oxford University Press, 1963), 41, 66, 77. The master wrote, "All warfare is based on deception," and "to win one hundred victories in one hundred battles is not the acme of skill. To subdue the enemy without fighting is the acme of skill."

2. Examples include Mark Lloyd, *The Art of Military Deception* (London: Pen and Sword, 1999); Barton Whaley, *Practise to Deceive: Learning Curves of Military Deception Planners* (Annapolis, MD: Naval Institute Press, 2016); Thaddeus Holt, *The Deceivers: Allied Military Deception in the Second World War* (London: Weidenfeld and Nicolson, 2004).

3. Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1976).

4. Office of Research and Development, Central Intelligence Agency, *Deception Maxims: Fact and Folklore* (Washington, DC: Central Intelligence Agency, 1980), 5, accessed 25 June 2018, http://www.governmentattic.org/18docs/CIAdeceptionMaxims-FactFolklore_1980.pdf.

5. "Murphy's Rules of Combat," The S2 Company, accessed 25 June 2018, http://www.s2company.com/files/readings/murphy.htm.

6. For example, see Ewan Montagu, *The Man Who Never Was: World War II's Boldest Counterintelligence Operation* (Annapolis, MD: Naval Institute Press, 2001); Ronald Neame, director, *The Man Who Never Was* (1956; UK: Odeon Entertainment, 2012), DVD.

7. "WikiLeaks Website Publishes Classified Military Documents from Iraq," CNN, 25 October 2010, accessed 25 June 2018, http://www.cnn.com/2010/US/10/22/wikileaks.iraq/index.html.

8. Joshua Berlinger and Maegan Vazquez, "US Military Reviewing Security Practices after Fitness App Reveals Sensitive Info," CNN, 29 January 2018, accessed 25 June 2018, https://www.cnn.com/2018/01/28/politics/strava-military-bases-location/index.html.

Soldiers of Headquarters Company, 23rd Infantry Regiment, 2nd Infantry Division fire a 37 mm gun through the Argonne Forest in the fall of 1918 during the Meuse-Argonne Offensive, where American soldiers fought their most difficult battle in World War I and proved that the American Army had come of age. (Photo courtesy of the U.S. Army)

Bringing Order to Chaos

Combined Arms Maneuver in Large-Scale Combat Operations

Lt. Col. Peter J. Schifferle, PhD, U.S. Army, Retired

Large-scale combat operations are at the far right of the conflict continuum and associated with war. Historically, battlefields in large-scale combat operations have been more chaotic, intense, and highly destructive than those the Army has experienced in the past decades. During the 1943 battles of Sidi Bou Zid and Kasserine Pass in World War II, 5,000 American Soldiers were killed over the course of just 10 days; during the first three days of fighting the Army lost Soldiers at a rate of 1,333 per day.

—Field Manual 3-0, *Operations*

Two days after the losses at Sidi Bou Zid and Kasserine Pass, the 1st Armored Division and other elements of the U.S. Army's II Corps began the counteroffensive that would destroy the vaunted *Panzergruppe Afrika* (formerly known as the *Afrika Korps*) and would net several hundred thousand German and Italian prisoners of war. This green U.S. Army unit, in its first major combat against a veteran opponent in which it would lose five thousand soldiers and then launch a series of counterattacks, could be a textbook definition of resilience.[1]

U.S. Army artillery crew in action February 1943 at Kasserine Pass, Tunisia. (Photo courtesy of the U.S. Army Center of Military History)

Our Army today may not be fully ready to display this type of resilience or win in this type of combat. As a result, we may need to adjust our cultural values to understand the verities and changes in the nature of conventional operations since 1945, come to grips with the impact of significant U.S. casualties, and become more comfortable with the sheer violence of modern combined arms battle. The bottom line is that we need to alter our perception of future war and embrace the training and readiness requirements of modern conventional operations, and we must be prepared to deal with the attendant horrors of mass casualties and the likely destruction of entire units along with the effects of air parity and being outgunned by the enemy artillery, at best.

The last times the U.S. Army conducted joint multidivisional offensive campaigns using combined arms maneuver were in Afghanistan in 2001 and Iraq in 2003, which then resulted in seventeen years of the Army attempting to master stability and counterinsurgency operations while fighting a deadly enemy.[2] These seventeen years of combat experience, while valuable for our smaller tactical unit leaders, have not been without their own challenges.

The definition of combined arms maneuver is the application of the elements of combat power in a complementary and reinforcing manner to achieve physical, temporal, or psychological advantages over the enemy to preserve freedom of action and exploit success.[3] As our Army continues to prepare for an unknown future regarding large-scale combat operations (LSCO) against a peer or near-peer adversary, we must prudently assume that our combined arms maneuver formations will most likely be outnumbered, the enemy may be technologically more advanced in some areas, and—for the first time since World War II—the enemy may have air superiority. Our mindset, our values, and our culture on training, education, and unit readiness must continue to adapt to the changing operational environment. Our path to future victories includes an Army that is a globally engaged, regionally responsive force providing a full range of capabilities to combatant commanders to

conduct offensive, defensive, and stability tasks to seize, retain, and exploit the initiative, consolidate gains, and win.[4]

The second volume of the LSCO series, *Bringing Order to Chaos: Historical Case Studies of Combined Arms Maneuver in Large-Scale Combat Operations*, provides ten case studies written by a diverse group of military historians. All of the chapters focus on some element of command and control of combined arms from 1917 through 2003. These case studies—ranging from multiple U.S. Army Corps in their first combat operations to divisions fighting on the far end of culmination—provide strong lessons in the major issue of combined arms warfare whether victory is determined by maneuver or fires, or a combination of both.

As Richard M. Swain points out in his excellent history of the Third Army during the Persian Gulf War, theorists, historians, and commentators frequently align themselves in one of two camps of explanation.[5] Swain calls them the romantic school and the realist school. Romantics believe that maneuver can be so adroit that a discerning enemy will admit defeat at the hands of an operational master and will surrender to the brilliance of the enemy's operational art. The realist school—occupied primarily by practitioners, especially those of an artillery heritage—believe that the end result of military operations is death from indirect fire. The more you shoot, the less damage the enemy can do. Victory happens not through psychoshock or silk scarves in the air but from 155 mm and larger artillery fires.

Infantrymen of the 27th Infantry Regiment take advantage of cover and concealment in tunnel positions 10 August 1952, forty yards from the communists near Heartbreak Ridge in North Korea. (Photo by Feldman via National Archives, 111-SC-410716)

A second major issue, but one beyond the limits of this book to offer sufficient case studies, is the role of casualties in LSCO and the relative lack of casualties in the last seventeen plus years of stability operations.[6]

In addressing the issue of adroit maneuver—or the simple need to kill the enemy in large numbers to gain victory—this book presents two chapters from experiences in World War I: one on the German experience late on the eastern front; and the other about U.S. V Corps operations, also very late in the war. It then goes on to discuss case studies from World War II in three essays: Buna, crossing the Moselle, and the reduction of Manila. The book goes on to provide two essays on Korea, one that discusses the U.S. approach to the start of the stabilized period and a second that discusses the People's Liberation Army, inclusive of the mythology of People's volunteers (in the same period). Finally, the Vietnam War, the 1973 Arab-Israeli War, and Operation Iraqi Freedom I in 2003 are all explored in single chapters.

Each chapter analyzes the necessity of tactical and, even occasionally, operational combined arms in LSCO against peer-threats since 1917. The focus is on the U.S. Army's approach, but the German, Chinese, Egyptian, Israeli, and South Vietnamese approaches are explored as well. These chapters are not all strictly chronological since the editors selected particularly noteworthy assessments of U.S. actions in Operation Iraqi Freedom I and at the start of the stabilization period in Korea to start the discussion. From those assessments, a common language emerged; the remainder of the chapters are organized chronologically. In all the chapters, the issues of Swain's romantic and realist versions of modern combat are debated—given the lessons revealed through these case studies, each reader will make his or her own assessment.

Chapter 1 is written by retired Gen. William Wallace, former V Corps

commander during Operation Iraqi Freedom I in 2003, and retired Col. Kevin Benson, a former J5 (strategic plans and policy) Coalition Forces Land Component Command (CFLCC) planner during the invasion. The authors explain the planning effects leading to the production of the CFLCC/Third Army major operations plan COBRA II and its execution in combat. The focus is on the major developments of the planning effort during wargaming and plan revision, and how the V Corps commander adjusted his execution as the combat conditions changed.

In chapter 2, Col. Bryan Gibby, the military division chief of the Department of History at the United States Military Academy, analyzes the 2nd Infantry Division's assault on Korea's Punchbowl in 1951 to include the assaults on Bloody Ridge and Heartbreak Ridge. He investigates how combined arms affected the Punchbowl operations through the preliminary attacks to seize Hill 1179 and establish a forward patrol base, a hasty attack to eliminate the North Korean forces at Bloody Ridge, and follow-on operations on Heartbreak Ridge. Gibby also assesses each of the field commanders on the ground in his analysis of the doctrine and fighting in a large-scale combat environment, and the honest results of the leaders who failed to be adaptive in a large-scale war. Gibby's cautionary note primarily addresses the difficulty of achieving great things with less than overwhelming resources. His narrative should enable further discussions of life under heavy and sustained enemy artillery bombardment, something we have missed, thankfully, in most actions in Afghanistan and Iraq.

In chapter 3, Maj. Mike Kiser, an instructor in the Department of History at the U.S. Military Academy, examines the Chinese use of maneuver to achieve operational and strategic objectives of the People's Liberation Army (PLA) from October 1950 to June 1951. Kiser demonstrates how Chinese officers understood their advantages against the United Nations forces and created superiority through maneuver *and* firepower.

In chapter 4, J. David Pressley II, a history graduate student from the University of North Texas, analyzes the German utilization of combined arms operations at Riga and the Baltic islands in the final months of the eastern front during World War I. He discusses several tactical and operational innovations witnessed during these German attacks, which were promulgated into official German doctrine and quickly transferred to the Italian and western fronts. This return of movement to the battlefield was actually based primarily on overwhelming firepower—indirect and direct fire—at the point of penetration, not on some romantic notion of adroit operational art, mystical psychoshock of the enemy command-and-control systems, or getting inside his OODA (observe, orient, decide, and act) loop. Today's doctrine writers, senior leaders, and those who would become senior commanders and staff officers would do well to read this chapter, especially if they believe they have found the magic keys to the kingdom in some new technology.

In chapter 5, Maj. John Nimmons, an armor officer and recent School of Advanced Military Studies (SAMS) graduate, provides a case study of the V Corps' operations in the Meuse-Argonne Offensive, charting the obstacles to adaption as well as the social and cultural impacts that affected the V Corps' actions and decisions. This chapter details the early struggles of V Corps to link their artillery and intelligence systems at the corps level with the tactical innovation of combined arms maneuver at the division level. The challenge of dividing the multiple tasks on the modern battlefield between echelons to maximize both effectiveness and efficiency is rarely the focus

Lt. Col. Peter J. Schifferle, PhD, U.S. Army, retired, is a professor of military history at the School of Advanced Military Studies (SAMS), U.S. Army Command and General Staff College, Fort Leavenworth, Kansas. He is a twenty-four-year veteran of the Army, having served in Korea, Saudi Arabia, Iraq, Germany, Hungary, and Bosnia, and throughout the United States. He is a veteran of Desert Storm, serving as the 3rd Armored Cavalry Regiment S-4, and of Implementation Force and Stabilization Force in Bosnia as the U.S. V Corps Chief of Plans. He has been a Department of the Army civilian instructor at SAMS since 2000 after serving three years as the SAMS exercise director. He is an ROTC graduate of Canisius College, Buffalo, New York; holds master's degrees from the University of North Carolina, Chapel Hill, and SAMS; and a PhD from the University of Kansas.

of historians' work, but it is a critical component of battlefield competence. Nimmons describes the steep learning curve of the U.S. Army in the fall of 1918 and finishes the chapter with a clear depiction of what victory looks like—the clear coordination of fires, maneuver, tanks, combat aircraft, effective logistics, and an effective level of coordination from the corps to the divisions.

A Sherman tank passing a burning Japanese medium tank during World War II in Luzon, Philippines. (Photo courtesy of the U.S. Army Center of Military History)

In chapter 6, Dr. Robert Young, a history professor at the American Military University, explains the effect of the just-in-time, or *almost* just-in-time, support of elements of a hastily mobilized U.S. Army division during World War II in the Southwest Pacific Area (SWPA) in 1942 and early 1943. Equipped with only one howitzer of sufficient firepower to destroy Japanese bunkers, inadequate ammunition for that one artillery piece, initially no tanks worthy of the name, and woefully short infantry front-line strength, the early fighting in Buna and elsewhere in the SWPA was not a story of success. Learning, however, did occur, and subsequent offensives, using more artillery, many more tanks, and some Allied combat-experienced soldiers, rapidly turned the course of these battle against the Japanese.

In chapter 7, Maj. Paul Cheval, an infantry officer and a recent graduate of SAMS, discusses the 80th Infantry Division that engaged the German army in August 1944 at Argentan, France, and again in September 1944 when crossing the Moselle River. His analysis of the division's ability to employ combined arms reveals that, although it eventually achieved its objective, the division fought too often with separate arms. More an explanation of the challenges of attaining useful levels of combined arms than a rousing success story, this is an important perspective on the difficulty of even the simplest things in combat. In this case, Cheval reminds us of the difficulty of anything when engaged in LSCO with an opponent who refuses to give up.

In chapter 8, Capt. James Villaneuva, an instructor in the Department of History at the United States Military Academy, discusses Gen. Walter Krueger's Sixth Army, which landed 9 January 1945 on the island of Luzon in the Philippines with initial operations focusing on the seizure of Manila. He analyzes the adaptive combinations of infantry, tanks, tank destroyers, and mobile artillery that allowed the 37th Infantry Division and 1st Cavalry Division to drive south to seize Manila. A story too infrequently told in our histories, the clearance of Manila may very well be a forecast of combat in megacities.

In chapter 9, retired Lt. Gen. Dan Bolger discusses our operations in Cambodia, from the political realities of the Nixon administration to the machinations

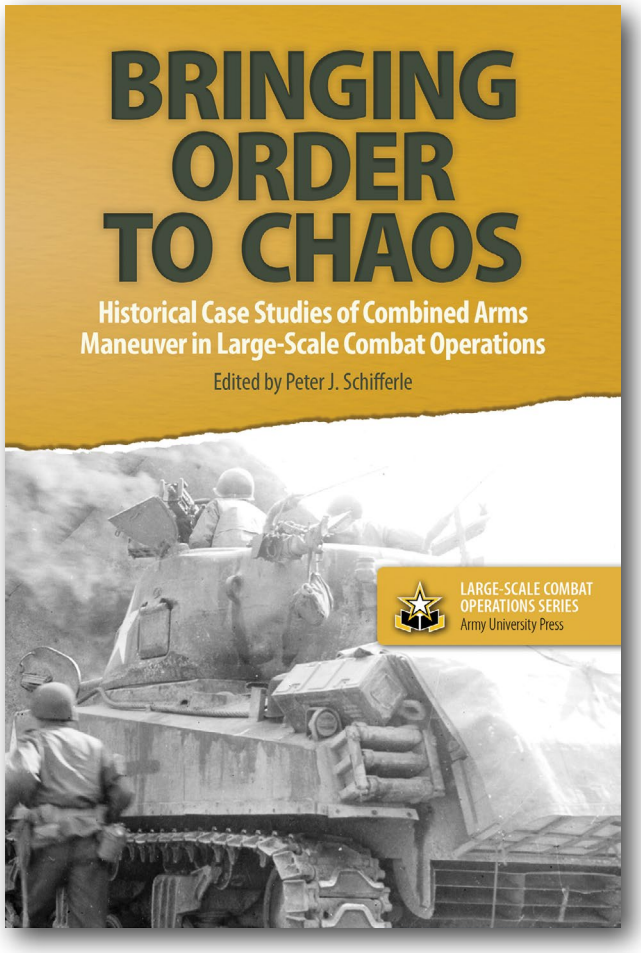
at the four-star headquarters and down to the fighting soldiers, both the South Vietnamese and American. Bolger, a University of Chicago-trained PhD historian, a former division combat commander, and a fellow instructor at the United States Military Academy's History Department, contributed a smoothly narrated but incisive history of the operational, sometimes tactical, incursion into Cambodia that brought powerful strategic results, although not quite as intended. Strong on the assessment of the South Vietnamese army's contribution and the sometimes silly, but frequently fatal political micromanagement of squad-level details, Bolger's piece establishes the right tone for assessments of future U.S. Army operational art in a combined arms LSCO environment.

Engineers supported by a M551 Sheridan Tank from the Blackhorse Regiment clear mines 31 December 1969 in Cambodia. (Photo courtesy of the U.S. Army)

In chapter 10, Dr. Tal Tovy, an associate professor at Bar Ilan University in Israel, discusses the Egyptian and Israeli armies in combat during the October 1973 war. Adding significantly to the relatively well-known analysis of the 1973 War, Tovy provides a double-level assessment of the use of combined arms by the Egyptians and the late discovery of this old concept by the Israelis. Tovy then adds to the discussion by linking the lessons learned, or imagined, by the U.S. Army from this war as the Army entered the operational art period of American doctrine. Useful in several aspects, he adds appropriate complexity and subtlety to what has usually been a somewhat sterile recitation of changes to Field Manual (FM) 3-0, *Operations*, or FM 100-5, *Operations*, as it was designated in the late 1970s.

In the concluding chapter, Lt. Gen. Michael D. Lundy, commander of the Combined Arms Center, presents a vision of the future in combined arms maneuver, and expands the discussion in this set of books, and possible future books, by identifying some of the unresolved issues of peer-competitor combat operations where divisions and corps are mere tactical formations. Our complacency (Lundy does not specifically use this word in his chapter), resting on the valorous actions of the last seventeen years—and a sense of the new culture of the Army inculcated by those seventeen plus years of stability operations—implies that preparation for more stability operations is enough and is as much the enemy of the future as the Russians, North Koreans, Chinese, or Iranians. Lundy argues that we must fight now to regain our ability

to deter, engage, deny, defeat, and win against any and all competitors. He argues persuasively that the Army needs to reorient on LSCO; it must remember the lessons and the ability to conduct stability operations but also quickly and drastically improve the Army's capabilities for training and preparation for LSCO, and deployment into immature theaters—these are the hallmarks of future conflict. ■



Additionally, I owe thanks to the staff at Army University Press for putting this book into physical and electronic form as part of the U.S. Army Large-Scale Combat Operations Series. Special thanks to Col. Paul E. Berg, the book set general editor (Welcome to Leavenworth and the joys of coordinating instant publications!). I also wish to thank Donald P. Wright for senior oversight of the project and its production, Robin D. Kern for graphics, and Diane R. Walker and Lynne M. Chandler Garcia for their professional copyediting and layout. Always ready to help, Russell P. "Rusty" Rafferty, chief, Classified Services, Ike Skelton Combined Arms Research Library (CARL), has not only remained a friend over the last six months of putting these books together but has also broadened an already encyclopedic knowledge of internet-based resources and an unparalleled combination of knowing where "that study" is in the CARL archives, and being willing, indeed eager, to go find it, reproduce it, and send it on to unsuspecting authors. All of these professionals have made this book better for their contributions. As the editor of this volume, I am responsible for any errors, omissions, or limitations of this work.

Notes

Epigraph. Field Manual (FM) 3-0, *Operations* (Washington, DC: U.S. Government Publishing Office [GPO], 2017), para. 1-3.

1. Peter J. Schifferle, *America's School for War: Fort Leavenworth, Officer Education, and Victory in World War II* (Lawrence, KS: University Press of Kansas, 2010). This book takes a different view of the Kasserine battles. This view, that it was a minor tactical defeat on the road to operational capability, is shared by Gerhard L. Weinberg in his epic history of World War II, *A World at Arms: A Global History of World War II* (New York: Cambridge University Press, 1994), 443, 1044n104.

2. FM 3-0, *Operations*, ix.

3. Army Doctrine Publication 3-0, *Unified Land Operations* (Washington, DC: U.S. GPO, October 2011 [obsolete]), 6.

4. FM 3-0, *Operations*, 1-38.

5. Richard M. Swain, *"Lucky War": Third Army in Desert Storm* (Fort Leavenworth, KS: U.S. Army Command and Staff College Press, 1994), 72–73.

6. Schifferle, *America's School for War*, 180, 202n38. For this author's view of combined arms, stabilized fronts, and operational exploitation and pursuit, and the operational similarities of the two world wars, see pages 182–87.

The burnt wreckage of a Ukrainian T-64 "Bulat" battle tank sits on a street 13 September 2014 near Dmitrivka in Oblast Lugansk, Ukraine. The street leads to a Ukrainian field camp that was destroyed during a rocket attack by pro-Russian separatists. (Photo by Jan A. Nicolas, dpa, Alamy Live News)

Lethal and Non-Lethal Fires

Historical Case Studies of Converging Cross-Domain Fires in Large-Scale Combat Operations

Lt. Col. Thomas G. Bradbeer, PhD, U.S. Army, Retired

The Russian rocket attack on Ukrainian forces at Zelenopillya on 11 July 2014 was the first example of Russia's contemporary reconnaissance-strike model on display. The strike targeted a large Ukrainian assembly area where Ukrainian forces were preparing to uncoil and conduct an offensive. At approximately 0400 on 11 July, drones were heard overhead; at around the same time, Ukrainian forces lost the ability to communicate over their tactical radio network. A few minutes later a bevy of rockets and artillery fell on the assembly area. The result was carnage—upwards of thirty Ukrainian soldiers were killed and dozens were severely wounded, while more than two battalions' worth of combat power was destroyed.

—Maj. Amos C. Fox and Maj. Andrew J. Rossow

According to Army doctrine, the word *fires* describes the use of weapon systems to create a specific lethal or non-lethal effect on a target.[1] Similarly, the fires warfighting function, which evolved from the fire support battlefield operating system less than a decade ago, specifically deals with the related tasks and systems that collectively provide coordinated use of Army indirect fires, air and missile defense, and joint fires through the targeting process. Army fires systems are tasked to deliver fires in support of offensive and defensive operations to create specific lethal and non-lethal effects. To accomplish this, the fires warfighting function must accomplish three critical tasks: deliver fires; integrate all forms of Army, joint, and multinational fires; and, conduct targeting.[2] Furthermore, fires assists operational forces in "seizing, retaining, and exploiting the initiative … and enhanc[ing] freedom of action and the movement and maneuver of ground forces."[3]

From the evolution of artillery systems such as the catapult and ballista used by the Roman legions to present-day cannons, missiles, and rockets, the purpose of fires has remained constant: to be the maneuver commander's most responsive combat arm and by doing so assist the other arms in accomplishing their battlefield missions. As the Army prepares for the possibility of conducting large-scale ground combat operations (LSCO) against a peer or near-peer adversary, it must confront the likelihood that U.S. Army and joint fires—especially cannon, rocket, and missile artillery—will be vastly outnumbered and outranged. Additionally, for the first time in nearly seventy years, U.S. and allied air and naval forces may not have air superiority—let alone air supremacy—during the opening engagements and battles of the war. To ensure U.S. and Allied forces do not suffer the same fate experienced by the Ukrainian army in July 2014, we must take advantage of our intellectual capital throughout the Army and our military to make up for our potential technological disadvantages in weapons systems if we are to be successful on tomorrow's battlefields.

Precision and near-precision munitions with standoff capability are at risk of losing effectiveness against adversaries that contest our hegemony in the space domain, across the electromagnetic spectrum, and through anti-access/area denial capability.[4] Our ability to provide flexible response and deterrent options to combatant commanders rests in the aggregated efforts of the greater fires community across the land, air, and maritime components—with varying levels of buy-in from host-nation, regional, and allied partners.

Given these challenges, volume number three of the LSCO series, *Lethal and Non-Lethal Fires: Historical Case Studies of Converging Cross-Domain Fires in Large-Scale Combat Operations,* provides a collection of ten historical case studies written by different authors involving lethal and non-lethal fires from the period 1917 through 1991 with lessons for military professionals who will be engaged in future LSCO. The collection provides three chapters focusing on battles from the First World War, three on battles and campaigns from the Second World War, and one each on the Korean War, the Arab-Israeli Wars, and the First Gulf War. The work analyzes the use of lethal and non-lethal fires conducted by U.S., British, Canadian, and Israeli forces from 1917 to 1991. The coverage is comprehensive and focuses heavily on the successful use of fires in large-scale combat operations against near-peer threats.

The twelve authors for this book were asked to provide a concise overview of fires as they related to an engagement, battle, or campaign that would be the centerpiece of their case studies. They were to present the doctrine the organizations were using—or attempting

Next page: Men of Battery C, 936th Field Artillery Battalion, U.S. Eighth Army, fire the 100,001st and 100,002nd shells at a Chinese Communist position near Choriwon, Korea. (Photo by Kostner, Signal Corps, no. #8A/FEC-51-39822)

to use—together with the challenges the leaders encountered with the doctrine and the operational environment, as well as their actions and decisions during the conduct of the operation. Most importantly, the authors were to address the lessons learned by the leaders in these large-scale combat operations and how they were applied or ignored. Lastly, they were tasked to identify how these lessons learned are applicable to U.S. Army leaders today and in the future.

Though the chapters range from the First World War through Desert Shield/Desert Storm, they are not organized chronologically. This will allow the reader with time constraints to read and analyze those specific battles and operations that strike a specific interest or need. Additionally, the concluding chapter, written by the commanding general of the Fires Center of Excellence, reviews the future of fires and the requirements and expectations for lethal and non-lethal fires to accomplish the numerous and complex missions the warfighting function will be expected to successfully execute during the conduct of multi-domain operations. For the convenience of readers, a brief overview of each article follows.

Chapter 1, provided by Dr. Joseph R. Bailey, the assistant command historian for the U.S. Army Combined Arms Center and Fort Leavenworth, examines the use of airpower during the planning and execution of Operation Overlord, the allied invasion of Europe conducted in early June 1944. The focus is on how Gen. Dwight D.

A Northrop Grumman E-2C Hawkeye "flying radar station" at the Israeli Air Force Museum 19 April 2007 at Hazerim Airbase, Israel. Israel used E-2C aircraft extensively as platforms for electronic warfare to suppress Syrian air defenses during Operation Mole Cricket 19 at the outset of the Lebanon War, 9 June 1982. (Photo courtesy of brewbooks, Wikimedia Commons)

Eisenhower overcame parochial and competing interests among the different U.S. services and allied national armed forces to ensure that airpower effectively supported the seaborne and ground assault.

In chapter 2, retired Lt. Col. Thomas G. Bradbeer, the Major General Fox Conner Chair of Leadership Studies at the U.S. Army Command and General Staff College, analyzes the November 1917 British offensive operation against German forces during the first battle of Cambrai, France, in World War I. He argues that by using the latest scientific and technological advancements in gunnery, the British Royal Artillery was able to overwhelm the German defenders along the Hindenburg Line, enabling the successful armored assault that followed.

Gen. David M. Rodriguez's 1989 School of Advanced Military Studies monograph in chapter 3 analyzes two campaigns from Middle Eastern wars—the Sinai Campaign in 1973 and the 1982 Bekaa Valley Campaign in Lebanon—to illustrate the impact of electronic warfare on operational maneuver.

In chapter 4, retired Air Force Lt. Col. Mark E. Grotelueschen, a professor at the U.S. Air Force Academy's Department of Military and Strategic Studies, discusses the U.S. Army's 1918 major offensive into the Meuse-Argonne and examines how significant changes made at the army, corps, and division levels affected the way firepower was planned and employed during the battle, resulting in the most successful attack by the American Expeditionary Forces during the war.

In chapter 5, Maj. Lincoln R. Ward, a joint plans officer with the Combined Joint Task Force-Horn of Africa, describes how the division artillery can

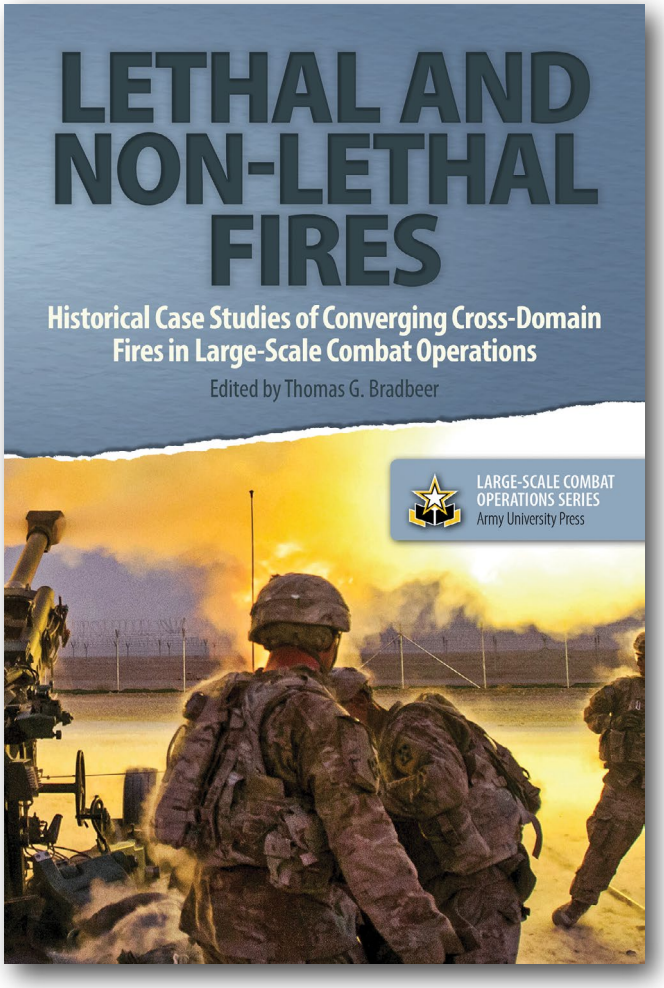
achieve the Army chief of staff's objective of readiness using Operations Desert Shield and Storm as a case study to analyze preparations for deployment and the use of artillery during offensive operations against a near-peer adversary.

Maj. Jeffrey S. Wright, an instructor in the Department of Military Instruction, U.S. Military Academy at West Point, analyzes in chapter 6 the February 1943 Battle of Kasserine Pass, the first major engagement between American and Axis forces in Africa during the Second World War. He examines how both the maneuver and field artillery commanders learned from their initial mistakes and were able to set the conditions to mass, demonstrate flexibility, and effectively synchronize fires to defeat follow-on Axis attacks.

Lt. Col. G. Kirk Alexander, commander of 1st Battalion, 31st Field Artillery, Basic Combat Training at Fort Sill, Oklahoma, uses the Korean War as a case study in chapter 7 to examine the principles of fire support in the defense: mass, unity of command, and security. He argues that operational success in the Korean War largely depended upon the U.S. Army's ability to provide artillery support at the decisive place and time to defeat the North Korean and Chinese offensive operations. He also discusses whether our current doctrine and organizations can execute these principles against a near-peer threat in large-scale combat operations.

In chapter 8, Boyd L. Dastrup, the U.S. Army Field Artillery School branch historian, analyzes the performance of the U.S. Army field artillery during the Vietnam War. First and foremost, he argues that the field artillery demonstrated adaptability and flexibility, most especially with its shift to incorporate airmobile operations in support of maneuver forces. However, he also asserts that the Army became too reliant on firepower to accomplish its missions.

Lt. Col. (retired) Mark T. Calhoun, an associate professor at the U.S. Army School of Advanced Military Studies, examines in chapter 9 the use of strategic bombers in close support of U.S. ground troops using the Normandy campaign in World War II, and specifically Operation COBRA in 1944. His chapter contrasts well with Bailey's chapter 1, ensuring that multiple perspectives are provided on the role and use of U.S. and British airpower during the invasion of France in 1944.



