

What is the Role of Heavy Armor in the Army of 2020?

**A Monograph
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AY 2012-002

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REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
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1. REPORT DATE (DD-MM-YYYY) 08-12-2012		2. REPORT TYPE SAMS Monograph		3. DATES COVERED (From - To) 13 JAN 2012 – 6 DEC 2012	
4. TITLE AND SUBTITLE What is the Role of Heavy Armor in the Army of 2020?				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Major Elliott L. Rogers, USA				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) School for Advanced Military Studies 320 Gibson Avenue Fort Leavenworth, KS 66027-2301				8. PERFORMING ORG REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Command and General Staff College ATTN: ATZL-SWD-GD Fort Leavenworth, KS 66027-2301				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for Public Release; Distribution is Unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT With operations in Iraq complete and an ongoing transition in Afghanistan, what is the role of the heavy armor force in the Army of 2020? This thesis analyzes the capabilities of the current heavy force through the lens of the current strategic context and Army operational concepts articulated in the Unified Land Operations to determine the role of the heavy force in 2020. Although several senior leaders have stated that armor will play a significant role in the future, none have articulated what that role will be. As the Army focuses on force reduction and economic constraints, it must also prepare a future fighting force to succeed against competitors who will employ all forms of warfare and tactics, perhaps simultaneously. As the Israeli Defense Force learned with difficulty in the Second Lebanon War, only well prepared ground forces can defeat a hybrid threat in complex terrain. The thesis demonstrates that when employed with supporting systems of dismounted infantry and artillery, the heavy armor force capabilities of mobility, firepower, and protection provide the overmatch necessary to fight and win.					
15. SUBJECT TERMS Armor, Infantry, Unified Land Operations, Combined Arms Maneuver, Wide Area Security, Squad, Decisive Action, Heavy, Mechanized					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT (U)	b. ABSTRACT (U)	c. THIS PAGE (U)			19b. PHONE NUMBER (include area code)
			Unlimited		

SCHOOL OF ADVANCED MILITARY STUDIES

MONOGRAPH APPROVAL PAGE

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ABSTRACT

WHAT IS THE ROLE OF HEAVY ARMOR IN THE ARMY OF 2020?

by Major Elliott Rogers, USA, 57 pages.

With operations in Iraq complete and an ongoing transition in Afghanistan, what is the role of the heavy armor force in the Army of 2020? This thesis analyzes the capabilities of the current heavy force through the lens of the current strategic context and Army operational concepts articulated in the Unified Land Operations to determine the role of the heavy force in 2020. Although several senior leaders have stated that armor will play a significant role in the future, none have articulated what that role will be. As the Army focuses on force reduction and economic constraints, it must also prepare a future fighting force to succeed against competitors who will employ all forms of warfare and tactics, perhaps simultaneously. As the Israeli Defense Force learned with difficulty in the Second Lebanon War, only well prepared ground forces can defeat a hybrid threat in complex terrain. The thesis demonstrates that when employed with supporting systems of dismounted infantry and artillery, the heavy armor force capabilities of mobility, firepower, and protection provide the overmatch necessary to fight and win against the hybrid threats of 2020.

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CHAPTER 1

INTRODUCTION

The most precise weapon system in the task force was the M1A1 main battle tank. The coaxial-mounted M240 machine gun is precision at its best. Outrange the enemy RPG gunner and you can conduct precision recon-by-fire in urban terrain while minimizing collateral damage. The tank also has the most accurate and deadly system available—the 120mm main gun. Tank commanders learned early on that firing a multipurpose antitank (MPAT) round, high-explosive antitank (HEAT) round or an obstacle reducing (OR) round immediately silenced enemy massed formations due to tremendous psychological effects. A tank can fire a main gun round through a window and destroy the enemy while damaging only one room, minimizing collateral damage. Tanks can also create entry points for scouts or infantry by firing a main gun round into the wall of a school or directly into the side of a building. OR and MPAT rounds are effective in destroying hasty obstacle, and the task force even used the MPAT round to suppress enemy dismounts on the street.

LTC Pat White
Task Force Iron Dukes Campaign for Najaf
CALL Newsletter 11-05 Urban OPS Fight in the COE (NOV 2010)

The purpose of the United States Army is to support and defend the constitution and protect the American way of life. The Army does this by deterring war and if deterrence fails, by providing forces capable of achieving decisive victory anywhere, anytime. Former Assistant Secretary of Defense, Joseph S. Nye, Jr. concludes that a superpower is “a country that has the capacity to project dominating power and influence anywhere in the world, and sometimes, in more than one region of the globe at a time.”¹ Following its intervention in Europe, the United States along with Great Britain began to expand its role as a future superpower and global defender of freedom. The Great War was critical in outlining a new world order. While the Army fought miles from its shores, industrialization and mass production was creating technology and modernizing warfare. On the war front, trench warfare became a challenging, sobering new reality. The Germans introduced poison gas and machine guns, mechanized tanks and

¹ Joseph S. Nye, Jr. *Soft Power: The Means to Success in World Politics* (New York: Public Affairs, 2004), 4.

trucks replaced horses, and artillery added the high explosive shell. Trench warfare had changed the way the Army would fight.²

After the Great War, the Army engaged in attritional war once again in Europe, Korea, and Vietnam. When the Vietnam War ended in 1975, the country continued a strategy of deterrence and moved the country to a heightened state of nuclear crisis in the Cold War that lasted for two decades. Military priorities diminished as the economy was recovering. Every facet of the military was under scrutiny, especially the role of the Army and its forces. Once again, the world was changing and the Army had to change with it. In response, the Army fielded the “Big Five” weapon programs: M1 Abrams Tank, M2 Bradley Infantry Fighting Vehicle, AH-64 Apache Attack Helicopter, Patriot Air Defense System and the UH-60 Blackhawk Helicopter. The Army also developed the new AirLand Battle doctrine, which it used successfully in operations in Operation Desert Shield/Desert Storm in Kuwait and Iraq.³

On September 11, 2001, the life of the average American citizen and the international community changed forever. Following the attacks, the Army immediately went after a transnational terror network that was committed to attacking freedom and the American way of life. This new operational environment consisted of an unpredictable, networked enemy utilizing asymmetric warfare. In this operating concept (asymmetric warfare), a small power applies its strength against the relative weaknesses of a larger power.⁴ The Army adapted by creating networked forces, biometrics, cutting-edge intelligence, surveillance and reconnaissance. A new operating concept also refocused the Army on full spectrum operations, which is defined as the range of operations Army forces conduct in war and military

² Albert Palazzo, *Seeking Victory on the Western Front: The British Army and Chemical Warfare in World War I* (Lincoln, NE: University of Nebraska Press, 2000), 41-46.

³ Thomas Donnelly and Frederick W. Kagan, *Ground Truth; The Future of U.S. Land Power* (Washington, D.C.: AEI Press, 2008), 135.

⁴ Richard Norton-Taylor, “Asymmetric Warfare: Military Planners Are Only Beginning to Grasp the Implications of September 11 for Future Deterrence Strategy,” *The Guardian*, October 3, 2001, 2.

operations other than war.⁵ This operating concept focused on Warfighting and enabled the Army to remove oppressive regimes, while denying terrorists safe heavens in Iraq and Afghanistan. According to Military Analyst, Frank G. Hoffman, “In future conflict, we can expect to face competitors who will employ all forms of war and tactics, perhaps simultaneously.” Hoffman further describes this fundamentally different adversary as a hybrid threat.⁶

The M1 Abrams tank dominated the Cold War, two conflicts in Iraq and a decade of war in Afghanistan. It is the centerpiece of the combined arms team and is critical to the Army’s ability to dominate land warfare. Over the years, the Abrams tank has developed a fearsome reputation for its lethality and its ability to take an enormous amount of battle damage and still keep fighting. Weighing over 60 tons, its gas turbine engine gives it significant ability to accelerate quickly over austere terrain. Its main armament is a stabilized 120mm-smoothbore cannon capable of engaging and destroying targets beyond 3,000 meters.⁷ The current M1A2 main battle tank features advanced fire control systems, thermal imaging, and digital communications that allow information to be rapidly shared.

Another key element of the combined arms team is the M2 Bradley infantry fighting vehicle. The Bradley is designed to transport infantry with armor protection while providing covering fire to suppress enemy troops and armored vehicles. The Bradley holds a crew of three: a commander, a gunner and a driver; as well as six fully equipped soldiers. Conceived in 1970, its primary design requirement was that it should be as fast as the then new M1 Abrams main battle tank so that they could maintain formation while conducting combined arms maneuver. The M2/M3’s primary armament is a 25 mm cannon which

⁵ Headquarters, Department of the Army, Field Manual M 3-0, *Operations* (Washington, DC: Government Printing Office, 2001), 1-4.

⁶ Frank G. Hoffman, “Hybrid Warfare and Challenges,” *Joint Force Quarterly*, NDU Press, Issue 52 1st Quarter, 2009, 34-39. Also see Frank Hoffman, *Conflict in the 21st Century: The Rise of Hybrid Warfare* (Arlington, VA: Potomac Institute for Policy Studies, December 2007).

⁷ Secondary armaments include a coaxial 7.62mm machine gun and another next to the loader’s hatch for engaging personnel and lightly armored trucks. The tank commander is armed with a cupola mounted .50-caliber heavy machine gun. Taken from Federation of American Scientist Military Analysis Network, “M1 Abrams Main Battle Tank,” <http://www.fas.org/man/dod-101/sys/land/m1.htm> (accessed August 17, 2012).

fires up to 200 rounds per minute and is accurate up to 2500 meters, depending on the ammunition used. It is also armed with twin wire guided missiles that are capable of destroying most tanks out to a maximum range of 3,750 meters. When employed with supporting systems of dismounted infantry and artillery, the heavy armor capabilities of mobility, firepower, and protection provide the overmatch necessary to fight and win against the hybrid threats of 2020.⁸

In book two of his unfinished manuscript, *On War*, Prussian theorist Carl von Clausewitz described war as an evolving system consisting of nonlinear problems.⁹ Chance, friction and complexity plague all military operations within the real world. Therefore, using an unchanging set of rules in similar situations is counterproductive and impractical. This is exactly where the Army found itself in 2003. After two decades of training to defeat state-based forces using symmetrical conventional tactics, the Army was unprepared to face an enemy that played by its own set of rules.¹⁰ After the Vietnam War, the Army deliberately chose to train and equip the force to conduct major combat operations (MCO). Therefore, in 2003, a force deployed to Baghdad predominately led, trained and equipped to defeat a Soviet-style army. On the streets and highways of Iraq, at the company and battalion levels, leaders and Soldiers found themselves in a fight they did not fully understand. At the strategic levels, there was ambiguity and leaders struggled to gain an understanding of the adversary in order to assist troops on the round. Army Cold War training and doctrine had ill prepared its fighting forces for counterinsurgency operations (COIN).¹¹

⁸ Federation of American Scientist Military Analysis Network, "M2 Bradley Fighting Vehicle," <http://www.fas.org/man/dod-101/sys/land/m2.htm> (accessed August 17, 2012).

⁹ Carl von Clausewitz, *On War*, translated and edited by Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1984), 100-119.

¹⁰ Steven Metz and Douglas V. Johnson II, *Asymmetry and U.S. Military Strategy: Definition, Background, and Strategic Concepts* (Carlisle, PA: Strategic Studies Institute, 2001), <http://www.au.af.mil/au/awc/awcgate/ssi/asymetry.pdf>. (accessed May 15, 2012), 10-11.

¹¹ Jason Conroy and Ron Martz, *Heavy Metal: A Tank Company's Battle to Baghdad* (Dulles, VA: Potomac Books, Inc., 2005), 163-194.

During this period in Iraq, proficiency in stability operations became critically important, as the Army played a vital role in President George W. Bush's policy of military intervention and nation building.¹² According to Department of Defense (DOD) Directive 3000.05, adopted in 2007, "The DOD shall be prepared to conduct stability operations activities throughout all phases of conflict and across the range of military operations, including combat and non-combat environments."¹³ American author T.R. Fehrenback wrote this about the unchanging nature of war:

You may fly over a land forever; you may bomb it, atomize it, pulverize it and wipe it clean of life—but if you desire to defend it, protect it and keep it for civilization, you must do this on the ground, the way the Roman legions did, by putting your young men into the mud.¹⁴

Once again several modifications were needed in doctrine, equipment, organization, and training to confront the asymmetric methods of non-state actors, insurgents, and terrorist. This became the new reality for the U.S. Army and those in the profession of arms.

With operations in Iraq complete and an ongoing transition in Afghanistan, President Barack Obama issued a revised National Security Strategy in 2010 shifting the military to a more agile and sustainable posture, focused primarily on protecting U.S. interests in the Middle East and Pacific and countering 21st century threats. In response, the 38th Army Chief of Staff, General Raymond Odierno, added:

The service will have to adjust to three major changes. Declining budgets, due to the country's worsened fiscal situation; a shift in emphasis to the Asia-Pacific region; and a broadening of focus from counterinsurgency, counterterrorism, and training of partners to shaping the strategic environment preventing the outbreak of dangerous regional

¹² Michael A. Cohen, "The Powell Doctrine's Enduring Relevance," *World Politics Review*, July 22, 2009.

¹³ United States Department of Defense Instruction (DODI) 3000.05, *Stability Operations* (Washington, DC: Government Printing Office, 2009), 2.

¹⁴ Theodore Reed Fehrenback, *This Kind of War: The Classic Korean War History* (Dulles, VA: Potomac Books, 1998), 34.

conflicts; and improving the army's readiness to respond in force to a range of complex contingencies worldwide.¹⁵

In 2011, Army senior leaders thus revealed what appeared to be a new way forward for the Army, which places squads right at the tip of the spear. The dismounted squad is the lowest tactical unit capable of conducting fire and movement as part of these decentralized operations and is, according to the Army's operating concept, the strategic formation for success in future operations from 2016-2028. "There is overmatch at just about every level, but when you get down to the squad it is too fair a fight," said Major General Robert Brown, who commands the Maneuver Center of Excellence. "We don't want a fair fight. Boots on the ground is the most strategic thing we do, and it is absolutely critical that we get it to overmatch."¹⁶ According to senior military leaders, the Army's mandate is a networked, mobile and lethal squad that knows its environment. The future squad will dominate at a given place and time in both wide area security and combined arms maneuver, establishing favorable conditions while retaining the squad's ability to react and maintain the offensive initiative, while connected through the existing network.¹⁷

In 2011, then Army Chief of Staff, General Martin Dempsey initiated a bottom-up review that analyzed the organization from the squad up instead of the brigade down. General Dempsey quickly codified his guidance to the Maneuver Center of Excellence, which was responsible for the strategic

¹⁵ Raymond T. Odierno, "The U.S. Army in a Time of Transition," *Foreign Affairs*, 1 May 2012. <http://www.foreignaffairs.com/articles/137423/ramond-t-odierno/the-us-army-in-a-time-of-transition> (accessed August 3, 2012).

