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

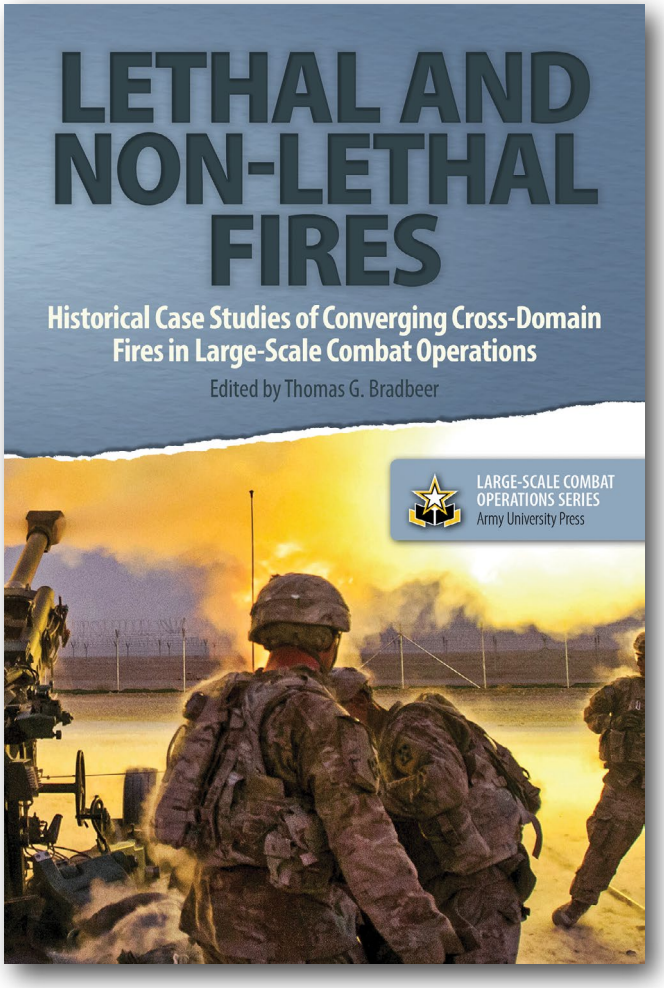
achieve the Army chief of staff's objective of readiness using Operations Desert Shield and Storm as a case study to analyze preparations for deployment and the use of artillery during offensive operations against a near-peer adversary.

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.

1. Army Doctrine Reference Publication 3-09, *Fires* (Washington, DC: U.S. Government Publishing Office [GPO], 31 August 2012), 1-1.

2. Ibid., 1-1 and 1-2.

3. Army Techniques Publication 3-09.90, *Division Artillery Operations and Fire Support for the Division* (Washington, DC: U.S. GPO, 12 October 2017), vii.

4. Centers for Army Lessons Learned (CALL) Handbook 18-28, *Operating in a Denied, Degraded, and Disrupted Space Operational Environment* (Fort Leavenworth, KS: Headquarters, CALL, June 2018), 6.

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