

# The Tank is Dead ... Long Live the Tank

## The Persistent Value of Armored Combined Arms Teams in the 21st Century

Maj. Gen. Curtis A. Buzzard, U.S. Army

Brig. Gen. Thomas M. Feltey, U.S. Army

Lt. Col. John M. Nimmons, U.S. Army

Maj. Austin T. Schwartz, U.S. Army

Dr. Robert S. Cameron

**T**anks enable national power projection, provide operational flexibility and tempo to joint commanders, and facilitate tactical combined arms maneuver. The tank's true value is found at all levels of war, starting with combined arms teams at the tactical level that amplify the tank's capabilities and mitigate its vulnerabilities. Such teamwork ensures the continued relevancy of the tank despite the proliferation of unmanned aircraft systems, loitering munitions, precision artillery, antitank guided missiles, and electromagnetic spectrum considerations. However, the tank's inherent characteristics of lethality, survivability, and mobility as part of a combined arms team provide ground force commanders an operational option when considering how best to seize key objectives, sustain momentum, and apply constant pressure to enemy forces. Finally, the ability to place armored forces with tanks anywhere in the world signifies the strategic value they possess

in terms of deterrence and offensive capability. Given these factors, it is imperative to not draw premature conclusions from recent conflicts on the efficacy of tanks and armored formations in future conflicts.

The effectiveness of armored combined arms teams in the face of an array of aerial and ground antiarmor systems, however, requires integrated training, organizational flexibility, and the means to sustain combat power. In the Ukraine war, Russia employed an array of modern weapons and capabilities yet failed to achieve an early knockout blow or shape the course of subsequent events. This outcome stems from the Russian failure to synchronize tactical, operational, and strategic actions. Battalion tactical groups—considered the centerpiece of its ground forces before the war—operated in an independent rather than coordinated manner. A lack of combined arms enablers (particularly infantry), poor training, and the inability to execute



A Ukrainian T-64 BV tank from the 59th Yakiv Handziuk Motorized Brigade maneuvers in September 2022. Originally designed in the Soviet Union during the 1960s, it benefited from upgrades over the years, including Ukrainian improvements to its thermal imaging, reactive armor, and radio. (Photo courtesy of the Ministry of Defense of Ukraine via Wikimedia Commons)

mission command further minimized the battlefield impact of these units.<sup>1</sup> More generally, the Russians employed their armored vehicles with little support of any kind. Ukrainian defenders used antiarmor weapons to maximum effect without interference from enemy fires, aerial systems, or infantry. At Vuhledar, for example, tanks tried to drive through minefields in column formations, creating a shooting gallery for the Ukrainian defenders.<sup>2</sup> Nor did the Russians provide continuous supply and maintenance to combat vehicles, resulting in reduced operational readiness and increased breakdowns. The high loss and wastage of tanks led the Russians to rely upon much older models, including the T-62 and T-54, for replacements.<sup>3</sup> Misuse minimized the tactical value of Russian armor and precluded the accrual of operational and strategic benefits.

Ironically, the widespread media coverage given Ukrainian destruction of Russian armored vehicles encourages a sense of the tank's obsolescence not shared by the Ukrainians. After a year of war with a world power, they understand the tank's value as a symbol of national

power and its potential value to end the war's strategic and operational deadlock. However, continuous combat operations have eroded the Ukrainian tank fleet. The T-64 was considered the nation's best tank at the war's start, but over half have since been destroyed.<sup>4</sup> This loss, coupled with Russia's shift to massed artillery and infantry attacks in lieu of combined arms maneuver, contributed to the deadlocked nature of the war by early 2023. Ukraine seeks an influx of Western tanks to reequip its combined arms armored and mechanized brigades and provide the operational punch necessary to restore maneuver and tempo to a battlefield environment characterized by trenches and urban strongpoints.<sup>5</sup>

## Symbol of National Power

The tank originated in World War I to enable maneuver in a tactical setting dominated by trenches, bunkers, artificial obstacles, and machine guns. By World War II, tanks organized into combined arms armored formations proved capable of projecting national power with strategic consequences. In 1939, German panzer



Chinese Type 99 tanks and armored fighting vehicles participate in China's World War II victory parade 3 September 2015 in Beijing. (Screenshot from Voice of America)

divisions played a central role in the destruction of Poland. The following year, these same formations forced France's surrender in just six weeks, leaving Germany as the dominant European land power. The subsequent exploits of American, British, and Soviet armored formations in the Mediterranean, European, and Pacific theaters of operations eclipsed these early war successes, ensuring the defeat of the Axis powers and a fundamental change to the global balance of power. In the immediate postwar era, emerging nations understood the value of tanks as national power symbols. Israel, India, Pakistan, North Korea, and the People's Republic of China all built armored forces that leveraged the collective wartime armored experience.