¹⁶ United States Army Maneuver Center, MG Robert Brown's Lecture, www.benning.army.mil/.../PPT/MCoE_Update_MG_Brown.ppt, (accessed July 16, 2012).

¹⁷ Rob McIlvaine, "Squad Needs 'Overmatch' Capability," October 13, 2011, http://www.army.mil/article/67175/Squad_needs__overmatch__capability (accessed July 16, 2012).

squad concept. Dempsey stated “There is some controversy about whether the nine-man squad is right,” the Chief said. “Let me end that controversy. The nine-man squad is the center of our universe.”¹⁸

According to author Robert Citino, heavy armor has been the spearhead of Army ground forces since its inception; but under the latest operational concept, the dismounted infantry squad has become the centerpiece of the decisive force and the focus of Army procurement dollars. As a result, Cold War stalwarts such as the M1 Abrams and M2 Bradley have become “supporting weapons platforms” rarely employed in the current operating environment.¹⁹ To compound the problem, decision makers continue to reduce mechanized capacity while reallocating resources to enhance the infantry squad. Consequently, other industrialized nation states, such as China and Iran, have closed the technology gap by improving their ground combat systems. In an address to the Senate Armed Service Committee, Former Army Chief of Staff, General George W. Casey, Jr. stated,

After our major conflicts -- WWII, Korea, Vietnam and Desert Shield/Desert Storm -- and it's always been the same. A Nation weary of war, struggling to get its domestic economy going again, looks to cash in on a "Peace Dividend" and drastically cut back on defense. However, we have seen time and again that a "Peace Dividend" is, at best, a mirage and, at worst, a danger to the long-term security of our Country, our allies and our interests. We cannot make the same mistake again. We cannot fool ourselves into thinking that we have defeated the enemy of ideological extremism--that the security of the United States and our allies and partners no longer requires a vigilant, combat ready Army. That's the mentality we carried through the '70s after Vietnam and the '90s after the First Gulf War...we simply can't afford it.²⁰

Not only has suppressing the role of armor affected how the Army fights, it has also affected how future leaders are developed.

¹⁸ Lance M. Bacon, General Martin Dempsey comments, “Tomorrow’s Fight Trusts NCOs with More Power,” <http://www.armytimes.com/news/2011/08/army-ncos.trusted-with-more-power-082011> (accessed July 10, 2012)

¹⁹ Robert M. Citino, *Blitzkrieg to Desert Storm: The Evolution of Operational Warfare* (Lawrence: University Press of Kansas, 2004), 267-300.

²⁰ General George W. Casey, Jr., “Address to the Association of the United States Army Winter Symposium, February 25, 2011,” www.army.mil/article/52439/ (accessed May 2, 2012).

A decade of persistent conflict with fixed strategies and tactics has also taken a toll on leader development and thus created a generation of maneuver officers that are unclear of the role of armor within their organizations. Young Armor and Cavalry non-commissioned officers struggle in their role because they have lost the requisite skills required to conduct proper fire and maneuver as part of a combined arms team. The challenges of global insurgency and instability have created an environment filled with complexity and unpredictability. After a decade of combat far from the shores of the United States, future opponents have become acutely aware of American strengths and weaknesses. Additionally, Israel operations against Hezbollah in 2006 demonstrated the continued requirement for ground forces and combined arms maneuver to defeat a hybrid threat.²¹ In an address to the West Point class of 2009, Secretary of Defense Robert Gates stated, “The need for heavy armor and firepower to survive, close with, and destroy the enemy will always be there, as veterans of Sadr City and Fallujah can no doubt attest.”²² This disparity will have drastic effects on our ability to fight and win conflicts in the future.

This monograph seeks to convince the reader that in order to achieve overmatch in decisive action while sustaining minimal casualties, it must employ the right mix of heavy armor and infantry forces in future operating environments. Thorough analysis of U.S. strategic context, the Army operating concept, and armor force capabilities, the monograph will prove that the heavy armor force is the most capable element in both wide area security and combined arms maneuver. If employed properly, tanks and infantry fighting vehicles can provide mobile and precise firepower to close with and destroy a hybrid threat during unified land operations. Although, dismounted infantry squads remain essential to U.S. expeditionary capability, mobile firepower provided by armored forces quickly overmatch and defeat enemy combatants. In the current operating environment, armored forces provide precision fires to

²¹ David E. Johnson, *Hard Fighting: Israel in Lebanon and Gaza* (Santa Monica, CA: RAND Corporation, 2011).

²² Robert M. Gates, Lecture Delivered by Secretary of Defense Robert M. Gates, West Point, NY, Friday, February 25, 2011, <http://www.defense.gov/Speeches/Speech.aspx?SpeechID=1539> (accessed May 13, 2012)

minimize collateral damage, protect soldiers to minimize friendly casualties, and provide overwhelming firepower to end engagements. With budgetary constraints and fierce resource competition forthcoming, armor force capabilities of fire and maneuver are essential to maintaining America's position of relative advantage in the world.

CHAPTER 2

CURRENT STRATEGIC CONTEXT

The motives for war have not changed since the ancient Greek historian Thucydides laid them out over 2000 years ago: fear, honor, and interest.²³ The end of the Cold War destroyed the balance of power throughout the world, and intensified instability and uncertainty. Over the last decade, there have been ethnic battles, border conflicts, and two major wars involving external forces. As the premier global hegemon and “shining city on the hill,” it is not likely that the role of the U.S. will diminish over coming decades. If anything, America’s global engagement may increase as the world comes to grips with a more complex, uncertain, and challenging future. According to Dr. John Lewis Gaddis, “When confronted with unexpected dangers, we tend to expand rather than contract our sphere of responsibilities.”²⁴ Although the United States does not confront a single conventional military power capable of threatening its security, the establishment of regional alliances, as well as changing priorities of other nations, could change the strategic environment and lead to situations that would represent a direct threat to the national security interests of the United States.

Globalization has facilitated a change in the operational environment and the character of an enemy or adversary, which now comprises a combination of national, international, and non-state organizations, aided by various individual actors, all utilizing unconventional strategies and tactics. The Department of Defense defines operational environment (where the Army will fight) as “a composite of the conditions, circumstances, and influences that affect the employment of military forces and bear on

²³ Thucydides, *The Landmark Thucydides*, trans by Richard Crawley and ed. by Robert B. Strassler (New York: Touchstone Book, 1998), 23.

²⁴ John Lewis Gaddis, *Surprise, Security, and the American Experience* (Cambridge, MA: Harvard University Press, 2005), 37.

the decisions of the unit commander.”²⁵ The contemporary operational environment (COE) is the general situation that exists today and in the near future (2020).

Although the current force remains focused on the ongoing campaign in Afghanistan and defeating violent extremism worldwide, the future force must be prepared to leverage all of its capabilities to maintain a position of relative advantage. According to the Department of Defense, “There exist in Asia two rising global powers plus a large number of consequential regional powers. The Middle East features a number of emerging and influential regional powers. Additionally, social and economic dynamics in Asia and the Middle East, in particular, may challenge current regional stability.”²⁶ Developing or weaker states in this area will have a greater propensity to turn into failed or failing states as the competition for resources increases and as the world becomes more populated and urbanized.²⁷ The United Nations estimates that the global population will increase by approximately 1.2 billion and there will be more than a billion additional urban residents by 2025.²⁸ This condition places a tremendous burden on members of international institutions such as North Atlantic Treaty Organization to maintain stability around the world.

In order to validate this image of the operational environment, initial assumptions are necessary. Primarily, the United States will have no single peer or near-peer competitor until 2020 or beyond.²⁹ According to Dr. Colin S. Gray, Professor of International Politics and Strategic Studies at the University of Reading, England War, nation-states will remain the principal actors in the geopolitical arena, but non-

²⁵ Headquarters, Joint Staff, Joint Publication 1-02, *DOD Dictionary of Military and Associated Terms 08 November 2010, as amended through 15 August 2012* (Washington, D.C.: Government Printing Office, 2010).

²⁶ Department of Defense, *National Military Strategy*, (Washington, DC: Government Printing Office, 2011), 2.

²⁷ Headquarters, Department of the Army, Army Doctrine Reference Publication (ADRP) 3-0, *Unified Land Operations* (Washington, D.C.: Government Printing Office, 2012), 1-1.

²⁸ United Nations Department of Economic and Social Affairs, Population Division/DESA at www.unpopulation.org (accessed May 14, 2012).

²⁹ *National Military Strategy*, 2.

state actors (including transnational actors) will increasingly take prominent positions in world affairs. Next, nations will continue to equip armed forces and use them as instruments to pursue national interests. Entities other than nations will also pursue their own interests (which may be economic, or political) through force or by other means, either independently or in support of other non-state or nation-state actors. As nation-state or non-state actors pursue their own interests, their actions may illicit U.S. intervention, either unilaterally or as a coalition partner, with or without a United Nations mandate. Finally, nations that believe the United States will act counter to their national interests will develop diplomatic and military plans for managing U.S. intervention. Nations will modernize their military for possible use against regional adversaries and developing adaptive technologies for possible use against extra-regional adversaries such as the United States.³⁰

Therefore, in the contemporary operational environment, the Army will face a variety of conflicts across a number of different landscapes. The exact nature of the conditions, circumstances, and influences that make up the environment will vary according to the particular situation. Variables range from military capability to national will and define the nature of the operational environments in which those conflicts or other U.S. military activities may occur. These variables are interrelated and sometimes overlap. Different variables will be more or less important in different situations, but they are all common to any operational environment. Nevertheless, the collective content of these variables will define any operational environment the Army could face, whether it is involved in stability and support operations or major combat. Each operational environment is different because the context of the variables is different; however, there are common characteristics that exist in all operational environments. Only by understanding these variables and incorporating them into the Army operating

³⁰ Colin S. Gray, *War, Peace and International Relations: An Introduction to Strategic History* (New York, NY: Routledge, 2007), 235-263. See also Thomas Donnelly and Frederick W. Kagan, *Ground Truth: The Future of U.S. Land Power* (Washington, D.C.: AEI Press, 2008), 14-32.

concept, can it keep adversaries from using them against the U.S. or challenging its position of relative advantage.³¹

The concept of asymmetric warfare is critical to understanding the contemporary operational environment.³² In the context of the operational environment, asymmetry means an adaptive approach to avoid or counter U.S. strengths without attempting to oppose them directly, while seeking to exploit weaknesses. Nations and non-state actors in various regions of the world generally see the United States as an expansionist international power, with large technological, economic, and material advantages and a devastating military capability. Given this strategic assessment, potential opponents will seek to avoid U.S. strengths while exploiting perceived U.S. weaknesses. Thus, they hope to achieve their own regional goals without U.S. intervention or, failing this, without the U.S. defeat of those objectives. If war with the U.S. is inevitable, a weaker adversary will not fight using the same methods they would use against peers or lesser forces in the region. Potential opponents will increasingly study and prepare to counter U.S. strategy, tactics, and capabilities. According to author Thomas Donnelly, countries such as Iran, North Korea, China and non-state entities have studied how the United States fights and have begun to devise ways to fight a technologically superior force, if necessary, and win.³³

During the Cold War, the U.S. military planned to attack the head or center of gravity of adversarial nation states through force and flexible deterrent options. In today's globalized, interconnected world, the strategic context has changed and so has the character of the threat (who the Army will fight). In addition to peer competitors, the United States will face new security threats in the

³¹ Headquarters, United States Joint Force Command, *The Joint Operational Environment: The World Through 2030 and Beyond* (Washington, D.C.: Government Printing Office, 2007), 7-12.

³² Asymmetry is a condition of political, cultural, technological, or military imbalance that exists when there is a disparity in comparative strengths and weaknesses. Taken from Melissa Applegate, *Preparing for Asymmetry: As Seen Through the Lens of Joint Vision 2020* (Carlisle, PA: Strategic Studies Institute, 2001), <http://www.carlisle.army.mil/ssi/pubs/2001/preparng/preparng.htm> (accessed July 6, 2012).

³³ Donnelly and Kagan, *Ground Truth*, 23-28.

form of decentralized organizations led by super-empowered individuals and non-state actors.³⁴

Additional asymmetric threats will result from the proliferation of transnational crime, terrorism, and illicit drug trafficking, as well as from traditional military forces that are at a significant technological disadvantage compared to the United States. Potential state and non-state actors are studying the American military and adapting their capabilities to neutralize U.S. military advantages.³⁵

Initially, these innovative, adaptive, globally connected, and networked threats might operate from the sanctity of urban areas embedded in the population. The enemy will not avoid combat, but will seek battle in urban environments and other complex terrain that may be better suited for the adversary and not the friendly force. Since friendly forces are fighting in the adversaries region, the enemy may also have the advantage of being more familiar with the terrain and other features of the environment than friendly forces. The enemy will seek to deny U.S. forces safe haven during every phase of deployment and as long as they are in the region. It is prepared to attack U.S. military and civilian targets anywhere on the battlefield, in the region, or even in the homeland.³⁶

Next, hybrid threats or diverse combinations of regular forces, irregular forces and criminal elements will unify to achieve mutually benefitting effects while engaged at small unit level where they perceive a greater chance to obtain overmatch and achieve success.³⁷ This force will deny, delay, and disrupt entry of U.S. forces into their region. Even if the opponent is unable to deny U.S. access, it will seek to control it. Meanwhile, the time required for any phased U.S. deployment affords the enemy the opportunity to begin changing the nature of the conflict to something for which the U.S. force is least prepared once it gets there. Additionally, adversaries will increase reliance on anti-tank guided missiles,

³⁴ Thomas L. Friedman, *The Lexus and the Olive Tree* (New York: Farrar Straus and Giroux, 1999), 47.