Lt. Col. Thomas G. Bradbeer, PhD, U.S. Army, retired, is the Major General Fox Conner Chair of Leadership Studies for the U.S. Army Command and General Staff College at Fort Leavenworth, Kansas. He earned a BA in history from the University of Akron, an MA in adult education from the University of Saint Mary, a Masters in Military Arts and Sciences from the U.S. Army Command and General Staff College, and a PhD in history from the University of Kansas. His chapter on Gen. Matthew B. Ridgway appeared in *The Art of Command: Military Leadership from George Washington to Colin Powell*, 2d Edition, and his article "General Cota and the Battle of the Hurtgen Forest: A Failure of Battle Command?" published in *Army History*, received the Army Historical Foundation Distinguished Writing Award in 2010. His research areas include air warfare, specifically the First and Second World Wars, the British Army in the twentieth century, and the Korean War.

In chapter 10, David Thuell, a graduate student at Norwich University, and Bradbeer analyze how the Canadian Corps applied new doctrine in the employment of fires and maneuver in World War I to successfully capture the German-held Vimy Ridge during the Battle of Arras in April 1917. They assert that five of the six tenets of today's unified land operations—flexibility, integration, lethality, adaptability, and synchronization—were displayed by the leaders and soldiers of the Canadian Corps during the assault on Vimy Ridge.

In the concluding chapter, Maj. Gen. Wilson A. "Al" Shoffner, commanding general, Fires Center of Excellence and Fort Sill, Oklahoma, and Col. Christopher D. Compton, chief, Concepts Development Branch, Fires Center of Excellence, present a vision of the future of lethal and non-lethal fires and the critical role they will serve in ensuring that the combined arms team will win the first battle of the next conflict against a near-peer opponent.

This work would not have been possible without the voluntary time and work of the authors; they are the experts. The authors are a mix of four active and seven retired officers and civilian scholars. Several authors are current or past Army historians with a significant depth of expertise. Some are scholars who have devoted a lifetime of study to master the sources, understand the context, analyze the breadth and depth of the subject, and develop a skill for presenting each case study in a comprehensible format. ■

I owe special thanks to the staff of Army University Press for putting this book into physical and electronic form as part of The U.S. Army Large-Scale Combat Operations Series. Special thanks to Col. Paul E. Berg, book set general editor; Donald P. Wright for production; Robin D. Kern for graphics; and Diane R. Walker and Lynne M. Chandler Garcia for the copy editing and layout. Also, Russell P. "Rusty" Rafferty, chief, Classified Services, Ike Skelton Combined Arms Research Library, as well as Kenneth A. Turner and Lt. Col. David M. Ward, field artillery—two instructors from the Department of Command and Leadership, U.S. Army Command and General Staff School—deserve special praise for their willingness to locate photographs to support each of the chapters as well as their cogent advice and recommendations. They have made this book better for their contributions. As the general editor of this book, I am responsible for any errors, omissions, or limitations of this work.

Notes

Epigraph. Amos C. Fox and Andrew J. Rossow, *Making Sense of Russian Hybrid Warfare: A Brief Assessment of the Russo-Ukrainian War*, Land Warfare Paper 112 (Arlington, VA: Association of the United States Army, March 2017), 10.

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THE LAST 100 YARDS

The Crucible of Close Combat in Large-Scale Combat Operations

In April 2019, the Army University Press will release the ninth book in its Large-Scale Combat Operations (LSCO) series, titled *The Last 100 Yards: The Crucible of Close Combat in Large-Scale Combat Operations*, edited by Col. Paul E. Berg.

This collection has twelve articles detailing and comparing features of close combat in diverse LSCO battles and campaigns in World War I, the European and Pacific theaters in World War II, and the Korean War.

BOOK RELEASE COMING SOON!

U.S. Army soldiers on Bougainville of the Solomon Islands 1 March 1944 during World War II. Japanese forces tried infiltrating the U.S. lines at night. At dawn, the U.S. soldiers would clear them out. In this picture, infantrymen are advancing in the cover of an M4 Sherman tank. (Photo courtesy of the U.S. National Archives)

Army University Press

The Long Haul

Historical Case Studies of Sustainment Operations in Large-Scale Combat Operations

Lt. Col. Keith Beurskens, DM, U.S. Army, Retired

You will not find it difficult to prove that battles, campaigns, and even wars have been won or lost primarily because of logistics.

—Gen. Dwight D. Eisenhower

There will not be a revolution in military affairs unless there is a revolution in military logistics.

—Gen. Dennis J. Riemer

The practice of logistics has been around since the earliest known standing army of the Assyrians at around 700 BC and has been fundamentally unchanged for more than two millennia. Assyrian logistic support consisted of feeding, equipping, and moving (with horses, camels, mules, and oxen) the force. Noncombatant followers carried the materiel necessary to provide sustenance and maintenance to the fighting force. Campaign timing was synchronized to occur just after the harvest to extend the time the force could remain in one place.[1]

Alexander the Great later established warfare as a year-round operation; not wintering or staying more than a few weeks away from a seaport or navigable river with his army on campaign. He made extensive use of shipping with merchant ships and horses, and also used his enemy's logistics weaknesses against them.[2]

There was no truly revolutionary approach to logistics until the introduction of steam engines and the railroad. The American Civil War foreshadowed future warfare, particularly regarding logistics. It was the first major war in which the railroads played an important part, speeding up the movement of troops and supplies. To a great extent, the railroads also dictated the axes of advance or retreat, the siting of defensive positions, and the locations of battles.[3] The United States' first two large-scale combat operations (LSCO) within the industrial age were the two world wars. Both these wars had the traditional logistics requirements, only on a much grander scale, and they both introduced new warfare technology-based logistics requirements.

Previous page: A U.S. convoy ascends the famous "Twenty-one Curves" 26 March 1945 at Annan, China. The convoys operated between Chen-Yi and Kweiyang, China, on a section of what became known as the "Burma Road." (Photo by Pfc. John F. Albert. Courtesy of the National Archives, no. 531304)

Lt. Col. Keith Beurskens, DM, U.S. Army, retired, is the deputy director of Academic Affairs at Army University. Beurskens served as the lead author for the "Army University White Paper" and the "Strategic Business Plan for the Army University," which led to the establishment of Army University in 2015. He has also been featured in *Military Review* and the *Journal of Military Learning*. In 2005, Beurskens completed a twenty-four-year military career, retiring as a lieutenant colonel in the Corps of Engineers. He holds a BS from Utah State University, an MS from University of Colorado, and a DM from University of Phoenix.

A neo-Assyrian alabaster wall panel relief (865 BC–860 BC) shows Ashurnasirpal II's chariot and another being placed in a boat for transportation across a river, probably the Euphrates. Upstream, Assyrian officials supervise as the army crosses river; some cross on inflated skins. (Photo courtesy of The British Museum)

Post-Korean War and throughout the Cold War, the United States, as a superpower and in cooperation with its allies, expanded the concept of logistical planning. The United States began to stockpile military supplies at strategic points around the world, near areas of potential conventional war danger.[4] The origins of the modern operational contract support practices are from the United States' experiences during the Vietnam War.[5] Advances in logistical support to strategic maneuver and in harsh environments occurred during Operation Desert Storm and Operation Iraqi Freedom (OIF) in the Middle East.

The Long Haul: Sustainment Operations in Large-Scale Combat Operations is a collection of eleven historical case studies of sustainment operations drawn from the past one hundred years with lessons for modern LSCO. The book is organized chronologically, specifically including World Wars I and II, the Korean War, the Vietnam War, the Falklands War, Operation Desert Storm, and OIF. The commanding general for the Combined Armed Support Command (CASCOM) presents future sustainment trends to conclude the book. *The Long Haul* is a work of history intended as a tool for the development of thoughtful reflection on past experiences—good and bad—a tool to teach situational critical thinking.

We asked authors to focus the readers on the lessons learned with chapters short enough to prohibit a comprehensive telling of the story. Thus, the orientation to the situation in each chapter is brief, and only elements of the situation critical to understanding the major lessons learned are presented. Where the authors felt it was applicable, they close the chapters with forecasts of sustainment operations in future LSCO.

Soldiers from the 20th Engineer Brigade shuttle trucks across the Euphrates River 16 November 2007 in support of a combat operation near Baghdad. (Photo by Spc. Luke Thornberry, U.S. Army)

In the end, we want readers to have a good, not perfect, understanding of the capabilities and limitations of at least one important challenge in each major area of sustainment, the actions taken for addressing it, and the outcome. To gain the full value from these case studies, readers must reflect on what they read; analyze for themselves the cause, effect, and outcome of each situation; and apply the fruit of this thought to their own lives and experiences.

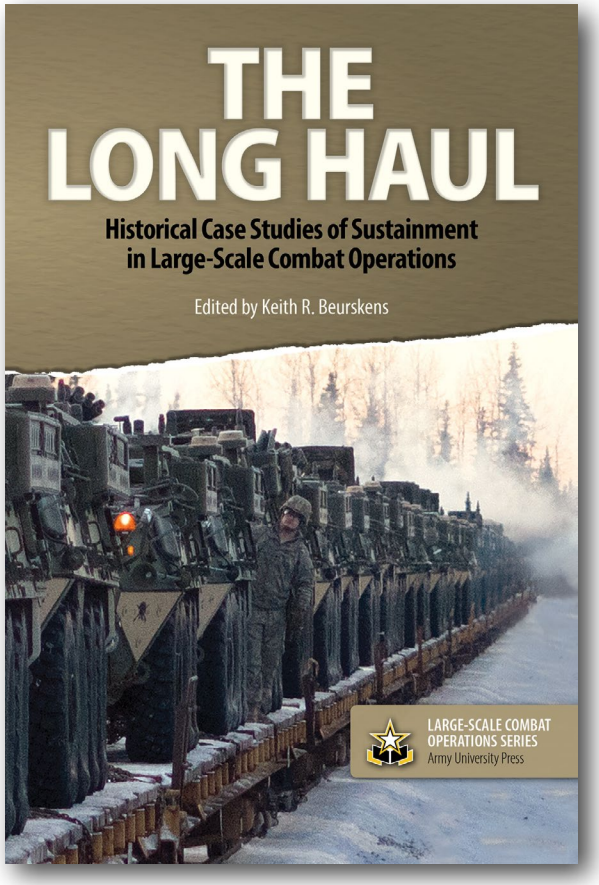
In the first chapter, retired quartermaster historian Dr. Leo Hirrel examines the maturation of U.S. Army sustainment functions during World War I from vague notions into a workable organization structure. Dr. Sanders Marble, an Army Medical Command senior historian, focuses chapter 2 on World War I's medical functions and their effect on maintaining combat power in the First Army's area during the Meuse-Argonne Offensive.

As the U.S. Army's entry into the west during World War II, the North African Campaign is studied against the framework of AirLand Battle and logistical doctrine by retired Lt. Col. Mark D. Kitchen in chapter 3; and Maj. Cory Campbell identifies lessons from the Battle of Metz within today's principles of sustainment in chapter 4. In chapter 5, history professor Dr. James A. Huston explores the logistical support and challenges as the United States, the United Nations, and the Republic of Korea forces transitioned from traditional to cold war.

Chapters 6 and 7 arguably do not cover LSCO; however, the case studies explore advancements in sustainment practices that can be applied to future LSCO. In chapter 6, Dr. Isaac Hampton II, the Quartermaster Branch chief historian, explores the infrastructure build-up of Vietnam from 1962 to 1967 as the Army's introduction to operational contracting support. Lt. Col. Michael Gunther represents the only non-U.S. logistics case in chapter 7. Gunther examines the application of British joint logistics to expeditionary operations against near-peer forces without the benefit of a secure logistical base in the area of operations.

Chapters 8 to 11 represent sustainment operations in the Middle East during Operation Desert Storm and OIF. Dr. James Martin studies the VII Corps logistics operations in Operation Desert Storm, examining the sheer volume of support required and the lessons learned from such a major land-combat operation.

OIF is examined from three perspectives. In chapter 9, Kelvin Crow, the Combined Arms Center historian, and retired Col. Christopher Croft study the strategic maneuver of the 4th Infantry Division from eighteen installations in the United States, Germany, and Italy to Iraq and Turkey, and then through the Suez Canal and Kuwait as an example of complex and chaotic strategic maneuver. In chapter 10, Richard E. Killblane, the Transportation Corps historian, examines the doctrine of on-time delivery and the many unforeseen factors that prevent it from the context of the 3rd Infantry Division and its distribution of bottled water. Dr. Kenneth Finlayson, the CASCOM historian, completes the study of OIF in chapter 11 by examining the planning, preparation, execution, and results of the installation and operation of the Inland Petroleum Distribution System as the principle bulk fuel delivery mechanism supporting the American forces. Maj. Gen. Paul C. Hurley, commanding general of CASCOM; Maj. Gen. Rodney Fogg, the fifty-fourth quartermaster general; and Ronald Jaeckle, the CASCOM strategic planner, explore the future of logistics decision-making in the final chapter.



The Long Haul would not have been possible without the voluntary time and work of the authors; they are the experts. Several authors are current or past Army historians with a significant depth of expertise. Some are scholars who have given a lifetime of study to master the sources, understand the context, ponder the details, and develop a skill for narrative. The balance of the authors have experience as practitioners who have devised innovative solutions to the inevitable surprises that arise during the fog of war. ■

Thanks to the staff of Army University Press for putting this book into physical and electronic form as part of the Historical Case Studies in Large-Scale Combat Operations book set. Special thanks to Col. Paul Berg, book set general editor, Dr. Donald Wright for production, Robin D. Kern for graphics, and Diane R. Walker and Dr. Lynne M. Chandler Garcia for copyediting and layout. As the general editors of this project, we alone are responsible for the errors, omissions, or limitations of this work.

Notes

Epigraph. Bradford K. Nelson, "Defeating the Threat to Sustainment Operations," *Army Logistician* 40, no. 2 (March-April 2008): 33.

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Residents of Lodz, Poland, greet Soviet tank crews in 1945 as they enter the city. (Photo courtesy of the State Archive of the Russian Federation)

Deep Maneuver

Historical Case Studies of Maneuver in Large-Scale Combat Operations

Jack D. Kem, PhD

Deep attack is not a luxury; it is an absolute necessity to winning.

—Gen. Donn A. Starry

All right Mister, let me tell you what winning means … you're willing to go longer, work harder, give more than anyone else.

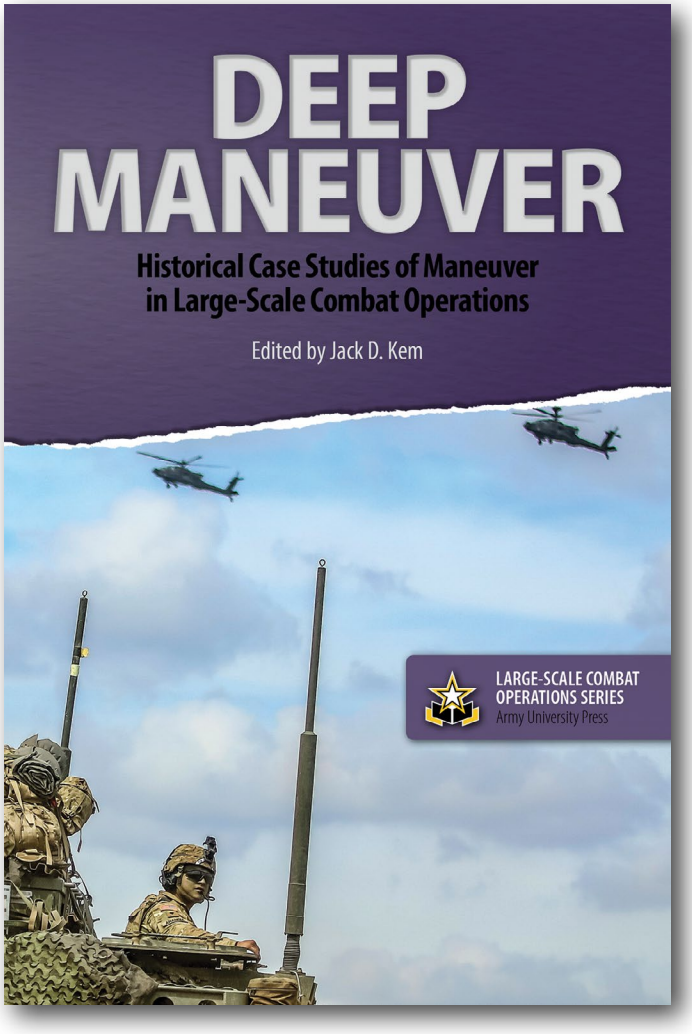
—Vince Lombardi

The terms *deep maneuver*, *deep attack*, and *deep operations* have been prominent in Army doctrine for many years. The concept of deep operations relates to extending operations in time, space, and purpose to gain an advantage over enemy forces and capabilities before adversaries can use their capabilities against friendly forces.[1]

Field Manual 3-0, *Operations*, emphasizes this concept of extending operations in time, space, and

purpose to gain an advantage over potential peer enemies in highly contested, lethal environments to prevail and win.[2] Deep maneuver, the employment of forces using the combination of movement and fires to gain a position of relative advantage over enemies, is fundamental to warfighting.[3]

Deep maneuver for large-scale combat operations (LSCO) at the division and corps level has not been practiced for many years in the U.S. Army. The focus on stability operations and protracted counterinsurgency campaigns caused a shift away from LSCO and conducting deep maneuver. The current operational environment demands that we, once again, sharpen our focus on the threats that exist today, and that we study deep maneuver as a core competency.



So, we turn to the past to study both the successes and failures of deep maneuver in warfighting. *Deep Maneuver: Historical Case Studies of Maneuver in Large-Scale Combat Operations* is a collection of eleven chronologically ordered historical case studies drawn from the past one hundred years with lessons for modern LSCO. Included in the collection are case studies from World War II, the 1967 and 1973 Arab-Israeli Wars, Vietnam, Desert Storm, and Operation Iraqi Freedom. The last two chapters provide perspectives on the future of deep maneuver.

The authors were asked to look at deep operations regarding time, space, and purpose; the default is to think of deep maneuver only in terms of space, but time and purpose are critical factors to understand the concept of deep operations. We also asked the authors to not only include successes but to also include failures and shortfalls. Each chapter is relatively short and is focused on deep maneuver. When possible, the authors provided their insight into the implications of the lessons learned—or not learned.

Deep operations require boldness and audacity, and yet carry an element of risk as a result of overextension. Readers should carefully review these case studies and reflect on the components that still apply today and in the future as well as consider those components that are not applicable today. The critical role of commanders communicating their vision regarding purpose and end state are enduring; weapon systems and their capabilities are ever-changing. Balancing boldness and risk are enduring challenges; geography and weather are situationally independent. Readers should read, study, and analyze each case study in light of these considerations.

Edward P. Shanahan studies the German penetration of the Ardennes in May 1940 in chapter 1's "Surprise: The XIX Panzer Corps' Lightning Advance into France, May 1940." The Wehrmacht's operations took less than one week to shatter the French army; in less than three weeks, the Germans had conquered France and had driven the British army from the European continent. This element of surprise—attacking in a way that was completely unexpected—allowed the German army to accomplish in six days what they had only attempted to complete in World War I.

Glen L. Scott addresses operations in northern Africa in November 1941 in "Considerations for

Deep Maneuver: Operation 'Crusader.'" Chapter 2, focused on corps-level operations, details the actions of the British XXX Corps, which had moved deep into Axis territory to fight the German Afrika Korps. Initially, Lt. Gen. Erwin Rommel's Afrika Korps achieved a tactical victory in a series of battles and maneuvers. Rommel then led the Axis mobile forces on a bold, but futile, maneuver designed to encircle the British 8th Army and break their will to continue the offensive. At the end of the operation, neither side had a conclusive victory.

Chapter 3, "The Debaltsevo Raid by the Bashkir Cavalry Division during 'Operation Gallop,' February 1943," by Robert F. Baumann and William E. Bassett, outlines a 1943 raid by the most-decorated Soviet division in World War II, the 112th "Bashkir" Cavalry Division, which would later be redesignated as the 16th Guards Cavalry Division. The division, which began the operation at only 48 percent strength, conducted two successive major operations and months of hard combat against some of the best German divisions fielded during World War II. The 112th Cavalry Division penetrated German defenses and achieved tactical mission objectives but complicated coordinated operations with friendly units over vast distances.

Christopher J. Shepherd describes the second invasion of Western Europe (after Normandy) along the Southern Riviera known as Operation Dragoon in chapter 4's "Creating Operational Depth through Coalition Integration." The objectives of Dragoon were to secure the ports of Marseille and Toulon, which enabled the logistical support for the Allies continued efforts through France and into Germany. A key consideration for this operation was the integration of U.S., French, and British forces, including the U.S. Seventh Army, the French Armée B, the American VI Corps, the American-Canadian First Special Service Force, the First Airborne Task Force, the French Group of Commandos, and French Naval Assault Group.

In December 1944, Adolf Hitler's Fifth and Sixth Panzer armies attacked the U.S. First Army in the Ardennes Forest of eastern Belgium, a surprise move that penetrated the Army's front and created a large salient in the Allied lines known as "the Bulge." Rather than focusing on the defense in the early days of the German offensive, Dean A. Nowowiejski's chapter, "Command Decisions on Counterattack and Deep Envelopment in the Battle of the Bulge," focuses on the decisions that the Allied generals made to counterattack the German salient to save Bastogne and, most importantly, the decisions they made to remove the Bulge itself. Nowowiejski specifically addresses the employment of counterattacks in the Battle of the Bulge to not only gain a position of tactical advantage but also to achieve the larger purpose of counterattacking to stop the enemy and to take the initiative away from the enemy through envelopment.

Chapter 6, "Vistula to the Oder: Soviet Deep Maneuver in 1945," is the final chapter that addresses World War II deep maneuver and is written by Timothy Heck. By 1945, the Soviet army had pushed the German army back to Poland's Vistula River. It then planned a series of front-sized campaigns to defeat the Germans and liberate Berlin. The Vistula-Oder Offensive was the main Soviet effort in these 1945 campaigns. The offensive was conducted on two fronts, each consisting of ten armies (approximately 2.2 million men), an air army, and four to

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An Interim Armored Vehicle "Stryker" and AH-64 Apache helicopters move to secure an area 15 June 2018 during a lethality demonstration for exercise Puma 2 with Battle Group Poland as part of Saber Strike 18 at Bemowo Piskie Training Area, Poland. The exercise tested allies and partners from nineteen countries on their ability work together to deter aggression in the region and improved each unit's ability to perform its designated mission. (Photo by Spc. Hubert D. Delany III, U.S. Army)

A CH-47 Chinook with a sling loaded M-777 155 mm howitzer flies overhead as soldiers of 1st Battalion, 119th Field Artillery Regiment, use picks to remove inches of ice 1 March 2014 in order to place their howitzer during a live-fire exercise at Camp Grayling Joint Maneuver Training Center, Grayling, Michigan. (Photo by Staff Sgt. Kimberly Derryberry, Michigan National Guard)

five corps-sized mobile groups, giving the two front commanders the ability to echelon their forces for breakthrough and exploitation phases. The application of mass and tempo, along with the necessary enablers, were fundamental to Soviet success when conducting large-scale maneuver in depth during the Vistula-Oder Offensive.

We shift away from the case studies of World War II in chapter 7. In Ronnie L. Coutts's "The Israeli Experience: The Apogee of Blitzkrieg," he describes the adoption of the deep maneuver concept in 1967 and 1973, necessitated by the lack of maneuver space by the Israelis and the need to avoid deliberate battles of destruction. In 1967, Gen. Israel Tal's Ugda (division) conducted rapid deep maneuver across the Sinai to quickly bring the battle into Arab territory; and in 1973, Gen. Ariel Sharon gambled by attacking across the Suez Canal into Egyptian rear areas—a gamble that was won only due to the piecemeal attacks by the Egyptians.

Col. Paul Berg and Ken Tilley's chapter, "Task Force Normandy: Deep Operation that Started Operation Desert Storm," describes the initial strikes in Operation Desert Storm by Task Force Normandy in January 1991. This operation by Task Force Normandy displayed the effects of dramatic changes in thinking about the dimensional multi-domain battlefield and how to organize and fight in it. Task Force Normandy helped to prove the doctrinal ideas about deep attack operations in LSCO and aviation in the 1990s. In addition, this deep maneuver mission also proved the importance of moving toward joint integrated operations that were fundamental in the thinking of future Army doctrine and the continued concepts of current LSCO.

Initially published in *On Point: The United States Army in Operation Iraqi Freedom*, Gregory Fontenot, E. J. Degen, and David Tohn describe the unsuccessful deep strike 23 March 2003 by the 11th Attack Helicopter Regiment as part of Operation Iraqi

Freedom in chapter 9's "Army Attack Aviation: The 11th Attack Helicopter Regiment's Attack in Karbala." In this attack, thirty-one of thirty-two aircraft were damaged—one aircraft was downed in enemy territory, and two pilots were captured—without decisively engaging the Iraqi Medina Division. As a result, it took thirty days for the 11th Attack Helicopter Regiment to restore to full capability and cast a shadow over deep-attack operations throughout the duration of major combat operations.

Daniel E. Stoltz, Stephen E. Ryan, and Joseph A. Royo's chapter, "Task Force Viking: Conventional Forces—Special Operations Forces—Synergy in Large-Scale Ground Combat Operations," outlines the importance of gaining synergy between conventional forces, special operations forces, and indigenous forces at all levels of warfare. Using coalition operations in northern Iraq during Operation Iraqi Freedom, the authors describe how Task Force Viking integrated over fifty-two thousand-strong Kurdish Peshmerga to secure the liberation of Kirkuk and Mosul in 2003.

Brendon E. Terry describes the importance of a critical enabling capability for deep operations—dismounted reconnaissance—in chapter 11's "Maintaining Capability and Options: Dismounted Reconnaissance in the Division and Corps Deep Area." Focusing on the division and corps fights, Terry describes the evolution of dismounted reconnaissance including long-range reconnaissance, Rangers, and long-range surveillance units. The author also provides two case studies on the utility of this enabling capability: Vietnam's long-range patrol units, and Operations Desert Storm and Iraqi Freedom I's long-range surveillance units. He concludes that the U.S. Army must maintain this capability for the future.

The final two chapters provide insight into the future of deep maneuver. Maj. Gen. William K. Gayler, commander of the U.S. Army Aviation Center of Excellence, discusses "The Future of Army Aviation in Deep Maneuver" in chapter 12. Maj. Gen. Gary M. Brito, commanding general of the Maneuver Center of Excellence, and Maj. Keith Boring discuss the future of multi-domain operations in chapter 13, "Disrupted, Degraded, Denied, but Dominant: The Future Multi-Domain Operational Environment." ■

We owe thanks to the staff of Army University Press for putting this book into physical and electronic form as part of the Historical Case Studies in Large-Scale Combat Operations book set. Special thanks to Col. Paul Berg, book set general editor; Dr. Donald Wright; Ms. Robin Kern; Ms. Diane Walker; and Dr. Lynne Garcia for their support. As general book editors, we alone are responsible for the errors, omissions, or limitations of this work.

Notes

Epigraph. Donn A. Starry, "Extending the Battlefield," *Military Review* 61, no. 3 (March 1981): 32.

Epigraph. Hannah Hutyra, "115 Vince Lombardi Quotes to Use in the Game of Life," Keep Inspiring Me (website), accessed 17 July 2018, http://www.keepinspiring.me/vince-lombardi-quotes/.

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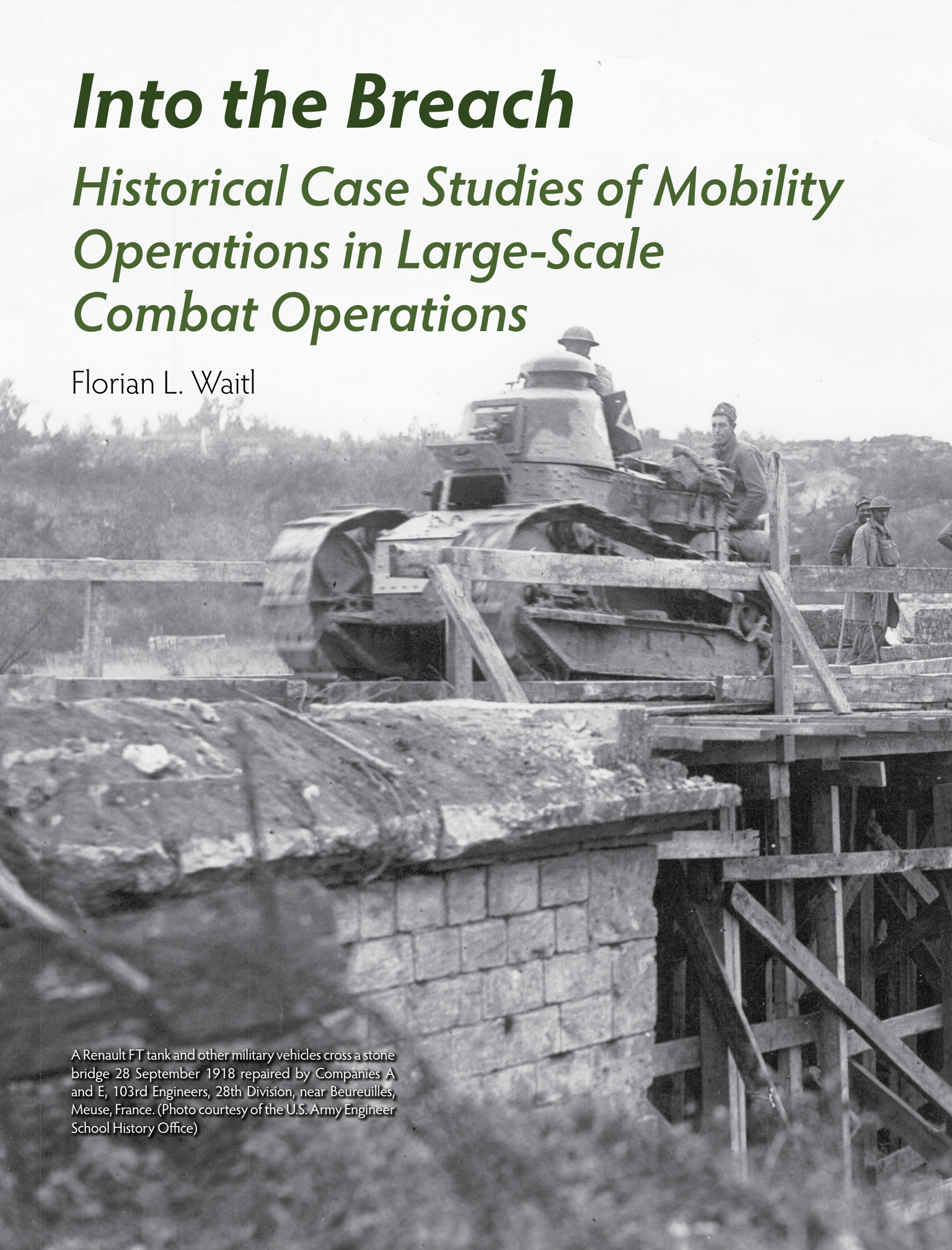
Into the Breach

Historical Case Studies of Mobility Operations in Large-Scale Combat Operations

Florian L. Waitl



A Renault FT tank and other military vehicles cross a stone bridge 28 September 1918 repaired by Companies A and E, 103rd Engineers, 28th Division, near Beureuilles, Meuse, France. (Photo courtesy of the U.S. Army Engineer School History Office)

Once more unto the breach, dear friends, once more;
Or close the wall up with our English dead.
In peace there's nothing so becomes a man
As modest stillness and humility:
But when the blast of war blows in our ears,
Then imitate the action of the tiger

—William Shakespeare, *Henry V*

The operational environment the U.S. Army faces today has changed significantly from that of recent years. Emerging regional threats like Russia, China, North Korea, and Iran have resulted in a need to shift the U.S. Army's doctrine to address possible future large-scale combat operations (LSCO) against peer or near-peer competitors. While the U.S. Army has been "bogged down" in counterinsurgency and stability operations in Iraq and Afghanistan for the last seventeen years, our potential adversaries have studied our existing doctrine and capabilities with the intent to develop means to counter our once-guaranteed land domain overmatch.[1] As a result, for the first time since the end of the Cold War, the U.S. military and coalition forces face adversaries that have the ability to compete and in some instances even outmaneuver and overmatch our forces.