In the decades since World War II, the tank reflected military power and reinforced diplomatic initiatives. American tanks equipped the armies of several NATO members in the alliance's early years, and they became staple components in the national defense of Israel, Pakistan, and Taiwan. The success of the Abrams tank in the First Gulf War resulted in its sale to Kuwait and Saudi Arabia, and the recent Polish purchase of the latest Abrams tank ensures that this ally, too, will have a significantly upgraded ground combat capability further hardened by the parallel buy of the South Korean K2 Black Panther tank.<sup>6</sup> Similarly, the Soviet Union routinely sold tanks to satellite states to boost their military capability, encourage dependency, and

stimulate domestic economic activity. Consequently, Soviet tanks and armored vehicles equip many of today's armies. The current war in Ukraine pits Russian-built platforms against one another.

Today, China possesses the largest tank fleet in the Indo-Pacific region.<sup>7</sup> Ongoing modernization initiatives include upgrades to older tank models and the development of new designs. China also uses its tanks to bolster international rela-

tions. Trade deals in which China offers military aid for economic gain often include tanks, and it produces tanks specifically for export. Cambodia, North Korea, Myanmar, Thailand, and Vietnam all include significant numbers of Chinese tanks in their armed forces. Moreover, tank sales include training and maintenance support to encourage stronger military ties and some level of interoperability.<sup>8</sup>

Popular reactions to the capture or destruction of a tank further highlight the tank's value as a national power symbol. Ukraine regularly releases footage of its soldiers destroying Russian tanks, but such imagery only serves to raise national spirits if the tank remains a powerful and desirable weapon. The Ukrainians themselves risk lives to capture or recover Russian tanks and employ them with friendly combat forces. Similarly, nonstate actors, including Islamic State and Hezbollah, routinely paraded captured tanks as trophies for propaganda value.

Tanks also constitute a powerful endorsement of peace initiatives. American combat assets deployed to Bosnia and Herzegovina as part of a NATO-led multinational peacekeeping force sent to Bosnia and Herzegovina to ensure adherence by the warring ethnic factions to the 1995 Dayton Peace Accords. This action included the deliberate selection of the U.S. 1st Armored Division to lead the military operation known as Operation Joint Endeavor. The formation's iconic crossing of the Sava River as it entered Bosnia underscored America's national commitment to the peace in a manner not possible by light infantry in HMMWVs. Tanks, not trucks, get people's attention.



An Abrams tank of the 1st Armored Division crosses the Sava River into Bosnia in December 1995 during Operation Joint Endeavor. (Photo courtesy of the U.S. Army)

## The Power of Deterrence

The tank emerged as a means of conflict deterrence during the Cold War. The cornerstone of NATO's ground defense of Central Europe lay in its armored formations. Their collective combat power represented national commitments to the region's defense and complicated potential Warsaw Pact invasion plans. The inherent combined arms capabilities of NATO armor provided a mix of lethality, survivability, and maneuver well suited to execute warfighting concepts that evolved from Active Defense to AirLand Battle.<sup>9</sup> Even at the platform level, the strategic deterrence of armor became reflected in deliberate efforts to showcase the ever-increasing capabilities of NATO tanks. The Canadian Army Trophy, often referred to as the Olympics of tank gunnery, demonstrated the latest Western tank capabilities and the combat readiness of NATO tankers.<sup>10</sup>

Effective deterrence, however, requires a credible tank force. In June 1950, the Republic of Korea possessed neither tanks nor the means to defeat them. The absence of these capabilities contributed to North Korea's decision to invade.<sup>11</sup> North Korean tanks facilitated the conquest of all but a small corner of the Korean peninsula

A column of 3rd Armored Division M60A3 tanks move in a convoy near the Sembach Air Base exit ramp in the Federal Republic of Germany on 26 April 1982. (Photo courtesy of Wikimedia Commons)

within weeks. A mass influx of men and materiel—including armor—by the United States and its United Nations allies secured the survival of South Korea in a grueling three-year war. Nevertheless, the North Koreans came perilously close to unifying Korea under the banner of the Democratic People's Republic in large part because they possessed an armored capability that South Korea initially did not.

Today, the nations most threatened by China or North Korea maintain some of the

largest tank fleets in the region. India maintains over 3,500 tanks with another 1,100 in storage. South Korea maintains more than 2,000 vehicles to equip armored brigades and provide an organic armored component for its mechanized divisions.<sup>12</sup> Taiwan clearly understands the potential deterrent value of tanks as it seeks to upgrade its armored force with Abrams tanks in the face of escalating tensions with China.<sup>13</sup> Japan, too,





Japanese Type 97 Te-Ke tanks followed by their bicycle infantry behind during the Battle of Kampar in Perak circa December 1941. (Photo courtesy of Wikimedia Commons)

improved its armored capabilities in recent years with indigenous platforms. While Singapore and Australia are not directly threatened by China, the former maintains a small tank fleet of Leopard 2 tanks, and Australia purchased the latest version of the Abrams tank in 2022. These nations improved their armored forces as deterrents against aggression and to ensure capability options in the event of conflict.<sup>14</sup>

## Shaping Campaigns

Tanks offer an unmatched degree of versatility for ground forces. Included in combined arms organizations, they possess the ability to seize key land objectives, rapidly react to enemy action, and penetrate and destroy enemy defenses. Armored formations provide theater commanders with the means to shape conflict, sustain a high tempo of operations, and eliminate opposition.