³⁵ Major General Robert H. Scales, Jr., *America's Army: Preparing for Tomorrow's Security Challenges* (Carlisle Barracks, PA: Strategic Studies Institute, 1998), 4.

³⁶ Headquarters, United States Joint Force Command, *The Joint Operational Environment: The World Through 2030 and Beyond* (Washington, D.C.: Government Printing Office, 2007), 35.

³⁷ Matthew Rusling, "For the Military, A Future of Hybrid Wars," *National Defense* (September 2008).

robotics and unmanned aerial systems to defeat our armor capabilities.³⁸ They will also employ electronic warfare to counter U.S. precision munitions by jamming global positioning satellite and communications networks and exploiting cyber capability.

Finally, as adversaries focus on preserving their own combat power, they will try to neutralize American technological overmatch, particularly its long-range, standoff precision fires. Then they will use maneuver, massing forces and fires from dispersed positions. At the tactical level, there is a high likelihood of close combat in urban environments or other complex terrain. In specific tactical situations, the enemy might be able to employ a niche technology to create parity or overmatch lightly armored U.S. forces deployed in that particular area. When opportunities arise, the enemy will use these forces to destroy high payoff U.S. targets and cause politically unacceptable casualties.³⁹ Subsequently, they will conduct sophisticated information campaigns designed to erode U.S. will and international legitimacy over time. As Clausewitz concluded, “War is nothing but a duel on a larger scale.”⁴⁰

As globalization sparks change in the operational environment and the threat, the friendly force (how the Army will fight) must adapt. According to Clausewitz, the traditional object of war is to impose one’s will on the enemy in order to achieve political ends.⁴¹ At the strategic level, war involves economic, diplomatic, and psychological forces as well as military force. In book two of the unfinished manuscript, *On War*, Clausewitz describes war as an evolving system consisting of nonlinear problems. Chance, friction and complexity plague standard operations within the real world.⁴² In addition, Dr. Colin

³⁸ Avi Kober, “The Israel Defense Forces in the Second Lebanon War: Why the Poor Performance,” *Journal of Strategic Studies* (February 2008), 3–40.

³⁹ Colin S. Gray, *War, Peace and International Relations: An Introduction to Strategic History* (New York, NY: Routledge, 2007), 246-263.

⁴⁰ Clausewitz, *On War*, 175.

⁴¹ *Ibid.*, 101.

⁴² *Ibid.*, 100-119.

S. Gray called the fear of war the most powerful among the influences that have shaped the course of international relations over the past two centuries.⁴³

The American military is one the most advanced organizations in the world. It can see at night, drive through the desert without getting lost, and put a smart bomb on a target with precision accuracy. However, developing a Warfighting concept based solely on technological advantages limits operational adaptability in fluid, unpredictable security environments of the future. According to the Department of Army, “The Army’s primary mission is to organize, train, and equip forces to conduct prompt and sustained land combat operations and perform such other duties, not otherwise assigned by law.”⁴⁴ As prescribed in the Army’s operations manual, it accomplishes this by promptly deploying land power and constantly adapting to each campaign’s unique circumstances as they occur and change. Land power normally solidifies the outcome, even when it is not the definitive instrument. Land power is the ability, by threat, force, or occupation, to gain, sustain, and exploit control over land, resources, and people. Land power is at the very heart of unified land operations, as it includes the ability to impose the Nation’s will on an enemy, by force if necessary; engage to influence, shape, prevent, and deter in an operational environment; establish and maintain a stable environment that sets the conditions for political and economic development. When other means fail to drive enemy forces from their positions, Army forces close with and destroy or capture them in close combat. Close combat is warfare carried out on land in a direct-fire fight, supported by direct and indirect fires and other assets.⁴⁵ The precision fire and maneuver capabilities of the armor force are essential to this task.

At the operational level, the modular brigade combat team is the decisive force of the U.S. Army. It conducts combined arms maneuver to defeat the enemy in close combat and supports Unified Land

⁴³ Gray, *War, Peace and International Relations*, 27.

⁴⁴ Headquarters, Department of the Army, Army Doctrine Reference Publication (ADRP) 3-0, *Unified Land Operations* (Washington, D.C.: Government Printing Office, 2012), 1-7.

⁴⁵ Huba Wass De Czege and Antulio J. Echevarria II, “Land Power and Future Strategy: Insights into the Army after Next,” *Joint Force Quarterly*, (Spring 1999), 69.

Operations (ULO) with decisive action. The brigade also conducts wide area security to protect populations, forces, infrastructure while building partner capacity, preventing conflict, and preparing for contingencies. It is able to understand and influence multiple interconnected friendly and enemy networks while conducting sustained operations from and across extended distances.⁴⁶ In order to synchronize these actions on the battlefield in time, space and purpose, commanders must utilize mission command. Mission command is the exercise of authority and direction by the commander using mission orders to enable disciplined initiative within the commander's intent to empower agile and adaptive leaders in the conduct of unified land operations.⁴⁷ This application of lethal power combined with operational art enables the U.S. Army to prevent or deter conflict, prevail in war, and create the conditions for favorable conflict resolution.⁴⁸

⁴⁶ ADRP 3-0, *Unified Land Operations*, 1-7.

⁴⁷ General Martin Dempsey, *Mission Command: White paper* (Joint Chiefs of Staff, Washington, DC, 2012).

⁴⁸ For Army forces, *Operational Art* is defined as the pursuit of strategic objectives, in whole or in part, through the arrangement of tactical actions in time, space, and purpose. *Operational Art* applies to all aspects of operations and integrates ends, ways, and means, while accounting for risk. See ADRP 3-0, *Unified Land Operations*, 4-1.

CHAPTER 3

EVOLUTION OF OPERATING CONCEPTS

As the Army prepares to fight the Nation's Wars, doctrine has evolved to meet the challenges of the contemporary operating environment. Doctrine derives from a variety of sources that profoundly affect its development: strategy, history, technology, the nature of the threats the nation and its armed forces face, inter-service relationships, and political decisions that allocate resources and designate roles and missions.⁴⁹ To appreciate the critical capabilities that armor provides, it is necessary to understand how the Army fights. This chapter briefly focuses on the evolution of the Army operating concept from Airland Battle to Unified Land Operations. According to then Colonel David A. Fastabend, "An operational concept is an image of combat: a concise visualization that portrays the strategic requirement, the adversary and his capabilities, and the scenario by which that adversary will be overcome to accomplish the strategic requirement."⁵⁰ For the leader, this visualization provides a framework of how the Army intends to deter conflict, prevail in war and succeed in the future operational environment. It also describes the employment of forces at the operational and tactical level of war.

Since the American Civil War, Army operating concepts have aided its ability to gain, sustain, and exploit physical control over land and resources and exert influence over people by physical and psychological means. Senior leaders from both sides of the conflict studied the prescriptive principles of French strategist Antoine Henri Jomini and the system of Napoleonic Warfare. As described by Jomini, Napoleon's operational concept consisted of movement over numerous routes, designed to mass superior combat power at the decisive point and time in decisive battle, ideally astride the enemy's lines of

⁴⁹ Headquarters, Department of the Army, Field Manual 100-5, *Operations* (Washington, D.C.: Government Printing Office, 1976), 5.

⁵⁰ David A Fastabend, "That Elusive Operational Concept," *Army Magazine*, June 2001, 12-19.

communication.⁵¹ Generals Robert E. Lee and Ulysses S. Grant leaned heavily on this Napoleonic operational concept throughout the Civil War.⁵² However, Lee's search for decisive battle was no match for Grant's distributed warfare, which became a perfect fit for the United States' industrial capability.⁵³

As the world's militaries prepared for World War I (WWI), Europeans were seen as experts in the art of war and the Americans were seen as amateurs with limited experience. Veterans of German wars of unification took select tenets from Napoleon's operating concept and combined them with the deployment of large forces along a broad front. According to German Field Marshal Helmuth von Moltke, these forces would have unlimited freedom of action to find and encircle enemy forces.⁵⁴ As the U.S. Army fought the monstrous German war machine in the trenches of World War I, it realized that pre-war operating concepts had failed to keep pace with advances in technology. In WWI, developing weapons technology and operating concepts were not well coordinated. The mismatch between weapons and tactics limited large-scale operational maneuver and hindered efforts to defeat the continuous front of trenches with no assailable flank.⁵⁵ The result was more than nine million total combatants killed, mainly because of vast increases in the lethality of weapons without matching improvements in protection or

⁵¹ John Shy, "Jomini" In Peter Paret, ed. *Makers of Modern Strategy: From Machiavelli to the Nuclear Age* (Princeton, NJ: Princeton University Press, 1986), 144-151.

⁵² Russell F. Weigley, *The American Way of War: A History of United States Military Strategy and Policy* (New York: Macmillan Publishing, 1973; Reprint, Bloomington: Indiana University Press, 1977), 83-84.

⁵³ According to Joint Doctrine, Distributed Warfare is a series of battles distributed over vast distances and time, linked in the framework of an overarching campaign. Headquarters, Joint Staff, Joint Publication 1-02, *DOD Dictionary of Military and Associated Terms 08 November 2010, as amended through 15 August 2012* (Washington, D.C.: Government Printing Office, 2010).

⁵⁴ Gunther E. Rothenburg, "Moltke, Schlieffen and the Doctrine of Strategic Envelopment," in Peter Paret, ed., *Makers of Modern Strategy from Machiavelli to the Nuclear Age* (Princeton, NJ: Princeton University Press, 1986).

⁵⁵ Christopher Bellamy, *The Evolution of Modern Land Warfare: Theory and Practice* (New York, NY: Routledge, 1990), 39.

mobility.⁵⁶ In time, the U.S. Army realized the necessity of combined arms maneuver and new offensive weapons, such as the tank.

Prior to World War II, the Germans, upset by their loss in World War I, developed an operational concept to rapidly integrate evolving combined arms capabilities into mobile formations built around tactical flexibility and independent action for blitzkrieg (lightning warfare).⁵⁷ In the Soviet Union, military leaders considered two different operational concepts. General Mikhail Tukhachevsky, Commander in Chief of the Red Army, wanted widespread mechanization focused on deep attack. Tanks were to be used with mechanized combined arms formations to make deep penetrations to outflank and encircle enemy forces. However, Chief of General Staff, Aleksandr A. Svechin, wanted an operational concept that focused on defensive operations and total mobilization of Soviet society in a strategy of attrition. This conflict of interest would result in the removal of Svechin from his position and the adoption of deep attack as the primary Soviet approach.⁵⁸ Tukhachevsky's ideas about new forms of warfare not only affected his own military in the interwar years, but also enhanced Soviet operations on the Eastern Front versus the Germans and the development of operational thinking for the remainder of the twentieth century.⁵⁹

The purpose of the U.S. Army's broad front approach in Western Europe was to counter the blitzkrieg concepts of the Germans. In WWII, land warfare changed from the static trench lines of World War I to a more fluid battlefield with increased mobility and combined arms. The tank had evolved into the primary weapon for both Allies and their adversaries. In the late 1930s, U.S. Army tank capability was significantly more advanced than it had been during World War I, and advances continued

⁵⁶ Martin Gilbert, *The First World War: A Complete History* (Clearwater, FL: Owl Books, 2004).

⁵⁷ Michael R. Matheny, *Carrying the War to the Enemy: American Operational Art to 1945* (Norman: University of Oklahoma Press, 2011), 44.

⁵⁸ Aleksandr A. Svechin, *Strategy*, ed. Kent D. Lee; (Minneapolis, MN: East View Publications, 1992), 1-5.

⁵⁹ Christopher Paul McPadden, *Mikhail Nikolayevich Tukhachevsky (1893–1937): Practitioner and Theorist of War* (Arlington, VA: The Institute of Land Warfare, 2006), 9.

throughout the war to increase speed, armor and firepower.⁶⁰ To counter the U.S. Army's operational concept of tank centric formations in the open, Germans employed multiple anti-tank systems. The Germans utilized indirect artillery, anti-tank guns, mines, short-ranged infantry antitank weapons, and other large caliber tank destroyers. U.S. Army doctrine also had a profound effect on developing the American tank. As a platform intended for exploitation and pursuit, armor and firepower were not as essential as speed. The poor performance of the early light tank guns against German armor, doctrine of avoiding tank-versus-tank combat, and use of combined arms were keys to successful German blitzkrieg tactics across Poland and France.⁶¹ Eventually, American industrial capability produced an overwhelming number of tanks and the Allies gained the initiative to defeat the Germans. These lessons in land warfare and force modernization would shape the U.S. Army and its operating concept for the next forty years.⁶²

From 1950 to 1970, the United States operating concept was based on the use of nuclear weapons in support of an evolving deterrence strategy of massive retaliation and flexible response.⁶³ The Air Force provided the primary delivery mechanism for these strikes, lowering conventional land forces to a lesser role of holding terrain while the nuclear strikes devastated the adversary. Analysis of the United States' closest competitor, the Soviet Union, predicted that any attempt to concentrate forces for conventional land attack would only invite a nuclear strike against them, so if the Army was to play a role

⁶⁰ Trevor Nevitt Dupuy, *The Evolution of Weapons and Warfare* (New York, NY: Da Capo Press, 1982), 231.

⁶¹ Robert M. Citino, *Blitzkrieg to Desert Storm: The Evolution of Operational Warfare* (Lawrence: University Press of Kansas, 2004), 102. See also Robert Stewart Cameron, *Mobility, Shock, and Firepower: The Emergence of the U.S. Army's Armor Branch, 1917–1945* (Washington, DC: Center of Military History Press, 2008).

⁶² Michael R. Matheny, *Carrying the War to the Enemy*, 201 and 253-269.

⁶³ Robert L. Perry, *The Ballistic Missile Decision* (Santa Monica, CA: RAND Corporation, 1967), 27.

they would have to be dispersed and able to rapidly concentrate.⁶⁴ As the concept of nuclear deterrence lost its relevance, the Army realized the importance of maintaining a large conventional force capable of deterring Communist aggression anywhere in the world.