The U.S. Army's recently published Field Manual (FM) 3-0, *Operations*, provides a doctrinal approach for theater armies, corps, divisions, and brigades to address the challenges associated with large-scale ground combat. The FM mentions that "historically, battlefields in large-scale combat operations have been more chaotic, intense, and highly destructive than those the Army has experienced in the past several decades."[2] Large-scale exercises, as were seen in the 1980s in Europe, have not been conducted for decades. The skills to participate, lead, and fight in such large-scale combat operations as described in FM 3-0 have atrophied and, as a consequence, the Army needs to rebuild itself and foster institutional and cultural changes to successfully fight tomorrow's multi-domain operations.

Fortunately, the U.S. Army is a learning organization that is proud of its history and heritage, and capable of adjusting rapidly to meet new challenges and threats. To achieve the necessary adjustments, we can gain valuable insights through the study of history, which is why Lt. Gen. Michael D. Lundy, commander of the U.S. Army's Combined Arms Center, specifically instructed the Army University Press to produce the Historical Case Studies in Large-Scale Combat Operations book set. The purpose of this initiative is to introduce Army commanders and their staffs to some of the challenges one might encounter

in LSCO, to teach situational critical thinking, and to open the discussion of warfighting issues of mutual interest to the Army and joint community.

Due to the simple reason that without mobility, maneuver forces would go nowhere, the LSCO book set would not be complete without a volume specifically addressing mobility operations. As the command historian for the U.S. Army Engineer School, I immediately volunteered to lead this endeavor and bring home this project to the Maneuver Support Center of Excellence (MSCoE) at Fort Leonard Wood, Missouri. MSCoE consists of the U.S. Army Engineer School; the Military Police School; and the Chemical, Biological, Radiological, and Nuclear School, which all have their place in mobility operations in LSCO.

Into the Breach: Historical Case Studies of Mobility Operations in Large-Scale Combat Operations is a collection of ten historical case studies of mobility and countermobility operations drawn from the past one hundred years with insights for modern LSCO. It is organized chronologically to include World War I, World War II, the Korean War, the 1973 Arab-Israeli War, and Desert Storm.

Andrew Huebner starts the book with a closer look at the Gorlice-Tarnow Offensive on the eastern front during World War I. Even though the offensive is seen as one of Germany's greatest feats in the war,

Traffic crossing a treadway bridge over the Rhine River south of Wesel, Germany, in 1945. (Photo courtesy of the U.S. Army Engineer School History Office)

it is still one of many understudied topics by military historians of the West. Huebner follows a dual perspective, considering both sides involved in the maneuvers of pursuit and retreat that characterized one of the largest frontline shifts in World War I. His insights about the stalled German advance after gaining major tactical victories time and time again is an eye-opening experience that underlines once again the need to understand the culminating point of victory when planning and conducting mobility operations in LSCO.

The next three chapters shift to the western front of World War I. Scott Znamenacek takes a closer look at how U.S. Army engineering efforts ensured freedom of movement to operational and tactical forces during the Meuse-Argonne Offensive. In his conclusions, he connects the historical lessons to observations of contemporary operations and exercises that have been collected by the Center for Army Lessons Learned. Even though a full century has passed since the Meuse-Argonne Offensive, many of the engineer roles, responsibilities, and capabilities are still needed today to fight and win on the multi-domain battlefield.

Christy Lindberg continues the examination of the Meuse-Argonne Offensive through the lens of the then newly established Chemical Warfare Service. Today's Chemical Corps traces its creation back to 28 June 1918 when the 30th Engineer Regiment (Gas and Flame) was transferred and redesignated as the 1st Gas Regiment. The Meuse-Argonne Offensive marked the 1st Gas Regiment's "baptism by fire" after having been created only ninety days prior. Lindberg points out the invaluable lessons and insights from how the chemical support enabled mobility operations during the campaign that still influence the Chemical Corps today.

Dan Runyon finishes the examination of World War I by shifting the focus to Germany's need to develop new doctrine while at war. He highlights the strategic situation of Germany and examines the importance of being a learning organization similar to what the U.S. Army is attempting today with the introduction of the new FM 3-0 and its shift to peer and near-peer threats in a multi-domain arena. He accomplishes this task by examining the history of the Hindenburg Line from its conception up to its breach in 1918.

Paul Munch keeps our focus on the western front and takes us through the interwar years to Germany's invasion of France. He chooses to concentrate on the importance of terrain and compares the actions that took place during the invasion of France through the Ardennes in 1940 to Germany's counteroffensive commonly known as the "Battle of the Bulge" in December 1944. Munch's discussion is followed by Brett Boyle's account of the conquering of the Rhine by the U.S. Army in 1945 in which he discusses the roots of current doctrine and how specifically the lessons of the 1945 Rhine crossings influenced and shaped current wet-gap crossing doctrine. Lastly, mobility and countermobility operations in a megacity are explored in Walker Mills's chapter when he discusses the block-by-block fighting that occurred in Berlin in the last days of World War II.

Ron Miller focuses on lessons from the Korean War when he examines enemy prisoner of war and refugee control operations essential to sustaining a high level of operational tempo and maintaining a successful battle rhythm while conducting LSCO.

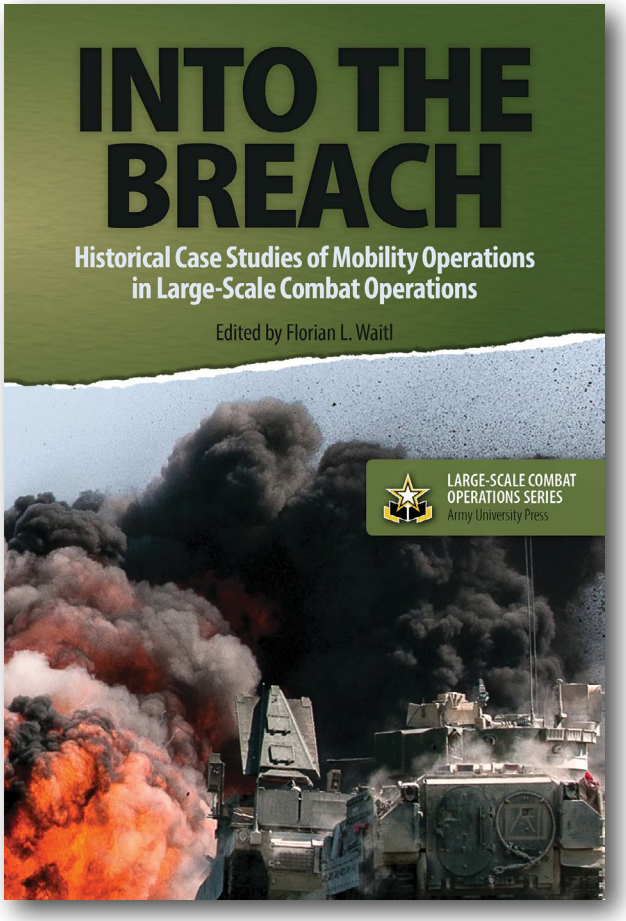
Miller is followed by George Gawrych, who shifts the focus to the Middle East and discusses the 1973 Arab-Israeli War, during which Egyptian engineers crossed the Suez Canal and were able to breach the Bar Lev Line in record time. The last historical study examines the actions of Operation Desert Storm and

Florian L. Waitl is the command historian at the U.S. Army Engineer School at Fort Leonard Wood, Missouri. He received his master of arts in military history from Norwich University and has an extensive background in military history, leadership development, team building, and lessons learned programs. He served both as an enlisted and an officer in the U.S. military and deployed as an Army civilian on two different occasions to Afghanistan. He facilitated leadership seminars at dozens of universities and at various prestigious military leadership institutions such as the U.S. Army Command and General Staff College, the U.S. Army Engineer School, the British Land Warfare Centre, and for the Führungsakademie der Bundeswehr (Military Academy of the German Armed Forces). He has been previously published in several Army publications and military history publications around the world.

how engineer support enabled maneuver units in the "100-Hour Ground War" against Iraq.

Maj. Gen. Kent D. Savre, commanding general of the Maneuver Support Center of Excellence, closes the book with a look at future mobility and countermobility developments that the U.S. Army will face on the multi-domain battlefield of tomorrow.

This collection of essays seeks to shed some light on the last one hundred years of mobility operations in LSCO. It also highlights several recurring themes and patterns in the accounts that current commanders and doctrine developers must be aware of when discussing or conducting mobility operations. Though this book is by no means a comprehensive treatment of the subject, we hope professionals and instructors alike will gain a better understanding of the historical context of mobility and appreciate the importance of history when looking at the future through the lens of the past. ■



This work would not have been possible without the voluntary time and work of the authors who have spent countless hours researching, writing, and taking my constructive criticism to make the volume what it is today. They are the experts in their individual fields of study. I would also like to thank their families, and especially my own family, for supporting us in this endeavor, which is a work of love for many of us. Furthermore, the support received from MSCoE and the U.S. Army Engineer School leadership has been exceptional.

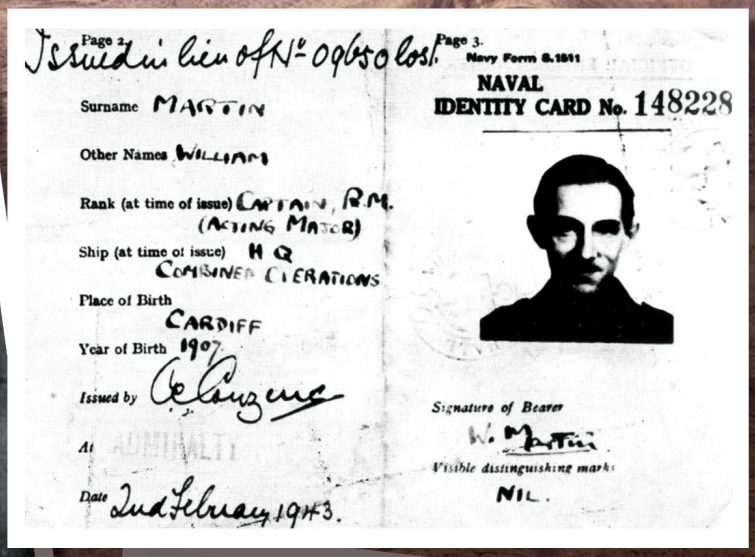
I also owe thanks to the staff of Army University Press for putting this book into physical and electronic form as part of the Historical Case Studies in Large-Scale Combat Operations book set. Special thanks to Col. Paul Berg, book set general editor; Dr. Donald Wright for production; Ms. Robin Kern for graphics; and Ms. Diane Walker and Dr. Lynne Chandler Garcia for layout and copyediting. As the general editor of this project, I am alone responsible for the errors, omissions, or limitations of this work.

Notes

Epigraph. *Henry V*, 3.1.1–6. References are to act, scene, and lines.

1. U.S. Army Training and Doctrine Command (TRADOC), *Multi-Domain Battle: Evolution of Combined Arms for the 21st Century (2025-2040)*, version 1.0 (Fort Eustis, VA: TRADOC, December 2017).

2. Field Manual 3-0, *Operations* (Washington, DC: Government Publishing Office, 2017), 1-2.



Top left: The corpse of Glyndŵr Michael fully dressed and outfitted as Maj. William Martin, Royal Marines, in London, just before being sealed in his air-tight canister as the central piece of Operation Mincemeat. Top right: Identity card for Capt. (acting Maj.) William Martin, Royal Marines. One of the fictitious documents created. Bottom: Some of the effects included on "Maj. Martin's" person as part of the operation. (Photos courtesy of the Imperial War Museum, United Kingdom)

Perceptions Are Reality

Historical Case Studies of Information Operations in Large-Scale Combat Operations

Col. Mark D. Vertuli, U.S. Army

All war is inherently about changing human behavior, with each side trying to alter the behavior of the other by force of arms. Success requires the ability to outthink an opponent and ruthlessly exploit the opportunities that come from positions of relative advantage. The side that best understands an operational environment learns and adapts more rapidly and decides to act more quickly in conditions of uncertainty is most likely to win.

—ADRP 3-0, *Operations*

Arguably, information operations (IO) is one of the most misunderstood and misused terms in Army doctrine, to the point where it has largely become a ubiquitous term of reference that lacks the necessary clarity of purpose and application for the majority of the Army. I am sure that if several Army leaders and soldiers were asked to define information operations in their own words, one would receive several differing—and often conflicting—interpretations. Multiple changes to Army doctrine concerning information operations after it emerged as a concept from *Joint Doctrine for Command and Control Warfare (C2W)* over twenty-five years ago have contributed to this confusion.[1] The definition of IO has changed three times in the last eleven years alone: from *C2W*'s focus on five core capabilities, to information engagement (2007), to inform-and-influence activities (2011), to its current incarnation focusing on information-related capabilities (2016). As the Army shifts its doctrinal focus to large-scale combat operations (LSCO) against peer and near-peer adversaries, the purpose of *Perceptions Are Reality* is to help leaders and soldiers visualize and understand IO through the lens of historical case studies.

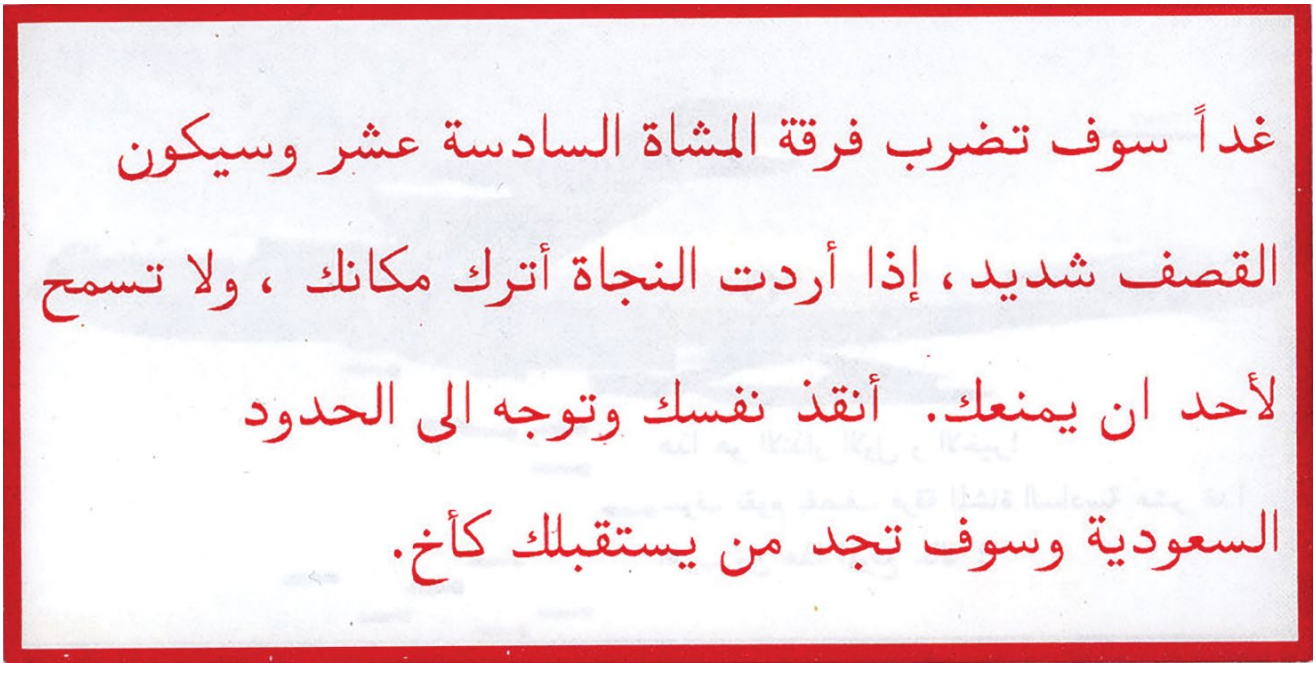
In both joint and Army doctrine, IO is defined as "the integrated employment, during military operations, of information-related capabilities in concert with other lines of operation to influence, disrupt, corrupt, or usurp the decision-making of adversaries and potential adversaries while protecting our own."[2] In more general terms, IO supports the commander's ability to achieve a position of relative advantage through activities in the information environment (the physical, informational, and cognitive dimensions) to influence the adversary's will to fight; to disrupt, corrupt, or usurp its capabilities to collect, process, and disseminate information; and ultimately to manipulate (deceive) or disrupt an enemy decision-maker's understanding of the operational environment. Field Manual 3-0, *Operations*, does a very good job describing the broad scope of possible information-related capabilities and effects in the information environment. However, over the course of the last seventeen years of counterinsurgency and counterterrorism operations, IO has become synonymous, in many minds, with themes and messages, psychological operations (PSYOP)/military information support operations, or strategic communications/communications strategy, and its larger purpose has become lost.

Three lessons (dare I say themes) are interwoven throughout the book's historical case studies of information operations during large-scale combat operations: (1) the focus is the *information,* regardless of the capabilities employed to effect it; (2) successful information operations are operations—integrated, synchronized, resourced, and commander-led from inception to execution; and (3) information operations are, at their core, adversary/enemy-focused operations conducted to gain a relative advantage for friendly decision-makers.

"It Is All About the Information"

The title of this book in the LSCO box set is *Perceptions Are Reality*. Although this could be read as hackneyed phrase, its meaning has great significance to the application of IO in LSCO. Leaders visualize and understand the operational environment through information. As an element of combat power, information enables decision-making, and its transmission aids decisive operations. Today, modern technology has significantly increased the speed, volume, and access to information. Concurrently, technology has enabled significant means to disrupt, manipulate, distort, and

Previous page: Operation Mincemeat provides a classic example of how information operations can support a large-scale combat operation. The British operation in April 1943 involved creating a fictitious military officer using the body of a dead vagrant, planting false attack plans on it, and floating it off the Spanish coast, where it was picked up by Spanish fishermen. The Spanish government shared the false information found on "Cpt. William Martin" with German intelligence before returning him back to the British. The deception fooled the Germans, who reinforced Greece and Sardinia in the belief they were targeted for Allied invasion while leaving the actual invasion site, Sicily, relatively unprotected.



Close to five hundred thousand of these leaflets were dropped by U.S. Army Civil Affairs and Psychological Operations Command during Operation Desert Storm in 1991. The front of the leaflet (*above*) shows a B-52 bomber dropping bombs with the Arabic text that translates to "This is your first and last warning! The 16th Infantry Division will be bombed tomorrow! Flee this location now!" The back of the leaflet (*below*) translates to "The 16th Infantry Division will be bombed tomorrow. The bombing will be heavy. If you want to save yourself, leave your location and do not allow anyone to stop you. Save yourself and head toward the Saudi border, where you will be welcomed as a brother." The 16th Infantry Division was on the Kuwait-Saudi border and was smashed by Task Force Muthana of the Joint Arab Command. (Photos and information courtesy of www.psywar.org and www.psywarrior.com)

> During LSCO, maneuver in and through the information environment must be given the same attention as has been historically given to traditional maneuver on the land domain. Maneuver is maneuver, and whatever form of maneuver is employed, it is done through the operational process.

deny information; technology adversaries have already demonstrated a willingness to use with great effect.

In the book *Dark Territory*, author Fred Kaplan recounts an anecdote from then Rear Adm. Mike McConnell. While watching the movie *Sneakers* in 1992, the intelligence chief experienced the revelation that "it is all about the information"; that whoever controlled the information could dominate competition and conflict.[3] In LSCO, this remains as true as ever. Leaders direct resources toward intelligence collection in order to develop the situation and gain the sufficient information required to make timely and informed decisions. Just as importantly, measures must be put into place to protect friendly information while simultaneously developing and executing means in all domains to attack the adversary's ability to access, process, and disseminate information. In this way, IO enables an accurate understanding of the operational environment while disrupting or manipulating that of the adversary.

Through IO, the adversary/enemy decision-maker's reality should be that which best supports achieving a position of relative advantage. The doctrinal definition change away from the rather limiting five core capabilities of C2W to the current more wide-ranging definition focused on effects is a move in the right direction. That said, more needs to be done to fully garner the true potential of information as an element of combat power in a LSCO context. Common sense dictates that information absent accompanying action does not resonate cognitively in the same way when both are present and complementary. However, the perception of IO as an enabler to maneuver or operations remains. The duality of relationship between action and information must become a constant theme of operations in the Information Age of the twenty-first century.

Information Operations are Operations

When addressing the idea of conflict in space, the commander of U.S. Strategic Command, Air Force Gen. John Hyten, said that there is no such thing as space war or cyber war, for that matter; just *war*. Similarly, I had a recent conversation with a senior leader who remarked that if IO planners had their way, everything would be considered information operations. I would like to flip that on its head. During LSCO, maneuver in and through the information environment must be given the same attention as has been historically given to traditional maneuver on the land domain. Maneuver is maneuver, and whatever form of maneuver is employed, it is done through the operational process.

Recent changes to joint doctrine are beginning to account for the recognition of information's importance in conflict. Just last year, the secretary of defense and the chairman of the joint chiefs approved a rapid joint doctrine modification to make information a joint function. More recently, the joint staff issued a directive for operations in the information environment—titled as such to emphasize the activity as operations while avoiding the polarizing term information operations.[4] This

Col. Mark Vertuli, U.S. Army, is chief of Operations Plans (J35) for U.S. Strategic Command. He holds master's degrees in history from Vanderbilt University and in national resource strategy from the Eisenhower School, National Defense University. He has over twenty-three years of military experience and has planned information operations in Afghanistan and in the European Command and Pacific Command areas of responsibility. He served as commander of 1st Battalion, 1st Information Operations Command (Land) from 2012 to 2014.

Sgt. 1st Class Richard Miller (*left*) and Chief Warrant Officer 2 Larry Elrod of the U.S. Army Cyber Protection Brigade discuss the response to a simulated cyber attack on the 1st Brigade Combat Team, 82nd Airborne Division, 6 November 2015 during the brigade's rotation at the Joint Readiness Training Center, Fort Polk, Louisiana. (Photo by Bill Roche)

emphasis comes after observing adversaries wielding information powerfully on and off the battlefield to achieve decisive tactical to strategic outcomes.

In Iraq and Afghanistan, the Taliban and al-Qaida staged countless engagements against the United States and its partners, less for the physical effects in the immediate operational environment, but rather to gain an informational advantage around the world. Videotaped improvised explosive device attacks, while devastating, worked well to promote an image of organizational credibility, bolster adherents' will to fight, radicalize vulnerable populations, and increase financial support.

More importantly with respect to LSCO, Russian information confrontation activity preceding, during, and following its illegal annexation of Crimea and invasion of eastern Ukraine demonstrates the power of integrated operations in the information environment, in this case more appropriately termed information warfare. Russia successfully sowed disinformation, causing the international community to distrust the information it was receiving while also crippling the Ukrainian response through cyberspace operations, electronic warfare, and psychological operations. The confusion and misdirection caused by Russian information warfare had a paralytic effect on Western decision-makers. So much so, that Russia was able to achieve its strategic and political objectives before Western leaders could mount a credible response.

Adversary Focused

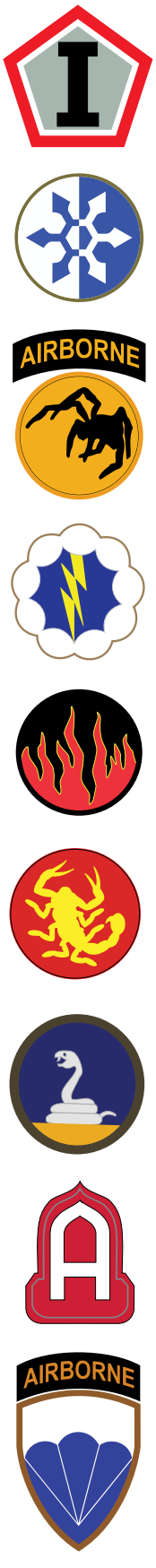
There is one final lesson or theme that runs through the case studies of LSCO: IO is, at its core, adversary focused. The seventeen years of counterinsurgency and counterterrorism operations gave rise to

a population-centric focus for IO while almost completely subsuming the adversary command-and-control elements of the doctrine. Only recently, really as a result of adversary successes, has this begun to change. Unified land operations occur in an operational environment dominated by civilians; their presence cannot be ignored or bypassed. However, first, the adversary must be defeated.

Warfare is a human endeavor; it is a contest of wills. The focus of IO during LSCO must be on defeating the adversary's will. This can be accomplished directly, as during Operation Desert Storm where combined bombing and PSYOP dispirited thousands of Iraqi troops and caused their surrender. Or more indirectly, during Operation Iraqi Freedom, the United States and Allied application of deception, electronic warfare, physical destruction, and cyberspace operations disrupted Iraqi command and control, causing an absolute lack of situational understanding and inability to coordinate a defense by Iraqi leadership. As the quote at the beginning of this article states, "The side that best understands an operational environment learns and adapts more rapidly and decides to act more quickly in conditions of uncertainty is most likely to win."

The Book

Perceptions Are Reality is composed of eleven chapters. The first ten chapters explore historical case studies of IO during LSCO, and the final chapter considers the future implications of IO for LSCO. While many information-related capabilities are explored in the case studies, by no means do they present the definitive accounting. Some of the more technical or sensitive capabilities are not treated in as much depth as I would prefer due to considerations of security and classification. The case studies cover LSCO from World War II through recent conflicts in Georgia and Ukraine. While the United States is prominent in most of the case studies, other nation's operations in the information environment are explored as well, particularly those of the Russian Federation.



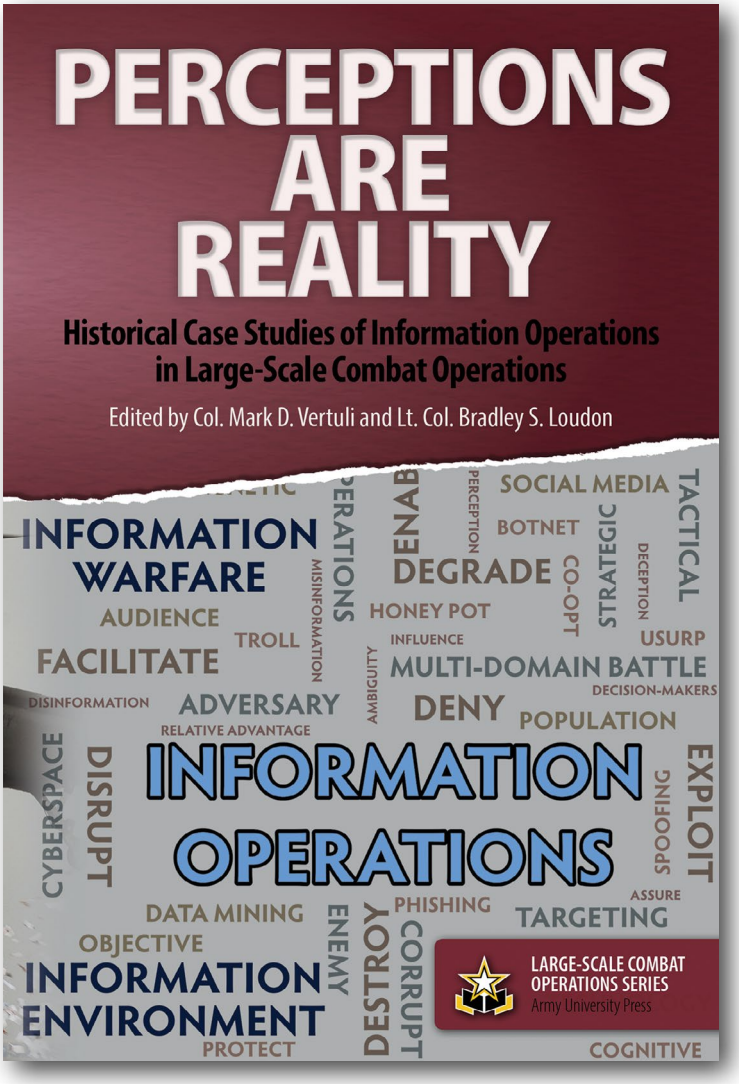
Some of the patches of fictitious units that the U.S. Army used in a number of World War II deception operations. (Graphics created by various authors via Wikimedia Commons)

In "The Logic of Information Operations in Large Scale Combat Operations," Col. Christopher Lowe explores the evolution of U.S. Army IO doctrine from its C2W roots to today's commonly held (mis)perception that IO is a means to influence civilian populations. Lowe attributes the origin of the United States IO to Cold War Soviet radio-electronic combat doctrine developments. The United States recognized that it needed similar doctrine, organization, training, material, leadership, personnel, and facilities solutions to counter the Soviet's development and an offset strategy to dominate on the modern battlefield through information. Over the course of several years of peacekeeping, counterinsurgency, and counterterrorism operations, the Army shifted focus from a command-and-control emphasis to a more population-centric, "hearts and minds" approach. The second chapter continues along a similar narrative.

While Lowe explores IO past, Maj. Justin Gorkowski reflects upon the current state of Army IO in "U.S. Information Operations in Large-Scale Combat Operations: Challenges and Implications for the Future Force." In his chapter, Gorkowski details internal, structural challenges to Army IO in doctrine, organization, and leadership in juxtaposition to adversarial advancements in the employment of information warfare in competition with the United States. While Gorkowski's assessment is not positive, it is not without hope for the future. He concludes his chapter with several recommendations to address the imbalance.

The third chapter provides a more in-depth analysis of Russian information warfare. United States Military Academy

professors Dr. Lionel Beehner, Col. Liam Collins, and Dr. Robert Person combine first-hand accounts with secondary research to explore recent historical case studies of Russia's systemic, strategic use of information warfare, focusing on the evolution of its military doctrine from the Russia-Georgia War of 2008 to the ongoing Russia-backed campaign in Ukraine's Donbass region. This look at Russian strategy of information confrontation offers stark lessons for future large-scale combat operations and the integration of operations in the informational environment to achieve strategic effects.



Taking the approach that one can learn as much from failure as from success, Michael Taylor analyzes one of the lesser-known Allied deception operations from World War II. In "Operation Starkey: The Invasion that Never Was," Taylor explores the reasons for the deception plan's failure to convince German leadership of Allied intentions to invade in 1943 in order to keep German forces in the west to relieve pressure on the allied Russian forces in the east. In the following chapter, Branden Riley, Michael Kitchens, and Matthew Yandura use the 1948 Arab-Israeli War to illuminate ways in which information was honed into a weapon by the belligerents and their supporters to achieve desired military, political, and social outcomes within the context of LSCO. In this war, the employment of strategic master narratives to guide operational and tactical maneuver in the information environment proved decisive.

In chapter 6, Andrew Whiskeyman focuses on the use of PSYOP during the Vietnam War. After a brief exploration of the doctrinal, leadership, intelligence, and organization underpinnings of Military Assistance Command Vietnam, Whiskeyman details PSYOP employment during the largest ground (Operation Cedar Falls) and airborne (Operation Junction City) operations of the war. While PSYOP achieved some success during these operations, significant challenges impeded widespread support and operational integration. Many of these challenges continue to exist today.

Turning to more recent operations, the next two chapters examine IO during the Gulf War and Operation Iraqi Freedom. First, Dr. Robert Hill updates the first chapter of Dr. Dorothy Denning's 1992 book, *Information Warfare and Security*. Using editorial comments throughout the text, Hill makes contemporary and relevant to today's operational environment Denning's exploration of what is considered the first true information war: Desert Storm. In the following chapter, Carmine Cicalese provides the only first-hand account in this volume. As the coalition forces land component commander (CFLCC) IO planner from April to July 2002, then Maj. Cicalese played an instrumental role in the design of information operations to support the CFLCC operational intent. This chapter offers tremendous insight

and lessons learned into planning and executing IO in LSCO at the highest operational levels.