In World War II, the Japanese used tanks to support their December 1941 invasion of Malaya, specifically employing them to exploit breaches in the defenses of

British imperial forces and prevent the rapid reconstitution of new lines of resistance. In this manner, the small Japanese light tank force played a key role in the rapid conquest of Malaya despite jungle terrain, limited roads, and an enemy equipped with antitank weapons, motor vehicles, and engineering assets. This judicious and careful use of armor at a precise moment and location generated shock, manifest by the disruption of British plans, the rapid disintegration of morale, and the collapse of defensive positions. Tanks enabled the Japanese advance to move faster than expected, setting the stage for their capture of Britain's principal regional base in Singapore.<sup>15</sup>

The U.S. Army and Marine Corps employed tanks in both small units and large groupings in their island-hopping campaigns across the Central and Southwest Pacific. New Guinea, Tarawa, Saipan, the Philippines, Okinawa, and Iwo Jima are just some of the locations where tanks provided additional mobile firepower to overcome entrenched and fortified Japanese defenders and facilitate maneuver. The size of the tank force deployed was tailored to fit terrain and tactical conditions, ranging from a single platoon to four tank battalions in the Luzon invasion. The concentration of tanks for Luzon reflected the presence of a Japanese armored division.<sup>16</sup> In all cases, however, the ability to provide tank support where needed accelerated the pace of operations and constrained Japanese activity. Such employment remains viable today, especially once the new medium assault platform, the M10 Booker, integrates with infantry brigade combat teams.

The 1967 Six-Day War showcased the employment of armored combined arms teams to penetrate, disrupt, and destroy hostile defensive measures. Israeli armor, working closely with reconnaissance, infantry, and artillery, breached Egyptian defenses along the Israeli-Sinai border. When the Egyptians began a general withdrawal, their columns became targets for Israeli aircraft and artillery, while Israeli armored units moved to block retreat paths to the Suez Canal. These actions accelerated the disintegration of Egyptian fighting forces and encouraged Egypt to agree to a cease-fire just three days after hostilities began.<sup>17</sup>

In March 2003, heavy armored formations spearheaded the invasion of Iraq. They executed a rapid thrust to Baghdad, the foundation of Saddam Hussein's power. Their combination of combat power and mobility disrupted Iraqi defenses, created dilemmas for their



national command structure, and generally dictated a pace of events beyond the Iraqi ability to respond. In twenty-one days, the U.S. Army's 3rd Infantry Division advanced from the Kuwait border into downtown Baghdad, supported by parallel actions by heavy forces in the 1st Marine Expeditionary Force and the United Kingdom's 1st Armoured Division. This rapid drive triggered the collapse of Saddam's regime.

## Tanks Facilitate Combined Arms Maneuver

The presence of tanks amplifies combined arms effectiveness and generates shock. In October 1951, the 2nd Infantry Division conducted an assault on Heartbreak Ridge, dubbed Operation Touchdown. The attack included the employment of armored task forces to move through the valleys on either side of the ridge and threaten the defender's lines of supply and communications. When the attack began, the North Korean and Chinese defenders found themselves pinned to their front by large-scale American infantry assaults, while tanks operated on their flanks and rear areas. Command paralysis and a disintegration of

An Army M1A1 Abrams main battle tank and personnel from A Company, 1st Battalion, 35th Armor Regiment, 2nd Brigade Combat Team, 1st Armored Division, pose for a photo 13 November 2003 under the "Victory Arch" in Ceremony Square, Baghdad, during Operation Iraqi Freedom. (Photo by Tech. Sgt. John L. Houghton Jr., U.S. Air Force)

coordinated opposition ensued, resulting in the capture of Heartbreak Ridge at high cost to the enemy.<sup>18</sup>

Such amplification also applies to urban environments. During the battle of Aachen in October 1944, the American 1st Infantry Division employed tanks in the city's streets to offset the limited infantry available. The close, integrated use of tanks, infantry, artillery, and reconnaissance succeeded in securing the fortified urban center with limited losses, and the battle became a model for postwar combined arms urban combat doctrine.<sup>19</sup> Similarly, armor proved a deciding factor in the 1950 liberation of Seoul, sometimes referred to as the "Battle of the Barricades." Early infantry attacks upon North Korean fortified enclaves in the city met with high losses, triggering requests for tank support. Tanks provided both precision and suppressive fires to permit infantry and



engineers to close with enemy personnel, secure key buildings, and clear obstacles.<sup>20</sup>

In 2004, U.S. Army combined arms teams in Fallujah used their armor to increase their rate of advance in a block-by-block battle. Their firepower and survivability permitted the rapid elimination of defenders and strong-points. However, their ability to penetrate urban defenses faster than adjacent, largely dismounted teams created coordination issues since the latter could not match the pace of the armored task forces.<sup>21</sup>

## Conclusion

With the ever-changing face of warfare, many armchair strategists believe that the advantages the employment of tanks bring to land warfare are outweighed by vulnerabilities that new technologies can exploit against them. Such critics envision a battlefield dominated by unmanned aerial systems, loitering munitions, missiles, and electromagnetic capabilities that marginalize the tank's utility. Similarly, such views tend to depict tanks working in isolation. In the U.S. Army, the tank is not a solo performer. It constitutes part of an ensemble of capabilities organic to the armored brigade combat team that both supplement the tank's inherent qualities and mitigate its vulnerabilities.