During the last two decades U.S. strategic doctrine lent itself to such conceptual aspects as deterrence, massive retaliation, limited war, arms control, flexible response, nation-building/counterinsurgency, controlled response, and escalation. Although massive retaliation dominated the 1950s and flexible response the 1960s, most of the other interrelated concepts were significant in shaping the evolution of operating concepts of the Army in Vietnam.⁶⁵ The Vietnam War proved that not only was there a tangible role for conventional land forces, but also that focus on solely the Soviet Union and the European theater as the foundation of future conflict was illogical. As the war in Vietnam ended, the U.S. Army examined the current operating concept in order to establish a framework to deter conflict and gain a position of relative advantage on the future battlefield.⁶⁶

At the conclusion of the Vietnam War, the U.S. Army focused on countering the increasing Soviet threat. The Soviets entered the Cold War with years of combat experience in Europe and an active military industrial society.⁶⁷ The Soviet Army developed an operational concept based on echeloning units and formations. This consisted of employing first echelon forces to find the enemy and penetrate

⁶⁴ Patrick Morgan defines immediate deterrence situations as those “where at least one side is seriously considering an attack while the other is mounting a threat of retaliation in order to prevent it,” Patrick Morgan, *Deterrence* (Beverly Hills, CA: Sage Publications, 1983), 30.

⁶⁵ Richard W. Stewart, “The Army of the Cold War From the ‘New Look’ to Flexible Response,” *American Military History Volume II, The United States Army in a Global Era, 1917-2008* (Washington, DC: Center of Military History, 2010), 255-260.

⁶⁶ Richard W. Stewart, “Rebuilding the Army Vietnam to Desert Storm,” *American Military History Volume II, The United States Army in a Global Era, 1917-2008* (Washington, DC: Center of Military History, 2010), 373-389.

⁶⁷ Cold War - The definition, which has now become fixed, is of a war waged through indirect conflict. The first use of the term in this sense, to describe the post-World War II geopolitical tensions between the USSR and its satellites and the United States and its western European allies is attributed to Bernard Baruch, an American financier and presidential advisor. See John Lewis Gaddis, *The Cold War: A New History* (New York: Penguin Press, 2005), 54.

weak points in the defense, while follow on echelons attacked along multiple high speed avenues of approach to destroy or fix opposing forces.⁶⁸ During the Cold War, this conceptual framework became the foundation of all Soviet doctrine, equipping and resourcing. To support this concept, the Soviets introduced the T-72 main battle tank. Designed to counter the American armor, the Soviet T-72 was fitted with a larger 125mm D-81 smoothbore gun, a 7.62mm co-axial machine gun and a 12.7mm air defense machine gun mounted on the commander's cupola. The Soviets mass produced the tank and immediately began exporting large quantities to all countries of the Warsaw Pact.⁶⁹ However, the exported tank lacked the advanced technology and armor capability of the original Soviet model as the U.S. Army discovered during Operation Desert Storm.⁷⁰

In 1973, the Arab-Israeli War began and instantly demonstrated the effects of technologically advanced conventional weapons, such as the anti-tank guided missile (ATGM).⁷¹ The introduction of smaller, man-portable ATGMs with larger warheads provided infantry the ability to defeat light and medium tanks at greater ranges from a protected position. This new technology generated to a new approach within the U.S. Army. It now believed that conventional land war against the Soviet Red Army in Europe was winnable. New anti-tank weapons, tank vulnerability and improved defensive power of the infantry had sparked another evolution in the Army's operating concept.

In the aftermath of the Arab-Israeli War, the U.S. Army created the Training and Doctrine Command (TRADOC) in an effort to centralize training of Army forces, the development of operational doctrine, and the development and procurement of new weapon systems. Led by General William E.

⁶⁸ Bellamy, *The Evolution of Modern Land Warfare* , 121-190.

⁶⁹ Chris Foss, *Jane's Armor and Artillery 2005-2006* (Englewood, CO: Janes Information Group, 2007), 101.

⁷⁰ Steven J. Zaloga, *T-72 Main Battle Tank 1974-93* (Oxford: Osprey, 1993), 90.

⁷¹ Harold R. Winton, "Partnership and Tension: The Army and Air Force Between Vietnam and Desert Shield", *Parameters* (Spring 1996), 100-19.

DePuy, TRADOC led the next evolution of Army operating concepts.⁷² GEN Depuy's approach focused on using new technology to gain the advantage in the defense. The idea of facing superior numbers of enemy troops in open terrain combined with the superiority of the U.S. main battle tank were catalysts behind this concept. According to GEN DePuy, combatants generally won or lost wars during the initial engagement because of technological advances in firepower and lethality.⁷³ Conveyed in the 1976 edition of the Army's Operations Field Manual (FM) 100-5, "The US Army must above all else, prepare to win the first battle of the next war."⁷⁴ This operational concept, known as Active Defense, provided the foundation for the 1976 edition of FM 100-5, *Operations*. The U.S. Army's priority now focused on the defense of NATO Europe against a quantitatively superior Warsaw Pact. Active Defense accepted force ratios as a primary determinant of battle outcomes and argued the virtues of armored warfare and the combined arms team. As additional global threats emerged, the Army later rejected Active Defense as an operational concept; however, DePuy's work underlined the importance of providing a clearly defined vision for employing its armor forces.⁷⁵

As the one of the leading developers of Active Defense and the 1976 edition of FM 100-5, General Donn Starry succeeded General Depuy as the TRADOC Commander following an operational assignment at V Corps.⁷⁶ While commanding V Corps in Europe, Starry aptly challenged the precepts of the Active Defense doctrine in exercises and training. Starry's experiences in Europe provided the

⁷² Headquarters, Department of the Army Training and Doctrine Command, *History of TRADOC*, <http://www.tradoc.army.mil/historian/faqs.htm> (accessed August 3, 2012).

⁷³ Robert A. Doughty, *The Evolution of US Army Tactical Doctrine, 1946-76* (Fort Leavenworth, KS: Combat Studies Institute, 2001), 44.

⁷⁴ Field Manual 100-5, *Operations* (1976), 5.

⁷⁵ Henry G. Cole, *General William E. DePuy: Preparing the Army for Modern War* (Lexington: University Press of Kentucky, 2008).

⁷⁶ Richard W. Stewart, "Rebuilding the Army Vietnam to Desert Storm," *American Military History Volume II, The United States Army in a Global Era, 1917-2008* (Washington, DC: Center of Military History, 2010), 383.

catalyst for revisions of FM 100-5, *Operations*. The lessons and perceptions he provided resulted in the evolutionary concepts of integrated battle and extended battle that challenged the principles of Active Defense. This work also introduced systemic thinking and previously unrecognized tensions between tactical actions and operational conception.⁷⁷

The series of operational concepts emerging from the Active Defense provide a new focus on heavy armor operations not just against a Soviet opponent, but any Army in the world. General Starry's 1982 edition of FM 100-5, *Operations*, explicitly presented AirLand Battle doctrine as the Army's latest operational concept. The manual stressed that the Army had to "fight outnumbered and win" the first battle of the next war, a concept that required a trained and ready peacetime force.⁷⁸ The manual acknowledged armored battle as the heart of warfare, with the tank as the single most important weapon in the Army's arsenal. However, at the tactical level, success relied on the maneuver of a heavy combined arms force supported by dismounted infantry, engineers, artillery, and air power. At the operational level, AirLand doctrine required commanders to manage multiple types of operations simultaneously throughout the battlefield framework – Close, Deep, and Rear. In close operations, large armored formations conducted battles with combined arms maneuver, close combat, and indirect fire support. Deep operations shaped close battle by engaging enemy armored formations and reserves out of contact.⁷⁹

General Starry recognized that success on the modern battlefield depended upon securing or retaining the initiative, then exploiting it to defeat the enemy. In order to complete destruction, the unit had to keep the enemy off balance by delivering powerful blows from unanticipated directions, then rapidly following up to maintain the initiative. Starry viewed this operational context as the cognitive

⁷⁷ Shimon Naveh, *In Pursuit of Military Excellence* (London: Frank Cass Publishers, 1997), 295-299.

⁷⁸ Headquarters, Department of the Army, FM 100-5, *Operations* (Washington, D.C.: Government Printing Office, 1982).

⁷⁹ John L. Romjue, "Evolution of the AirLand Battle Concept," *Air University Review* (May-June 1984) <http://www.airpower.maxwell.af.mil/airchronicles/aureview/1984/may-jun/romjue.html#romjue> (accessed August 5, 2012).

tension that exists between conceptual strategic aims and the tactical means required to achieve them.⁸⁰

This synthesis produced the 1982 and 1986 versions of FM 100-5, *Operations*, and established operational art as “the employment of military forces to attain strategic goals in a theater of war or a theater of operations through design, organization and conduct of campaigns and major operations.”⁸¹

The 1986 version of FM 100-5 completed the evolution of AirLand Battle and GEN Starry’s vision with an increased emphasis on seizure and retention of the initiative, particularly through the employment of a heavy armor force. In the following passage, the 1986 edition of FM 100-5, *Operations*, Chapter 2 describes the Army’s approach to generating and applying combat power at the operational and tactical levels:

It is based on securing or retaining the initiative and exercising it aggressively to accomplish the mission. The object of all operations is to impose our will on the enemy to achieve our purposes. To do this, we must throw the enemy off balance with a powerful blow from an unexpected direction, follow up rapidly to prevent his recovery and continue operations aggressively to achieve the higher commanders’ goals. The best results are obtained when powerful blows are struck against critical units or areas whose loss will degrade the coherence of enemy operations in depth and, thus, most rapidly and economically accomplish the mission. From the enemy’s point of view, these operations must be rapid, unpredictable, violent and disorienting. The pace must be fast enough to prevent him from taking effective counteractions.⁸²

The AirLand Battle concept also helped the Army procure the proper equipment for its execution and shaped military organizations for battle. To fight outnumbered and survive, the Army needed to access the nation’s technology capacity. This led to the Army developing the Big Five weapon programs: M1 Abrams Tank, M2 Bradley Infantry Fighting Vehicle, AH-64 Apache Attack Helicopter, Patriot Air Defense System and the UH-60 Blackhawk Helicopter.⁸³

As threats continued to evolve, the U.S. Army began review of AirLand Battle during the late 1980s. This review, known as AirLand Battle Future, emphasized the need for greater mobility and

⁸⁰ General Donn A. Starry, “Extending the Battlefield,” *Military Review* (March, 1981), 31-50.

⁸¹ FM 100-5, *Operations*, 1986.

⁸² FM 100-5, *Operations*, 1986, 14.

⁸³ Donnelly and Kagan, *Ground Truth; The Future of U.S. Land Power*, 135.

greater range of weapon systems and information sensors across all dimensions of conflict.⁸⁴ As the global security environment evolved, the U.S. Army responded with a new operating concept known as Full Dimensional Operations. At the Strategic level, Full Dimensional Operations employed “all the means available to accomplish any given mission decisively and at the least cost across the full range of possible operations in war and operations other than war (OOTW).”⁸⁵ At the operational and tactical level, well-equipped, future Army maneuver forces operating at an operational tempo controlled by the commander within a given battlespace will use an expanded array of weapons systems to engage enemy forces at greater distances with assured accuracy. Based on enhanced situational awareness through Army Battle Command Systems (ABCS), the operating tempo of these forces will be such that they will be able to outpace any adversary in both mounted and dismounted Warfighting environments.⁸⁶

The first major test of this operating concept occurred following victories in the first Gulf War. Operation Desert Storm confirmed perceptions of mechanized, combined arms maneuver and demonstrated U.S. Army’s unparalleled capability in the realm of large-scale combat operations. However, the March 1993 expansion of the United Nations mission in Bosnia-Herzegovina from humanitarian assistance to peace enforcement exposed several gaps in the Full Dimension operating

⁸⁴ John L. Romjue, *American Army Doctrine for the Post-Cold War* (Fort Monroe, VA: U. S. Army Training and Doctrine Command, 1997), 23-25.

⁸⁵ Field Manual 100-5, *Operations*, 1993, 1-4. The Army named its expanded scope of force employment the Range of Military Operations. This range portrayed the full-dimensional operating concept in the environmental context of war, conflict, and peace. It specifically associated certain types of military operations within that context. Large-scale combat operations, attacks, and defenses occurred in war. Raids, peace enforcement, support to insurgencies, antiterrorism, peacekeeping, and noncombatant evacuation occurred in conflict. Counterdrug operations, disaster relief, civil support, peace building, and nation assistance occurred in peacetime.

⁸⁶ Headquarters, Department of the Army, Training and Doctrine Command Pamphlet 525-5, *Force XXI: A Concept for the Evolution of Full-Dimensional Operations for the Strategic Army of the Early Twenty-First Century* (Washington, DC: Government Printing Office, 1994).

concept. These gaps resulted from ill-defined military objectives such as restoration of rule of law and creating a legitimate government.⁸⁷

This prompted the U.S. Army to create a new operating concept focused on Full Spectrum Operations; however, force reductions and the end of the Cold War stymied all organizational or doctrine initiatives.⁸⁸ Finally, just months before the 2001 terror attacks, the Army released FM 3-0, *Operations*, and formally adopted full spectrum operations as its fundamental approach. This transition from FM 100-5 represents a major shift in the Army's approach to the security challenges posed by the 21st Century. Just as earlier editions of the *Operations* manual marked major shifts in the Army's approach to land warfare, this FM was as influential as previous Army doctrine (e.g., Active Defense, AirLand Battle) (1976), and (1982), which moved the Army out of Vietnam and prepared it for the Cold War. Because of operations in the Balkans, the Army determined that it must defeat enemies and simultaneously shape the civil situation through stability or civil support operations.⁸⁹ Field Manual (FM) 3-0, *Operations*, emphasizes that conflict involves more than combat between armed opponents. Full spectrum operations apply combat power through simultaneous and continuous combinations of four elements: offense, defense, stability, and civil support.⁹⁰

⁸⁷ UN Security Council, Resolution 814 (1993) Adopted by the Security Council at its 3188th Meeting, on 26 March 1993, S/RES/814 (1993), available at: <http://www.unhcr.org/refworld/docid/3b00f21143.html> (accessed August 19, 2012).