The final two historical case studies explore elements of cyberspace operations during the recent conflicts in eastern Europe. While chapter 3 of this book examines Russian Federation information warfare from a strategic perspective, Wesley White documents Russian operational and tactical integration of cyberspace effects in Georgia, Estonia, and Ukraine. White argues that these conflicts served as test beds— cyber crucibles—for Russian forces to fully integrate cyberspace operations into multi-domain battle. In chapter 10, Rick Galeano, Katrin Galeano, Dr. Samer al-Khateeb, Dr. Nitin Agarwal, and James Turner focus on the employment of social botnets in support of military operations. Through detailed analysis of botnet use in Ukraine and the Baltics, they argue social botnet can be used to promote narratives, alter perceptions of viewpoint popularity, and ultimately trigger behavior supportive to military end states.

The book concludes with a look to the future. In the final chapter, Maj. Gen. James Mingus and Col. Christopher Reichart explore the implications of the future information environment across the range of military operations during both competition and conflict. They offer several important recommendations that touch elements of Army training, organization, doctrine, and leadership in order to provide commanders the informational capability and capacity to gain and maintain a position of relative advantage in the future operational environment.

The intent of *Perceptions Are Reality* is to employ history to stimulate discussion and analysis of the implications of IO in future LSCO by exploring past actions, recognizing and understanding successes and failures, and offering some lessons learned from each author's perspective. I leave it you, the reader, to determine its success. ■

I want to thank all the authors for volunteering their time and research to support this effort. Brad Loudon provided tremendous advice and editorial support; I could not have completed this without his assistance. Finally, I want to offer my most heartfelt thanks to the leaders at the Army Combined Arms Center and Army University Press for entrusting me with this project.

Notes

Epigraph. Army Doctrine Reference Publication 3-0, *Operations* (Washington, DC: U.S. Government Publishing Office [GPO], 6 October 2017), 1-4.

1. Joint Publication (JP) 3-13.1, *Joint Doctrine for Command and Control Warfare (C2W)* (Washington, DC: U.S. GPO, 7 February 1996 [obsolete]), II-1. The five elements of C2W are operations security, psychological operations, military deception, electronic warfare, and physical destruction.

2. JP 3-13, *Information Operations* (Washington, DC: U.S. GPO, 20 November 2014), GL-3; Field Manual 3-13, *Information Operations* (Washington, DC: U.S. GPO, 6 December 2016), 1-2.

3. Fred Kaplan, *Dark Territory: The Secret History of Cyber War* (New York: Simon and Schuster, 2017), 31.

4. *Department of Defense Strategy for Operations in the Information Environment* (Washington, DC: U.S. Department of Defense, June 2016), accessed 25 June 2018, https://www.defense.gov/Portals/1/Documents/pubs/DoD-Strategy-for-Operations-in-the-IE-Signed-20160613.pdf.

A soldier assigned to the 11th Armored Cavalry Regiment observes the valley below as a UH-72 Lakota helicopter passes by 13 April 2018 during Decisive Action Rotation 18-06 at the National Training Center, Fort Irwin, California. (Photo by Spc. J. D. Sacharok, Operations Group, National Training Center, U.S. Army)

"Ready Now"—Our Number One Priority

Col. Christopher R. Norrie, U.S. Army
Maj. Thomas E. Lamb, U.S. Army
Capt. Michael J. Culler, U.S. Army

In 2018, a rotational unit at the National Training Center was simultaneously attacked across multiple domains within hours of crossing the line of departure on Training Day 1, starting ninety-six hours of continuous contact. The brigade commander personally observed direct-fire contact from multiple directions with enemy attack aviation in support; chemical munitions were employed to deny terrain; special munitions were used to isolate one battalion; GPS, radio, and Joint Capabilities Release (a friendly tracking system) were jammed; friendly forces were targeted by lethal enemy indirect fires; and sustainment units were simultaneously attacked by elements of a criminal insurgent network in the vicinity of a small town. As this was happening, two hundred civilians walked by the brigade commander's combat vehicle, displacing from one urban center to another as combat operations started, which caused him to say, "If our Army's senior leaders were looking for a jaw-dropping, lip-quivering experience, they've got it—we've not previously experienced something so complex, on this scope, and at this pace."

Readiness for ground combat remains our number one priority.[1] Units must be "ready now" to win against a near-peer enemy; this requires adaptive leaders who can react to uncertain conditions and make sound decisions, and well-trained units that are proficient in decisive-action mission-essential tasks.[2] Military success depends

Soldiers assigned to 2nd Brigade Combat Team, 2nd Infantry Division, provide security from their Stryker while waiting for a smoke screen to fully engulf a breach 12 September 2017 during Decisive Action Rotation 17-09 at the National Training Center in Fort Irwin, California. (Photo by Spc. J. D. Sacharok, Operations Group, National Training Center, U.S. Army)

on an organization willing to learn—the Army must adapt at least as fast as the Nation's adversaries change their ways of conducting operations.[3]

Combat training centers remain the cornerstone of our integrated training strategy to win, and they replicate the complexity of a near-peer enemy and operational environment.[4] The purpose of the National Training Center (NTC) remains to ensure that units have their hardest day in the desert so that no soldier goes untrained into combat. In 2018, a typical fourteen-day NTC rotation was structured as continuous, open-phased, force-on-force and live-fire decisive-action operations against a near-peer enemy. Open phasing is continuous competition across multiple domains, with less restrictive guidance to units on where and when to maneuver, focused on training leaders *how to think* versus telling them *what to think*, to reward commanders, both rotational and enemy, who identify and exploit opportunities on the battlefield.[5]

As visualized in Field Manual (FM) 3-0, *Operations*, complexity at the NTC continues to increase.[6] The currently replicated operational environment is best characterized as simultaneous, continuous combat across multiple domains, to include an overwhelming enemy fires capability; direct-fire, air, and information parity; challenged lines of communication; full-spectrum enemy sensing; hyper chaos; accelerated tempo; and exponential lethality at echelon.

The multi-domain operations concept is not only driving change and design for the future Army, but it is also driving change now.[7] Replicating the complexity of multi-domain operations is improving decisive-action proficiency and driving that change. Leaders and soldiers are learning how to continuously synchronize combined arms across multiple domains in an ambiguous and uncertain environment, with a solid foundation in the fundamentals of warfighting,

at echelon. Units are arriving at the NTC with good habits, grounded in the fundamentals of shoot, move, communicate, and sustain. Live-fire operations are now continual, and units are not allowed to see the terrain they will fight from prior to execution. Units are consistently issuing effective warning orders, and they are adhering to reasonable planning timelines. Command posts are smaller and more agile. The volume of fires is increasing, and the use of joint enablers in support of the brigade close-area fight is improving. Increasingly, units are proficient in exercising basic chemical, biological, radiological, and nuclear (CBRN) tasks related to force protection, detection, and decontamination, and fewer logistics resupply missions are unforecasted. Multiple repetitions, at pace and in complexity, have improved our ability to simultaneously compete across multiple domains and win today. While we have made considerable progress building decisive-action readiness, we must continue to raise the bar. Units are developing multi-domain tactics to account for the complexities of multi-domain operations and are starting to settle on tasks that have historically been a challenge: combined arms breach operations; fires integration; combined arms synchronization; rigor in planning processes; and command post echelonment. In an uncertain, fast-paced, and ambiguous environment, units often recognize what is happening, but often do not understand why it is happening. This includes being comfortable operating in a communications-degraded environment; actively targeting sensors; using physical and digital camouflage; further improving fires and aviation integration; increasing the tempo of combined arms breach operations; and further building a bench of leaders who are masters of the fundamentals of shoot, move, communicate, and sustain.

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What We Are Learning and How We Are Growing

As previously stated, the multi-domain operations concept is not only driving change and design for the future Army but is also driving change now. Units are learning from their experience fighting large-scale combat at the NTC against a replicated near-peer adversary, and combining these lessons with those learned over the last seventeen years to build exceptionally capable and lethal combat formations. Specific examples of growth and learning, consistent with that visualized in FM 3-0, include the following:

(1) Units are adjusting to fighting at an exceptionally fast pace and are comfortable operating in ambiguity and uncertainty. Accelerated tempo requires leaders to understand why things are happening or risk losing momentum. Recognizing multiple forms of simultaneous contact is difficult—even more difficult, particularly at pace, is understanding how the enemy is able to converge capabilities and to understand where specific vulnerabilities might be targeted. Units are investing in repetitions and visualization, and learning how to operate in a communications-degraded environment. Often, simple is best—efficient command posts; codified standard operating procedures; cluttering the battlefield;

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Soldiers in Stryker armored vehicles assigned to 2nd Battalion, 23rd Infantry Regiment, 1st Stryker Brigade Combat Team, 4th Infantry Division, maneuver through a pass 16 January 2018 during Decisive Action Rotation 18-03 at the National Training Center in Fort Irwin, California. (Photo by Spc. Esmeralda Cervantes, Operations Group, National Training Center, U.S. Army)

and the fundamentals of shoot, move, communicate, and sustain at echelon.

(2) Units are arriving at the NTC with good habits, grounded in the fundamentals of shoot, move, communicate, and sustain. The fundamentals matter—there are no shortcuts in decisive action, just the hard work of doing things correctly and routinely, as a habit. This includes maintenance, orders production, rehearsals, checks and inspections, casualty evacuation, boresighting, fires distribution, and battle drills at echelon. Lethal platoons and companies, paired with rehearsed command posts and efficient planning processes at echelon, are very effective in a decisive-action, multi-domain environment.

(3) Units are comfortable operating with information parity. Data is widely accessible to a large audience, whether through electromagnetic detection or social media, which makes it more difficult to gain information advantage—certainly, opportunities are not clear, and there are no easy choices about where to put combat power. Units are creating opportunity through action, encouraging disciplined initiative, and leveraging positions of advantage to destroy enemy formations, amidst ambiguity and at a very fast pace, in a complex environment.

(4) Mass matters. Diluting combat power to account for a range of perceived problems may elevate risk if there is no single problem where an adversary is outmatched, and immobility increases the likelihood that units will be effectively targeted. Units are massing formations that are effectively enabled by fires, aviation, close air support, and sensors to overwhelm the enemy at points of weakness, and they are committing combat power to get the information needed to quickly enable the synchronization of combined arms at a decisive point.

(5) Units are operating on intent. Synchronization of combined arms is a significant endeavor—doing so amidst the chaos of simultaneous contact is even harder. Units are investing in teaching leaders "how to think," because the pace of operations is so fast that leaders must solve difficult problems quickly at their level, and ideally, in ways that do not create larger problems in the process. Information parity, pace, communications degradation, confusion, and intermingled friendly units mean that information naturally flows in a fragmented manner. Commanders are simplifying complexity, discerning specific places where an effect is needed, and allocating resources to achieve that effect. Empowered units that are resourced with assets and intent are making decisions at echelon, often at the edge of the network, to further accelerate synchronization while in simultaneous contact.

(6) Because a near-peer adversary will likely make first contact electronically, units are increasingly comfortable operating with degraded communications.

(7) Sustainment is moving faster. Units are more fully enabling sustainment and protection operations through transitions, in an anticipatory way, which is critical to enabling continuous expeditionary offensive and defensive operations without losing tempo or lethality. Field maintenance is improving.

(8) Units must learn faster, and synchronize combined arms faster than the enemy. This quote by Gen. George S. Patton remains relevant today:

> There is still a tendency in each separate unit … to be a one-handed puncher. By that I mean that the rifleman wants to shoot, the tanker to charge, the artilleryman to fire … That is not the way to win battles. If the band played a piece first with the piccolo, then with the brass horn, then with the clarinet, and then with the trumpet, there would be a hell of a lot of noise but no music. To get the harmony in music each instrument must support the others. To get harmony in battle, each weapon must support the other. Team play wins. You musicians of Mars must not wait for the band leader to signal you … You must each of your own volition see to it that you come into this concert at the proper place and at the proper time.[8]

Absolutely nothing in our formations can be at rest, and consistently synchronizing effects to exploit advantage is essential. Brigades are investing in enabling a battle rhythm while in constant contact, to include plans to current operations transitions; operational synchronization meetings; logistics synchronization meetings, and battle updates. A near-peer adversary will likely not present

Previous page: Soldiers assigned to 2nd Battalion, 3rd Infantry Regiment, 1st Brigade Combat Team, 2nd Infantry Division, clear a trench 18 April 2018 during Decisive Action Rotation 18-06 at the National Training Center (NTC) in Fort Irwin, California. Decisive action rotations at the NTC ensure units remain versatile, responsive, and consistently available for current and future contingencies. (Photo by Spc. Daniel Parrott, Operations Group, NTC, U.S. Army)

formations uniformly across the battlefield but will more likely attempt to mass with overwhelming combat power in a few places in an attempt to achieve favorable force ratios. Platoons, as an example, may make first contact with full-strength, company-sized or larger enemy formations and must use all of the tools at their disposal, to include mortars, smoke, and other effects to rapidly isolate and destroy enemy elements. Units are effectively using obscuration as a condition to allow formations maneuver space to get underneath enemy formations at a place of their choosing to maximize combined-arms platforms from a position of advantage. Favorable force ratios are often realized by aggressive, creative maneuver and the efficient use of effects.

(9) Units are proficient in exercising basic CBRN tasks related to force protection, detection, and decontamination. The demands of operating in a chemical environment are exceptional. Units are able to fight in chemical protective gear and are conducting well-rehearsed decontamination operations.

(10) Multi-domain operations are driving leaders to imagine what might be possible. Not imagining in this way but relying instead on a framework that is most convenient (or comfortable) to us is a significant danger. The enemy gets a vote and will likely not fight as we planned. The concept of multi-domain operations is helping leaders understand how capabilities might converge, and is helping them to visualize a range of competitive domains that may influence the outcome of a fight with a near-peer adversary. Units are challenging themselves to imagine the possibilities—how social media, sensors, data, electromagnetic signatures, civilian populations, infrastructure, combat formations, and enablers might all be combined in ways that uniquely offset our own capabilities, and then changed while in contact. Replicating the complexity of multi-domain operations is improving decisive-action proficiency and driving change.

What Is Next

To win the first fight, brigade combat teams must master these fundamentals:

- a commander-driven operations process
- operating in a communications-degraded environment
- reconnaissance and security
- digital fires (specifically, sensor to shooter)
- gap crossing (combined-arms breaching)
- decisive action in an urban environment
- counterfire
- CBRN operations
- joint integration and interoperability
- sustainment in decisive action[9]

Lethal platoons and companies, enabled by rehearsed command posts and efficient planning processes, are essential. For each, it is critical to ask, how would the enemy fight us? How would we fight the enemy? And, how do we best enable interoperability? At home station, units are investing in getting the fundamentals right—quality repetitions of tasks common to every training event (squad through brigade), to include

- rehearsals (all forms of contact, daily—and an investment in the quality of information collection and fires rehearsals, sustainment rehearsals, combined arms rehearsals, and fires technical rehearsals);
- command post operations (standard configurations, small and well-rehearsed);
- crew management;
- sustainment (at distance and pace);
- creating, maintaining, and sharing a common operating picture;
- reporting;
- the fundamentals of shoot, move, communicate, and sustain; and
- simple orders.

This investment is building leaders and soldiers able to continuously synchronize combined arms across multiple domains in an ambiguous and uncertain environment, who have a solid foundation in the fundamentals of warfighting at echelon. Units are arriving at the NTC with good habits, grounded in the fundamentals of shoot, move, communicate, and sustain. Rigor of repetition while operating at pace in a complex and hyperlethal environment is driving change.

While we have made considerable progress building decisive-action readiness, we must continue to raise the bar.[10] At the NTC, rotational aviation units will continue to conduct operations against an array of increasingly complex live sensors at China Lake Naval Air Station. The opposing force at the NTC has also improved significantly in the last three years of decisive-action operations and will continue to

increase complexity while replicating a near-peer enemy across multiple domains.

The scenario will continue to evolve to increase planning repetitions and the number of operational dilemmas, with additional south-to-north rotations planned in 2019 to take advantage of more complex terrain and increase opportunity for additional defile drills, less restrictive guidance about when and where to conduct operations, more permissive control measures for fires and aviation, increased pace and tempo, and more geographic dispersion. Enemy forces will continue to mass attack aviation aircraft against rotational units to increase lethality throughout the operating environment. During live fire, rotational units will need to reinforce the brigade support area with attack aviation or with organic indirect fires, or risk loss of critical supplies. Conventional and special operations force interoperability will further increase, with a cost associated with not efficiently sharing information or enabling shared interest, throughout the operating environment. There will be a further enriched social media environment, to include indicators that, if understood, will benefit rotational units as they conduct multi-domain operations. Units will be allowed to employ sensors earlier to set conditions for the introduction of maneuver units into combat operations, and there will be increased cyberspace electromagnetic activities and operations through the space domain (codified in the latest FM 3-12, *Cyberspace and Electronic Warfare Operations*), to include electromagnetic signature mapping and further link to precision long-range enemy fires.[11] ■

Notes

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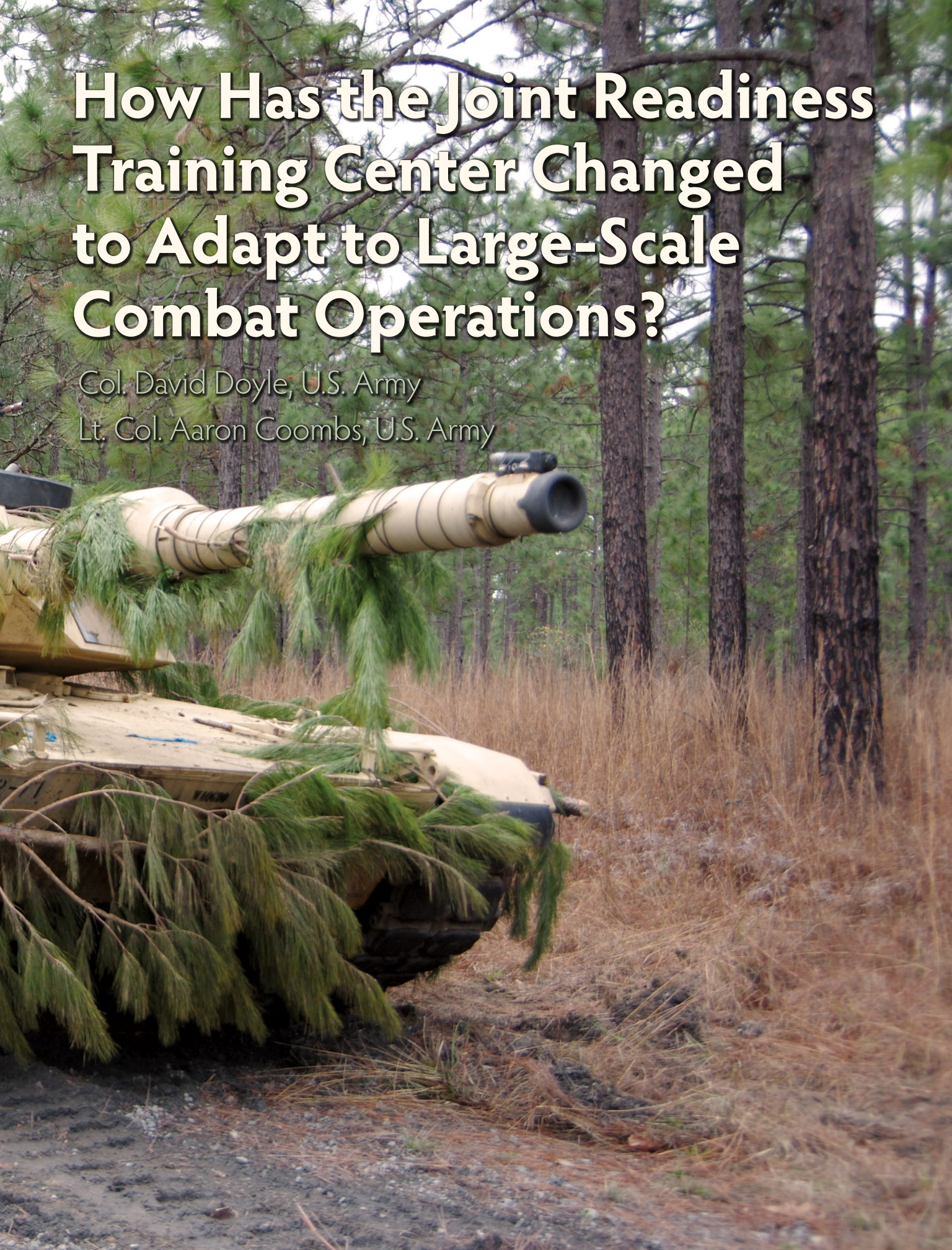
M1A2 Abrams tanks patrol the countryside during exercises at the Joint Readiness Training Center (JRTC) at Fort Polk, Louisiana. (Photo courtesy of JRTC, U.S. Army)

How Has the Joint Readiness Training Center Changed to Adapt to Large-Scale Combat Operations?

Col. David Doyle, U.S. Army
Lt. Col. Aaron Coombs, U.S. Army



With zero illumination and near 100 percent humidity on an oppressively hot summer night, sound travels well. The sound of oncoming BMP infantry fighting vehicles and T-80 tanks clamoring west on Artillery Road contrasts with the soldiers' fatigue; the audible signature closes on the defenders as they drift in and out of consciousness. Then, in a few desperate moments, the Arianan armor column appears, and a crescendo of antitank fire distorts the command radio net's situation reports and fire coordination. These few decisive moments of integrated arms characterize the brigade combat team's (BCT) defense, and the success or failure of its platoons and companies are the down-trace results of BCT fights: creating depth, executing integrated information collection and joint fires, and sustaining the force for the anticipated fight.

Unlike Task Force Smith from the early days of the Korean War, infantry brigade combat teams (IBCTs) come to the Joint Readiness Training Center (JRTC) well-prepared, well-equipped, and well-trained for the decisive-action training environment (DATE), and they have the distinct advantage of being able to learn and improve from training rather than combat. In *America's First Battles, 1776–1965*, editors Charles E. Heller and William A. Stofft present a collection of essays examining the preparedness of America's Army to fight the first major combat events of its wars from the America Revolution to the Vietnam War.[1] The doctrine, tactics, training, and overall preparedness of U.S. Army forces at the onset of major combat operations often resulted in battlefield defeat or costly victories that stimulated a need to adapt and to prevail in the midst of conflict. As the demands of the Army's IBCTs have shifted from stability and counterinsurgency (COIN) operations toward preparation for large-scale combat operations (LSCO), the JRTC has adapted to prepare them for the known, suspected, and likely environments in which they must fight and win.

When he took over as the chief of staff of the Army in August 2015, Gen. Mark Milley established readiness as the Army's number one priority and specifically messaged that the ability of units to "fight tonight" on little to no notice against a peer threat in LSCO is the necessary benchmark.[2] Though Field Manual 3-0, *Operations*, does not explicitly define the term LSCO, for this article we will assume what our doctrine implies: LSCO is that in which an IBCT is but one contributor to a multidivision land operation, fighting as part of a joint force. A recent example, the invasion of Iraq in 2003, illustrates explicitly that IBCTs are important components of a much grander campaign that may include multiple division headquarters operating as maneuver forces.

The JRTC makes the fight for the fictional country of Atropia each IBCT's "first battle," an opportunity to test itself in a crucible experience approaching combat to stimulate the growth needed for greater combat readiness. The JRTC trains the Army's IBCTs to fight and win in LSCO by meeting the U.S. Army Forces Command and Training and Doctrine Command guidance on combat training centers. This article, however, focuses on three specific ways the JRTC provides a crucible experience that meets the chief of staff of the Army's intent. First, JRTC DATE rotations allow units to experience and learn from failure. Second, training at the JRTC helps IBCTs challenge assumptions and break the expectations its leaders have learned over the last couple of decades of COIN. And third, the JRTC construct provides scalable, flexible scenarios that create uncertainty while optimizing an IBCT's training objectives.

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Failure as a Stimulus

While the BCT's Shadow unmanned aircraft system observes elsewhere, a mounted scout section unpreparedly encounters a mined wire obstacle on the far side of a blind curve and is destroyed within moments by 30 mm fire from two defending BMP-2s. Scouts intended for dismounted missions with Javelin antitank missiles lie dead in the back of their trucks. Without an artillery battery in direct support, without a low enough coordinating altitude for responsive troop mortar fires, and without sufficient mobility assets available to breach the obstacle, hours pass without progress toward the troop's reconnaissance objective; the squadron is fixed by an enemy it can neither bypass nor defeat.

JRTC comprises about 220 thousand acres of training land in north central Louisiana—much of it the same ground Gen. George Marshall used for the Louisiana Maneuvers of 1940–1941. Today's JRTC retains its heritage in relation to the Louisiana Maneuvers through the Operations Group tenet: "JRTC is the premiere crucible training experience. We prepare units to fight and win in the most complex environments. We are inspiring professionals; trusted and respected."[3] Recent JRTC DATE rotations have been exercises with both multiple successes as well as multiple failures, not unlike the Louisiana Maneuvers. Well-led units demonstrate small-unit proficiency and lethality but still struggle with fourteen days of full immersion and the enormous complexity of moving and sustaining an IBCT in restricted terrain. Integrating the effects of a task-organized IBCT is daunting; IBCTs rarely get it quite right against a capable and determined opposing force that gives no quarter and requires a unit to mass effects to achieve success.

One way the JRTC is adapting to train our IBCTs is by presenting them with large-scale problems, resourced as closely as possible to combat conditions, and allowing them to own not only their successes but also their failures. Gone are the combat outposts and replicated forward operating bases. There are no situational training lanes teaching companies, platoons, or individuals the latest COIN techniques. Because of the crucible experience, the environmental conditions, and the tremendously well-equipped hybrid enemy threat, IBCTs leave with an appreciation and with ownership of the adjustments that make them better prepared than a home-station event can achieve. They also leave with well-earned confidence about their readiness for future challenges.

> The outstanding performance of 3rd Infantry Division (3ID) and the 101st Airborne Division (101st) at the beginning of Operation Iraqi Freedom in March 2003 is an excellent example of ready Army units enabling the joint force to achieve victory. … This readiness was not developed quickly, it was built long before these units ever crossed the line of departure and was key to their success. *Due to the many years of combined arms maneuver preparation and training these units conducted*, 3ID and the 101st succeeded in dismantling a larger army, achieving their objectives with minimal casualties, and doing so with a speed many thought impossible.
>
> –Gen. Mark A. Milley, U.S. Army
>
> *Army Readiness Guidance, Calendar Year 2016–17*

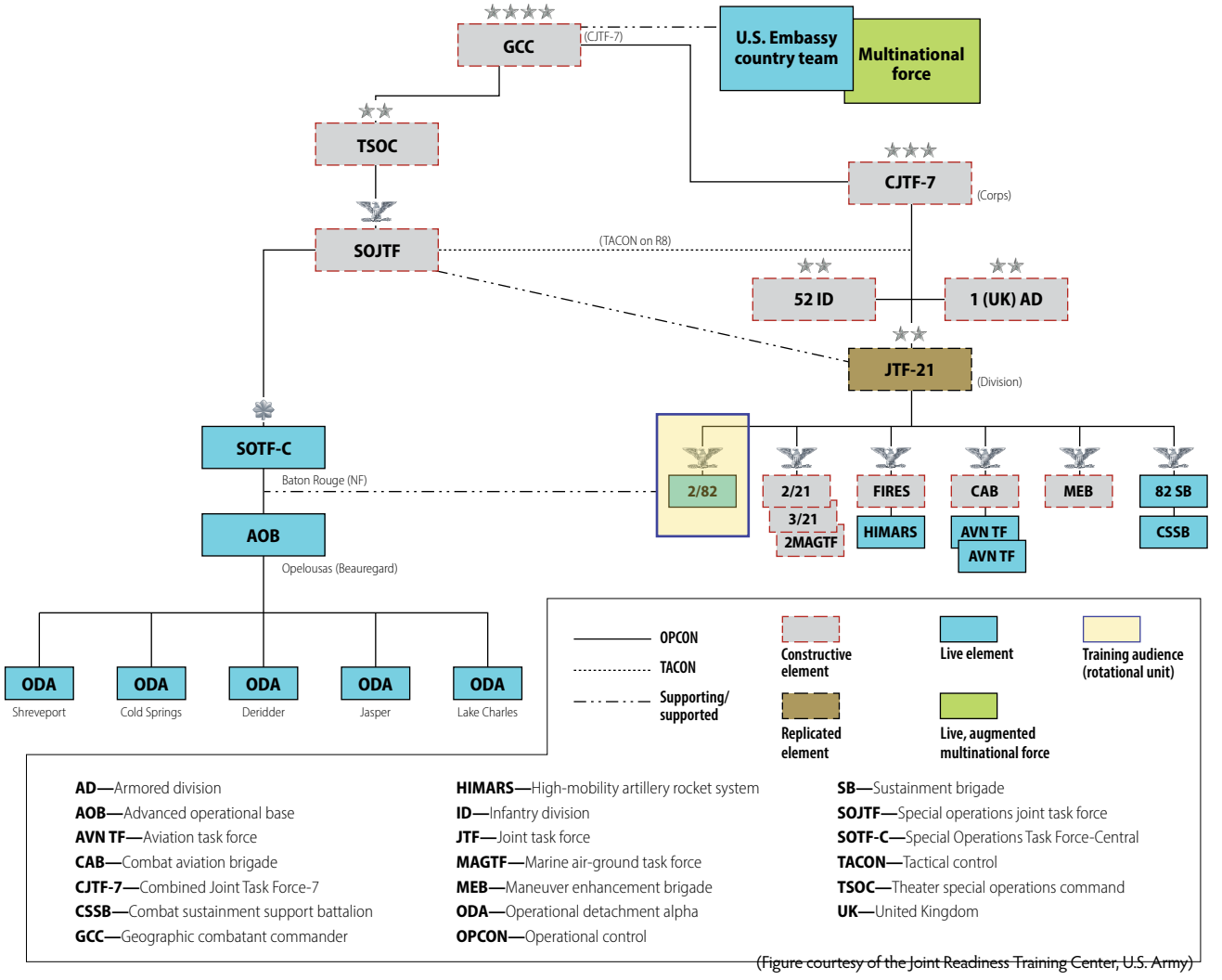
Soldiers of the 2nd Battalion, 4th Infantry Regiment, work their way through the live-fire portion of a recent training exercise at the Joint Readiness Training Center (JRTC), Fort Polk, Louisiana. (Photo courtesy of JRTC, U.S. Army)

What IBCTs often learn through failure in the maneuver box is the difficulty of terrain management and movement control; few appreciate that a light IBCT's modified table of organization and equipment of rolling stock stretches over 18.5 kilometers when spaced at 20 meter intervals. Most have not been conditioned to expect that, although a brigade support area takes up more than twenty acres, it can be largely concealed in open forest and survive against a determined and capable enemy. Fewer still have an appreciation for the need to position command posts incrementally for short periods of time and plan surge periods of no more than twenty-four to forty-eight hours to sustain mission command functions and also survive.

When confronted directly with the frustration or desynchronization of the IBCT, adaptation follows. The crucible approach at JRTC allows units to build on successes while thoroughly dissecting failures, and to experience firsthand the lessons that will prepare units and leaders to participate in LSCO. Normally, by the end of a fourteen-day rotation, units can handle the challenges of LSCO that seemed insurmountable on day one or two.