The value of the tank lies in the application of combat power at optimal times and locations to create

The first U.S. tank to enter Aachen, Germany, during the attack upon the city in October 1944. Tanks played a key role in the capture of the city, providing necessary firepower for the limited infantry forces available for the operation. (Photo courtesy of the National Archives)

a shock effect that paralyzes and destroys resistance. Employed in a combined arms context, the resultant capability set of mobility, lethality, and survivability offers tactical advantages that unlock operational and strategic opportunities. Once committed, these capabilities generate a momentum of their own that dictates the tempo of events and constrains enemy action. These qualities underscore the role of armored forces as the "Combat Arm of Decision."<sup>22</sup> Recent technological developments do not stifle these traits. Instead, UAS, loitering munitions, and the ability to detect force concentrations via their electromagnetic signature and attack them with precision munitions necessitate adaptation rather than outright removal from the battlefield. Such adjustment includes understanding how friendly forces look from an enemy perspective, enhancing masking and camouflage, greater dispersal, and faster dissemination of orders and the related convergence of combat power at decisive points in time and space. These actions, combined with a judicious application of new technologies into armored organizations ensure their continued effectiveness. Moreover, as Stephen

Biddle in his article “Back in the Trenches: Why New Technology Hasn’t Revolutionized Warfare in Ukraine” highlights, the current war in Eastern Europe does not necessitate fundamental transformation of military organizations. Instead, it reflects a mix of old and new, underscoring the importance of “incremental adaptations, not tectonic shifts” in force modernization. Continuing to improve armored organizations makes sense. Abandoning them altogether does not.<sup>23</sup>

In their absence, commanders are left to rely upon lighter infantry organizations that lack the combination

of firepower and mobility to achieve early battlefield dominance and immediately exploit success. Moreover, the simple presence of the armored combined arms team demands attention, forcing enemy combatants to prepare defensive measures that divert resources from their preferred main effort. The cost of organizing, equipping, training, and sustaining armored units remains high, but in the words of Army Chief of Staff Gen. James McConville, “You don’t need armor if you don’t want to win.”<sup>24</sup> Ukraine’s President Volodymyr Zelensky clearly understands this simple maxim. ■

## Notes

1. Amos C. Fox, “Reflections on Russia’s 2022 Invasion of Ukraine: Combined Arms Warfare, the Battalion Tactical Group and Wars in a Fishbowl,” Association of the United States Army, 29 September 2022, accessed 27 July 2023, <https://www.ausa.org/publications/reflections-russias-2022-invasion-ukraine-combined-arms-warfare-battalion-tactical>.

2. Andrew E. Kramer, “In an Epic Battle of Tanks, Russia Was Routed, Repeating Earlier Mistakes,” *New York Times* (website), 1 March 2023, accessed 27 July 2023, <https://www.nytimes.com/2023/03/01/world/europe/ukraine-russia-tanks.html>; Jake Epstein, “Putin’s Army Can’t Figure Out How to Use Tanks, and the Battlefield in Ukraine Is Littered with Burnt Wrecks,” *Business Insider*, 4 March 2023, accessed 27 July 2023, <https://www.businessinsider.in/international/news/putins-army-cant-figure-out-how-to-use-tanks-and-the-battlefield-in-ukraine-is-littered-with-burnt-wrecks/articleshow/98416111.cms>.

3. Jared Keller, “Russia Is Dusting Off Ancient Tanks as Losses Mount in Ukraine,” *Task and Purpose*, 22 March 2023, accessed 27 July 2023, <https://taskandpurpose.com/tech-tactics/russia-tanks-t-54-t-55-ukraine/>; Joseph Trevithick, “Russia to ‘Modernize’ 800 Vintage T-62 Tanks Due to Ukraine Losses,” *The Drive*, 12 October 2022, accessed 27 July 2023, <https://www.thedrive.com/the-warzone/russia-to-modernize-800-vintage-t-62-tanks-due-to-ukraine-losses-report>.

4. David Axe, “Ukraine Is Going to Run Out of T-64 Tanks,” *Forbes* (website), 16 February 2023, accessed 27 July 2023, <https://www.forbes.com/sites/davidaxe/2023/02/16/ukraine-is-going-to-run-out-of-t-64-tanks/?sh=a10754f6b696>.