⁸⁸ General Eric K. Shinseki, "Statement by General Eric K. Shinseki, Chief of Staff, United States Army before the AirLand Subcommittee on Armed Services," United States Senate, Second Session, 106th Congress on the Army Transformation, March 8, 2000.

⁸⁹ Department of Defense (DOD) Directive 3000.05, *Military Support to Security, Stability, Transition and Reconstruction Operations* (Washington, DC: Government Printing Office, 2005), emphasized that stability operations were no longer secondary to combat operations: "Stability operations are a core U.S. military mission that the Department of Defense shall be prepared to conduct and support. They shall be given priority comparable to combat operations and be explicitly addressed and integrated across all DOD activities including doctrine, organizations, training, education, exercises, materiel, leadership, personnel, facilities, and planning." The directive further stressed that stability operations were likely more important to the lasting success of military operations than traditional combat operations. Thus, the directive elevated stability operations to a status equal to that of the offense and defense. That fundamental change in emphasis sets the foundation for this doctrine.

⁹⁰ Headquarters, Department of the Army, Field Manual 3-0, *Operations* (Washington, D.C.: Government Printing Office, 2001).

Multi-National Division-Baghdad (MND-B), the 1st Cavalry Division validated this operating concept in 2004. At its max, Task Force Baghdad was a 39,000-soldier, 62-battalion coalition task force centered in and around Baghdad. Major General Peter W. Chiarelli, Commander of Task Force Baghdad, implemented a well-founded operational campaign plan balanced across five integrated conceptual lines of operations (LOOs).⁹¹ Each LOO was tied to a robust Information Operations (IO) capability moving incrementally and cumulatively toward decisively accomplishing the ultimate goal of shifting Baghdad away from instability and a fertile recruiting ground for insurgents, to a thriving modern city encompassing one-third of Iraq's population. Baghdad had to be secure not only by protecting its sovereignty, but its economic future depended on legitimate government that radiated democratic ideals across Iraq. As a modular division deployed from the continental United States, 1st Cavalry Division successfully implemented the tenets of Full Spectrum Operations to achieve decisive results in the influential capital of Iraq.

Following a decade long war in Iraq, the latest evolution in Army Warfighting concepts focuses on Unified Land Operations. It is a condensed statement of how the Army intends to conduct operations in war. The central idea of the Army Operating Concept is that success in the future security environment requires Army forces to be capable of defeating enemies and establishing conditions necessary to achieve national objectives using combined arms maneuver and wide-area security to seize, retain and exploit the initiative as part of full spectrum operations.⁹² Flexibility, integration, lethality, adaptability, depth, and synchronization are six tenets that provide the foundation for the Army's latest operating concept. As in previous doctrine, Unified Land Operations occur through decisive action in the offense, defense, stability and defense support to civil authorities, separately and in combination, as validated in Operation Iraqi

⁹¹ Major General Peter W. Chiarelli and Major Patrick R. Michaelis, "Winning the Peace: The Requirement for Full-Spectrum Operations," *Military Review* (July-August 2005), 4-17.

⁹² Unified Land Operations is a natural evolution of U.S. Army doctrinal thought from AirLand Battle in the 1980s to Full Spectrum Operations. Army Doctrinal Publication 3-0, *Unified Land Operations*, 1.

Freedom.⁹³ This decisive action is achieved by means of the Army's core competencies; combined arms maneuver (CAM) and wide area security (WAS).⁹⁴

Following the initial 2003 Iraq invasion, insurgency challenged the fundamentals of Full Spectrum Operations. The Army struggled to recognize the problem and find the appropriate doctrinal approach. Combined arms maneuver and wide area security capture the lessons of the past and balances them with the broader principles of Warfighting. These two core competencies are the specific and unique set of capabilities that, in combination, create the ability to conduct Full Spectrum Operations. Leaders and units employ CAM to achieve a position of physical, temporal, or physiological advantage over the enemy. Thoughtful execution of CAM surprises the enemy by attacking from an unexpected direction and time or by employing combat power in unforeseen ways. WAS is used to consolidate and maintain advantage over an enemy or to deny the enemy a position of advantage.

Prior to 2003, the Army focused almost entirely on major combat operations, then predominantly on counterinsurgency. The fighting force of the future must be prepared to do both, and at times simultaneously. The core competencies of CAM and WAS require a broad understanding in order to prepare for conflict. This will ensure that future land forces are adaptable and that leaders in the Army of 2020 are fully supported by a full range of Army doctrine and weapon systems.⁹⁵

⁹³ Chiarelli and Michaelis, "Winning the Peace: The Requirement for Full-Spectrum Operations," 4-17.

⁹⁴ Combined arms maneuver (CAM) is the application of the element of combat power in unified action to defeat enemy ground forces; to seize, occupy, and defend land areas; and to achieve physical, temporal, and psychological advantages over the enemy to seize and exploit the initiative. Wide area security (WAS) is the application of the elements of combat power in unified action to protect populations, forces, infrastructure, and activities; to deny the enemy positions of advantage; and to consolidate gains in order to retain the initiative. ADRP 3-0, *Unified Land Operations*, 6.

⁹⁵ Headquarters, Department of the Army, *Army Posture Statement: The Nation's Force of Decisive Action* (Washington, DC: Government Printing Office, 2012) https://secureweb2.hqda.pentagon.mil/~vdas_armyposture/statement/2012/pages/Transition.aspx (accessed August 16, 2012).

CHAPTER 4

FUTURE EMPLOYMENT OF HEAVY ARMOR

Armored vehicles will be around for a long time to come. But their shapes, sizes, weights, armor, armaments, propulsion, connectivity, battlefield awareness, and crewing will change profoundly. The continuity will be in the mission: to deliver local killing power and allow protected maneuver. Technology and strategic requirements and the contemporary operation environment will drive the evolution of armored vehicles and formations.⁹⁶

Ralph Peters,
Fighting for the Future: Will America Triumph?

In order for the U.S. to maintain a position of relative advantage in the world, its future fighting force must be able to seize, retain and exploit the initiative as part of unified land operations. As witnessed in the second battle for Fallujah, the dismounted infantry squad alone, regardless of the quantity/quality of technology, cannot apply the precision lethality needed to succeed in wide area security or combined arms maneuver against a hybrid threat.⁹⁷ Senior leaders continue to say that armor will have a significant role in the future; however, they fail to provide any specific details. The Chief of Armor, Brigadier General Thomas James, stated, “Mobility, protection and firepower remain the key capabilities armor brings to the fight. We have to be able to make decisions at 15 (kilometers an hour) and faster. We want to act on contact, not react to contact.”⁹⁸

On future battlefields, the most capable land force will be an armored force equipped with main battle tanks and infantry fighting vehicles. While light infantry forces are vital to an early entry capability, mobile protected firepower provided by armored forces quickly set conditions for favorable

⁹⁶ Ralph Peters, *Fighting for the Future: Will America Triumph?* (Mechanicsberg, PA: Stackpole Books, 1999), 133.

⁹⁷ David Bellavia and John R. Bruning, *House to House: An Epic Memoir of War* (New York: Free Press, 2007).

⁹⁸ BG Thomas James, “Chief of Armor Update on the Future of the Force at the United States Army Maneuver Center of Excellence” (Fort Benning, GA, 2011).

conflict resolution.⁹⁹ A well-resourced, combined arms organization with a mix of armor and mobile infantry can defeat or destroy an enemy, seize or occupy key terrain, protect or secure critical assets and populations, and prevent the enemy from gaining a position of advantage. As the Army prepares for future unified land operations, the lethality and survivability of the armor force is vital to conflict prevention and resolution.¹⁰⁰

Historically, the evolution of the tank during the interwar years was constrained by the limited vision of the Army's concept of future war. The Army uses its numerous think tanks, such as RAND Corporation, Strategic Studies Institute (SSI), and Center for a New American Security (CNAS), to take successes from the latest war and apply those lessons learned to future operating concepts. However, as the Army transitions out of a decade long counterinsurgency, the concept of infantry-centric organizations engaging in urban warfare with an armor force solely in a support role greatly reduces Warfighting capability, land power preeminence and any opportunity to exploit new technology. This skewed vision is a direct result of senior leaders failing to ask the right question at the end of Operation Iraqi Freedom. "What is the role of heavy armor in the Army of 2020?"¹⁰¹

Conservative estimates and lack of concern for the future role of armor and other new weapons could lead to an absence of armor relevance in doctrine, training and organizational design. Currently, the limited role assigned to armor in a predominately infantry-centric force imposes armament constraints

⁹⁹ Donnelly and Kagan, *Ground Truth; The Future of U.S. Land Power*, 57.

¹⁰⁰ On May 4, 2009, Task Force, 1st Battalion, 6th Infantry Regiment (Mechanized), joined the fight for Sadr City and played a decisive role in combat operations from May 4 to May 15. Its involvement in the battle was critical in relieving some of the pressure on TF 1-68 Armor Regiment (Combined Arms Battalion) and 1-2 SCR (Stryker), and it added heavy armor and partnership capacity to the Iraqi Security Forces. Taken from David E. Johnson, *The 2008 Battle of Sadr City Occasional Paper* (Santa Monica, CA: RAND Corporation, 2011).

¹⁰¹ Robert M. Gates, "As Delivered by Secretary of Defense Robert M. Gates, West Point, NY, Friday, February 25, 2011," <http://www.defense.gov/Speeches/Speech.aspx?SpeechID=1539> (accessed May 13, 2012).

on tank design and resulted in the shutdown of a primary tank plant.¹⁰² The outcome is a future war concept focused on armor forces accompanying infantry and providing support by neutralizing enemy strongpoints and knocking down barriers. In turn, the gap between the U.S. Army and its closest competitors shrinks due to the limited role and lack of initiative in innovation. Postwar troop reductions, deferred modernization and economic pressure also enhance the effect of these variables.¹⁰³ In order to prevent the future armor force from becoming merely an infantryman's taxi, the Army must act now to reevaluate the role of the armored force.¹⁰⁴

At the tactical level, brigades push capabilities and responsibilities down the chain and the organization becomes more decentralized with battalions arranging tactical action in time, space, and purpose. Key to this capability is the heart of the Armored Brigade Combat Team, the Combined Arms Battalion (CAB). Organized to fight as a unified element, the combined arms battalion consists of two tank companies and two mechanized infantry companies. The tank platoon is the smallest maneuver element within a tank company and the infantry squad is the smallest maneuver element within a mechanized infantry company. The tank platoon has four main battle tanks organized into two sections, with two tanks in each section. During combined arms maneuver, tank platoons operate as a whole or by section and do not normally deploy as individual tanks against hybrid or conventional threats.¹⁰⁵

¹⁰² The military is planning to close the M1 Abrams factory in Lima, Ohio from 2013 to 2016 to save an estimated \$1 billion. Taken from Philip Ewing, "The Tank at the End of History," April 21, 2011, www.military.com (accessed July 31, 2012).

¹⁰³ Paul McLeary, "U.S. Army Maps Out Postwar Vehicle Needs," Defense News, June 11, 2012, <http://www.defensenews.com/article/20120611/DEFREG02/306110001/U-S-Army-Maps-Out-Postwar-Vehicle-Needs> (accessed September 9, 2012).

¹⁰⁴ Kenneth A. Steadman, *The Evolution of the Tank in the U.S. Army* (Fort Leavenworth, KS: Combat Studies Institute, 1982), <http://usacac.army.mil/cac2/cgsc/carl/resources/csi/steadman2/steadman2.asp> (accessed August 3, 2012).

¹⁰⁵ Headquarters, Department of the Army, Field Manual 3-90.6 *Brigade Combat Team* (Washington, DC: Government Printing Office, 2010).

The mobility, firepower and protection capabilities of the combined arms battalion are perfectly suited to seize, retain, and exploit the initiative to gain and maintain a position of relative advantage in sustained land operations through simultaneous offensive, defensive, and stability operations. On the modern battlefield, the CAB has instant overmatch and can conduct sustained offensive and defensive operations in almost any environment. Armor capabilities of mobility, firepower and protection combined with close air support and artillery have proven to be lethal combinations against regular and irregular forces.¹⁰⁶ This multi-capable formation affords the operational leader time and provides a range of military options. Because the foundation of unified land operations depends on initiative, decisive action, and mission command linked through simultaneous execution of both combined arms maneuver and wide area security, the U.S. Army's dominating armor force must have an expanded role.¹⁰⁷ In order for the reader to understand the role of heavy armor in the Army of 2020, an examination of the 2004 battle for Fallujah, Iraq, 2006 battle for Tal Afar, Iraq and the Second Lebanon War is necessary.

Although, the central mission of the combined arms battalion is to close with and destroy the enemy, the battalion's ability to move, shoot, communicate, and provide armored protection remains a decisive factor on the modern battlefield. Additionally, the battalion's ability to maneuver, attack, defend, and perform other essential tasks in support of the brigade or higher mission are essential capabilities not provided by any other land force.¹⁰⁸ In accomplishing combined arms maneuver, the battalion uses fire, maneuver, and shock effect, synchronized with other war fighting functions as witnessed during Operation Iraq Freedom with Task Force 1-64 Armor (who call themselves the Desert Rogues) of the 2nd Brigade (2 BCT) of the 3rd Infantry Division (3ID). From March to April 2003, the

¹⁰⁶ Donnelly and Kagan, *Ground Truth; The Future of U.S. Land Power*, 21.

¹⁰⁷ Field Manual 3-90.6 *Brigade Combat Team*, 2010.

¹⁰⁸ During hybrid warfare of the 2006 Second Lebanon War, heavy armored formations were the only units able to maneuver on a battlefield where an adversary had an effective standoff weapons capability, particularly ATGMs and MANPADS. David E. Johnson, *Hard Fighting: Israel in Lebanon and Gaza* (Santa Monica, CA: RAND Corporation, 2011).