Breaking Counterinsurgency Expectations

There are two types of plans at JRTC: those that have a chance to be successful and those that will not be successful. On this night, observer/coach trainers (OC/Ts) and senior observers from the chain of command anxiously await the fight to see whether the blue forces can pull off a victory. After moonset, the opposing forces probe, assessing defenses, overwhelming blue forces' fire mission processing times, and presenting multiple dilemmas, until culmination. Victims of their perspective of the last sixteen years, the BCT relies too much on precision rather than mass, and on positive control versus the procedural controls needed to enable the simultaneity of surface fires, close air support, and attack aviation to defeat enemy forces on a scale not encountered since Iraq in 2003. Centralizing control through a BCT headquarters at execution time and

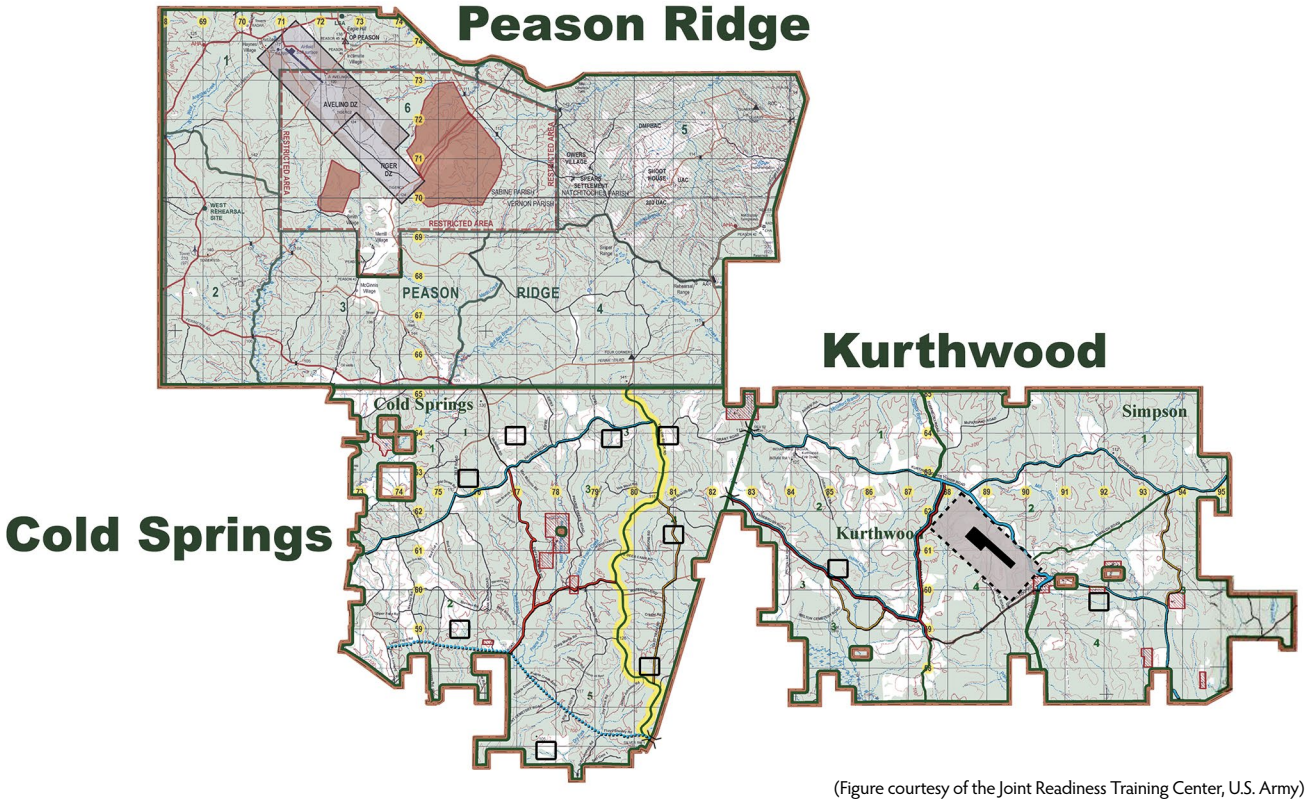


(Figure courtesy of the Joint Readiness Training Center, U.S. Army)

Figure 1. Recent Joint Readiness Training Center (JRTC) Exercise Force Structure

waiting to clear air and ground with each request will not produce the volume required for a win.

Like the Louisiana Maneuvers of 1940–1941, rotations at the JRTC present larger-scale movement and maneuver, and demand a higher concentration of combined arms integration than most units have practiced. No two rotations are exactly alike, but all typically involve a couple of IBCT-level attacks, at least one defense against a hybrid threat including motorized and armored forces, and an IBCT live-fire exercise that includes the maneuver of two cavalry troops and two infantry battalions with mortars, organic artillery, attack aviation, and close air support as well as a deep fight that challenges the IBCT's ability to link information collection and deep fires. Over fourteen days, the IBCT will reposition three to four times, executing anywhere from four to eight IBCT command post jumps. The IBCT is required to meet its tactical obligations as well as its collaboration requirements with the joint task force headquarters (JTF-21), a replicated two-star land component headquarters commanding five separate brigade equivalents. The IBCT must accomplish all this while integrating the efforts of eight or more battalion-, squadron-, or task-force-level formations and



(Figure courtesy of the Joint Readiness Training Center, U.S. Army)

Figure 2. Northern Training Area Development

numerous other enablers task-organized to the IBCT, often including international partners.

One expectation the JRTC helps an IBCT break is that unlike most IBCT's experiences of the past sixteen years, they are not the main effort, nor are they responsible for the decisive operation during any of their major combat operations—all are in support of adjacent units within the scenario. As a result, IBCTs cannot exclusively rely on supporting assets from division-or-above echelons. Nor can an IBCT execute on its own execution timelines; all of the IBCT's actions at the JRTC must be nested with the larger-scale scenario. For example, in figure 1 (on page 75) from a recent rotation, the IBCT, enablers, and adjacent special operations forces units are portrayed in blue for clarity. All other units at the JTF-21 level and below are replicated or built into the synthetic training environment via constructive simulation for perspective and context.

The IBCT may be the centerpiece training audience, but it does not represent a preponderance of the combat power. Further complicating things, nearly all actions during a DATE rotation are opposed, with even sustainment forces finding themselves in routine contact with enemy forces. Maneuver is executed in terrain with few improved surface roads and even fewer open areas—conditions that do not allow massing of effects as happenstance.

Also different for most IBCTs' experiences is the application of the law of armed conflict and rules of engagement to a much more lethal environment. Proactive and liberal use of fires requires foresight both to resupply and to reposition frequently enough to avoid counterfire or ground attack. IBCTs are learning to "make artillery a logistics problem" as they become more comfortable pre-clearing and firing unobserved fires, firing frequent counterfire, and, firing high volumes of neutralization fires in support of maneuver into built-up areas out of tactical necessity. In Atropia, the noncombatant and civilian casualty cutoff value is rarely tested, and almost never even approached due to leader experiences in Iraq and Afghanistan since 2009.[4] The mass and responsiveness of fires required to get effects at JRTC requires centralized planning and clearly understood procedural controls supported by graphic control measures down

Engineers attached to the 41st Engineers of the 2nd Brigade Combat Team, 10th Mountain Division, build defensive positions in support of the units' training exercise at the Joint Readiness Training Center (JRTC), Fort Polk, Louisiana. (Photo courtesy of JRTC, U. S. Army)

to the company level. That common understanding allows the decentralized execution required to enable mortars, IBCT artillery, attack weapons teams, and close air support employment with the simultaneity to affect multiple enemy formations at once.

A final COIN expectation the JRTC is helping IBCTs shed is a reliance on immediate sustainment, whether aerial medevac for all casualty situations or emergency resupply for unanticipated consumption of commodities. Unable to plan and predict due to no logistics reporting, the supporting combat support sustainment battalion (CSSB) routinely dedicates the majority of its resources toward emergency resupply of a specific commodity class to prevent the BCT's culmination. A logistical game of emergency resupply "whack-a-mole" plays out beginning on training day two in the box; as the CSSB delivers past-due class V, the immediate priority shifts to water resupply of the cavalry and infantry battalions. The singular focus on water resupply for nearly forty-eight hours, in turn, prevents the timely delivery of barrier material required to construct obstacle belts and develop engagement areas for the defense. Ultimately, a continuous pattern of emergency resupply prevents the BCT from gaining and maintaining the initiative. In addition, units in the attack will commonly suffer hundreds of casualties, with the casualty rates of lead companies exceeding all medevac capacity available.

Units often learn that the greatest thing you can do to save a soldier's life is to win the gunfight, not call in a nine-line medevac. The most common impediment to evacuating casualties and equipment, and getting them back in the fight, is an inability to secure the wounded, the dead, and the unit's destroyed equipment. In much of the last sixteen years that step was taken for granted.

So, a way that JRTC is preparing IBCTs for LSCO is by demonstrating to IBCTs that many of the techniques adopted for the COIN fight in Iraq and Afghanistan over the past couple of decades are not effective on the decisive action battlefield.

A Flexible Training Environment

The division commander surveys the room after looking up from his green notebook. Unsatisfied with the BCT's progress, he wonders aloud whether an emergency resupply push from a JTF asset like the CSSB, along with a twenty-four-hour delay, could provide the time and supplies needed to fully develop engagement areas and meet key training objectives. Despite the BCT's lack of foresight and time management, it has just solved its communications problems and issued an order; the training opportunity is too important to squander. Without hesitation, the COG agrees to the twenty-four-hour delay, setting the wheels in motion for a scenario change with impacts across the JRTC; JTF-21 headquarters, OC/Ts, role players, contracted support, and even the enemy approach immediately adjust.

The JRTC is also adapting to help units better prepare for LSCO by providing a flexible training environment with the best resources to meet any IBCT training objectives. No two rotations are alike, with each tailored to the training units. The recent addition of 42,000 acres of training area, which complements the 38,000-acre Peason Ridge Training Area and the nearly 130,000-acre Fullerton Box gives the commander of the Operations Group tremendous flexibility in scenario design. The commander, with an understanding of the Forces Command commander's intent and a division commander's training objectives, intensively controls the scenario through multiple means. Influence levers include a peerless opposing force, a higher headquarters cell, a wider synthetic scenario, special operations forces, adjacent units, role players who provide context to the towns and villages of Atropia, and a network of OC/Ts. The control and responsiveness engendered allow the commander of the Operations Group to increase or reduce pressure on the IBCT across its echelons and warfighting functions to expose weaknesses, reinforce training objectives, and create multiple dilemmas to get the most out of the fourteen-day crucible training event.

Senior OC/Ts, along with the senior trainer (typically the division commander or deputy commanding general) and the exercise control cell, confer twice daily to compare an IBCT's progress, make recommendations, and adjust the scenario for optimal training value. The reviews often result in changes to the training scenario within the next twenty-four to forty-eight hours that are fully resourced to help an IBCT meet its anticipated obligations to a land component commander on a future battlefield. Recent scenarios have included two near-simultaneous airborne assaults in the execution of joint forced-entry operations, the training of a Stryker BCT in January 2016, the inclusion of two separate Army aviation task forces supporting both the joint task force and the IBCT, and the training of the 1st Security Force Assistance Brigade in advance of its inaugural deployment.

JRTC 2025—Evolving and Relevant

The JRTC is not done evolving; much more remains to be done to provide every IBCT the best training available. Much like the IBCTs that rotate through the Joint Readiness Training Center ten or eleven times per year, the JRTC is imperfect, self-aware, and in a state of constant change and improvement. The JRTC 2025 concept includes increases of usable maneuver space through more road networks, landing zones, and positioning areas in newly acquired Simpson, Kurthwood, and Cold Springs training areas (see figure 2, page 76). Plans are underway to expand the live-fire exercise to incorporate all three of an IBCT's maneuver battalions operating in concert. The way ahead includes concepts for a fully-integrated, digital tactical network to host instrumentation, communications, and force-on-force adjudication.

These changes will not only make training better within an IBCT but also will provide more opportunity for broader live fires and more comprehensive maneuver operations needed to prepare our IBCTs and future leaders for LSCO. Within the next couple of years, JRTC will complete two more battalion/squadron live-fire exercise lanes and will increase the coalition partner participation in rotations to battalions from the current level of company participation. When combined with the aviation, mechanized, or Stryker company team augmentation, or the frequently apportioned companies of engineer, chemical, military police, and civil affairs enablers, the future DATE rotation will frequently include more than six thousand soldiers, over thirty aircraft, and over one thousand ground vehicles all operating in concert.

Conclusion

The JRTC has changed its scenario design, expanded its training area—both real and synthetic—and reversed the decade-plus trend toward company and battalion situational training lanes. It has deliberately identified ways to train the IBCT echelon fights so that our IBCTs can integrate immediately and win in LSCO. By providing units a crucible training experience and allowing them to examine failure as well as success, by helping units break COIN expectations and challenge perspectives gained over the past sixteen years, and by embracing flexible and responsive scenario design, the JRTC continues to evolve to better prepare IBCTs for LSCO. Though much remains to be done, the JRTC will continue to provide what our Army's IBCTs need to deploy worldwide on short notice, integrate with a division of other land component headquarters, and fight and win immediately as part of the joint force against any threat. ■

Notes

1. Charles E. Heller and William A. Stofft, eds., *America's First Battles, 1776–1965* (Lawrence, KS: University Press of Kansas, 1986).

2. Gen. Mark A. Milley, "39th Chief of Staff Initial Message to the Army," Army.mil, 1 September 2015, accessed 19 June 2018, https://www.army.mil/article/154803/39th_Chief_of_Staff_Initial_Message_to_the_Army; Chief of Staff of the Army, Memorandum for All Army Leaders, "Army Readiness Guidance, Calendar Year 2016–17," 20 January 2016, accessed 19 June 2018, https://www.army.mil/e2/downloads/rv7/standto/docs/army_readiness_guidance.pdf.

3. Operations Group, Joint Readiness Training Center (website), last modified 4 June 2018, accessed 19 June 2018, http://www.jrtc-polk.army.mil/ops/.

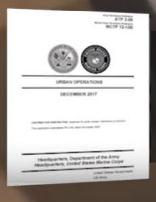
4. The noncombatant casualty cutoff value is the designated number of civilian casualties a unit can inflict during a military operation without seeking approval from higher headquarters.

ARMY UNIVERSITY PRESS

Defense Tasks
FM 3-0, Para. 6-109

Fires
ADRP 3-09, Para. 1-30

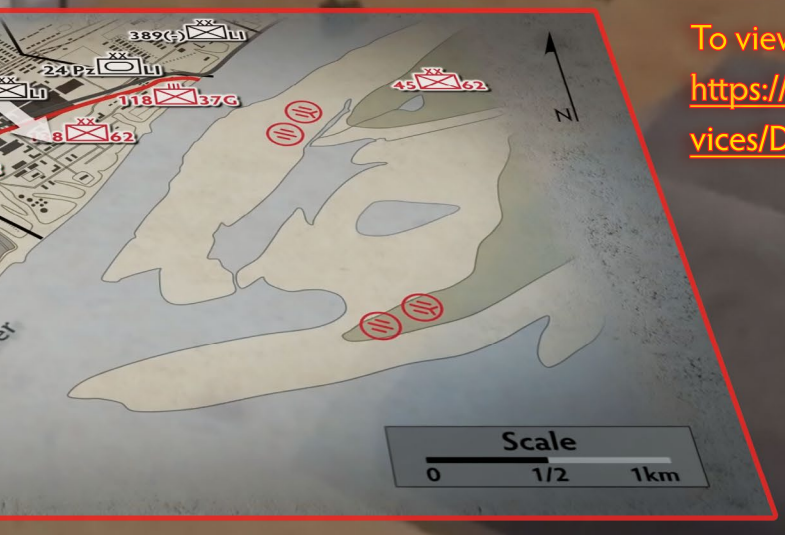
Reconnaissance and Intelligence
FM 3-90-2, Para. 1-5



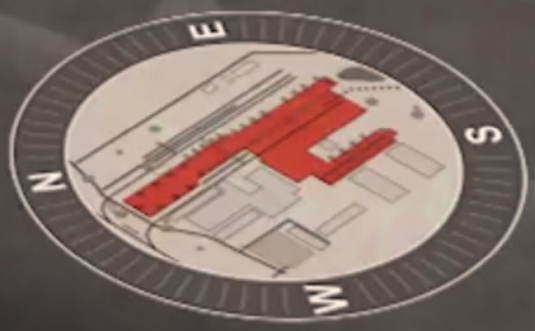
Urban Operations
ATP 3-06, Para. 1-8

The Battle for the Martenovskii Shop

The Army University Press produces documentaries to make "history come to life" to illustrate doctrinal points of large-scale combat operations from FM 3-0 and other doctrinal publications. The intent is to make the documentaries available for use in professional military education, for leader professional development sessions, and for individual self-development. The first video series examines the Battle of Stalingrad and the challenges of operating in dense urban terrain. The first episode of the Stalingrad series analyzes the Battle for the Martenovskii Shop of the Red October Factory.



To view or download the documentary please visit, https://www.armyupress.army.mil/Educational-Services/Documentaries/Battle-of-Stalingrad/5.



STALINGRAD

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Creating Powerful Minds

Army University Education Initiatives for Large-Scale Combat Operations

Col. Thomas Bolen, U.S. Army
Vince Carlisle, PhD

In the not-too-distant past, large-scale ground combat operations against near-peer adversaries seemed unlikely and less dangerous than the immediate threats posed by al-Qaida, Iraqi insurgents, and the Taliban. However, Russian ground campaigns against the Republic of Georgia and Ukraine plus threats to former Soviet republics destabilized eastern Europe and provoked NATO partners. Meanwhile, the dramatic growth of China's economy enabled the unprecedented development of Chinese military power across all domains and emboldened aggressive expansion into the South China Sea. And, in addition to these events, tensions with North Korea and Iran continue. These conditions required a comprehensive assessment of the Army's

training and readiness, and the development of materiel and doctrine to maintain the capability to deter and defeat potential adversaries in a conventional setting.[1]

Today's strategic environment presents the U.S. Army with a fresh dilemma: the requirement to continue prosecuting campaigns against terrorists while also preparing for threats from near-peer adversaries that could diminish the United States' leading role in the global community. Additionally, the Army also faces challenges preparing for operations in a rapidly changing operational environment characterized by expanding populations in unstable, strategic locations in the world, rising social expectations enabled by advances in communications and transportation technology, and increasing competition for the availability of scarce natural resources.

Against this necessity to increase soldier and leader proficiency in conducting multi-domain, large-scale combat operations (LSCO) is the specter of outdated professional military education (PME). In January 2018, Secretary of Defense James Mattis stated in the "National Defense Strategy,"

> PME has stagnated, focused more on the accomplishment of mandatory credit at the expense of lethality and ingenuity. We will emphasize intellectual leadership and military professionalism in the art and science of warfighting, deepening our knowledge of history while embracing new technology and techniques to counter competitors.[2]

Due to the extreme complexity of the operational environment our soldiers and leaders now face, efficiency in the use of time and resources to develop understanding and cognitive capabilities through PME cannot be overstated. Army leaders must commit to a cultural change in the way education is delivered as the legacy system is retooled to make it more effective, especially with regard to waging and winning large-scale conventional conflicts to achieve definable victory.

Previous page: 1st Lt. Daniel Butensky, an engineer officer assigned to 299th Brigade Engineer Battalion, 1st Stryker Brigade Combat Team, 4th Infantry Division, cuts through metal with a Broco torch in subfreezing temperatures 6 December 2017 during the Best Sapper Competition, Fort Carson, Colorado. Skills like this can lead to civilian degrees and certifications through Army University continuing education degree programs. (Photo by Sgt. Micah Merrill, U.S. Army)

Army University Established

In February 2015, the commanding general of the Combined Arms Center initiated the Army effort to promote cultural and structural changes outlining the establishment of the Army University (AU). The problem statement in "The Army University White Paper" centered on the realization that the Army's education system did not address the growing complexity of the twenty-first century security environment.[3] The paper described an Army education system that reflected an obsolete industrial-age methodology, employing a rigid assembly-line approach focused on procedures that failed to promote the kind of critical thinking necessary for a new operational environment. Another identified shortfall was the inability to proliferate best practices throughout the Army due to the stove-piped nature of Training and Doctrine Command's (TRADOC) seventy separate schools and research libraries. Additionally, the white paper cited substandard accreditation of Army training and education due to a failure to align educational requirements with those of authoritative accrediting agencies. These factors resulted in wasted time and tuition assistance money, as soldiers seeking academic credit had to retake courses in competencies they previously mastered as they pursued a degree or credential from America's educational institutions.

Subsequently, the white paper called for a renewed focus by the Army's educational enterprise on cultivating innovative methods to study the application of lethal force with an emphasis on LSCO. In March 2015, the commanding general of TRADOC released the *Strategic Business Plan for the Army University* to modernize the overall Army education system.[4] The plan included three lines of effort: increased academic rigor and relevance; greater respect and prestige; and improved management practices and institutional agility. These lines of effort contained eight initiatives that evolved into key tasks captured in the order establishing Army University.[5] In response, a fundamental retooling of Army education at its highest levels is underway. Army University is now integrating a uniform, foundational understanding of LSCO into curricula development while at the same time developing a capable world-class faculty to create an innovative learning environment.

Curriculum Changes and Large-Scale Combat Operations

As Carl von Clausewitz observed with regard to the military mind, "In addition to his emotional qualities,

the intellectual qualities of the commander are of major importance. One will expect a visionary, high-flown and immature mind to function differently from a cool and powerful one."[6] To cultivate cool and mature minds, Army University focuses its staff and faculty development curricula on the execution of large-scale ground combat to develop soldiers and leaders capable of executing operations to defeat peer and near-peer aggression around the world. Army University facilitated changes in the branch captains career courses and also revamped the CGSC curriculum to accommodate LSCO principles. These initiatives foster an understanding among students about LSCO that enables them to gain a position of intellectual advantage. To this end, Army University uses the recently revised Field Manual (FM) 3-0, *Operations*, and supporting doctrine to develop students with a common understanding of complex multi-domain operations as they prepare for service in theater armies, corps, divisions, and brigades.[7]

Learning Enterprise Advisory Program

Army University is moving Army training and education beyond branch stovepipes to proliferate best educational practices. Army University's Directorate of Academic Affairs established the Learning Enterprise Advisory Program (LEAP) as an initiative to provide academic services to centers of excellence (CoEs) and schools and to share best practices across the learning enterprise. LEAP services are based on CoE self-assessments and requests for assistance, and leverage the Army University areas of expertise. The Directorate of Academic Affairs tailors LEAP visits for different learning audiences at the executive, manager, and employee levels, and fosters initiatives in critical areas such as regional and national accreditation standards, faculty and staff development, instructional design, course design and management, and institutional research and assessments. Interaction by the LEAP teams ensures the best academic practices of teaching LSCO proliferate across the Army in the shortest time possible.

Continuing Education Degree Programs

Preparing soldiers and leaders for success in potential large-scale operations of the future requires expanded opportunities for critical thinking and academic advancement. Having begun the process to move beyond an industrial-age approach, Army University is also working to move beyond marginal accreditation standards and to make progress in its continuing education degree program (CEDP) and its private and public partnership expansion initiatives. As of March 2018, fourteen centers of excellence and schools have approved CEDP programs associated with thirty-one military occupation specialties (MOSs).

Army University CEDP efforts now cover 100 percent of enlisted soldiers under seven CEDPs for leadership with six different universities. In conjunction with the centers of excellence and schools, Army University established forty-one officer CEDPs at the master's level and eight warrant officer CEDPs and ninety enlisted CEDPs at the associate and bachelor's levels. The Army now has CEDPs established with twenty-eight different colleges and universities.

Army University plans to add a CEDP link to the Army Credentialing Opportunities On-Line web page and the Army Career Tracker to enable soldiers to identify further educational opportunities. It also intends to develop products and promotional events to ensure soldiers are aware of the CEDP opportunities available to them.

Public and Private Partnerships

A related Army University effort is the expansion of public and private partnerships with academic

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Vince Carlisle, PhD, manages the Army's Learning Coordination Council from within the Directorate of Strategic Policies and Plans, Office of the Provost, Army University. He has a BA in Russian studies from the University of Washington; a master's in public administration from Troy University; and a PhD in adult, occupational, and continuing education from Kansas State University. He is an adjunct instructor for Webster University in management strategy and organizational behavior.

Command and General Staff College (CGSC) students compete in a combination of board game and digital-based simulations 21 February 2018 identifying and comparing the strengths and weakness of both at the Lewis and Clark Center, Fort Leavenworth, Kansas. (Photo courtesy of the CGSC)

institutions to increase credit awarded for Army training and education. In February 2018, AU's Directorate of Learning Systems attended the Kansas Board of Regents (KBOR) Credit for Military Alignment Working Group. This group met to review the Army's 91C (utility equipment repairer) MOS. Seventeen college instructors and deans representing ten community and technical colleges attended this working group, along with representatives from the Combined Arms Support Command and the Kansas Army National Guard. The Kansas colleges conducted program-of-instruction extract reviews and conducted an occupational review with the Kansas Army National Guard Regional Training Institute.

The Directorate of Learning Systems also worked with the U.S. Army Sergeants Major Academy and the KBOR to establish credit for Basic Combat Training, the Basic Leader Course, the Advanced Leader Course, and related distributed learning courses in support of statewide Associate of Arts or Bachelor of Arts degree programs in management or leadership. Currently, the KBOR has over eighty-eight articulated agreements covering twenty-seven MOSs spanning twenty-three educational institutions focused on MOS specific credit. The goal is to introduce the articulated credit gained by attending noncommissioned officer professional military education leading to a technical management degree to all regional boards of regents. Recognition of Army training and education by established academic bodies promotes the continuous learning by all cohorts of Army leaders as they prepare for the complex environment inherent to LSCO.

Distributed Learning Programs

Army University achieved success in numerous areas in the three years since it was chartered, and many are a direct result of the success of efforts by the Directorate of Distributed Learning (DDL). The DDL's accomplishments involve progress in development of virtual learning environments; interactive digital publications; mobile learning; and academic, industry, and sister services partnerships. These projects help Army University create innovative and rigorous learning environments,

Chief Warrant Officer 3 Patrick Montgomery and Spc. Manuel Álvarez, members of 1st Armored Division Combat Aviation Brigade, inspect a Lycoming O-290 aircraft engine 10 May 2018 during the hands-on training of an airframe and powerplant class at Fort Bliss, Texas. Army University provides opportunities for soldiers to obtain civilian degrees and certifications for their military training while preparing them for large-scale combat operations. (Photo by Sgt. Kris Bonet, U.S. Army)

professionalize distributed learning (DL) curricula, and cultivate credentialed learners. Many of the products developed by the DDL reflect the doctrinal foundation of FM 3-0 and the Army's focus on LSCO.

Army Virtual Learning Environment

A major milestone of the DL modernization goal was the award of the five-year Army Virtual Learning Environment (AVLE) contract in February 2018. This event represents a significant step in modernizing the DL program. The AVLE is the Army's centralized contract allowing proponents the ability to request innovative learning products and courseware that are accessible at the point of need. The AVLE enables the creation of more realistic content that engages the senses and uses delivery methodologies not used before in distributed learning. In the future, these delivery methods will include synthetic tutors, gamification, machine cinema (machinima), and virtual/augmented reality. Having a streamlined contracting process for DL initiatives supports rapid product development and the potential for increased input from the CoEs and schools, particularly in the area of LSCO.

Self-Structured Development

The DDL is also working closely with the United States Sergeants Major Academy as they transition from structured self-development to distributed leaders courses. These courses engage the learner through a scenario-based learning environment. Assessments are delivered through storylines using a stealth-style of assessment throughout the course scenario versus the traditional multiple-choice questions. Stealth-style assessments were popularized in the gaming industry and should be invisible to the learner; this feature retains the engagement with the story intact. The evolution of distributed leaders courses provides another avenue to introduce LSCO and multi-domain operational concepts to the next generation of noncommissioned officer leadership.

Mobile Learning

Since establishing the Army's mobile learning division, the DDL has made tremendous strides in mobile learning. Working with Department of the Army chief information officer and the Defense Information Security Agency (DISA), the DDL added numerous Android apps onto the DISA's application store. An example is the fielding of the vehicle recovery calculator, which incorporates the rigging, sling leg force, and Mire formulas taught at the recovery school in one easy-to-reference application. Also, in coordination with the TRADOC command sergeant major, the DDL fielded an iBook and Android mobile app version of the *Noncommissioned Officer Guide*; as of March 2018, downloads number over twenty-four thousand.[8] These tools and applications represent the future of products tailorable for large-scale operations and multi-domain problems.

Digital Rucksack Mobile App

The DDL is supporting the TRADOC command sergeant major by integrating MOSs within the Digital Rucksack mobile app into an interface for electronic assistance response support via Amazon's Alexa and Xbox One educational prototypes. Current efforts focus on identifying development capabilities for the console hardware to distribute apps and e2Books. Permissions were also granted to use the Halo 5 interface to create a soldier skill machine cinema (machinima) and playable soldiering skill scenarios. Chapters from Center for Army Lessons Learned Manual 10-62, *Convoy Operations in Afghanistan*, are used to illustrate engine capabilities, and the DDL is evaluating a method of posting audio book versions of publications to Audible.[9] To continue promotion of the LSCO theme, the FM 3-0 audiobook is targeted as the first publication for delivery.

Summary

These initiatives are indicative of the breadth of achievement in the three years since the chartering of Army University. The AU team continues addressing shortfalls identified in the 2015 "Army University White Paper," to the clear benefit of our soldiers and veterans. Once considered an industrial-age education system, the Army system will soon include a degree path for all enlisted soldiers and warrant officers. Additionally, once assessed as having a lack of ability to proliferate best practices, the Army system now boasts a modern distributed learning capacity and multiple avenues for increased academic credit and credentialing opportunities. The finding of poor accreditation practices for Army training and education is under review and is the subject of leadership, education, and material analysis. Moreover, additional opportunities for continued improvement are nearly limitless, as numerous academic institutions actively seek to partner with Army University to provide more educational opportunities for soldiers.

Army University's efforts are increasing the academic rigor and relevance of education programs with respect to LSCO and multi-domain operations. The primary metric for AU's efforts, however, remains the readiness of soldiers prepared to tackle the complexity of the twenty-first century battlefield; those soldiers represent our credentials. ■

Notes

1. Mike Lundy and Rich Creed, "The Return of U.S. Army Field Manual 3-0, *Operations*," *Military Review* 97, no. 6 (November-December 2017): 14–21.

2. Office of the Secretary of Defense, "Summary of the 2018 National Defense Strategy of the United States of America" (Washington, DC: Department of Defense, 2018), 8, accessed 16 August 2018, https://www.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf.

3. "The Army University White Paper: Educating Leaders to Win in a Complex World" (Fort Leavenworth, KS: U.S. Army Combined Arms Center, 2015), 4, accessed 16 August 2018, https://usacac.army.mil/publication/the-army-university-white-paper.

4. Training and Doctrine Command (TRADOC), *Strategic Business Plan for the Army University* (Fort Eustis, VA: TRADOC, 16 March 2015), accessed 16 August 2018, http://www.tradoc.army.mil/INCOPD/reference/ArmyU_Strategic_Plan.pdf.

5. Ibid., 7.

6. Carl Von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Oxford, UK: Oxford University Press, 2007), 88.

7. FM 3-0, *Operations* (Washington, DC: U.S. Government Printing Office [GPO], 2017).

8. Training Circular 7-22.7, *Noncommissioned Officer Guide* (Washington, DC: U.S. GPO, 7 April 2015).

9. Center for Army Lessons Learned (CALL) Handbook 10-62, *Convoy Operations in Afghanistan: Observations, Insights, and Lessons* (Fort Leavenworth, KS: CALL, September 2010).

Chief Warrant Officer 5 Darren Cook (*right*) and Capt. Joseph Koennecke discuss changes to the maintenance culture 15 February 2017 before Cook's presentation to more than 120 officers in the Captains Career Course at the Maneuver Center of Excellence, Fort Benning, Georgia. Now retired, Cook was the command chief warrant officer for the U.S. Army Materiel Command at Redstone Arsenal, Alabama. He traveled across the Army collecting feedback about the changes occurring with the Army's maintenance system. (Photo by Sgt. Eben Boothby, U.S. Army)

The Rapid Redesign of the Captains Career Course

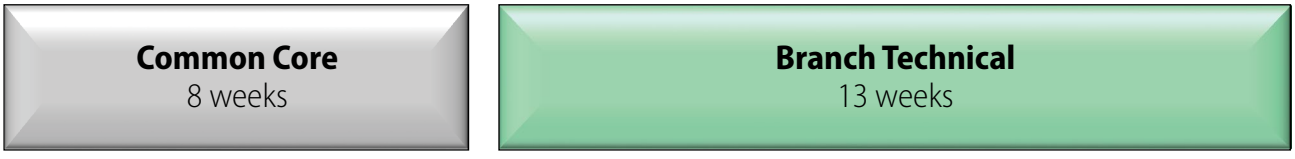
An Example of Agility in Professional Military Education

Col. Ken Hawley, U.S. Army
William Kuchinski

All Army units, organizations, and agencies will ensure that they prioritize execution of all activities and use time to enhance the readiness and lethality of our formations.