5. James Fitzgerald and Jonathan Beale, “Ukraine War: Give Us Tanks, Says Zelensky, as Western Allies Meet,” *BBC*, 20 January 2023, accessed 27 July 2023, <https://www.bbc.com/news/world-europe-64341337>.

6. “Poland Signs Deal to Buy 2nd Batch of Abrams Tanks,” *Defense News* (website), 4 January 2023, accessed 27 July 2023, <https://www.defensenews.com/global/europe/2023/01/04/poland-signs-deal-to-buy-2nd-batch-of-us-abrams-tanks/>; Sébastien Roblin, “Can Germany’s Big Cats Resist South Korea’s Black Panther Invasion?,” *Breaking Defense*, 31 March 2023, accessed 27 July 2023, <https://breakingdefense.com/2023/03/can-germanys-big-cats-resist-south-koreas-black-panther-invasion/>.

7. International Institute for Strategic Studies (IISS), *The Military Balance 2020: The Annual Assessment of Global Military*

*Capabilities and Defence Economics* (New York: Routledge, 2020), 260.

8. Khuon Narim, “China Donates Army Vehicles,” *Khmer Times* (website), 29 January 2018, accessed 31 July 2023, <https://www.khmertimeskh.com/104978/china-donates-army-vehicles/>; Charlie Gao, “China Is Selling Its New ZTZ-99 Tank, but Is Anyone Buying?,” *The National Interest* (website), 2 October 2019, accessed 27 July 2023, <https://nationalinterest.org/blog/buzz/china-selling-its-new-ztz-99-tank-anyone-buying-84876>; Mike Yeo, “Thailand to Buy More Chinese Tanks, Reportedly for \$58M,” *Defense News* (website), 4 April 2017, accessed 27 July 2023, <https://www.defensenews.com/land/2017/04/04/thailand-to-buy-more-chinese-tanks-reportedly-for-58m/>; “MBT-3000,” *Military Today*, accessed 27 July 2023, [https://www.militarytoday.com/tanks/mbt\\_3000.htm](https://www.militarytoday.com/tanks/mbt_3000.htm); Linda Kay, “Nigeria Receives Chinese Artillery, VT4 MBT and STI Tank Destroyer,” *Defense World*, 9 April 2020, accessed 27 July 2023, <https://www.defenseworld.net/2020/04/09/nigeria-receives-chinese-artillery-vt4-mbt-sti-tank-destroyer.html>.

9. Active Defense constituted the Army’s overarching doctrinal concept of the 1970s, embodied in Field Manual (FM) 100-5, *Operations* (Washington, DC: U.S. Government Printing Office, July 1976 [obsolete]). Criticism of Active Defense resulted in modifications that resulted in a new warfighting doctrine known as AirLand Battle, detailed in FM 100-5, *Operations* (Washington, DC: U.S. Government Printing Office, August 1982 [obsolete]).

10. See, in particular, chapters 3 and 4 of Robert S. Cameron, *The Canadian Army Trophy: Achieving Excellence in Tank Gunnery* (Fort Benning, GA: U.S. Army Armor School, 2016).

11. Allan R. Millett, *The War for Korea, 1945–1950: A House Burning* (Lawrence: University Press of Kansas, 2005), 229.

12. Figures taken from IISS, *The Military Balance 2020*, 270, 287.

13. Kelvin Chen, “Taiwan’s Abrams Orders Complicated by US Decision to Send Tanks to Ukraine,” *Taiwan News*, 27 January 2023, accessed 27 July 2023, <https://www.taiwannews.com.tw/en/news/4792661>.

14. Benjamin Brimelow, “Japan Is Rethinking How to Use Its Tanks to Prepare for a Potential Clash with China,” *Business Insider*, 2 May 2021, accessed 27 July 2023, <https://www.businessinsider.com/japan-rethinks-tank-use-to-prepare-for-potential-china-clash-2021-4>; “Japan—Army,” *Jane’s World Armies*, 25 February 2021 (subscription required); “Singaporean Leopard 2 Tanks Are Equipped for Urban Warfare,” *21st Century Asian Arms Race*, 13



August 2020, accessed 27 July 2023, <https://21stcenturyasianarms-race.com/2020/08/13/singaporean-leopard-2-tanks-are-equipped-for-urban-warfare/>; Thomas Newdick, "Australia Buys M1A2 SEPv3 Advanced Abrams Tanks to Lead Its Major Armor Upgrade," *The Drive*, 10 January 2022, accessed 27 July 2023, <https://www.thedrive.com/the-war-zone/43820/australia-buys-m1a2-sepv3-advanced-abrams-tanks-to-lead-its-major-armor-upgrade>.

15. David McCormack, *Japanese Tanks and Armoured Warfare 1932–1945: A Military and Political History* (Charleston, SC: Fonthill Media, 2021), 34–42.

16. Gene Eric Salecker, *Rolling Thunder against the Rising Sun: The Combat History of U.S. Army Tank Battalions in the Pacific in World War II* (Mechanicsburg, PA: Stackpole Books, 2008), 257–71.