Desert Rogues spearheaded the Division attack and conducted intense combat operations in complex desert, river valley, and urban terrain. In three weeks of combat, the Task Force Desert Rogues attacked over 750 kilometers, destroyed over 50 armored vehicles, 150 trucks and technical vehicles, more than 100 artillery and air defense guns, killed at least 1100 dismounted soldiers, destroyed thousands of weapons and rounds of ammunition hidden in caches, and captured over 50 EPWs while suffering minimal casualties.¹⁰⁹ This is one of many examples of a combined arms battalion conducting combined arms maneuver, when properly supported, a combined arms battalion is capable of conducting sustained operations and provides the commander several options to deal with future hybrid threats.¹¹⁰

Another example of armor capability in combined arms maneuver can be found by examining the “thunder runs” also conducted by 2nd Brigade, 3rd Infantry Division in Iraq. After weeks of bombing by the Air Force, an Armored Brigade Combat Team, equipped with 30 M1A2 Abrams Tanks and 13 M2A3 Bradley Fighting Vehicles, received orders on April 6, 2003 to seize the city of Baghdad with roughly 5 million inhabitants. Ten years earlier, American soldiers without armor support, were trapped and killed by Somali street fighters in Mogadishu. Instead of repeating this tragic event, senior Army leaders opted for a single bold armored thrust into the heart of Baghdad. By April 7, 2003, the 3rd Infantry Division had seized Saddam Hussein’s Presidential Palace and achieved initial strategic aims of the war.¹¹¹ Two main factors led to the overwhelming tactical and operational success of the 2nd Brigade, 3rd Infantry Division during combined arms maneuver. First, the firepower and mobile protection provided by the main battle tank and infantry fighting vehicle were critical in rapidly defeating Iraqi armored units in open country with minimal losses, as they had done during in 1991. Second, operational planners understood the capabilities of the armored force and created an opportunity for the highly successful, but unorthodox

¹⁰⁹ Conroy and Martz, *Heavy Metal*, 81.

¹¹⁰ Frank G. Hoffman, “Hybrid Warfare and Challenges,” *Joint Force Quarterly*, NDU Press, Issue 52 1st Quarter, 2009, 34-39. Also see Frank Hoffman, *Conflict in the 21st Century: The Rise of Hybrid Warfare* (Arlington, VA: Potomac Institute for Policy Studies, 2007).

¹¹¹ Donnelly and Kagan, *Ground Truth; The Future of U.S. Land Power*, 52-58.

“thunder runs.” The after action report of the 3rd Infantry Division recognizes the importance of the M1 Abrams’ survivability:

This war was won in large measure because the enemy could not achieve effects against our armored fighting vehicles...U.S. armored combat systems enabled the division to close with and destroy heavily armored and fanatically determined enemy forces with impunity, often within urban terrain. Further, the bold use of armor and mechanized forces striking the heart of the regime’s defenses enabled the division to maintain the initiative and capitalize on its rapid success in route to Baghdad. During MOUT, no other ground combat system currently in our arsenal could have delivered similar mission success without accepting enormous casualties.¹¹²

Additionally, armor capabilities outrival other land systems in the Army core competency of wide area security. Wide area security is the application of the elements of combat power in unified action to protect populations, forces, infrastructure and activities; to deny the enemy positions of advantage; and to consolidate gains in order to retain the initiative. The capability of lethality, situational awareness, and maintainability provide armor a significant advantage in populated, urban environments.¹¹³ Precision weapons systems, thermal optics, and armor protection provide instant overmatch in urban environments against irregular forces. In the 2004 battle for Fallujah, Iraq, M1A2 Abrams main battle tanks were vital to success in coalition fighting. Yet again, armor forces were extremely well suited for operations that feature wide area security.

Fallujah, west of Baghdad near the Euphrates River, had an estimated 300,000 residents in a 30 square kilometer area. It also contained several blocks of civilian residences, government buildings, industrial areas, civil infrastructure, and a major line of communication (Highway 10) running through the center of the city. Known as “the city of a hundred mosques,” Fallujah had forty-seven mosques in the city, and fifty-five more in the outlying areas. The highly urbanized terrain and anti-American sentiment

¹¹² Headquarters, Third Infantry Division, *After Action Report: Operation Iraqi Freedom* (Fort Stewart, GA, 2003), 22. See also Thomas Donnelly, *Operation Iraqi Freedom: A Strategic Assessment* (Washington, DC: American Enterprise Institute, 2004), 80. On the value of heavy armored vehicles in OIF, see also John Gordon IV and Bruce R. Pirnie, “Everybody Wanted Tanks: Heavy Forces in Operation Iraqi Freedom,” *Joint Force Quarterly*, No. 39 (October 2005), 84–90.

¹¹³ Vincent L. Foulk, *The Battle for Fallujah: Occupation, Resistance and Stalemate in the War in Iraq* (Jefferson, N.C.: McFarland & Company, Inc., 2007), 218.

made Fallujah a suitable location for insurgency.¹¹⁴ From 2003-2004, Fallujah became widely known as the most dangerous place in Iraq.¹¹⁵ In the urban environment of Fallujah, the Abrams was able to take enormous punishment and continue operating. In many instances, these tanks received multiple hits from rocket-propelled grenades, which failed to penetrate the heavy armor; even large improvised explosives failed to knock out the tanks.¹¹⁶ It was widely known as the most dangerous place in Iraq.

From November 7, 2004 to December 23, 2004, the U.S. Marine Corps led a coalition offensive against the city. Named Operation Phantom Fury, this second battle of Fallujah exposed the Marines to some of the heaviest urban combat since Vietnam.¹¹⁷ According to U.S. Army Staff Sergeant David Bellavia, Fallujah was a magnet for “the global all-star team” of Islamist terror movements: Chechen snipers, Filipino machine-gunners, Pakistani mortar men, Saudi suicide bombers. All of them well trained well-armed, battle hardened, utterly fearless and highly suicidal.¹¹⁸ After weeks of bombardment from the Air Force, an estimated 3000 hardcore insurgents remained in the city in prepared fortified defenses consisting of tunnels, trenches and improvised explosive devices (IED). The tactical plan included a cordon, followed by an assault from north of Fallujah to the south. Breaking with tradition, the U.S. Army heavy armor would lead the assault into the city with the infantry and Marines closely following to provide cover and to clear each building.¹¹⁹

Prior to sunrise on November 10, 2004, 1st Platoon, Alpha Company, 1st Battalion, 8th Marines, Regimental Combat Team 7, infiltrated the city and established an overwatch position near the

¹¹⁴ Bing West, *No True Glory: A Frontline Account of the Battle for Fallujah* (New York, NY: Bantam Book, 2005), 13-14.

¹¹⁵ Foulk, *The Battle for Fallujah*, 21.

¹¹⁶ Kendall D. Gott, *Breaking the Mold: Tanks in the Cities* (Combat Studies Institute Press, U.S. Army Combined Arms Center, Fort Leavenworth, Kansas, 2006), 105.

¹¹⁷ Thomas E. Ricks, *Fiasco: The American Military Adventure in Iraq, 2003–2005* (Penguin), 399.

¹¹⁸ Bellavia and Bruning, *House to House*, 29.

¹¹⁹ Gott, *Breaking the Mold*, 97.

Government Complex in order to prepare for a company attack scheduled for the following day as part of Operation Phantom Fury. 1st Platoon consisted of three squads, an attached machinegun squad and an attached assault squad, totaling forty-six Marines. Supporting the platoon was a tank section consisting of two combat loaded M1A2 Abrams.¹²⁰

At sunrise, the dismounted platoon was in a perfect position to observe the enemy. As the enemy moved closer, the platoon began engaging with direct fire and artillery. This allowed the enemy to pinpoint the Platoon's position and return fire on the Marines from multiple fortified structures. At this point, the tank section became invaluable. After multiple enemy positions had been located, the Platoon Commander called the tanks over the company tactical net and moved them from their cold position to a hot position adjacent to the Platoon. As the tanks moved down the street, the Marines provided security for them from their overwatch position. While the Platoon suppressed the enemy positions, the Platoon Commander talked the tank section onto the targets. Using multiple techniques in combination, the Platoon Commander oriented the tanks onto their targets and the tanks proceeded to destroy the enemy positions one after another.¹²¹

After all the known enemy positions were destroyed, the tanks moved back to their position. Throughout the course of the day, as the enemy attempted to reoccupy many of the buildings or moved to new buildings, the same process was repeated fifteen to twenty times. The Platoon would pinpoint the enemy's location, suppress the position, and then call on the tanks to destroy the enemy. This Marine platoon succeeded during this engagement because Infantry squads, weapons sections, engineers, mortars,

¹²⁰ Gary Livingston, *Fallujah, With Honor: First Battalion, Eighth Marine's Role in Operation Phantom Fury*, (North Topsail Beach, NC: Caisson Press, 2006), 37-38.

¹²¹ Captain Michael Skaggs, "Tank-Infantry Integration," *Marine Corps Gazette* (June 2005), 41-42.

aircraft, and tanks fought as a combined arms team and leaders understood how to integrate these units and capabilities in an urban environment against an irregular force.¹²²

Historically, Army operating concepts have dissuaded the use of heavy armor in urban environment, but in future conflicts, the threat will seek sanctuary in these uncontested locations. Therefore, the future fighting force must be adaptable and capable of adjusting the balance of lethal and nonlethal actions necessary to achieve a position of relative advantage. According to ADP 3-0, *Unified Land Operations*, offensive, defensive, and stability operations each requires a combination of combined arms maneuver and wide area security; neither core competency is adequate in isolation.¹²³ An example of armor force adaptability is 3rd Armored Cavalry Regiment (3rd ACR) in Tal Afar, Iraq April 2005 utilizing a combination of combined arms maneuver and wide area security in urban environments.

Organized as a self-contained, armored reconnaissance force made up of Abrams tanks, Bradley fighting vehicles, Up-armored high mobility multipurpose-wheeled vehicles (HMMWV) and 5,200 troops, the 3rd Armored Cavalry Regiment, was tasked to retake the insurgent strong hold Tal Afar.¹²⁴ Upon their arrival, this conventional unit faced myriad challenges from a determined insurgency entrenched amid a diverse local population. Even though the regiment was organized to serve as the eyes and ears of the III Armored Corps during major combat operations, 3rd ACR leaders realized that the unit would have to adapt in order to successfully accomplish its mission. The Regimental Commander, Colonel H.R. McMasters implemented a counterinsurgency approach known as Clear, Hold, Build in order to defeat the insurgency and restore stability to the city of Tal Afar. First, the regiment utilized the lethal firepower of its tanks to reduce enemy forces affecting the main routes in and out of the city. Next,

¹²² Sergeants Earl Catagnus, Jr. and Brad Edison, Lance Corporals James Keeling and David Moon, "Infantry Squad Tactics: Some of the Lessons Learned During MOUT in the Battle for Fallujah," *Marine Corps Gazette* (September 2005) 80-82.

¹²³ ADP 3-0, *Unified Land Operations* (2011).

¹²⁴ Richardo Herrera, "Brave Rifles at Tal Afar, September 2005," In *In Contact! Case Studies from the Long War*, ed. William G. Robertson (Fort Leavenworth, KS: Combat Studies Institute, 2006), 125.

the regiment moved to isolate and kill or capture insurgents while minimizing civilian casualties via a berm around the city with controlled access points using the long-range options and crew serve weapons from its armored vehicles. Finally, as the main combat operations concluded and security improved, humanitarian aid and civil-affairs work began to rebuild the city. Although the 3rd Armored Cavalry Regiment was a unit trained and organized to fight conventional forces in high intensity conflict, it adapted based on the operational environment in order to accomplish the mission.¹²⁵

In contrast to some other thinkers on future warfare, the worst-case scenario for the U.S. Army is continue to suppress the role of the armored force and to have a peer competitor gain a marked technological advantage in land warfare. Case in point, Israel believed that future ground power would focus largely on irregular challenges and that air power would be sufficient to manage the security challenges outside its borders, however, it was proven wrong in 2006 during the Second Lebanon War. The Israel Defense Force (IDF) failure against Hezbollah in 2006 provides several lessons highlighting the effects of poor preparation.¹²⁶

In 2006, the IDF was in the midst of an organizational and doctrinal transition away from a symmetrical view of warfare to an asymmetrical view focused on low intensity conflict (LIC) and terrorism. Prior to the war, the IDF focused all of its training on LIC and preventing the incursion of Palestinian terrorists. According to the findings of the Winograd Report, commissioned by the State of Israel after the 2006 war:

Some of the political and military elites in Israel have reached the conclusion that Israel is beyond the era of wars. It had enough military might and superiority to deter others from declaring war against her; these would also be sufficient to send a painful reminder to anyone who seemed to be undeterred; since Israel did not intend to initiate war, the conclusion was that the main challenge facing the land forces would be low intensity

¹²⁵ George Packer, "The Lesson of Tal Afar: Is It Too Late for the Administration to Correct Its Course in Iraq?" *The New Yorker*, April 10, 2006.

¹²⁶ Stephen Biddle and Jeffrey A. Friedman, *The 2006 Lebanon Campaign and the Future of Warfare: Implications for Army and Defense Policy* (Carlisle Barracks, PA: Strategic Studies Institute Press, 2008).

asymmetrical conflicts. Given these assumptions, the IDF did not need to prepare for “real war” ...¹²⁷

Consequently, the IDF spent very little time preparing units for large-scale operations.

Since its inception in the early 1980s, Hezbollah has conducted raids and suicide attacks against IDF troops and against targets in Lebanon to establish an Islamic regime. On July 12, 2006, Hezbollah operatives ambushed two IDF HMMWVs conducting a routine patrol along the border between Israel and Lebanon, taking two soldiers hostage. This action led to the first Israeli military operation in Lebanon since the IDF’s withdrawal in 2000.¹²⁸ When the Second Lebanon War started in 2006, the IDF was confronted with the challenges of complex terrain in Lebanon and by Hezbollah’s well-armed, well-trained fighting force.

During the years leading up to the Second Lebanon War, Hezbollah forces received extensive training in Lebanon, Syria, and Iran and learned how to blend guerilla tactics with conventional military tactics and weapons to create an innovative concept for defending southern Lebanon from an Israeli incursion. Hezbollah organized military units to conduct decentralized operations, built well-equipped bunkers across southern Lebanon, stockpiled supplies, and armed itself with effective standoff weapons (including ATGMs, rocket-propelled grenades, MANPADS, mortars, and a wide array of rockets). After suffering several losses to rockets attacks, the IDF quickly realized that in order to defeat a Hezbollah hybrid threat in complex terrain requires well-trained, combined arms forces.¹²⁹ However, years of counterinsurgency operations against the Palestinians had greatly eroded the IDF’s conventional

¹²⁷ The Commission for the Examination of the Events of the 2006 Campaign in Lebanon, *The Second Lebanon War: Final Report*, Vol. I (January 2008), 232-233.