—Army Directive 2018-07

The 2018 National Defense Strategy identified that professional military education (PME) stagnated. It noted that PME focused more on accomplishing mandatory credit over ingenuity and lethality.[1] Therefore, in March 2018, the Army University Office of the Provost undertook a comprehensive review of the mandatory requirements resident in the Captains Career Course (CCC) curriculum to identify potential opportunities to reduce those requirements while providing the branch schools with more time to improve branch tactical and technical competencies. In the weeks that followed, the Midgrade Learning Continuum (MLC) team used guidance from the Combined Arms Center (CAC) commanding general and the National Defense Strategy to redesign the CCC core curriculum.[2] The updated common core of the CCC shifts emphasis to large-scale combat operations (LSCO) while simultaneously providing additional course time for branch schools to focus on efforts to enhance lethality and ingenuity.



(Figure by Kuchinski)

Figure 1. Captains Career Course Model (Fiscal Year 2018)

Background on Common Core

The CCC prepares more than eight thousand graduates a year with "the tactical, technical, and leader knowledge and skills needed to lead company-size units and serve on battalion and brigade staffs."[3] In 2011, as a result of a 2010 study that identified a need for more formal oversight of the common-core curriculum at the CCCs, the CAC formed the School for Advanced Leadership and Tactics (SALT) to design and develop CCC common-core courseware for all branch schools.[4] SALT developed 240 hours of learning content with supporting products focused on providing captains with a foundational professional military education based on Army doctrine in leadership, the Army profession, operations, mission command, the operations process, training in units, critical thinking, problem solving, and effective communication. Subsequently, schools have used SALT's common-core materials to support their branch-specific tactical and technical instruction. Since its implementation in 2013, eight weeks of the twenty-one-week CCC course have been core-curriculum focused (see figure 1).

Midgrade Learning Continuum Team

The establishment of Army University included integrating SALT as the MLC team, Instructional Design Division, within the Directorate of Academic Affairs at the Office of the Provost. The MLC team develops resident and distributed-learning products to support implementation of core curricula at both the CCC and the Warrant Officer Advanced Course. The ten-person MLC team includes both military and civilian instructor/developers who produce over four hundred hours of resident and distributed-learning courseware in support of both courses. Additionally, the team conducts annual curriculum workshops to ensure CCC and Warrant Officer Advanced Course instructors understand common-core lesson materials while also providing a leader workshop to help course leaders successfully execute the courses at their respective schools. Figure 2 (on page 90) shows the common curriculum modules and their corresponding hours developed by the MLC for the CCC at the start of fiscal year 2018.

Agility of Common Core

The MLC team continually supports schools by routinely updating the common-core curriculum to align with senior-leader guidance, account for new and emerging doctrine, and implement changes in mandated or directed topics in PME. Indeed, the CCC

(Figure by Kuchinski. Note: student reflection and research time not included)

Figure 2. Captains Career Course Common-Core Modules (Fiscal Year 2018)

common-core curriculum is not stagnating. With the publication of Field Manual (FM) 3-0, *Operations*, and the renewed focus on LSCO, the MLC team redesigned the core curriculum to provide greater emphasis on offensive operations against a near-peer threat in a multi-domain environment. While mainly impacting the eighty-one hours of curriculum in the "Operations" and "Operations Process" modules of instruction, the publication of FM 3-0 also required the team to update the common-core staff exercise and provide doctrinal updates during curriculum workshops to ensure instructors are prepared to teach the new material.

Focus on Lethality

The CCC common-core updates also address the concerns identified by the National Defense Strategy by focusing more on enhancing the lethality and readiness of the Army. Prior to this redesign, the common core contained more than twenty hours of mandatory topics in the "Leadership Essentials" module and up to sixty additional hours of mandated or directed topics embedded in other areas. To better provide branches with more time to get the "sets and reps," or practice, needed to increase lethality and readiness, the MLC team removed or integrated mandatory and directed content in lesson plans, providing schools with an additional two weeks to focus on branch technical and tactical outcomes. As a result of the rapid redesign and shift away from an emphasis on mandatory topics, the MLC team redesigned and restructured the content in the "Leadership" module to form the "Army

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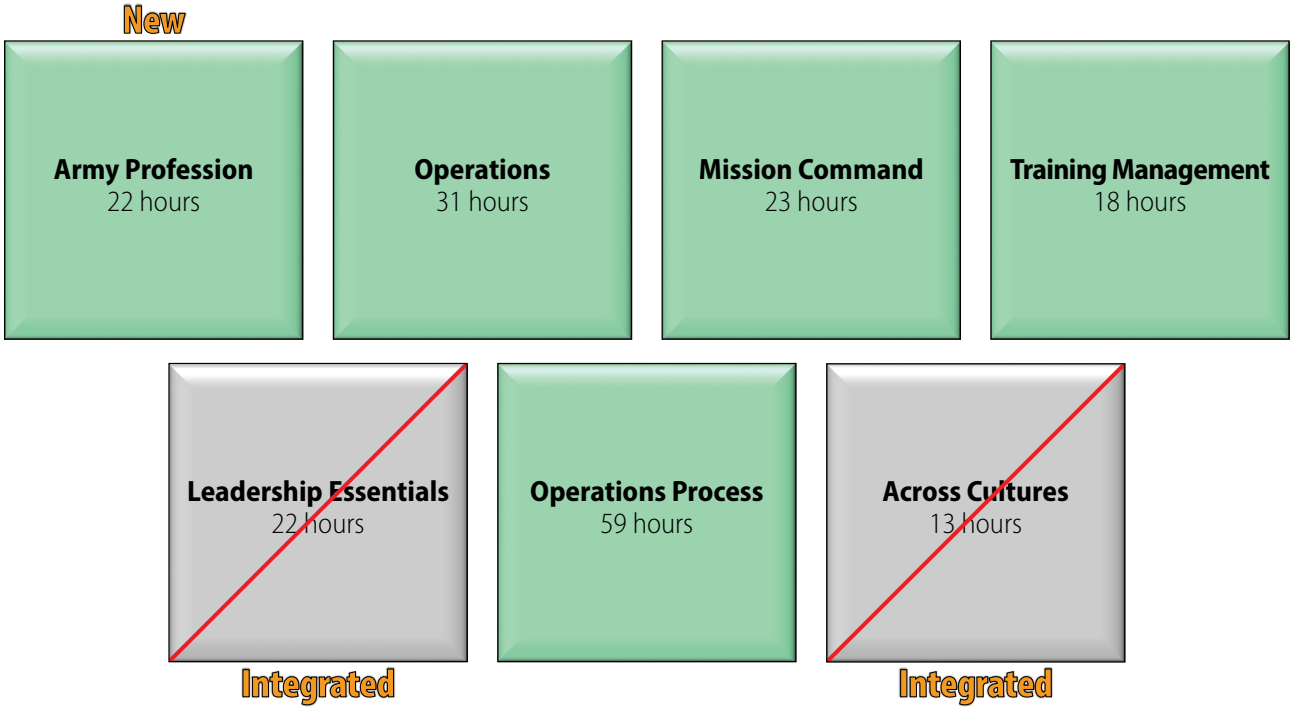
Profession" module. The "Army Profession" block now includes an introductory presentation by school commandants intended to reinforce the importance of being a professional leader of character in the Army. The redesign and integration of mandatory topics also enabled the MLC team to completely remove the opportunity to address identified shortfalls in the training and education of the captains, particularly with the synchronization of operations and execution of rehearsals. In all cases, schools used the time to enhance the branch-technical readiness and lethality of their students.[5]



(Figure by Kuchinski. Note: student reflection and research time not included)

Figure 3. Redesigned Captains Career Course Common-Core Modules (Fiscal Year 2018)

"Leadership Essentials" and "Across Cultures" modules from the common-core courseware. Figure 3 illustrates the redesigned common-core course.

Sets and Repetitions

Branch schools used the rebalanced time from the common core to increase the amount of time dedicated to branch-technical outcomes. Specifically, schools added additional iterations of branch-focused content including more opportunities to learn how to defeat near-peer threats through the military decision-making process while also integrating with other branches. Schools also added more time to develop branch-specific planning and execution products including estimates, annexes, and synchronization matrices. Finally, branches gained the

Acceptable Risk

Like many compressed planning-and-execution cycles, there are risks to implementing a rapidly redesigned course. Undeniably, there is a risk that some of the integrated, consolidated, or removed content may not achieve the intended common-core learning outcomes. There is also a risk that some students and instructors may marginalize the importance of some newly integrated topics that previously had dedicated time. Finally, there is a risk some proponents may perceive their content, subject-matter expertise, or learning products are underutilized or underrepresented in the course. To overcome these risks, the MLC team will continually address identified concerns with schools and use the Accountable Instruction System to assess

Retired Maj. Gen. Bernard Loeffke speaks to a group of Maneuver Captains Career Course, Infantry Basic Officer Leadership Course, and Armor Basic Officer Leaders Course students 24 February 2014 at Derby Auditorium, Fort Benning, Georgia. Loeffke was speaking about his views on the relationship between the United States and China. (Photo by Patrick A. Albright, U.S. Army)

common-core outcomes and determine where further refinement or redesign is required.[6]

The MLC team will also continue to work with CCC instructors and course leaders during MLC workshops to explain the importance of integrated topics and help identify potential points of unintended marginalization of integrated topics. The MLC team will also communicate with proponents such as the Center for the Army Profession and Ethic, the Sexual Harassment/Assault Response and Prevention Academy, and others to ensure accurate and up-to-date content is effectively integrated where appropriate.

Way Ahead

The updated CCC common core provides greater emphasis on LSCO while providing the branch schools more time to focus on enhancing lethality through increased technical and tactical abilities of Army captains. The redesign does so by avoiding an overemphasis on mandated topics. It requires the instructional design process to balance agility and responsiveness with acceptable risk. It also requires course developers, course managers, instructors, proponents, and schools to all work together to effectively prioritize, develop, and evaluate learning content. The rapidly changing environment and the ever-increasing demands placed on our soldiers to fight and win in LSCO requires PME to be agile and adaptable to maintain the readiness and lethality of the force. The redesign of the common core and branch-technical curriculum in the CCCs provides an example of how curriculum adaptation and change can help to ensure PME remains agile, relevant, and focused on enhancing Army readiness. ■

Notes

Epigraph. Mark T. Esper and Mark A. Milley, Memorandum for Principal Officials of Headquarters, Department of the Army Commander, "Army Directive 2018-07 (Prioritizing Efforts—Readiness and Lethality)," 13 April 2018, accessed 6 July 2018, https://www.army.mil/e2/downloads/rv7/leaders/ad_2018_07_prioritizing_efforts_readiness_and_lethality.pdf.

1. Office of the Secretary of Defense, "Summary of the 2018 National Defense Strategy of the United States of America" (Washington, DC: Department of Defense, 2018), 8, accessed 3 July 2018, https://www.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf. The 2018 National Defense Strategy stated that professional military education was "stagnant" and "more focused on mandatory requirements than lethality."

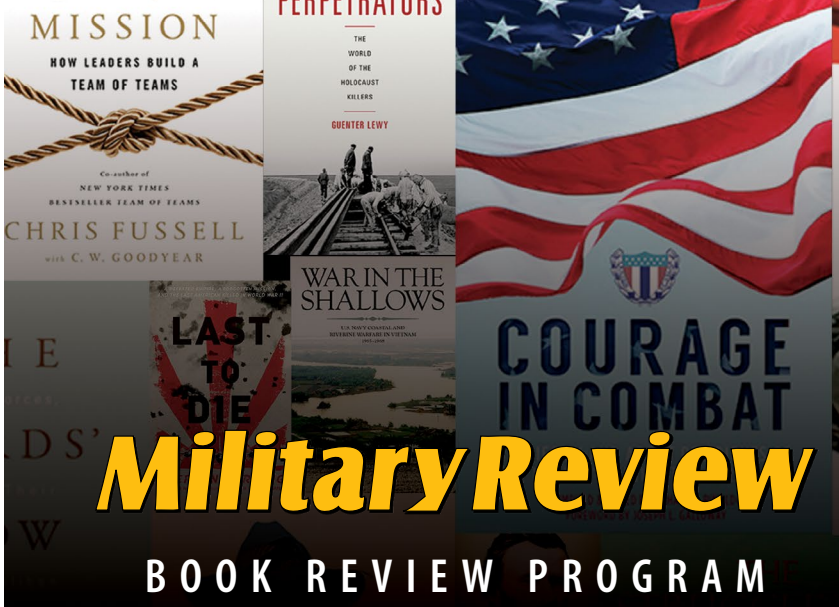
2. "School of Advanced Leadership and Tactics and Mid-Grade Learning Continuum Overview" (PowerPoint presentation, U.S. Army Combined Arms Center [CAC], Fort Leavenworth, KS, 5 March 2014), accessed 6 July 2018, https://usacac.army.mil/cac2/cgsc/salt/docs/SALT_MLC_Brief.pdf. The School for Advanced Leadership and Tactics (SALT) initially conducted the analysis, development, and implementation of the Captains Career Course core curriculum in support of the Midgrade Learning Continuum (MLC) 2015 initiative from the Army Professional Leader Development Panel in 2012. The MLC team subsumed SALT's mission when Army University was established in 2015.

3. Army Regulation 350-1, *Army Training and Leader Development* (Washington, DC: U.S. Government Publishing Office, 10 December 2017), 74.

4. Special Commission from the U.S. Army Combined Arms Center, *Report of Findings and Recommendations 2010 U.S. Army Captains Career Course Study*, 14 June 2010.

5. School information provided during the CAC Commander's Senior Leader Session 18-3, 30 May 2018.

6. U.S. Army Training and Doctrine Command (TRADOC) Pamphlet 350-70-7, *Army Educational Processes* (Fort Eustis, VA: TRADOC, 9 January 2013), fig. 2-1. The Accountable Instruction System is an educational program evaluation process that includes the Post Instructional Conference and the Course Design Review.



Military Review

BOOK REVIEW PROGRAM

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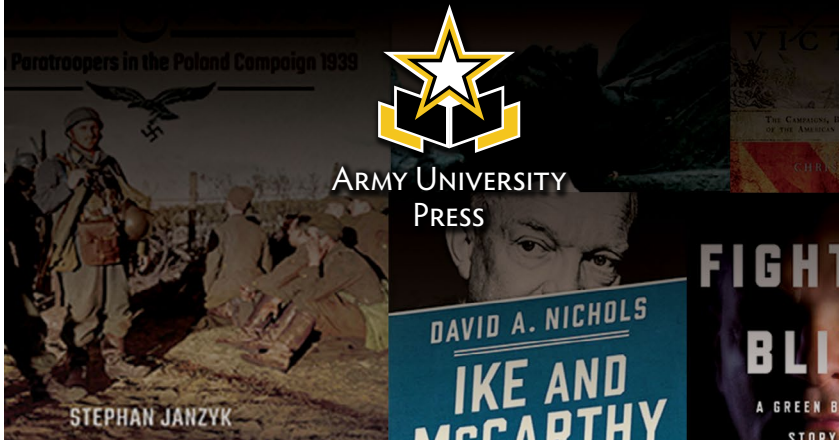
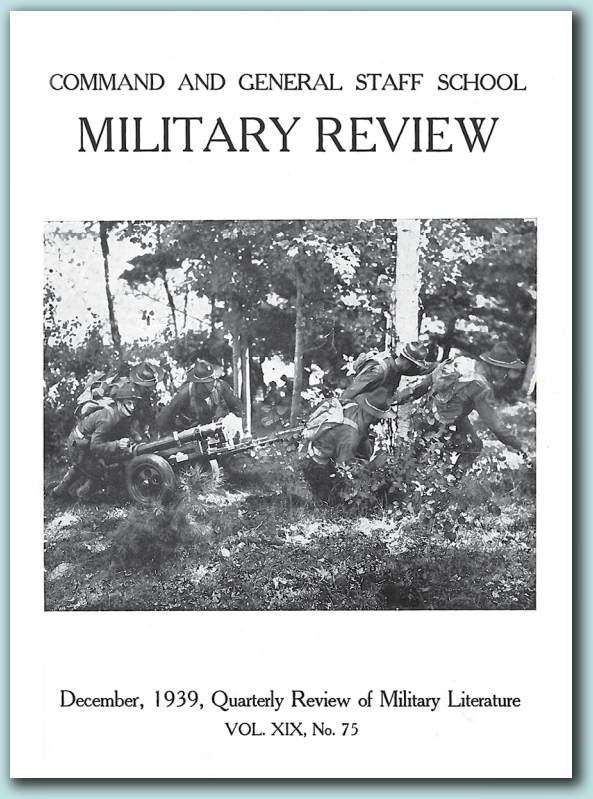


ARMY UNIVERSITY PRESS

Military Review

LEGACY ARTICLE

The article that follows, "The European War" by Lt. Col. E. M. Benitez, was first published in *Military Review* in December 1939. It provides a historical retrospective of what one U.S. Army writer was observing at the time with regard to developments in Western Europe at the outset of what would become World War II. It is republished here (with original pagination) to emphasize that the future may in some sense repeat itself, and the U.S. Army must be prepared.



Benitez writes, "It may sound like a paradox that in an age of machine guns, tanks, and airplanes, we should evoke the ghost of the Roman and Carthaginian Armies." Similarly, it might seem incongruous in an age of multi-domain operations to consider the actions of the European armies in 1939. However, just as the author foresaw the need for the U.S. Armed Forces to prepare for large-scale combat operations then, our leaders now anticipate the requirement for our forces to be prepared to face peer and near-peer adversaries during large-scale combat operations, possibly in the near future.

Many parallels to the dawn of World War II are apparent in 2018. Just as in the years prior to the outbreak of that war, many places in the world are in a state of political and social upheaval as many ideologies and nationalist agendas vie for hegemony in their respective spheres of interest. Russia no longer even attempts to mask its territorial ambitions as it is rearming on a massive scale for potential conventional war in Europe and Central Asia. Meanwhile, China is emerging as an aspiring super power, both economically and militarily. It continues to wage virtual war against the United States diplomatically, economically, and informationally in an effort to undermine U.S. influence while simultaneously expanding the scope and reach of its armed forces, especially its Navy and Air Force, and especially in the South China Sea. Posing additional threats, both Iran and North Korea place as their highest priority developing conventional force capabilities, even at the cost of great tribulation and suffering borne by their respective peoples to pay for such military capability. And, finally, similar to fascist dreams of global conquest, the jihadist vision of establishing an Islamic caliphate with the conventional military power capable of eradicating Western culture and influence continues to smolder in groups at the seams of a global Islamic community numbering in the billions.

Though the threats to the U.S. and its allies are not exactly analogous to those faced in 1939, the key similarity is the continuing need to clearly perceive and acknowledge what the real threats are and to prepare effectively to deal with them. ■

Acme.

CAPITULATION OF WARSAW, 27 SEPTEMBER 1939

The European War

By Lt. Col. E. M. Benitez, CAC

THE COLLAPSE OF POLAND

War tactics, despite spectacular new weapons, have changed little in 2,000 years. What Hannibal's Carthaginians did to the Romans at Cannae, southeastern Italy, in 216 B.C., the Germans did to the Poles last September.

It may sound like a paradox that in an age of machine guns, tanks, and airplanes, we should evoke the ghost of the Roman and Carthaginian Armies. At Cannae, we find a strong Roman center, well forward, presenting a convex front (Posen and Corridor Armies) disposed in great depth, the flanks protected by cavalry; if that protection were removed (the Silesian Army and right of the Corridor Army), the dispositions were such that an attack by the enemy could not be opposed in time or space. Hannibal, on the contrary, stretched his center to the limit (German frontier troops only opposing the Posen Army), in order to be *strong on the wings* (North and South Army Groups), where he sought a decision by a double envelopment in a prearranged maneuver.

There is a striking similarity between the scheme of maneuver of the Germans in Poland, with the Polish Army in the role of the Roman Legions caught in the deadly vice of Hannibal's maneuver. There was little head-on fighting in Poland, the German columns moving swiftly and cutting off the retreat of the defending forces. The left arm of the pincers, operated from Pomerania and East Prussia; the right arm pushed towards Lodz, southwest of Warsaw, with a southern advance from Slovakia threatening Kracow. The double envelopment worked with appalling efficiency, particularly at Kutno, Radom and Warsaw, where the pair of

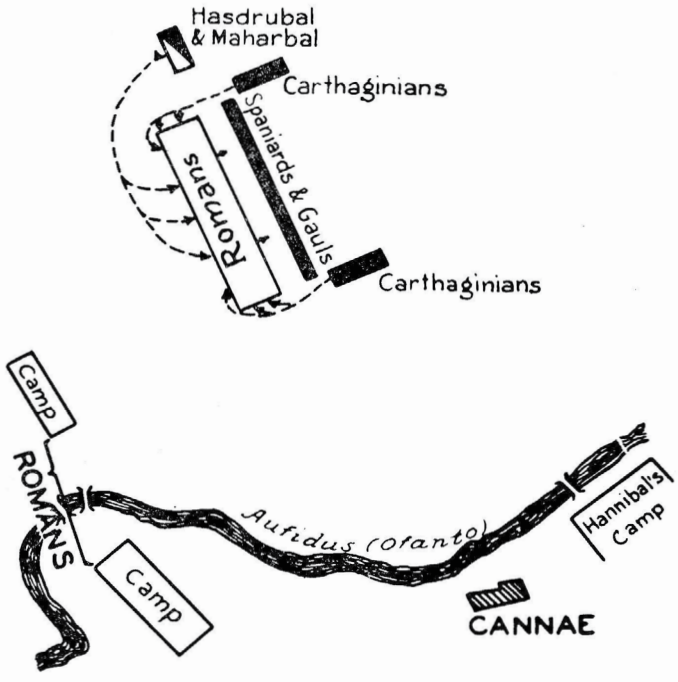
General Map of Poland Showing Location of Places Mentioned in the Polish Campaign.

huge jaws successively closed, trapping thousands of Polish troops and capturing many guns and matériel.

The envelopment has always been the German classic. At Sedan in 1870 where out of 100,000 Frenchmen, 15,000 were killed and 80,000 made prisoners. At Tannenberg in 1914, against Russia, 30,000 fell in battle and 92,000 were made prisoners out of a force of 150,000 Russians. It almost succeeded in 1914. It won a *blitzkreig* in 1939 when it took the German military machine a little over three weeks to overrun Poland in one of the most rapid and overwhelming campaigns in history.

After the spring of 1939, when it was beginning to grow more evident that Poland would resist Germany, the Intelligence Bureau of the German Army set out to clarify the probable operations and intentions of Poland. From impressions obtained from Polish literature* and the daily

*See C&GSS Military Review, September 1939, page 42.



THE BATTLE OF CANNAE, 216 B.C.

press in connection with military measures taken by Polish Army leaders, the German General Staff drew the following conclusions:

(1) That Poland would fight.

(2) That Polish Army leadership underrated the German Army and held the belief that Poland could successfully conduct a war in the East, at least to a certain degree, as strong German forces would be needed to face France and Britain on the Western Front.

(3) That the Polish plan contemplated:

(a) Immediate occupation of the Free City of Danzig.

(b) An attack on East Prussia from three sides as follows:

(i) An attack from Augustow and Suwalki.

(ii) Another attack from Thorn and Graudenz. The two attacks mentioned above were to converge on Koenigsberg, completely avoiding the difficult lake terrain both in the west and in the east.

(iii) A holding attack from the south against East Prussia in the general direction: Warsaw—Koenigsberg.

The Poles believed that even if the German Army were able to break through Pomorze, it would still have to cross the Vistula, which is almost 3,000 feet wide with no bridges between Graudenz and Tczew, a distance of about 45 miles.

The Polish High Command also was convinced that the right flank of the German Army coming to the aid of East Prussia would be exposed to a Polish attack from the region of Bromberg, and also visualized the Posen center as a direct threat to Breslau and Berlin, separated by 30 and 95 miles, respectively, from the Polish frontier.

The Poles felt that they could defend successfully the Carpathian Mountains which reach an altitude of 7,500 feet in the Tatras, 5,200 feet in the western part and 3,900 feet in the east. They recognized the importance and vulnerability of the Jablunka Pass (1,650 feet) in the extreme west and of the Dukla Pass (1,500 feet) in the extreme east, where the Carpathians are comparatively easy to cross.

The railway net favored the defense along the Slovakian frontier, there being only one railroad and one motor road in Slovakia, while on the Polish side there were five railroad lines between Jablunka and Dukla, supplemented by several motor roads converging on the main railroad lines of Southern Poland. Furthermore, the Poles thought that they could launch an offensive on the Slovakian front, where the population was bitterly opposed to German rule.

THE OPPOSING FORCES

MILITARY REGIONS OF POLAND

Poland.

Poland was divided into ten military army corps areas, each corps consisting of three divisions and one regiment of corps artillery; one cavalry division in Warsaw and 11 independent cavalry brigades; 1 to 2 incomplete mechanized brigades; 2 army artillery regiments; 2 aviation groups with 6 reinforced regiments (about 300 reconnaissance planes, 300 bombers and 400 pursuit; few reserves).

The infantry division consisted of 3 infantry regiments and one regiment of light artillery. The cavalry division included 3 brigades of 2 cavalry regiments each, and 2 battalions of horse artillery. The separate cavalry brigade consisted of from 2 to 4 cavalry regiments and 1 battalion of horse artillery. In keeping with terrain conditions and Polish doctrines of war, there was a heavy preponderance of cavalry (272 squadrons) in the Polish Army. On the other hand, the army was weak in antiaircraft weapons, having only about 40 batteries.

On the Russian border there was a frontier corps and from 2 to 3 cavalry brigades, about 30,000 men in all.

Whether or not at the outbreak of hostilities each corps area contained a reserve division prepared for action is not certain, but it is estimated that Poland had between 40 and 60 divisions in the field.

In addition to the combat troops, the field armies had supply branches and other service troops. Trained reserves brought the total fighting strength of Poland to about 1,500,000 men. The Polish forces were under the supreme command of General Edward Smigly-Rydz, who had been a favorite of the late Marshal Pilsudski, and had distinguished himself in the battle of Warsaw in 1920, where the Soviets were decisively defeated.

Germany.

The strength of the German Army of invasion has been estimated at from 70 to 80 divisions, six of which were Panzer (mechanized), and four motorized. The equipment of the German divisions was excellent and modern in every respect.

Wide World Photo.

GENERAL WALTER VON BRAUTCHITSCH
Commander-in-Chief of the German Armies

The strength of the German infantry division was approximately 14,000 men, each division consisting of 3 infantry regiments, 4 battalions of field artillery (105-mm gun and 155-mm howitzer) and necessary service troops. The antitank and antiaircraft matériel of the German Army was of the highest quality and stood superior to that of their Polish adversaries in a ratio of at least three to one.

The Panzer division, approximate strength 11,000 men, had a reconnaissance echelon, a tank brigade (shock echelon), a motorized brigade (ground holding echelon) and the necessary auxiliary troops.

The German forces were under the command of Colonel General* Walter von Brautchitsch, who was fifty-eight years of age and the son of a cavalry general. Given the best education Berlin afforded, he became a lieutenant in the Royal Elizabeth Guard Grenadiers, at the age of 19, later transferring to an artillery regiment and rising to the rank of captain by 1914. After the war, despite the lull in German arms, he became successively a major, a lieutenant colonel and in 1930 director of military training for the Defense Ministry; 1931 saw him appointed a major general, and in 1932 he was made chief of artillery. He rose rapidly with the Nazi regime and in February 1938 was made Commander-in-Chief of the German Army succeeding Blomberg and Fritsch.

General Halder was his Chief of Staff.

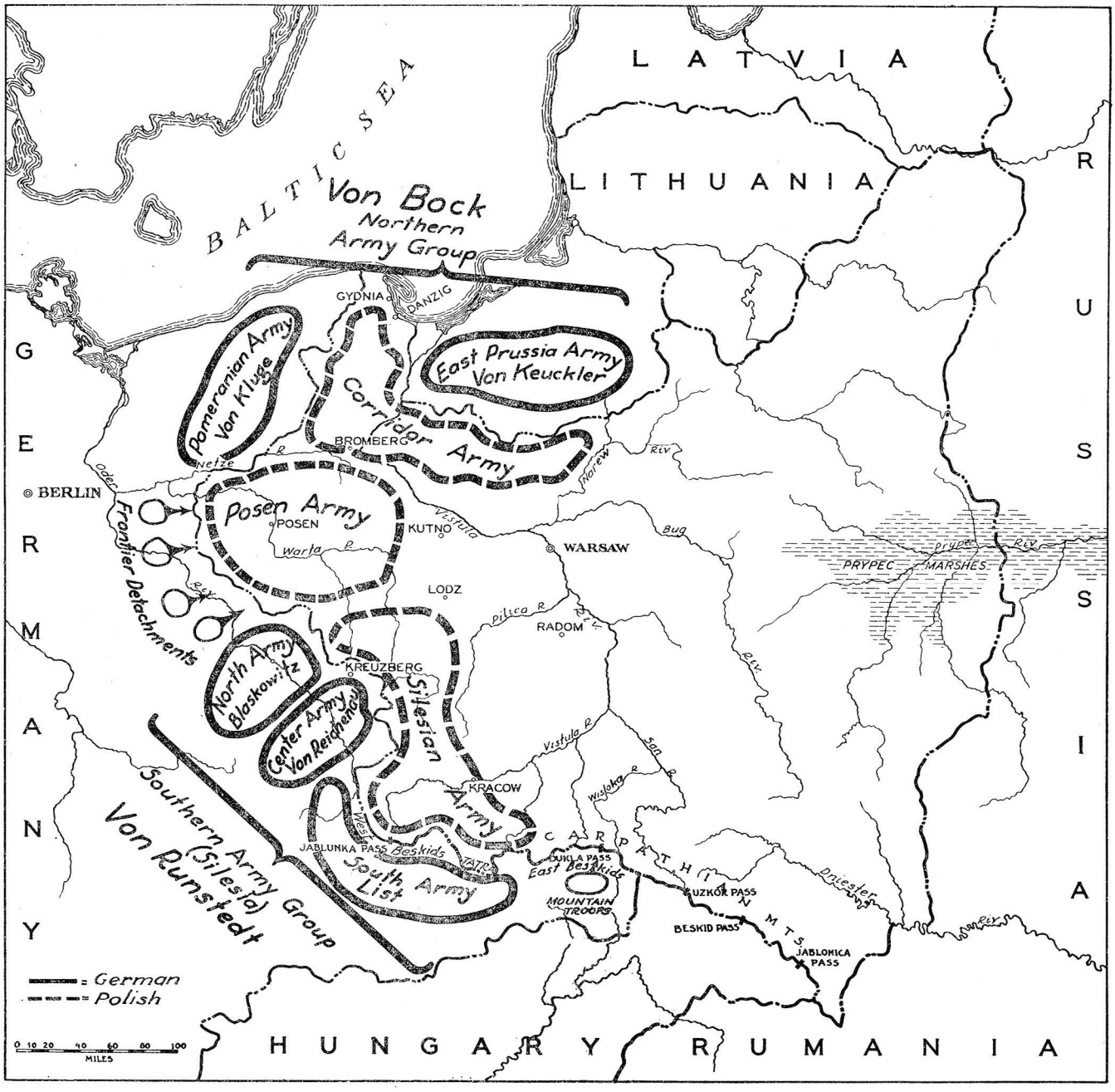
PLANS OF CAMPAIGN

Poland

The Polish war plans, before the annexation of Czechoslovakia by Germany, were generally believed to envisage, on the part of Poland, defensive operations in Upper Silesia and in the Corridor, but offensive movements directed primarily against Central Silesia (Breslau), and secondarily against Berlin. The Polish provincial capital of Posen is only two hours by rail from the German capital; however, on the German side of the frontier the countryside, intersected by many river and canal beds, is easily defensible, and in addition, this region had been strongly fortified. These war plans, however, were based upon the assumption of the existence of a strong and well-defended Czechoslovakia which, in alliance with Poland and France, would, on her part, take the offensive against German Silesia to join the Polish forces there.