17. See "Part IV: Sinai" in Eric Hammel, *Six Days in June: How Israel Won the 1967 Arab-Israeli War* (New York: Charles Scribner's Sons, 1992).

18. Sam Freedman, "Tankers at Heartbreak," *Armor* 61, no. 5 (September-October 1952): 24–27; Scott D. Aiken, "The 72d Tank Battalion in Operation Touchdown," *Armor* 101, no. 5 (September-October 1992): 44–48.

19. Christopher R. Gabel, "'Knock 'Em All Down': The Reduction of Aachen, October 1944," in *Block by Block: The Challenges*

*of Urban Operations*, ed. William G. Robertson and Lawrence A. Yates (Fort Leavenworth, KS: U.S. Army Command and General Staff College Press, 2003), 63–90.

20. Matthew H. Fath, "Busting the Barricades: How Armor was Employed in the Urban Battle of Seoul," *Armor* 110, no. 5 (September-October 2001): 25–29.

21. Matt M. Matthews, *Operation AL FAJR: A Study in Army and Marine Corps Joint Operations* (Fort Leavenworth, KS: Combat Studies Institute Press, 2006), 45, 47–48, 73–74.

22. "Armor Branch Brief," U.S. Army Maneuver Center of Excellence, slide 3, accessed 7 August 2023, <https://www.moore.army.mil/Armor/Cadet-Branching/content/PDF/Armor%20Branch%20Brief.pdf>.

23. Stephen Biddle, "Back in the Trenches: Why New Technology Hasn't Revolutionized Warfare in Ukraine," *Foreign Affairs* (website), 10 August 2023, accessed 15 August 2023, <https://www.foreignaffairs.com/ukraine/back-trenches>.

24. "What Pentagon Leaders Say They Have Learned One Year on from the Battle in Ukraine," *Breaking Defense*, 23 February 2023, accessed 27 July 2023, <https://breakingdefense.com/2023/02/what-pentagon-leaders-say-they-have-learned-from-a-year-of-observing-the-battle-in-ukraine/>.

**Maj. Gen. Curtis Buzzard, U.S. Army**, is the commanding general of the Maneuver Center of Excellence at Fort Moore, Georgia. He holds a BS from the U.S. Military Academy at West Point; an MPA from Harvard Kennedy School, Cambridge, Massachusetts; and an MMS from the Marine Corps University, Quantico, Virginia. Over his thirty years of service, he served in numerous command and staff assignments across airborne, light, and mechanized infantry, and Stryker formations, and he deployed multiple times to Iraq and Afghanistan.

**Brig. Gen. Thomas Feltey, U.S. Army**, is the deputy commanding general of maneuver for III Armored Corps, Fort Cavazos, Texas. He holds a BS from Rutgers University, New Brunswick, New Jersey; an MA from the Naval War College, Newport, Rhode Island; and an MS from the Joint Forces Staff College of the National Defense University, Norfolk, Virginia. He has served in a diverse selection of Army and joint/combined command and staff positions to include as the fifty-third chief of armor; director, G-3/5/7, Futures and Concepts Center, Fort Eustis, Virginia; and chief of staff of the 4th Infantry Division, Fort Carson, Colorado.

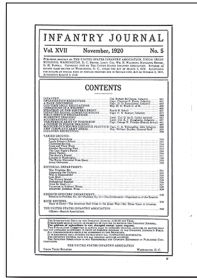
**Lt. Col. John Nimmons, U.S. Army**, is chief of tactics at the Maneuver Captains Career Course, Fort Moore, Georgia. He holds a BA in history from Presbyterian College, Clinton, South Carolina; a master's in business administration and project management from Norwich University, Northfield, Vermont; and a master's in military operations from the School of Advanced Military Studies, Fort Leavenworth, Kansas. His previous assignments include tours in Korea and Germany, and deployments in support of Operation Iraqi Freedom 07-09 and Operation New Dawn.

**Maj. Austin Schwartz, U.S. Army**, is the chief of certification at the Maneuver Captains Career Course, Fort Moore, Georgia. He holds a BS from the Anisfield School of Business at Ramapo College, Mahwah, New Jersey. He has served in the 2nd Cavalry Regiment, Vilsek, Germany; and the 2nd Battalion, 12th Cavalry Regiment, 1st Brigade, 1st Cavalry Division. He has trained extensively throughout the European theater and Caucasus region both maneuvering armor formations and planning tactical operations.

**Dr. Robert S. Cameron** has served as the Armor Branch historian for twenty-seven years, analyzing and documenting armor-related developments. He received his PhD from Temple University. He is the author of five books and over a dozen articles, including *Armor in Battle: Special Edition for the Armored Force 75th Anniversary* and *Mobility, Shock, and Firepower: The Emergence of the U.S. Army's Armor Branch 1917–1945*.