¹²⁸ Johnson, *Hard Fighting: Israel in Lebanon and Gaza*, 18.

¹²⁹ David E. Johnson, *Hard Fighting: Israel in Lebanon and Gaza* (RAND Corporation, 2011). Unfortunately for the Israelis, the Second Lebanon War demonstrated the difficulty in taking a defended position from a hybrid force that is armed with standoff fires (e.g., ATGMs, mortars, MANPADS, rockets).

Warfighting proficiency.¹³⁰ Hezbollah's anti-tank guided missiles and the lack of maneuver competency stymied IDF ground forces and prevented closing with the enemy. The IDF not only failed to defeat Hezbollah but also failed to stop Hezbollah rocket attacks, which continued until the last day of the war.¹³¹

The IDF responded to the lessons from Lebanon by going "back to basics," emphasizing combined arms competence, focusing on the ability to maneuver in the lethal hybrid environment, and equipping its forces with upgraded tanks and heavy infantry fighting vehicles.¹³² As Israel realized the difficulty of transition an infantry force to counter hybrid and state sponsored threats, the U.S. Army must also consider a future force that can adapt from irregular warfare to a balance force that capitalizes on the capabilities of the heavy force supported by infantry, artillery and air. In 2020, America will need a force capable of confronting a wide range of adversaries across the range of military operations. This force is the Armored Brigade Combat Team.

Within the Army's current operating concept, combined arms maneuver and wide area security provide the means for balancing the application of the elements of combat within the tactical actions and tasks associated with offensive, defensive, and stability operations.¹³³ Combined arms maneuver by an heavy armor force is essential to the application of the elements of combat power in unified action to defeat enemy ground forces; to seize, occupy, and defend land areas; and to achieve physical, temporal, and psychological advantages over the enemy to seize and exploit the initiative. Army leaders must have

¹³⁰ Matt M. Matthews, *We Were Caught Unprepared: The 2006 Hezbollah-Israeli War* (Fort Leavenworth, KS: Combat Studies Institute Press, 2008), 44.

¹³¹ The Commission for the Examination of the Events of the 2006 Campaign in Lebanon, *The Second Lebanon War: Final Report*, Vol. I (January 2008), 232-233.

¹³² David E. Johnson, *Heavy Armor in the Future Security Environment* (Santa Monica, CA, RAND Arroyo Center, 2011), 5.

¹³³ Elements of Combat Power according to ADRP 3-0 are Mission Command, Movement and Maneuver, Intelligence, Fires, Sustainment, Protection, and Leadership.

the ability to react immediately to changes in the operational environment in order to succeed during combined arms maneuver and wide area security.¹³⁴

¹³⁴ ADP 3-0, *Unified Land Operations*, 1.

CHAPTER 5

CONCLUSION

The dismounted infantry squad alone, regardless of the amount of technology, cannot achieve tenants such as lethality and initiative in wide area security or combined arms maneuver. It requires a well-resourced combined arms organization with a mix of armor and mobile infantry to defeat a hybrid threat in an ambiguous environment. The capabilities of the armor force are a crucial component of unified land operations. Through overmatch, the future fighting force must be able to seize, retain and exploit the initiative as part of full spectrum operations. Senior leaders continue to say that armor will have a significant role in the future; however, they fail to provide any specific details. The Chief of Armor's statement clearly provides an answer to the question, "Mobility, protection and firepower remain the key capabilities armor brings to the fight. We have to be able to make decisions at 15 (kilometers an hour) and faster. We want to act on contact, not react to contact."¹³⁵

Over the last decade, the U.S. Army has struggled to understand operations in urban environments and the employment of armored forces in that spectrum of battle. Generally, armor forces are relegated to the supporting role while the infantry remains dominant. With the increase in fourth generation warfare, many operational planners have virtually written off the tank as a legacy system in need of retirement.¹³⁶ Following Desert Storm, the U.S. Army slashed its armor force and focused on developing vehicles (e.g. Strykers) and units that could rapidly deploy but lacked the necessary lethality. Operation Iraq Freedom provides several examples of why the heavy armor force still provides an

¹³⁵ BG Thomas James, "Chief of Armor update on the future of the force at the United States Army Maneuver Center of Excellence" (Fort Benning, GA, 2011).

¹³⁶ According to William S. Lind, Director of the Center for Cultural Conservatism at the Free Congress Foundation First generation is wars of Napoleon, conscription and firearms. Second generations are the U.S. civil war and WWI, firepower and nation-state alignment of resources to warfare. Third generation is WWII, maneuver and armored warfare (Blitzkrieg). Fourth generation is non-state actors willing to engage in moral conflict.

overwhelming and lethal capability against any adversary in any environment. Its firepower, mobility, armor protection and shock effect combine to defeat the enemy, including those armed with the most advanced antitank weapons.¹³⁷

Conversely, several critics feel the tank's heavy weight and large size restrict its speed and areas of use. Blind spots and frequently restricted turret traverse and elevation hinder the tank's substantial firepower in urban environment while engaging short-range targets. One of Washington's most influential think tanks, the Center for a New American Security (CNAS), just came out with a report saying that the Army should not only delay the future Ground Combat Vehicle but cut its current armored force by transferring a quarter of its Armored Brigade Combat Teams from active duty to the reserve. The experts at CNAS, and many others, see heavy ground vehicles as less relevant to the administration's announced strategy of emphasizing air and naval operations in the Pacific and "low footprint" advisory missions elsewhere.¹³⁸

However, historical examples and recent experience from the field show that when employing armor in combination with infantry, supporting artillery, and air power, the tank is the dominant player in wide area security and combined arms maneuver.¹³⁹ Additionally, Armor School Commandant, BG Thomas James, stated, "the Armor School has a 'Tank After Next' study group looking at how the main battle tank can shoot further, move faster and communicate more effectively in the future."¹⁴⁰ Therefore, in the future operating environment, mobile firepower provided by the Abrams main battle tank and Bradley Infantry fighting vehicle will enable execution of close combat in offensive, defensive and

¹³⁷ Foulk, *The Battle for Fallujah*, 42.

¹³⁸ Sydney J. Freedberg, Jr., "Why Senate, House Authorizers Both Added Dough For Armor," May 25, 2012, <http://defense.aol.com/2012/05/25/why-senate-house-authorizers-both-added-dough-for-armor/> (accessed July 5, 2012).

¹³⁹ Gott, *Breaking the Mold*, 116.

¹⁴⁰ BG Thomas James, "Chief of Armor comments during the 2012 Marine Tank Conference at Fort Benning, GA," <http://www.ledger-enquirer.com/2012/02/01/1915684/marine-tank-conference-annual.html> (accessed 25 July, 2012).

stability operations. As proven in Iraq, Armor forces are extremely capable of closing with and destroying any adversary (regular or irregular) in the world, while providing protection for its crew in any conceivable combat environment.¹⁴¹

The synchronized, high tempo, distributed maneuver via digitized systems of the Abrams Tank System and Bradley IFV increase overall situational awareness throughout the battlefield framework. As a unified fighting force, armor provides the Army with the ability to execute operations with incredible shock and speed. Through its ability to provide sustained rates of fire while protected, the armor force achieves a marked advantage over the enemy. In an ambiguous environment against a hybrid or conventional threat, the Armored Brigade Combat Team, with its Combined Arms Battalions, is the most capable force on the battlefield and should be the first choice of operational planners.¹⁴² It is capable of engaging the enemy in any weather, day or night on multi-dimensional, non-linear battlefields using its firepower, shock effect, armor protection. Today, capabilities of the armored force are disregarded in an effort to save money or fund other projects. However, in order to counter future threats, senior leaders must expand the role of U.S. Army armored forces in unified land operations.

With operations in Iraq complete and an ongoing transition in Afghanistan, it is time for the U.S. Army to prepare America's premier fighting force for future conflicts. It must begin by understanding the threat, examining the capabilities required to counter this threat, evolving Army operating concepts and expanding the role of the armored force to take full advantage of its firepower, mobility, and protection. After a decade of persistent conflict against an asymmetrical adversary, America's closest peer competitors have been improving Warfighting capability. The threats to the U.S. and the American way of life are unchanged; however, the character of the enemy continues to evolve. To face this challenge,

¹⁴¹ John Gordon IV and Bruce R. Pirnie, "Everybody Wanted Tanks: Heavy Forces in Operation Iraqi Freedom," *Joint Force Quarterly*, Issue 39, 4th Qtr 2005, 84.

¹⁴² Johnson, *Hard Fighting: Israel in Lebanon and Gaza*, 2011.

the armor force of 2020 must also evolve and have an increased role in future combined arms maneuver and wide area security.

BIBLIOGRAPHY

Books

- Adan, Avraham. *On the Banks of the Suez*. Novato, California: Presidio Press, 1980.
- Applegate, Melissa. *Preparing for Asymmetry: As Seen Through the Lens of Joint Vision 2020*. Carlisle Barracks, PA: Strategic Studies Institute Press, 2001, <http://www.carlisle.army.mil/ssi/pubs/2001/preparng/preparng.htm> (accessed July 6, 2012).
- Atkinson, Rick. *Crusade*. New York: Houghton Mifflin Company, 1993.
- Baumann, Robert F. *Russian-Soviet Unconventional Wars in the Caucasus, Central Asia, and Afghanistan*. Washington, DC: Center of Military History, 1993.
- Bellamy, Christopher. *The Evolution of Modern Land Warfare; Theory and Practice*. New York, NY: Routledge, 1990.
- Bellamy, Christopher. *The Future of Land Warfare*. New York: St. Martin's Press, 1987.
- Bellavia, David and Bruning, John R. *House to House: An Epic Memoir of War*. New York: Free Press, 2007.
- Biddle, Stephen and Jeffrey A. Friedman. *The 2006 Lebanon Campaign and the Future of Warfare: Implications for Army and Defense Policy*. Carlisle Barracks, PA.: Strategic Studies Institute Press, 2008.
- Binnendijk, Hans and Richard Kugler. *Seeing the Elephant, The U.S. Role in Global Security*. Washington, DC: National Defense University Press, 2008.
- Birtle, Andrew J. *US Army Counterinsurgency and Contingency Operations Doctrine 1860-1941*. Washington, DC: Center of Military History, 2004.
- Blackwell, James. *Thunder in the Desert: The Strategy and Tactics of the Persian Gulf War*. New York: Bantam Books, 1991.
- Bolger, Daniel P. *Savage Peace: Americans at War in the 1990s*. Novato, CA: Presidio Press, 1995.
- Brafman, O. and Beckstrom, R.A. (2006). *The Starfish and The Spider: The Unstoppable Power of Leaderless Organizations*. New York. Penguin Group, 2008.
- Brown, John S and Kevlar Legions; *The Transformation of the U.S. Army 1989-2005*. Washington, D.C.: Center of Military History, 2011.
- Cameron, Robert Stewart. *Mobility, Shock, and Firepower: The Emergence of the U.S. Army's Armor Branch, 1917-1945*. Center of Military History, United States Army Washington, D.C., 2008.

- Cassidy Robert M. *The US Military and the Global Counterinsurgency: Turning Success into Victory, Military Operations After the Campaign*. Fort Leavenworth, KS: Combat Studies Institute Press, 2004.
- Citino, Robert M. *Blitzkrieg to Desert Storm: The Evolution of Operational Warfare*. Lawrence: University of Kansas Press, 2004.
- Clausewitz, Carl von. *On War*. Translated and Edited by Michael Howard, and Peter Paret. Princeton, NJ: Princeton University Press, 1976.
- Cole, Henry G. *General William E. DePuy: Preparing the Army for Modern War*. Lexington: University of Kentucky Press, 2008.
- Conroy, Jason and Martz, Ron. *Heavy Metal: A Tank Company's Battle to Baghdad*. Dulles, VA: Potomac Books, Inc., 2005.
- Department of Defense. *National Military Strategy*, Washington, DC: U.S. Department of Defense, 2011.
- . Department of Defense Instruction 3000.05, *Stability Operations*, Washington, DC: Government Printing Office, 2009
- Donnelly, Thomas and Kagan, Frederick W. *Ground Truth; The Future of U.S. Land Power*. Washington, D.C.: AEI Press, 2008.
- Donnelly, Thomas. *Operation Iraqi Freedom: A Strategic Assessment*. Washington, DC: American Enterprise Institute, 2004.
- Doughty, Robert A., *The Evolution of US Army Tactical Doctrine, 1946-76*. Fort Leavenworth, KS: Combat Studies Institute, 2001.
- Dupuy, Trevor Nevitt. *The Evolution of Weapons and Warfare*. 1982.
- Dzirkals, Lilita L. *Military Operations in Built-Up Areas: Essays on Some Past, Present, and Future Aspects*. Santa Monica, CA: RAND Corporation, 1976.
- Fehrenback, Theodore Reed. *This Kind of War: The Classic Korean War History*. Potomac Books, 1998.
- Foss, Chris *Jane's Armor and Artillery 2005-2006*. Jane's Information Group.
- Foulk, Vincent L. *The Battle for Fallujah: Occupation, Resistance and Stalemate in the War in Iraq*. Jefferson, NC: McFarland & Company, Inc., 2007.
- Friedman, Thomas L. *The Lexus and the Olive Tree*. Farrar Straus and Giroux, 1999.
- Gaddis, John Lewis. *The Landscape of History: How Historians Map the Past*. New York: Oxford University Press, 2002.
- . *The Cold War: A New History*. New York: Penguin Press. 2005

- . *Surprise, Security, and the American Experience*, Cambridge, MA: Harvard University Press, 2005.
- Getman, A. L. *Tanks are Moving on Berlin: 1941-1945*. Moscow: Nauka, 1973.
- Gilbert, Martin *The First World War: A Complete History*. Clearwater, FL: Owl Books, 2004.
- Gole, Henry G. *The Road to Rainbow; Army Planning for Global War 1934-1940*. Annapolis, MD: Naval Institute Press, 2003.
- Gott, Kendall D. *Breaking the Mold: Tanks in the Cities*. Fort Leavenworth, KS: Combat Studies Institute, 2006.
- Gray, Colin S. *War. Peace and International Relations: An Introduction to Strategic History*, New York, NY: Routledge, 2007.
- Hammel, Eric. *Fire in the Streets: The Battle for Hue, TET 1968*. Chicago, IL: Contemporary Books, 1990.
- Headquarters, Department of the Army. FM 100-5, *Operations*. Washington, DC: Government Printing Office, 1976.
- . FM 100-5, *Operations*, Washington, DC: Government Printing Office, 1982.
- . FM 100-5, *Operations*, Washington, DC: Government Printing Office, 1986.
- . FM 100-5, *Operations*, Washington, DC: Government Printing Office, 1993.
- . FM 3-0, *Operations*, Washington, DC: Government Printing Office, 2001.
- . Army Doctrine Reference Publication 3-0, *Unified Land Operations*. Washington, DC: Government Printing Office, 2012.
- . Army Doctrinal Publication 3-0, *Unified Land Operations*. Washington, DC: Government Printing Office, 2011.
- . FM 3-90.6, *Brigade Combat Team*. Washington, DC: Government Printing Office, 2010.
- . Training and Doctrine Command Pamphlet 525-5. *Force XXI: A Concept for the Evolution of Full-Dimensional Operations for the Strategic Army of the Early Twenty-First Century*. Washington, DC: Government Printing Office, 1994.
- Headquarters, Joint Staff. Joint Publication 1-02, *DOD Dictionary of Military and Associated Terms*. Washington, DC: Government Printing Office, 2010.
- Headquarters, Third Infantry Division. *After Action Report: Operation Iraqi Freedom*. Fort Stewart, GA, Government Printing Office, 2003.
- Headquarters, United States Joint Force Command, *The Joint Operational Environment: The World Through 2030 and Beyond*. Washington, DC: Government Printing Office, 2007.