These plans became useless after the partition of Czechoslovakia and had to be hastily revised. It has been said by some military commentators that the new Polish plans envisaged a generally defensive attitude on the part of the Poles with the chief object of keeping the Polish fighting forces intact and temporarily evacuating large portions of Polish territory. The main defensive positions were supposed to be, first, along the line of fortified cities: Kutno—Lodz—Random—Kracow; the second and strongest on the line of the rivers Narew, Bug, Vistula and San, to which the armies were to fall back delaying the German advance and delivering sharp counterattacks as the opportunity offered. Meanwhile, Polish reserve divisions were to assemble behind the last named line, especially those drawn from East Poland

*The rank of Colonel General is equivalent to second rank Field Marshal in the British Army.



CONCENTRATION AREAS OF GERMAN AND POLISH ARMIES.

whose mobilization, because of poor communication facilities, took considerably longer than those from the more thickly populated districts in the west.

In the light of events, it must be admitted, unless disproved by evidence, that the Polish plan must have contemplated offensive action, as the Germans claim. This is supported by the fact that Poland concentrated her armies far forward, that the Corridor Army and the Posen Army, in particular, were stronger than the Silesian Army and that the newly created Fourth Army was partly concentrated in the north near Grodno on the East Prussian border. A large number of troops were massed in the Corridor and in the early encounters Polish cavalry penetrated German territory near Breslau and also in East Prussia. It is only by assuming offensive rather than defensive action that the Polish initial strategical concentration can be explained.

In order to carry out their plans, the Polish concentrated their forces as follows: (See Concentration Map.)

(1) One Polish army was stationed in the area north of Warsaw, capable of checking or threatening a German advance from East Prussia against Warsaw. This army was protected on the right by the forces that were intended to attack East Prussia from an eastern direction and on the left by a strong army in the Corridor. The mission of this Corridor Army was to occupy the Free City of Danzig and to launch an offensive against East Prussia from the west.

(2) The Polish Army in the region of Posen had the mission of covering the rear of the Corridor Army in the operation outlined above. In case of a German attack against the Corridor Army, the Posen Army was to threaten the German flank and it could also be used to reinforce the southern Polish Army, if necessary. Due to its central location, the Posen Army could threaten the flanks of any German attack from Central Upper Silesia or from Pomerania.

(3) Poland's Southern Army, the weakest of the three, concentrated in the region of Kracow and Lemberg, and was in the opinion of Polish Army leaders, strong enough to protect the important industrial area: Kracow—Lublin—Lemberg.

Germany

The German plan of campaign was, as it has been already stated, the classic double envelopment, with a powerful drive from Silesia on Warsaw and another from East Prussia across the Narew and Bug, both pincers to close east of Warsaw. The initial concentration and disposition of Polish troops was well known to the German High Command, thus materially assisting the successful accomplishment of this plan.

General von Brautchitsch created two army groups as follows: (See Concentration Map)

(1) *Southern Group* (the strongest): Colonel General Karl von Rundstedt, commanding; Lieutenant General Mausein, Chief of Staff.

a. South Army (right wing):
General List, commanding.

b. Center Army (main effort):
Artillery General Hans von Reichenau, commanding.

c. North Army (left wing):
Infantry General Johannes Blaskowitz, a Sudeten German, who rose through the ranks, commanding.

(2) *Northern Group:* General Oberst von Bock, commanding; Lieutenant General Salmuth, Chief of Staff.

a. Pomeranian Army:
Artillery General Guenther von Kluge, commanding.

b. East Prussian Army (10-12 divisions):
General von Keuchler, commanding.

The German center connecting the two army groups was weakly held by frontier detachments, their mission was to pin down as many Polish divisions as possible, the retreat of which was to be cut off by the strong, swift moving wings.

The goal of the German Army was the *swift defeat of the Polish Army.* To accomplish this the German High Command decided to strike several rapid blows at vital parts on the front which measured 1300 miles all told and so to anticipate any large scale offensive by the Polish Army. The execution of this plan was aided materially by the annexation of Czechoslovakia, which enabled the German High Command to shift the right wing of von Rundstedt's Group into the Tatra and from there to launch an offensive in a northerly direction across the mountains.

The mission entrusted to the Southern Army Group was to push in a northeasterly direction toward the Vistula from near Kreuzberg with the center army (von Reichenau) which was to make the main effort. General List's Army from Silesia was to protect the right flank of the center army, cross the West Beskids Mountains by forcing the Jablunka Pass and advance in an easterly direction. Its orders were to hold the Polish forces there and, with the units advancing from Slovakia northward, encircle the Poles and prevent, if possible, a Polish retreat eastward.

General Blaskowitz' Army which, advancing from east of Breslau was to drive in the general direction of Warsaw protecting the left of the center army from expected flank attacks by the Polish Posen Army.

The mission of the Northern Army Group was to drive with General von Kluge's Army (Pomeranian Army) across the Corridor and establish contact with East Prussia as quickly as possible; then cross the Vistula between Bromberg and Graudenz and together with the forces advancing toward Graudenz from East Prussia, contact the north wing of the Southern Army Group (Blaskowitz) and advance in a general easterly direction.

The Second Army of General von Bock's Group (East Prussia), under the command of General von Keuchler, was given the mission of advancing from East Prussia over the Narew and the Bug, east of the Vistula, thus establishing connection with General von Reichenau's Army (Center Army, Southern Group) and cutting off Warsaw from the east. This army would extend its operations farther to the south in an effort to capture, with an encircling movement behind the Save and the Bug, those Polish forces that might succeed in crossing the Vistula.

BLITZKREIG

Germany commenced the war in the east early on the morning of 1 September. From East Prussia she launched an assault southward. She did not dispose of more than ten to twelve divisions in this isolated territory, and their attack by itself would have been fruitless. But, simultaneously, she thrust across the Corridor from Pomerania, overran it, opened up land communication with East Prussia, and continued the drive in the direction of Warsaw. The Posen salient was neglected; indeed, the Poles won a local success in this quarter, and reached for a moment the soil of the Reich. From the direction of Silesia came the main blow, in which most of her motorized and mechanized divisions were employed with terrific effect. Farther south still, from Slovakia, she thrust into Polish Silesia, that area of coal and iron, of intense industry, which contained the life-blood of Poland. This thrust was accompanied by another across the Beskid and Tatra ranges of the Carpathians.

The concentric attack might have been met with only a measure of success by a mobile and determined defense, but for one factor—the power of her air forces. They not only

enabled the German ground forces to move with complete freedom, but also blinded and crippled the Polish. Communications were shattered by constant bombing; counter-attacks were detected in assembly areas and broken up before they could develop; all Polish troop movements had to be confined to the hours of darkness. Polish artillery was instantly engaged by German, ranged by aircraft, whereas German battery positions could not be identified. Low-flying airplanes, using machine guns as well as bombs, preceded and covered the advance of fighting vehicles and of infantry. Back-area bombing spread disorganization in the rear. The Germans made tremendous use of aircraft operating in conjunction with mechanized and motorized units. Their swift and effective action disorganized the Poles, who were harassed from morning till night by this immensely superior and highly efficient force; consequently, they were unable to recover and reestablish successive defensive positions.

The concentric advance on Warsaw was followed by an advance of great strength, in the general direction of Lemberg. Various reasons have been put forward to explain this: that the objective was economic, namely, oil; that it was military, to cut off Poland from Rumania; that it was economic, military and political, to establish contact with Russia.

The course of the German offensive beginning 1 September reveals five separate main operations.

(1) In the south, the advance of the extreme right (List) across the Carpathian Mountains, advancing in the direction of the New Sandez—Tarnow railroad.

(2) North of that region, the envelopment of the industrial district of Upper Silesia, with the advance aimed at Kracow (von Reichenau).

(3) From Silesia, the drive past Lodz on Cestochowa and Warsaw (Blaskowitz).

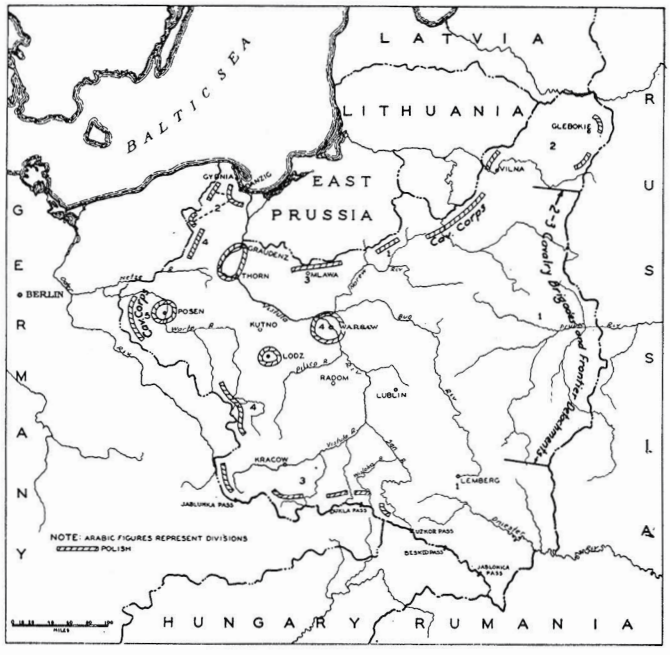
(4) In the north and east, the occupation of the Corridor by invasions from Pomerania and East Prussia.

(5) From East Prussia, the push in a southerly direction toward the Narew, by way of Mlawa and Przasnysz.

The defense of the Free City of Danzig was left entirely to locally organized guards, who occupied the Polish post office where the Poles put up some resistance.

The German Navy closed the Bay of Danzig and in the early days of September destroyed what was left of the small Polish fleet: four submarines, a destroyer and a mine planter. Three Polish destroyers had fled to England in the closing days of August. The Navy and Air Force bombed the Polish naval bases of Gydnia and Hela and erected mine barriers in vital locations. The Polish garrison at Westerplatte surrendered on 7 September after an attack by the landing forces of the training ship Schleswig-Holstein, reinforced by a battalion of engineers.

In this fast war of movement there never was a continuous battle front. The Germans launched their attacks in mass, smashing forward as far as possible, troubling themselves not at all with the pocket which they left in the intervals between their columns. Mechanized and motorized divisions smashed relentlessly forward, crushing resistance or simply passing it by. Thus the Polish centers of resistance became mere isolated islands. So it was at Posen, for example, where in the so-called "Posen sack," 10 Polish divisions were trapped. The Germans did not overcome the salient immediately, but depended upon their enveloping tactics, assuming that it would be disastrous for the Polish Army to be caught around Posen with its retreat cut off. The character of this rapid, crushing German advance can be better understood by a study of the operations as they developed, day by day.



PROBABLE DISPOSITIONS OF THE POLISH ARMY, 1 SEPTEMBER, 1939.

THE SILESIAN GROUP

1 September

By the evening of 1 September the extreme right wing of this group (List) had reached the line: Neumark—Sucha and crossed the Olsa at Tesin. Farther north, other units skirted the industrial region of Upper Silesia and advanced on Czestochowa.

2 September.

Units of this group pushed on through Jablunka Pass, in the Beskids and seized Pless. North of the industrial region the German forces gained the banks of the Warta after taking Wielun. Simultaneously, in the country north of Czestochowa, mechanized units drove toward Radomsk, while other elements, advancing by way of Kepno, moved on Sieradz.

3 September.

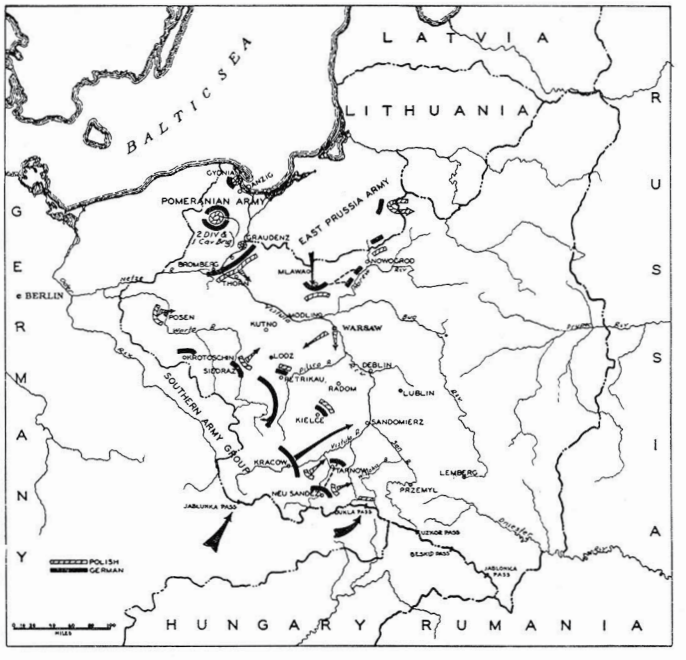
This day marks the forced crossing of the Vistula east of Pless, the overrunning of Polish fortifications south of Nikolei, the capture of Czestochowa, the crossing of the Warta at points east of Wielun and the occupation of Radomsk.

4 September.

According to German reports, the Polish 7th Division was destroyed southeast of Czestochowa and its commander, General Gosiovowski and staff taken prisoners. The German forces fought their way across the Warta and captured Ostrowo, Krotoszin and Lisa. The right wing of the Silesian Group continued the pursuit of the Polish forces in the direction of Kracow.

5 September.

The German troops drove the Poles from the northern exit of the Beskids. With the capture of Katowice, Konigshutto and Tarnow, the industrial region of Polish Upper Silesia was in German hands. While to the north, the advance reached the line: Checiny—Petrikau, the attack east of the Warta continued in the direction of Lodz. The Polish Government fled from Warsaw to Lublin.



ENVELOPMENT PHASE—SITUATION AS OF 6 SEPTEMBER

6 September.

Units of the Silesian Group entered Kracow without encountering resistance. In the north, the Germans took Kielce, and in the south they occupied Neu Sandez.

7 September.

The German advance kept close upon the heels of the defeated Poles in the region southeast of Gorlice and east of Tarnow, penetrating as far as the Wisloka; they also gained ground in the Lisa Cora range north of Kielce. North of Tomaszow, mechanized forces drove the Poles out of Rawa Mazowiecka, and advanced to within less than 40 miles from Warsaw.

THE POMERANIAN ARMY

Supported by the East Prussian Army, the mission of the Pomeranian Army was to establish direct contact with East Prussia. Instead of driving directly on Danzig, which was the shortest route, General von Kluge directed his main effort in the general direction on the line: Bromberg—Kulm —Graudenz.

1 September.

German troops reached the Netze River at Nakel and closed in on the Brahe. Meanwhile, the East Prussian forces launched an attack from Marienburg on the Polish fortified area of Graudenz.

2 September.

On this day, the Pomeranian Army crossed the Brahe. A powerful mechanized attack carried the advance elements to the Vistula at points south of Graudenz, northwards toward Tuchel.

4 September.

The Pomeranian Army reached the Vistula at Kulm, forcing its way across the Brahe. This advance prevented the Polish troops in the northern part of the Corridor from retiring to the south. All Polish efforts to shatter the iron ring by desperate individual action proved futile.

The Pomeranian Army forced the crossing of the Vistula at Kulm and continued to advance along the east bank of the river. Simultaneously, units of the East Prussian Army captured Graudenz. Tczew also fell into German hands that day.

5 September.

The Polish forces, under the pressure of the German units that had crossed the Vistula at Kulm and Graudenz, evacuated Bromberg.

6 September.

The Pomeranian Army concluded the mopping up of the region around Tuchel and according to German reports, wiped out the Polish 9th and 27th Divisions, a mechanized battalion, two battalions of light infantry and the "Pomorzka" Cavalry Brigade.

Continuing their drive to the east of the Vistula, the German forces crossed the Thorn-Strassburg highway.

7 September.

The Polish Posen Army commenced the evacuation of the Province of Posen. German troops occupied Wagrowice and Oborniki, north of Posen, and Kozmin at the south. The invasion of the Province of Posen from the west likewise gained ground forcing the Poles to withdraw farther and farther to the east.

THE EAST PRUSSIAN ARMY

1-4 September.

The left wing of this army advanced to the south driving deep into Polish territory. By 4 September this army had

pushed on past Mlawa and Przasniz and after heavy fighting broke through to the Narew.

5-7 September.

The German forces occupied Ciechanow, whence they drove toward the Vistula in the direction of Plonsk. They gained the Narew first at Rozan, next at Pultusk and later at Ostroleka and Lomza. By 7 September the German forces had crossed this important obstacle. Polish cavalry conducted raids against the left flank of the German forces and even penetrated East Prussian territory at one point, but this threat was too weak to halt the German advance.

8 September.

At the beginning of the second week of operations, the German armies in the East were making rapid advances all along the front.

While the right wing of the Silesian Group (List) was nearing the San, the left wing (Blaskowitz) advancing south of Lodz had reached to within 10 miles of Warsaw. In the afternoon of 8 September a German mechanized division entered the suburbs of Warsaw.

In the Province of Posen, the Polish forces were retreating eastward closely pursued by German troops.

In the northern part of the Corridor, units of the Pomeranian Army shifted to the attack on Gdynia, after mopping up the region of Tuchel.

A Polish cavalry attack against the extreme left of the East Prussian Army was broken up by the German air forces and in no wise interfered with the continuation of the German advance to the south.

By this time, the industrial region of Poland, where her munition bases and industrial centers were located, were in German hands and this had a decisive effect upon the subsequent operations.

9 September.

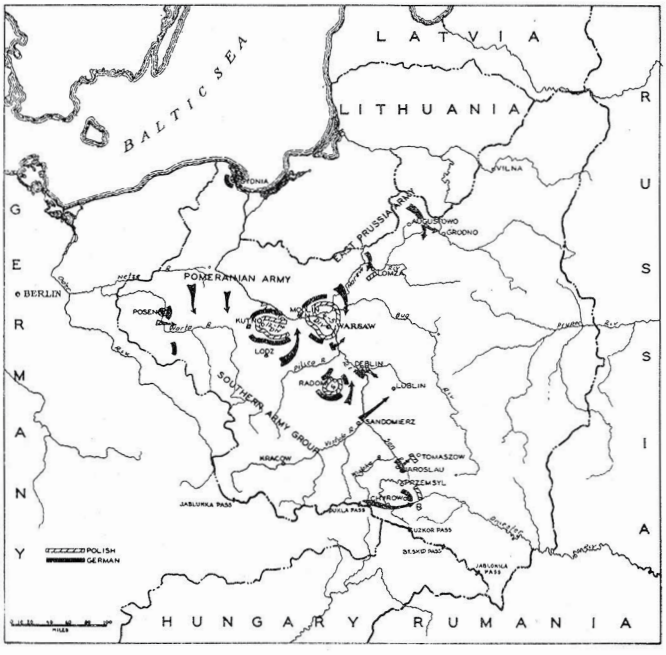
The motorized units of the Silesian Group reached Rzeszow on the Wisloka and proceeded to Jaroslau. German troops reached the Vistula and Sandomierz, captured Zwolen and Radomsk, while farther north the German advance had reached Gora Kalwarja on the Vistula. While units in rear of the Silesian Group occupied Lodz, the main body of the left wing (Blaskowitz) pushed on astride the city in pursuit of the Polish forces that were slowly retreating to the east.

10 September.

The Polish troops in the south retired across the San. Simultaneously, German troops forced the river crossing in the Sanok-Jawornick sector as well as at Radynna and Jaroslau. In the meanwhile the investment of from four to five divisions in the Radom area between Kielce and the Pilica and Vistula Rivers made further progress. Attempts on the part of the encircled Poles to break the German iron ring failed. A thrust by German mechanized units blocked the retreat of another group of Polish forces which was falling back on Warsaw.

11 September.

While the great battle in the area west of Warsaw continued unabated, the German forces in South Poland reached



COMMENCEMENT OF ANNIHILATION PHASE—SITUATION AS OF 11 SEPTEMBER

the San by forced marches and crossed the river. German mountain units on the extreme southern flank captured Chypew, south of Przemysl.

In the zone of operations between Lodz and Warsaw, several Polish divisions made a desperate attempt to escape the encirclement by breaking through to the east. All their efforts failed.

Other Polish forces, after withdrawing from the Province of Posen and the area: Bromberg—Thorn were now confronted by units of the Silesian, Pomeranian and East Prussian Armies around Kutno. They likewise tried in vain to escape to the south. The five Polish divisions and two cavalry brigades encircled in that area found their retreat hopelessly blocked.

12 September.

The German forces of the southern wing continued the swift pursuit. Attacking astride Przemysl, German mountain units captured Sambor and Jaworow. While mechanized elements occupied Crocowice, a town located northeast of Przemysl, strong forces in the region east and southeast of Warsaw crossed the Warsaw—Siedlce highway and railway.

13 September.

The German forces made further important gains. Mechanized and motorized forces in East Poland made rapid advances in the area north of Lemberg and reached the Lublin highway at Rawa Ruska and Tomaszow. On the front farther north, the Polish divisions encircled at Kutno made another attempt to break through the German lines in conjunction with a Polish thrust from the direction of Warsaw, but these efforts failed. Meanwhile the German

forces attacking Warsaw were about ready to join hands with the units that had crossed the Vistula south of the Polish capital. The battle of annihilation in the Radom area had netted 60,000 prisoners including several Polish generals and 143 guns of various calibers and 38 tanks.

14 September.

The strong Polish forces surrounded at Kutno made another desperate but unsuccessful attempt in a southeasterly direction to break through the German ring.

The German forces east of the Vistula were closing in on Prague, a suburb of Warsaw, from the north, east and southeast. There, too, they defeated all Polish efforts to escape to the east.

15 September.

The German troops continued their rapid advance, the pursuit of the Polish units in East Galicia and Wollynia also continued at an undiminished pace.

Two German divisions crossed the San on the 15th. These were the same units which in the early days of the advance had broken through the Polish lines of fortification in the industrial region of Upper Silesia; they were now following the mechanized units by forced marches for the purpose of wiping out the remnants of Polish resistance on the southeastern front. The Polish Silesian Army had now ceased to function as a coherent unit. The fortress of Przemysl, South Poland's mightiest bulwark, fell into German hands and motorized units occupied Wlodzmiers, a town far to the east.

16 September.

Lemberg was now enveloped on three sides and the Polish forces in the area between Lemberg and Przemysl were cut off from a retreat to the southeast. German units in the region north of the mouth of the San pushed on in the direction of Lublin and captured Deblin, where 110 planes were taken. Deblin was occupied the following day.

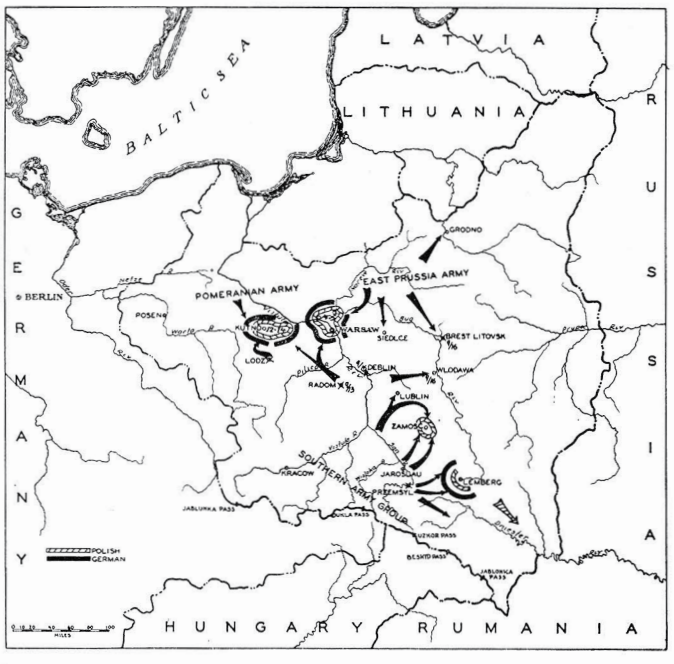
The reconnaissance units of the East Prussian, Upper Silesian and Slovakian troops joined hands at Wlodawa, a town south of Brest-Litovsk.

German forces seized Kutno and then headed north. Warsaw was closely surrounded. The German air forces conducted repeated raids on Polish troop concentrations and marching columns in the region east of the Vistula, thus preventing the Poles from reorganizing. The radio stations of Wilna and Baranowicze were destroyed by air raids. German forces captured the citadel of Brest-Litovsk.

17 September.

On the night 16-17 September, the Soviet Government handed the Polish Ambassador in Moscow a note informing him that the Soviet Government was compelled "in order to safeguard its own interests and to protect the White Russians and Ukranian minorities in East Poland—to order the Red Army to cross the Soviet-Polish border at 6:00 A.M., 17 September, Moscow time." As announced in the note, the Red Army took up the advance simultaneously along the entire frontier from Polosk in the north to Kamenec-Podolski in the south.

On 20 September, the Russian troops, after weak resistance by three Polish divisions, 2 to 3 cavalry brigades and border detachments, reached the line: Wilna—Grodno—Kobryn—Kowel—Stanislau. On the 22d Russian troops moved into Lemberg, whence the German troops were withdrawn. The Polish forces laid down their arms (120,000 men). The Russian invasion has been called the "knock-out blow," that rudely changed the aspect of that war, but it



ANNIHILATION PHASE—SITUATION AS OF 16 SEPTEMBER 1939

COMPLETION OF ANNIHILATION PHASE
SITUATION AS OF 21 SEPTEMBER 1939

is a fact that Poland's Army was disorganized and collapsing before a single Red soldier had stepped into Polish territory.

On 21 September the line of demarcation shown on sketch went into effect.

The war in Poland was practically brought to an end on 20 September, although Warsaw held out under heavy artillery and air bombardment until 27 September when it surrendered unconditionally. German troops delayed formal occupation of the city until 5 October. Modlin, the Poles' last fortress, yielded to German siege on the 28th.

THE POLISH CAMPAIGN

Few campaigns have begun with such overwhelming immediate advantages as those possessed by Germany when she launched her Blitzkrieg on Poland on 1 September. Time, strategic situation, matériel and numbers were all on her side. Time, because the Siegfried Line freed her from the risk of any serious ground attack on the west for a considerable period. She was fully mobilized, while the Polish forces in East Poland were not, although those in the western part of the country were.

The strategic situation for Germany's invasion of Poland was ideal, all was cut and dried for her favorite strategy of envelopment. In this she was greatly assisted by the initial concentration of the Polish armies: a strong center well forward with weak flanks, the ideal setup for a Cannae. To the south she outflanked Poland from Slovakia and Silesia, to the north from East Prussia. From the west she was faced by huge open plains, ideal for the movement of cross-country vehicles. Even the weather was on her side, for the summer had been unusually dry, so that the roads, few and poor as they are, were at their best for the purpose of withstanding heavy traffic.

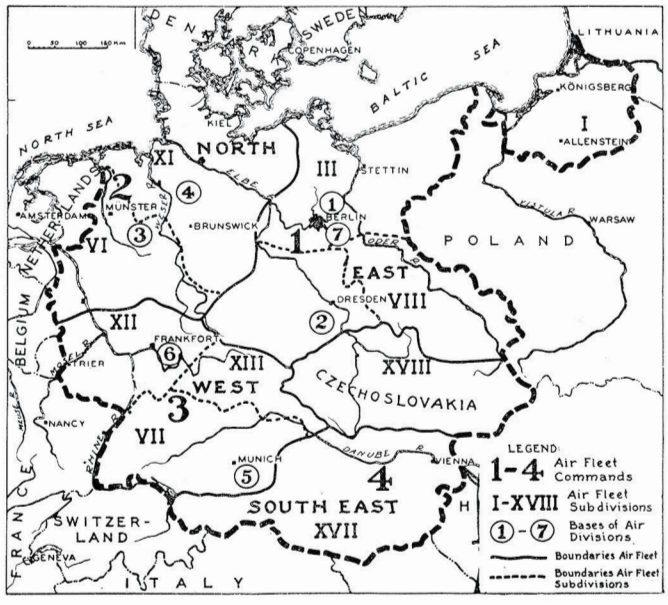
In matériel, she disposed of a superiority of probably more than four to one in aircraft; she had an enormous superiority in mechanized forces and a considerable superiority in artillery—both in quality and quantity. In actual numbers, her strength was perhaps less than three to two, hardly sufficient to command success against a brave opponent, had other things been equal. But other things were not equal, for the German forces were superior not only in strength, but also in training, equipment and leadership.

THE WAR IN THE AIR

On 1 March 1935, Hitler, by official decree, organized the Army of the Air. The Reich was, more recently, divided into four air commands as follows:

1. Air Fleet No. 1, facing Poland.
2. Air Fleet No. 2, oriented towards Netherlands, Belgium and England.
3. Air Fleet No. 3, oriented towards the French and Swiss frontier.
4. Air Fleet No. 4, recently organized, oriented towards the southeast.

Marshal Goering was appointed Commander in Chief of the Air Force with Major General Jeschonneck as his Chief of Staff.



TERRITORIAL ORGANIZATION OF THE GERMAN AIR FORCE.

Air Fleets Nos. 1 and 4, commanded by Generals Kisserlring and Loher, respectively, conducted the bulk of air operations in Poland, their mission being the destruction of the Polish air fleet and cooperation with the ground forces.

The German advance was helped tremendously by their superiority in the air; in fact, it may be said that the factor which told most heavily against a Polish stand was that of the air. German reinforcements could be brought up without fear of decimation by Polish bombers. The retreating Poles could be harassed, their communications cut, their bridges destroyed and their nerves kept constantly on edge, even when resting behind the lines. Ground strafing, the low bombing and machine gunning of troops, had great telling effects on the retreating Poles.

The preliminary surprise bombing of the Polish airdromes such as Tczew, Graudenz, Mlwa, Katowice, Kracow, Wilna, was devastating in its effects. Polish losses in the air became serious and by the end of the first week of war, the need for reinforcements became urgent. The Polish airplanes were greatly outnumbered and the Germans gained command of the air from the very first day of the war and from then on it was just like a blind man fighting a man with perfect eyesight. The result was that the Poles were unable to locate concentrations of German troops moving up to attack while the Germans were able to bomb every concentration of Polish troops. The systematic bombing of railway stations, road junctions, roads and bridges, hampered very much the mobility of the Polish forces, never good in a country of relatively poor communications. The repeated attacks against Polish air bases, military installations, munitions plants and the efficient cooperation with the ground forces played a decisive part in the demoralization of the opponent and in the weakening of his strength. The Germans operated from captured Polish airdromes, so that they could take off with big loads of bombs and little fuel and return quickly to rebomb and refuel.

As the war progressed and Polish losses increased, the German superiority in the air became more and more complete. This led to the paralysis of organized Polish resistance. The chains of command, of supply and of communication were snapped, so that the defense became sporadic and uncoordinated.

Once the Poles were driven from the air, their cause was hopeless, and it may be asserted that the remarkable success of the German forces would have been impossible without the splendid support given them by the air force.

By itself, control of the air cannot decide a war, but it can enable an army to win a quick decision. The campaign in Poland has confirmed the lessons learned from the wars in Spain and China, namely, that the air weapon is one of the most essential adjuncts in modern warfare.

Causes of the Polish Collapse

The reasons for the Polish collapse may be summed up as follows:

1. The Polish High Command underrated the German Army and erred in the belief that the Polish forces could conduct successfully an offensive war in the East—at least to a certain degree—in consideration of the strong German forces that would have to be retained on the Western Front.
2. Faulty Polish initial concentration as a result of an erroneous estimate of the situation. The battlefield is simply the execution of a preconceived plan.
3. Superiority of the German Air Force in numbers and efficiency.
4. Overwhelming German preponderance of mechanized and motorized forces.
5. Insufficient equipment on the part of Poland.

The Polish Army, consisting principally of cavalry and infantry, organized and equipped in World War style, faced a highly mechanized, modern Reich war machine. The Poles did not have adequate antitank guns or other satisfactory defense against the German Panzer divisions, and the German tanks, supported by infantry, rolled through a perfect demonstration of a "blitzkrieg."