# Military Review

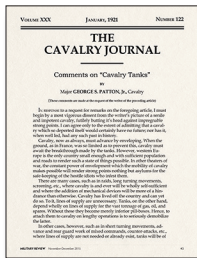
Invites You to Read About the Evolution of Armor as Reflected in Articles Over the Years



## "A Tank Discussion" (November 1920, pp. 453–58)

In his article published originally in *Infantry Journal*, then Capt. Dwight D. Eisenhower espouses development of the tank and combined arms warfare.

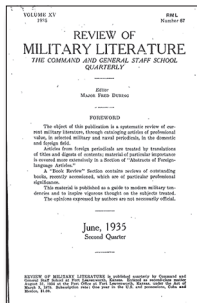
<http://cgsc.contentdm.oclc.org/cdm/ref/collection/p4013coll7/id/799>



## "Comments on 'Cavalry Tanks'" (January 1921, pp. 43–44)

In this commentary from *The Cavalry Journal*, republished in *Military Review* in 2015, then Maj. George S. Patton Jr. discusses the merits and shortfalls of tanks and the need for a tank corps.

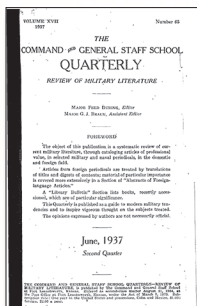
[https://www.armyupress.army.mil/Portals/7/military-review/Archives/English/MilitaryReview\\_20151231\\_art009.pdf](https://www.armyupress.army.mil/Portals/7/military-review/Archives/English/MilitaryReview_20151231_art009.pdf)



## "Tactical and Strategic Effects of the Development of the Fast Tank" (June 1935, pp. 5–20)

A discussion on the potential tactical and strategic effects of "fast tanks," defined as able to travel "cross-country [at a] speed of ten miles per hour or more."

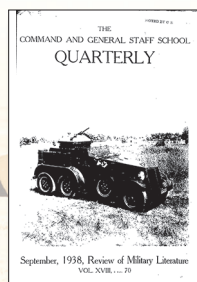
<https://cgsc.contentdm.oclc.org/digital/collection/p124201coll1/id/1069/rec/3>



## "Tank Tactics" (June 1937, pp. 15–31)

A translation and summary of "*Panzertaktik*" by Austrian General of the Artillery Ludwig von Eimannsberger that discusses the employment of tanks and antitank defense.

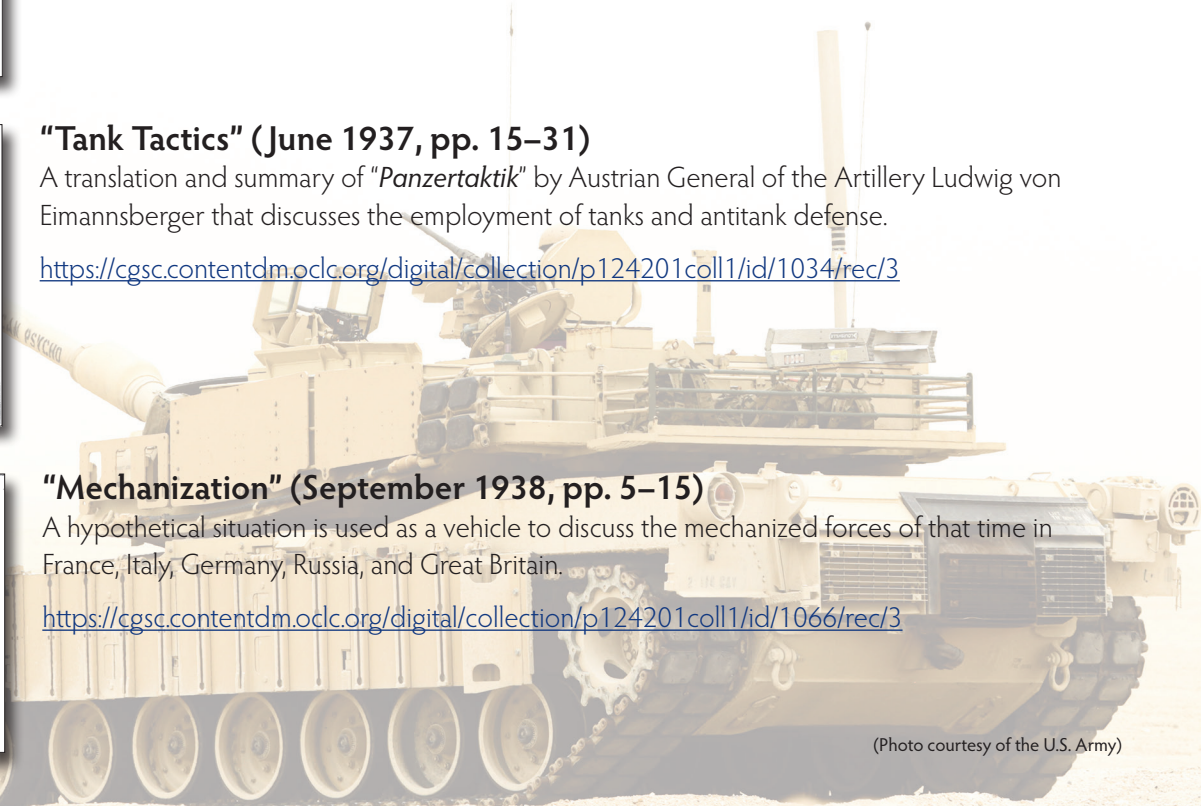
<https://cgsc.contentdm.oclc.org/digital/collection/p124201coll1/id/1034/rec/3>



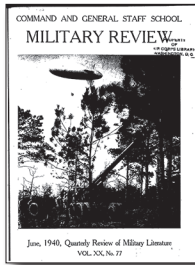
## "Mechanization" (September 1938, pp. 5–15)

A hypothetical situation is used as a vehicle to discuss the mechanized forces of that time in France, Italy, Germany, Russia, and Great Britain.

<https://cgsc.contentdm.oclc.org/digital/collection/p124201coll1/id/1066/rec/3>



(Photo courtesy of the U.S. Army)



### “Motor and Horse” (June 1940, pp. 50–51)

A translation and summary of “Motor und Pferd” by German General Heinz Guderian that discusses the merits of motorized vehicles versus horses at a time when both were used by the German army.

<https://cgsc.contentdm.oclc.org/digital/collection/p124201coll1/id/989/rec/2>



### “Deliberations on Armor” (April 1951, pp. 15–24)

A discussion on the use of tanks during the Korean War.

<https://cgsc.contentdm.oclc.org/digital/collection/p124201coll1/id/869/rec/11>



### “Wanted: An Infantry Fighting Vehicle” (February 1963, pp. 26–35)

A discourse on the development of armored infantry fighting vehicles written when the M113 Armored Personnel Carrier was new to the Army.

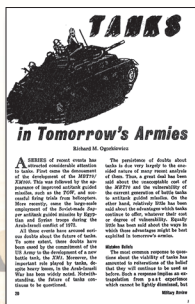
<https://cgsc.contentdm.oclc.org/digital/collection/p124201coll1/id/667/rec/7>



### “The Evolving Battle Tank” (February 1966, pp. 94–99)

An examination of the state of tank design and their role during the Cold War.

<https://cgsc.contentdm.oclc.org/digital/collection/p124201coll1/id/638/rec/10>

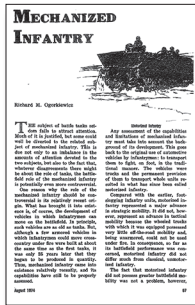


### “Tanks in Tomorrow's Armies” (February 1974, pp. 20–29)

An article supporting the viability of tanks in light of developments in antiarmor weapons and championing the use of armor and mechanized teams in future war.

<https://cgsc.contentdm.oclc.org/digital/collection/p124201coll1/id/391/rec/12>





## “Mechanized Infantry” (August 1974, pp. 67–73)

A critique of mechanized infantry vehicles with a recommendation for their replacement with wheeled armored troop transporters and troop-carrying helicopters.

<https://cgsc.contentdm.oclc.org/digital/collection/p124201coll1/id/397/rec/2>



## “Armor in Urban Terrain: The Critical Enabler” (September-October 2008, pp. 47–52)

An article by Maj. Gen. Peter W. Chiarelli, Maj. Patrick R. Michaelis, and Maj. Geoffrey A. Norman in an edition of *Armor* magazine dedicated to the use of armor in counterinsurgency.

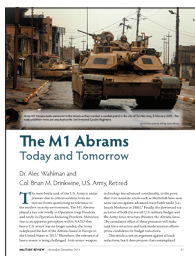
[https://www.moore.army.mil/Armor/eARMOR/content/issues/2008/SEP\\_OCT/ArmorSeptemberOctober2008web.pdf](https://www.moore.army.mil/Armor/eARMOR/content/issues/2008/SEP_OCT/ArmorSeptemberOctober2008web.pdf)



## “The Future Combat System Program” (March-April 2009, pp. 120–27)

A short essay supporting the Future Combat System Program as a replacement for legacy equipment.

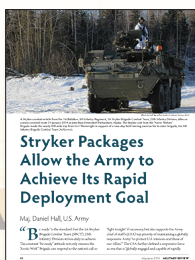
<https://cgsc.contentdm.oclc.org/digital/collection/p124201coll1/id/246/rec/10>



## “The M1 Abrams: Today and Tomorrow” (November-December 2014, pp. 11–20)

There is still a requirement in the U.S. Army for a lethal, mobile, and survivable armored vehicle.

<https://cgsc.contentdm.oclc.org/digital/collection/p124201coll1/id/1221/rec/2>



## “Stryker Packages Allow the Army to Achieve Its Rapid Deployment Goal” (May-June 2015, pp. 48–55)

Stryker units have been successfully integrated into the global response force and offer a credible combat force for the future.

<https://cgsc.contentdm.oclc.org/digital/collection/p124201coll1/id/1231/rec/2>