6. Lack of adequate Polish antiaircraft defense system.
7. Perfect cooperation between mechanized and motorized units and aircraft which was a feature of the German victory.
8. Failure of the Polish engineers to erect obstacles and coordinate the work of demolition of roads and bridges. The passes over the Western Carpathians afforded excellent opportunities to the engineers; yet, the attacking forces operating from Slovakia negotiated them very quickly. This thrust had disastrous consequences for the Poles. Their industrial area of Katowice, which they were defending against a German drive from the West was taken in rear by the advance across the Carpathians and their old capitol of Kracow had to be abandoned almost without fighting.
9. Collapse of radio communication.

The German information service proved to be very able. The position of the Polish G.H.Q. was constantly known to the Germans and consequently bombed from pillar to post.

10. Ability of attackers to concentrate in overwhelming numbers at three different points: Silesia, the Corridor and East Prussia, while the defenders attempted to cover the whole front. The bulk of the Polish Army was never effectively engaged at all.
11. Weather conditions—persistently fine—which was an immense help to aircraft action and an even greater help to the action of the German mechanized detachments which were pushed forward with the greatest vigor.
12. Lack of proper organization of Polish defensive or delaying positions and slow mobilization of Polish forces.

Conclusion

The Polish campaign will go down in history as one of the most brilliant campaigns of all times. In the incredibly short period of three weeks the military destruction of a nation of 30,000,000 people, defended by an army of 1,500,000 men was completed. This tremendous achievement bids fair to revolutionize many concepts of warfare. Never had large military units, even in peace time, moved so fast. The speed of the German Army was paralyzing, shattering all previous forecasts.

It showed, among other things, the efficiency of well trained and well led mechanized forces in a war of movement and it also proved that an army, no matter how brave, organized along World War lines of 1914 is no match for a modern army of 1939.

The remarkable success of the German armies was due to the sound strategic conception upon which the German concentration was based, the expert employment of units—particularly the air forces and the mechanized forces—and the quick exploitation of the advantages offered by the initial situation

The quality of the individual soldier still is, and will ever be, a factor of the highest importance; but, under identical conditions, the weight of destructive armament decides the issue. The plane, the tank, mobile artillery and motorized infantry have made the modern army fast and deadly.

Infantry, cavalry and the air force must operate together if an army ever hopes to develop the smooth technique and efficiency of which the German Army gave such an impressive demonstration on the battlefields of Poland.

THE WESTERN FRONT

Since the outbreak of hostilities (3 September) between Germany and the Allies—England and France—there have been no engagements of major importance. During the carly days of September there was some fighting at Lauterbourg and at Saarbrucken, capital of the important industrial province of the Saar. A few experimental raids have been made by the British and the Germans against each other's naval bases. The submarine warfare against commerce has been active and a number of daring exploits have occurred, such as the sinking of the Royal Oak at Scapa Flow and the bombing of the German base at Wilhelmshaven. However, the main activities up to the present time have consisted of extensive preparations, diplomatic parleys and propaganda by both belligerents.

The armies have been mobilized along the Maginot and Siegfried lines; the British have transported safely across the Channel a powerful expeditionary force, while the Germans have brought heavy reinforcements from Poland.

BRITISH BABY TANKS PASSING THROUGH A VILLAGE BEHIND THE LINES SOMEWHERE ON THE WESTERN FRONT. *Wide World Photo.*

That is all. The French made some gains into German territory during the first two weeks of the war; however they have given up the ground gained and returned to their original positions.

The war in the west has had none of the aspects of the "blitzkrieg." As yet, no cities have been bombed on either side; no attempts have been made to demoralize the enemy by an overwhelming attack capable of paralyzing both the armies and the civilian population. Nothing has happened on the Western Front that resembles the great battles of the World War. The reason for this inaction is apparently that both sides know the great defensive strength of their positions.

In order to have a clear conception of possible eventualities, a study should be made of the military leaders of the three powers and the impregnability of the famed Siegfried and Maginot Lines.

The combined English and French Armies on the Western Front are under the Supreme Command of 66-year old Generalissimo Marie Gustave Gamelin, a master strategist, scion of a family identified with the army for generations. Educated at the College of Stanislaus, cradle of many French generals, he received a commission in the infantry. He served three years in North Africa, returning to gain admission to the Staff College, where he became a pupil of the late Marshal Foch. He served under Joffre when the latter became Commander in Chief of the French Army in 1911.

Then came 1914 and the unexpected thrust of the Germans through Belgium in accordance with the Schlieffen Plan which upset the prearranged plans of French military leaders; saw the retreat of the French Armies almost to the gates of Paris. Gamelin convinced Joffre that the time had come to stop the retreat and attack the exposed right flank of the German Army. This resulted in the Battle of the Marne which saw the German Armies in full retreat.

In June 1915, Gamelin became G-3 of French G.H.Q. and at the end of the year, at the age of 44, Joffre made him Chief of Staff. Later he became division commander when Joffre was relieved of command. He served in Brazil as head of the French military mission, from where he was recalled in 1927 and promoted to command a corps. Four year later he became Chief of Staff of the army and as such superintended the construction of the Maginot Line and the modernization of the French Army. In January 1938,

Wide World Photo.

MAGINOT LINE SHOWING SEEMINGLY ENDLESS ZIG-ZAGGING STRETCHES OF BARBED WIRE ENTANGLEMENTS AND UP-ENDED STEEL RAILS.

he was given the newly created position of Chief of the General Staff of National Defense, carrying with it the responsibility of combined operations of the army, navy and air forces.

Viscount Gort, Commander in Chief of the British field forces, a descendant of an old army family, has 800 years of tradition behind him. He has spent 34 of his 53 years of life in the military service.

Following family tradition, Viscount Gort entered the World War as a young officer in the 1st Battalion, Grenadier Guards. He won the Victoria Cross, highest British decoration, for extraordinary bravery under fire, for his heroism in aiding the capture of 200 prisoners while wounded (he was wounded three times during the war). He was called "The Tiger." After the War he served as Colonel in India and as Colonial Chief in Shanghai during the 1927 revolution.

After the close of the World War, the English people, navy-minded for hundreds of years, promptly proceeded to disregard the fate of the army. The situation became so unsatisfactory that when Hore-Belisha became War Secretary in the Chamberlain Cabinet, drastic measures were adopted that resulted in the most important British Army "shakeup" since the World War, and as a result Viscount Gort became Chief of Staff in December 1937.

There is no hesitation in the English mind of Gort's ability to lead the British Army. This idea was strongly expressed in 1937 by Sir Ian Hamilton, when Viscount Gort became Chief of Staff: "Thank God! We are under a proper soldier."

The German Army is commanded by General Walter von Brautchitsch, fresh from a victorious whirlwind campaign in Poland. The salient points of his career are given in this issue under "The Collapse of Poland."

The Maginot Line built at an enormous cost and completed in 1934, has been constantly improved. Well-sheltered electric plants provide power for lighting, elevators, narrow gauge railroads and a system of ventilation which protects against seepage of poison gas by an increase of air pressure within the casemates. While it was thought that the LINE, which, in fact, is a series of fortified units, could not be broken, it was feared that flanking movements might take

Wide World Photo.

THE SIEGFRIED LINE, SHOWING SEEMINGLY ENDLESS ROWS OF TANK TRAPS, COMMONLY TERMED "GRAVESTONES OF TANKS."

and trap the garrison from the rear. Thus, two wings, one north along the Belgian border and the other south along the Swiss Jura were added to the main structure facing Germany. Both were completed this year.

The Maginot Line is relatively shallow, whereas the Siegfried Line—which should be called the "Siegfried Zone"—is very deep. The Maginot Line is of immense, but rigid strength; the strength of the Siegfried Line is much less at any given point, but defense is provided by the interdependence and mutual support of its various parts. The former might be compared to a steel wall, the latter to a series of steel buffers distributed in depth.

The Maginot Line stands for passive defense, the Siegfried for defense based upon the counterattack. To break through the Maginot Line would be a task of almost inconceivable difficulty, but once accomplished, the attacker would find himself up against the mobile field forces in rear of that line. To breach the Siegfried Line is a physical impossibility before the German Army is actually defeated, because the system would expand to the rearward and develop new lines of defense with fresh divisions continuously being brought up to replace those exhausted by counterattacks. The Siegfried Line is based upon a more modern tactical doctrine which has the strong support of recent experience, namely, that owing to the striking power of modern weapons, the best defense is not to withstand the shock, but to absorb it, to slow it down, to muffle and blanket it, and then, at the proper moment, when the hostile impetus has spent itself, to react vigorously by means of a counterattack.

The existence of the Maginot Line and the Siegfried Line makes a concerted offensive along the first World War lines very dubious.

Up to now the activity on the western front has been nominal. It is claimed that the Allies are willing to have this situation continue. They believe that the blockade, despite the supplies that Russia will send to Germany, will ultimately weaken the Reich. The Allies feel that in view of this circumstance, it is sounder for them to attack later, after Germany has been somewhat weakened by the blockade. There is also some evidence that the Allies are counting on this situation to force Germany into an offensive in which the Reich would have to hurl enormous numbers of troops against the French Maginot Line. The theory behind this opinion is that Germany faces the prospect that the block-

ade will make her progressively weaker, thus compelling her to attack before its devitalizing effect is severely felt. If the Germans attack the Maginot Line, the Allies' hope is that heavy German casualties, plus the shooting away of a large amount of German military matériel, which then will be difficult to replace, will insure the success of a later Allied counteroffensive against Germany.

That the Allies are pinning their hopes in the effectiveness of the blockade can be seen from the following warning by Paul Reynaud, France's outspoken Minister of Finance, when he said recently: "Those who believe that only artillery speaks with authority are deluding themselves. The outcome of this war will not depend on where we can pin little French or British flags on war-maps. I am telling the truth when I say that already in great measure Germany is exhausted by her gigantic effort of past years to prepare herself for war. Do not forget that while the military front is vital, behind it must be the support of an invulnerable economic, financial and monetary front * * *. I might point out that today the Bank of France possesses twice as much gold as it had in August 1914. Our economic and financial position is immensely superior to that of the enemy."

The stalemate along the German-French border cannot continue indefinitely. It is difficult to foretell what will happen in the immediate future, but there seems to be at the moment three possibilities.

1. A general offensive against France, combined possibly with a turning movement through Belgium, or Belgium and Holland, or, more improbably, through Switzerland.

2. A strong air offensive against Britain and France, which might be combined with a ground offensive against the Maginot Line.

3. A severe air and submarine offensive from bases established either in Belgium or the Netherlands, against the British with the hope of sinking the British Navy, breaking the blockade, and sinking the British merchant fleet, thus compelling Britain to accept peace terms.

The French Newspaper "La France Militaire," 23 September 1939, reports that the French covering forces found the following signs put up by the Germans facing the French frontier: "Ne passez pas la frontière at nous ne tirons pas." (Do not cross the frontier and we won't shoot.)

On the other hand, from Switzerland comes the report that French military engineers, after politely warning German sentinels on the opposite bank of the Rhine, dynamited on 21 October a small steel foot-bridge spanning the river near the electric plant at Kembs, twelve miles north of Basel, Switzerland.

To a great many people the war being waged on the Western Front is as strange as it is mystifying. It has, up to the moment of this writing, followed no accepted forms or precedents nor are there parallels for it in the recorded history of armed conflicts.

A definite estimate of the aspects of another major war on the Western Front is impossible, in view of the progress made by aviation and mechanization; but there is no question that both sides, armed as never before, are planning events to attain the same objective with all the means at their disposal, namely, to destroy the enemy's will to fight and compel him to surrender.

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Meeting the Challenge of Large-Scale Combat Operations Today and Tomorrow

Lt. Gen. Michael D. Lundy, U.S. Army

While our Army learned invaluable lessons over the last seventeen years of limited contingency operations, the experience culturally imprinted a generation of Army leaders for one type of warfare. An increasingly volatile operational environment (OE) characterized by great power competition demands that our Army adapt to the realities of a world where large-scale ground combat against a peer threat is more likely than at any time in recent history. Preparing for the most lethal and challenging threats to our nation warrants continued bold changes in how we man, equip, train, and employ Army forces, especially at echelons above brigade.

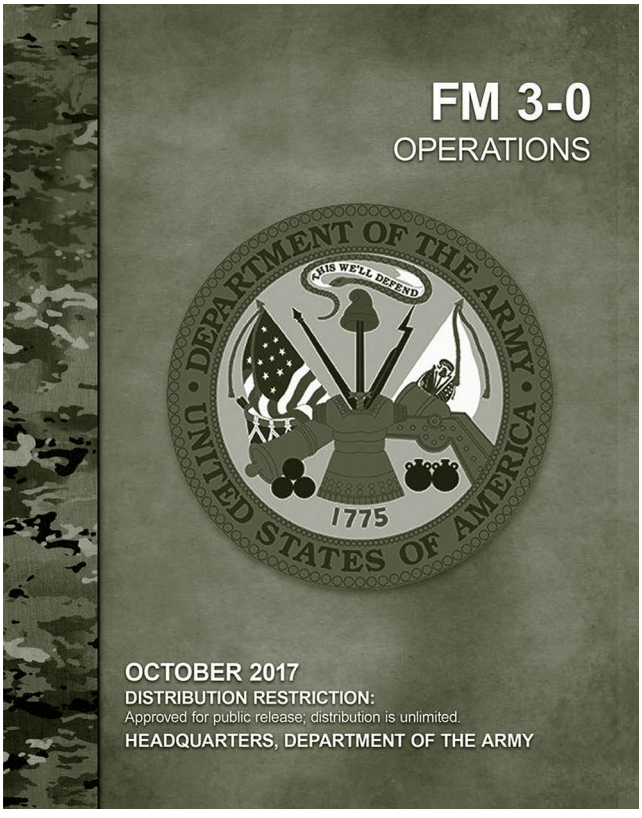
Over the last decade and a half, our peer and near-peer competitors studied us as we optimized our

force for limited contingency operations. They fielded more professional forces with advanced capabilities, improved training, and combined arms formations designed to contest us and our multinational partners across all of the domains. They adapted, improved, and continued to advance. In addition to violent extremist organizations with global reach, the current and future strategic environment is defined by a revanchist Russia, an expanding China, a rogue North Korea, and a calculating Iran.[1] It demands a U.S. Army prepared to continually (and persistently) shape the security environment to our advantage, deter adversary aggression through strength, and when necessary, prevail in large-scale ground combat as a member of the Unified Action team.[2] We are in great power competition today, and with competition, conflict is always a risk—this is not just a problem for tomorrow's leaders.

Success in large-scale combat operations against peer threats requires that we continue to evolve from a focus on predictable rotational deployments for stability operations to expeditionary operations in contested domains with few indications or warnings. With the renewed focus on readiness to meet the challenges of great power competition or conflict, we must continue to master the required skills to enable the Army's four strategic roles for the joint force: shaping security environments, preventing conflict, prevailing in large-scale ground combat, and consolidating gains to make the temporary permanent.

> *For decades the United States has enjoyed uncontested or dominant superiority in every operating domain. We could generally deploy our forces when we wanted, assemble them where we wanted, and operate how we wanted. Today, every domain is contested—air, land, sea, space, and cyberspace.*
>
> —Jim Mattis, Secretary of Defense[3]

There will always be tension between readiness for the worst case of large-scale ground combat and the requirements of limited contingency and shaping operations the Army conducts daily around the world. These adjustments will be at least as difficult as those made by our predecessors after Vietnam. Unlike post-Vietnam, however, as we make these adjustments, we cannot eschew the lessons of Iraq and Afghanistan. Retaining the hard-won lessons learned within our doctrine and training while also expanding our expertise in the required tactics, techniques, and procedures for large-scale ground combat is essential.



The Army is on the right path to developing leaders and units with the requisite skills and attributes to prevail in large-scale ground combat against peer threats. Our combat training centers have increased the intensity and realism of our unit decisive action rotations, unit home station training occurs at higher operational tempo and under more demanding conditions, and we have made significant adjustments to the rigor and focus of our professional military education and functional training.[4] Mastering the skills and experiences acquired during training, education, and operations requires repetition. Sustaining and improving what we are doing now is our challenge. Preparing and certifying leaders, hardening the force for the chaos and lethality of large-scale combat operations, and reorganizing our formations while fielding

Previous page: Soldiers assigned to 1st Battalion, 63rd Armor Regiment, 2nd Brigade Combat Team, 1st Infantry Division, move to assault a simulated objective 7 May 2017 during Decisive Action Rotation 17-06 at the National Training Center in Fort Irwin, California. (Photo by Spc. Dana Clarke, U.S. Army)

advanced technologies and new equipment requires an enduring and persistent focus.

To drive this cultural change, we renewed the focus on combined arms operations in large-scale ground combat with our newest doctrine, Field Manual (FM) 3-0, *Operations*. FM 3-0 is the Army's capstone tactics manual for execution of unified land operations against peer and near-peer threats in contested multi-domain environments.[5] It serves as a pivot point to steer the Army toward both persistent competition below armed conflict and, when necessary, armed conflict against highly lethal and adaptive peer and near-peer enemies. FM 3-0 does not disregard what we've learned over the last seventeen years. In fact, it reinforces and provides deeper context to the value and necessity of persistently competing, prevailing, and consolidating gains across the range of military operations and the conflict continuum.[6] To address the continuum, FM 3-0 is organized in accordance with the Army's four strategic roles it uniquely performs for the joint force: shape the security environment, prevent conflict, prevail in large-scale ground combat, and consolidate gains.[7] It emphasizes that maintaining positions of strategic advantage requires enduring outcomes favorable to U.S. interests.

FM 3-0 acknowledges we will not always enjoy the full domain superiority we have come to expect since the early 1990s. It recognizes that, with fewer forward-deployed forces than just twenty years ago, our force posture and activities must be optimized to successfully compete below the threshold of armed conflict. We do this by seeing, understanding, and preparing the environment; continuously setting the theater; conducting cyber and information operations; deploying rotational forces; and building readiness. By improving our own readiness for armed conflict and that of our partners, we maintain access and demonstrate the capability and will to win as part of a larger team. Multinational and joint operations are essential to this approach. How we build capacity and maintain access while denying adversaries positions of cognitive, virtual, temporal, and physical advantage are increasingly important to a largely CONUS-based Army.[8] To assure allies, we must be able to deter. To deter, our adversaries must believe we will prevail.

FM 3-0 addresses the challenges of the current and near-term multi-domain operational environments and guides our approach to winning against all possible competitors. Aspects of emerging multi-domain concepts have been integrated into FM 3-0 including space, cyber, electronic, and information warfare. These capabilities reinforce our combined arms approach to the traditional aspects of warfare in the land, air, and maritime domains. FM 3-0's new operational framework provides an expanded physical, virtual, cognitive, and temporal perspective to account for the multi-domain extended capabilities of friendly and threat forces. The physical and temporal considerations pertain to space and time, while the cognitive considerations apply to enemy decision-making, enemy will, and population behavior. The virtual considerations address friendly and threat cyberspace activities, cyber-enabled capabilities, and the entities that exist in cyberspace. Collectively, these considerations allow commanders and staffs to better converge multi-domain capabilities at echelon with the tempo and intensity necessary to present the enemy with multiple dilemmas from positions of tactical, operational, and strategic advantage.[9]

Central to the challenge of evolving the Army's culture is reenabling our division, corps, and theater armies to operate and fight as combat formations. Beginning with a perception in the mid-to-late 1990s of a reduced risk of great power conflict and exacerbated by ongoing limited contingency operations, the Army transformed from a division-based to a brigade-based modular force. As a result, echelons above brigade (EAB) transformed from highly-capable warfighting formations to headquarters that could be force-tailored with warfighting "modules" to accomplish a variety of missions. Over time, the separate modular components were further optimized for the prevailing fight—counterinsurgency and other stability operations.[10] When coupled with heavy reductions during directed downsizing, EAB headquarters

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Armored elements from Company A, 1st Battalion, 63rd Armor Regiment "Dragons," 2nd Armored Brigade Combat Team, 1st Infantry Division, Fort Riley, Kansas, conduct convoy operations 2 May 2018 during Combined Resolve X at Hohenfels Training Area, Bavaria, Germany. (Photo by Spc. Andrew McNeil, U.S. Army)

Soldiers of 3rd Armored Brigade Combat Team, 4th Infantry Division fire an M109A6 Paladin howitzer 21 August 2017 during Exercise Combined Resolve IX at the Grafenwoehr Training Area in Germany. (Photo by Sgt. Matthew Hulett, U.S. Army)

became much less capable of supporting anything more than limited contingency operations. While required at the time, the degradation of echelons above brigade formations and their capabilities significantly reduced the Army's ability to meet the entirety of its primary function—to execute prompt and sustained land combat to defeat any threat throughout the range of military operations.

As we adapt today's EAB headquarters into warfighting formations in doctrine, we also keep an eye on tomorrow through future concept work. The "U.S. Army Concept for Multi-Domain Combined Arms Operations at Echelons Above Brigade, 2025-2045" provides the foundation for the experimentation and development of future EAB capabilities. Informed by the Joint Warfighting Assessments, Mission Command Training Program lessons learned, the Multi-Domain Task Force pilot, and numerous battle lab and Army level experiments, the EAB concept has been continuously refined to identify the most critical doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy requirements for future EAB formations. This concept work has revealed key foundational requirements at each EAB echelon to defeat peer threats during both competition and conflict in the future.

Future Theater Armies

Uniquely-tailored future theater armies maintain enduring operational initiative. The theater army is unique as it is the only persistent Army echelon for a geographic area of responsibility. As an Army Service component command, all theater armies share the same basic set of theater management tasks distilled to five primary categories: setting conditions in the theater for the employment of landpower (setting the theater), Army support to theater security cooperation, Army support to other services, administrative control over all Army forces in the area of responsibility, and operational control and sustainment support of any assigned or attached Army forces until the combatant commander attaches those forces to a subordinate joint command.[11] To shape the security environment, prevent conflict, and, when necessary, prevail in large-scale combat operations in peer-adversary theaters, theater armies require greater operational warfighting organic capabilities. These capabilities include

threat-specific intelligence, surveillance, and reconnaissance; electronic warfare; air and ballistic missile defense; cyberspace, space, information warfare capabilities; and hardened command and control. Theater armies enable freedom of movement during transitions from competition to armed conflict and back. In the future OE, theater armies are central to winning in competition below armed conflict and ensuring that Army and coalition forces can operate from distributed and protected positions of advantage during armed conflict.[12]

Future Field Armies

Threat-focused future field armies provide credible deterrence, execute multi-domain competition against peer threats, and enable a rapid transition to and execution of large-scale ground combat operations (LSGCO). While all theaters require an operational capability, some theaters have adversaries that present enough risk of LSGCO that they require an additional standing echelon to manage specific operations within the area of responsibility and then transition rapidly to a land component command. Historically, this has been a field army commanding two or more corps. A field army is employed to relieve the operational burden on the theater army when attention to a specific operation in a subordinate geographic area would detract from the theater army's ability to support strategic objectives in the theater as a whole. The field army is forward stationed to account for the higher probability of LSGCO or other vital geopolitical considerations that may require partner assurance. It is required in areas of persistent, intense competition with a peer threat capable of rapidly transitioning to large-scale land combat. The field army can serve as the foundation for a joint task force, joint forces land component command, or merge into a standing—but underresourced—alliance headquarters. A standing field army allows rapid transition from competition to conflict. The presence of a field army changes the threat's risk calculus and helps prevent conflict or sets the conditions for success in LSGCO where multiple corps are required to defeat a peer enemy.

Future Corps

The future corps is the linchpin of EAB versatility and agility. The corps of tomorrow must be the most versatile echelon in the Army because no other echelon can. Since future theater armies are tailored to their respective theaters and operational support of Army missions defines their functions, their versatility is limited. Similarly, a future field army is sharply focused on succeeding in competition below armed conflict against a specific peer threat within the theater and setting conditions to rapidly transition to armed conflict as a multi-corps land component command. Meanwhile, future divisions maintain an uncompromising emphasis on readiness for the task of integrating multiple brigade combat teams (BCTs) and enabling formations as a highly-lethal, tactical formation to win the close fight during armed conflict. This limits some aspects of versatility at the division level. The future corps, functioning as the link between the operational and tactical levels of war, emerges as the echelon that affords the greatest potential for adaptation in response to the uncertainty of both future threats and the environment. This agility mitigates the operational risk naturally found in warfare when predictions of the future OE frequently fail to match reality.

> *We want a military, across the board, to be unbelievably lethal and unbelievably dominant, so that no nation will ever challenge the U.S. militarily.*
>
> —Gen. Mark A. Milley[13]

Highly versatile, future Army corps are the U.S. Army's intermediate tactical warfighting formations for large-scale combat, assigned with redundant capabilities and capacities to see and understand, decide, shape, strike rapidly, and endure. Concept development, experimentation, and lessons learned demonstrate that the most effective future corps organizational design includes assigned military intelligence, multi-domain reconnaissance and security, fires (artillery and air defense), maneuver support, space, cyberspace, information warfare, electronic warfare, sustainment, and aviation formations. These future subordinate formations enable the corps to conduct deep operations physically, temporally, virtually, and cognitively and enable subordinate divisions to dominate the close fight.[14] While assigned to the future corps, these capabilities can be task organized to directly support a subordinate division as the main effort.[15]

Future Divisions

Tactically-focused future divisions shape, dominate, and win the close fight. The division's role of

commanding and sustaining multiple BCTs and enabling formations in tactical operations remains its primary focus and is the crux of the Army's ability to gain and maintain contact and defeat an enemy maneuver force in violent close combat. This requires future Army divisions to singularly focus on lethal, tactical warfighting; it is the principal tactical echelon above brigade. Future Army divisions must have assigned reconnaissance and security, aviation, fires, maneuver enhancement, and sustainment formations in addition to capable BCTs. When properly force-tailored, postured, and positioned, divisions—along with other echelons above brigade formations—are a powerful, credible, and devastatingly lethal deterrent to any would-be threat.[16]

Conclusion

Large-scale ground combat is more likely today than at any point since the end of the Cold War. And the risk of great power conflict will likely persist into the distant future. While the last seventeen years of limited contingency and counterinsurgency operations were necessarily brigade-centric, conflict with peer and near-peer threats requires a continued culture shift as well as the optimization of EABs into highly capable divisions, corps, field armies, and theater armies. These EAB multi-domain fighting formations, coupled with requisite training, leader development, and modernization, enable the Army to shape security environments, prevent conflict, prevail in large-scale combat, and consolidate gains to make tactical success strategically enduring—today and tomorrow. ■

Notes

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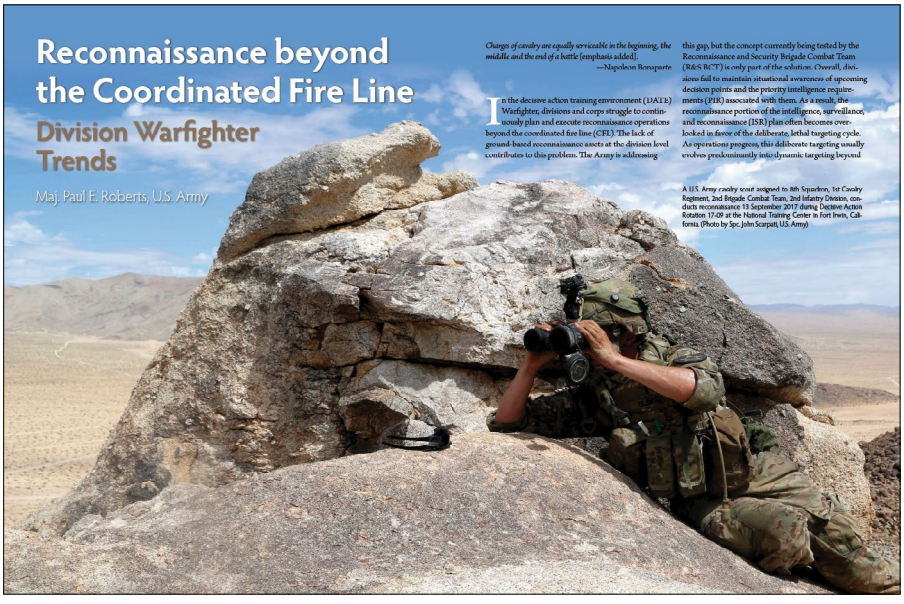
16. Ibid.

LETTER TO THE EDITOR

Response to Maj. Paul E. Roberts's "Reconnaissance beyond the Coordinated Fire Line: Division Warfighter Trends"

(*Military Review*, July–August 2018)



To view this article, please visit https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/July-August-2018/Reconnaissance-beyond-the-Coordinated-Fire-Line-Division-Warfighter-Trends/.

In his recent article, "Reconnaissance Beyond the Coordinated Fire Line (CFL)," Maj. Paul Roberts advocates the establishment of a reconnaissance cell as a means of improving reconnaissance planning and synchronization at the division- and corps-levels. While establishing a reconnaissance cell may improve the staff's ability to plan and integrate reconnaissance, Roberts' article glosses over the underlying issue: the Army lacks sufficient ground reconnaissance capability at the division- and corps-level.

Over the last fifteen years, the Army systematically dismantled its ground reconnaissance formations. Risk aversion in Iraq and Afghanistan frequently led commanders to rely on unmanned aircraft systems (UAS) and other air-based platforms rather than deploying small ground reconnaissance formations as a means of answering their priority intelligence requirements (PIR). Between under-employment in Iraq and Afghanistan and

the Army's growing obsession with brigade-centric, modular formations, several division- and corps-level reconnaissance formations soon faced the chopping block.

In 2005, the Army began divesting itself of division and corps long-range surveillance (LRS) detachments and companies. These storied units once deployed elite six-man teams days in advance of their parent division or corps to answer their command's PIR and to drive operations. While some LRS units reflagged as pathfinder companies in combat aviation brigades or dismounted reconnaissance troops in battlefield surveillance brigades, this simply postponed their inevitable fate. The last of these elite reconnaissance units inactivated in 2017.

Light, infantry-based units were not the only reconnaissance formations sacrificed in the name of modularity. The Army also dismantled several cavalry formations. Division cavalry (DIVCAV) squadrons, lethal combined arms reconnaissance squadrons that once served as the eyes and ears for highly mobile armored and mechanized divisions, met their demise in 2005. In 2011, the cavalry saw its coup de grâce as the last armored cavalry regiment (ACR), a formation once capable of organically screening, guarding, or covering an entire corps with its lethal assortment of armored vehicles, self-propelled artillery, and rotary-wing aircraft, transformed into a run-of-the-mill Stryker brigade combat team.

The loss of these reconnaissance formations has left our divisions and corps with a notable capability gap. In a conflict against a near-peer adversary, we will not enjoy the luxury of uncontested airspace. Our UAS and other air- and space-based platforms will not operate with impunity. Our divisions and corps will rely heavily on traditional ground reconnaissance to answer PIR and drive operations. However, due to the Army's shortsighted divestiture of reconnaissance formations, these echelons are currently forced to piece together impromptu reconnaissance task forces from their subordinate brigades. These task forces lack the specialized training, organization, and, most importantly, the institutional knowledge and experience required to effectively meet the reconnaissance and security demands of two- and three-star headquarters.

If the Army truly wants to eliminate its reconnaissance capability gap, it will take more than creating a reconnaissance cell. Instead, the Army must invest in developing competent reconnaissance units specifically organized and tasked with supporting division- and corps-level commanders. This does not require recreating the wheel with a new "Reconnaissance and Security" brigade combat team. Although the grey beret, SOF-like arrowhead-shaped patch, and "Recon" tab undoubtedly proposed for such a unit surely look splendid, there is better solution. We need to bring back LRS, Pathfinders, DIVCAV, and ACRs. The tables of organization and doctrine for these formations are tried and true; we need only pull out the old manuals and blow the dust off. More importantly, the knowledge and experience needed to rekindle these formations still resides throughout the force. By reinvesting in our battle-proven reconnaissance formations, we can eliminate this capability gap in a timely and efficient manner. ■

Maj. Kenneth A. Segelhorst, U.S. Army

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