- Herrera, Richardo. "Brave Rifles at Tall 'Afar, September 2005." In *In Contact! Case Studies from the Long War*, edited by William G. Robertson, 125-153. Fort Leavenworth, KS: Combat Studies Institute Press, 2006.
- Hiro, Dilip. *Desert Shield to Desert Storm: The Second Gulf War*. New York: Routledge, 1992.
- Hoffman, Frank. *Conflict in the 21st Century: The Rise of Hybrid Warfare*. Arlington, VA: Potomac Institute for Policy Studies, 2007.
- Kokoshin, Andrei, "Introductory Essay." In *Strategy*, written by Svechin, Aleksandr A, translated and edited by Kent D. Lee. Minneapolis, MN: East View Publications, 1992.
- Johnson, David E. *Hard Fighting: Israel in Lebanon and Gaza*. Santa Monica, CA: RAND Corporation, 2011.
- . *Heavy Armor in the Future Security Environment*. Santa Monica, CA, RAND Corporation, 2011.
- . *The 2008 Battle of Sadr City Occasional Paper*. Santa Monica, CA: RAND Corporation, 2011.
- Livingston, Gary. *Fallujah, With Honor: First Battalion, Eighth Marine's Role in Operation Phantom Fury*. North Topsail Beach, NC: Caisson Press, 2006.
- Matheny, Michael R. *Carrying the War to the Enemy: American Operational Art to 1945*. Norman, OK: University of Oklahoma Press, 2011.
- Matthews, Matt M. *We Were Caught Unprepared: The 2006 Hezbollah-Israeli War*. Fort Leavenworth, KS: Combat Studies Institute Press, 2008.
- McPadden, Christopher Paul. *Mikhail Nikolayevich Tukhachevsky (1893–1937): Practitioner and Theorist of War*. Arlington, VA: The Institute of Land Warfare, 2006.
- Morgan, Patrick. *Deterrence*. Beverly Hills, CA: Sage Publications, 1983.
- Murray, Williamson and Millet, Alan R. *Military Innovation in the Interwar Period*. New York: Cambridge University Press, 1996.
- Narmi, J.L. *SEAL Team 6, bin Laden and Beyond*. University Press, 2011.
- Naveh, Shimon. *In Pursuit of Military Excellence*. London: Frank Cass Publishers, 1997.
- Nye, Joseph S. Jr. *Soft Power: The Means to Success in World Politics*. New York: Public Affairs, 2005
- O'Hanlon, Michael. *Technological Change and the Future of Warfare*. Washington, DC: Brookings Institution Press, 2000.
- Palazzo, Albert, *Seeking Victory on the Western Front: The British Army and Chemical Warfare in World War I*. Lincoln: University of Nebraska Press, 2000.
- Perry, Robert L. *The Ballistic Missile Decision*. Santa Monica, CA: RAND Corporation, 1967.

- Peters, Ralph *Fighting for the Future: Will America Triumph?*. Mechanicsberg, PA: Stackpole Books, 1999.
- Reynolds, Paul D. *A Primer in Theory Development*. Boston: Pearson Education, 2007.
- Ricks, Thomas E. *Fiasco: The American Military Adventure in Iraq, 2003–2005*. New York: Penguin Publishing, 2006.
- Romjue, John L. *American Army Doctrine for the Post-Cold War*. Fort Monroe, VA: United States Army Training and Doctrine Command, 1997.
- . *From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1982*. Fort Monroe, VA.: United States Army Training and Doctrine Command, 1984.
- Rothenburg, Gunther E. “Moltke, Schlieffen and the Doctrine of Strategic Envelopment,” in Peter Paret, ed., *Makers of Modern Strategy from Machiavelli to the Nuclear Age*. Princeton, NJ: Princeton University Press, 1986.
- Rosen, Stephen P. *Winning the Next War; Innovation and the Modern Military*. Ithaca, NY: Cornell University Press, 1991.
- Scales, Robert H., Jr. *America’s Army: Preparing for Tomorrow’s Security Challenges*. Carlisle Barracks, PA: Strategic Studies Institute, 1998.
- Shy, John. “Jomini.” In *Makers of Modern Strategy: From Machiavelli to the Nuclear Age*, edited by Peter Paret. Princeton, NJ: Princeton University Press, 1986.
- Stewart, Richard W. “The Army of the Cold War From the ‘New Look’ to Flexible Response,” *American Military History Volume II, The United States Army in a Global Era, 1917-2008*, Washington, DC: Center for Military History, 2010.
- Stewart, Richard W. “Rebuilding the Army Vietnam to Desert Storm,” In *American Military History Volume II, The United States Army in a Global Era, 1917-2008*. Washington, DC: Center for Military History, 2010.
- Swain Richard M. “*Lucky War*” *Third Army in Desert Storm*. Fort Leavenworth, KS: United States Army Command and General Staff College Press, 1994.
- Thucydides. *The Landmark Thucydides: A Comprehensive Guide to The Peloponnesian War*, edited Robert B. Strassler. New York: The Free Press, 1976.
- Thomas Timothy L. *The Caucasus Conflict and Russian Security: The Russian Armed Forces Confront Chechnya*. Fort Leavenworth, KS: United States Army Foreign Military Studies Office, 1996.
- Tsouras, Peter and Elmo C. Wright Jr.,. *Military Lessons of the Gulf War: The Ground War*. Novato, CA: Presidio Press, 1991.
- Tucker, Spencer C. and Priscilla Mary Roberts. *Encyclopedia of World War II: A Political, Social, and Military History*, 2004.

- Ucko, David H. *The New Counterinsurgency Era; Transforming the U.S. Military for Modern Wars*. Washington, DC: Georgetown University Press, 2009.
- Weigley, Russell F. *The American Way of War: A History of United States Military Strategy and Policy*. Bloomington: Indiana University Press, 1977.
- West, Bing. *No True Glory: A Frontline Account of the Battle for Fallujah*. New York, NY: Bantam Book, 2005.
- Winton, Harold R. and David R. Mets. *The Challenge of Change; Military Institutions and New Realities, 1918-1941*. Lincoln: University of Nebraska Press, 2000.
- Zaloga, Steven J. *T-72 Main Battle Tank 1974-93*. Oxford: Osprey, 1993.

Periodicals, Articles, and Unpublished Sources

- Bacon, Lance M. General Martin Dempsey comments, "Tomorrow's Fight Trusts NCOs with More Power," <http://www.armytimes.com/news/2011/08/army-ncos.trusted-with-more-power-082011> (accessed online July 10, 2012)
- Benson, Bill. "The Evolution of Army Doctrine for Success in the 21st Century," *Military Review* (May-June 2012): 47-57.
- Betson, William R. "Tanks and Urban Combat." *Armor Magazine* (July-August 1992):22-25.
- Boyko, Robert G. "Just Cause: MOUT Lessons Learned." *Infantry Magazine*, 81:3(May- June 1991): 28-32.
- Casey, General George W. Jr., "Address to the Association of the United States Army Winter Symposium, February 25, 2011," www.army.mil/article/52439/, (accessed online May 2, 2012).
- Catagnus, Sergeant Earl Jr., Edison, Sergeant Brad Lance, Keeling, Corporal James & Corporal Moon, David. "Infantry Squad Tactics: Some of the Lessons Learned During MOUT in the Battle for Fallujah," *Marine Corps Gazette* (September 2005) 80-82.
- Chiarelli, Major General Peter W. and Michaelis, Major Patrick R., "Winning the Peace: The Requirement for Full-Spectrum Operations," *Military Review* (July-August 2005), 4-17
- Clarke, Michael. "The Implication of the Revolution in Military Affairs for Arms Control, Non-proliferation and Disarmament." *Disarmament Forum* (2001): 5-10.
- Cohen, Michael A. "The Powell Doctrine's Enduring Relevance," *World Politics Review*, July 22, 2009.
- Collier, Craig A. "Now that We're Leaving Iraq, What did We Learn." *Military Review* (September-October 2010): 89-93.
- Cronin, Patrick M., ed. "America's Security Role in a Changing World," *Global Strategic Assessment* (2009): iii-vi, 187-189.

- Dempsey, Martin, *Mission command: White paper*. Joint Chiefs of Staff, Washington, DC, 2012.
- . “Win, Learn, Focus, Adapt Win Again.” *Army Magazine*. March 2011.
- Echevarria, Antulio J. II. “Changing and Enduring Aspects of Conflict: America’s Security Role in a Changing World.” *Global Strategic Assessment* (2009): 157-161.
- Ewing, Philip. “The Tank at the End of History,” April 21, 2011, www.military.com (accessed July 31, 2012).
- Fastabend, David A. “That Elusive Operational Concept,” *Army Magazine*, June 2001, 12-19.
- Federation of American Scientist Military Analysis Network, “M1 Abrams Main Battle Tank,” <http://www.fas.org/man/dod-101/sys/land/m1.htm> (accessed August 17, 2012).
- Foster, Chad. “Building for the Future: Combined Arms Officers.” *Armor Magazine*; (Jan-Feb 2007) 20.
- Freedberg, Sydney J. Jr., “Why Senate, House Authorizers Both Added Dough For Armor,” May 25, 2012, <http://defense.aol.com/2012/05/25/why-senate-house-authorizers-both-addeddough-for-armor/> (accessed online July 5, 2012)
- Gates, Robert M. Lecture Delivered by Secretary of Defense Robert M. Gates, West Point, NY, Friday, February 25, 2011, <http://www.defense.gov/Speeches/Speech.aspx?SpeechID=1539> (accessed on 13, 2012)
- Gordon, John IV. and Pirnie, Bruce R. “Everybody Wanted Tanks: Heavy Forces in Operation Iraqi Freedom,” *Joint Force Quarterly*, No. 39 (October 2005), 84–90.
- Gray, Colin S., “How Has War Changed Since the End of the Cold War? Paper prepared for the Conference on the “Changing Nature of Warfare” *Global Trends 2020 Project*. Washington DC: United States National Intelligence Council.
- Headquarters, Department of the Army, *Army Posture Statement: The Nation’s Force of Decisive Action* (Washington, D.C., 2012) https://secureweb2.hqda.pentagon.mil/-vdas_armyposturestatement/2012/pages/Transition.aspx (accessed August 16, 2012).
- Headquarters, Department of the Army Training and Doctrine Command (TRADOC), *History of TRADOC*, <http://www.tradoc.army.mil/historian/faqs.htm> (accessed on August 3, 2012).
- Hoffman, Frank G. “Hybrid Warfare and Challenges,” *Joint Force Quarterly*, NDU Press, Issue52 1st Quarter, 2009, 34-39.
- James, Thomas “Chief of Armor comments during the 2012 Marine Tank Conference at Fort Benning, GA,” <http://www.ledger-enquirer.com/2012/02/01/1915684/marine-tank-conference-annual.html> (accessed online 25 July, 2012)
- Kober, Avi “The Israel Defense Forces in the Second Lebanon War: Why the Poor Performance,” *Journal of Strategic Studies* (February 2008), 3–40.

- McIlvaine, Rob "Squad Needs 'Overmatch' Capability," October 13, 2011, http://www.army.mil/article/67175/Squad_needs__overmatch__capability (accessed online July 16, 2012).
- McLeary, Paul "U.S. Army Maps Out Postwar Vehicle Needs," Defense News, June 11, 2012, <http://www.defensenews.com/article/20120611/DEFREG02/306110001/U-S-Army-Maps-Out-Postwar-Vehicle-Needs> (accessed September 9, 2012).
- Metz, Steven and Johnson II, Douglas V. "Asymmetry and U.S. Military Strategy: Definition, Background, and Strategic Concepts," (Strategic Studies Institute at the United States Army War College, Carlisle, Pennsylvania, January 2001). <http://www.au.af.mil/au/awc/awcgate/ssi/asymetry.pdf>. (Accessed online at February 8, 2012.)
- Odierno, Raymond T. "The U.S. Army in a Time of Transition," *Foreign Affairs*, 1 May 2012. <http://www.foreignaffairs.com/articles/137423/raymond-t-odierno/the-us-army-in-a-time-of-transition> (accessed on line August 3, 2012).
- Packer, George. "The Lesson of Tal Afar: Is It Too Late for the Administration to Correct Its Course in Iraq?" *The New Yorker*, April 10, 2006.
- Peters, Ralph. "The Army of the Future." *Military Review*, (September 1987): 36-45.
- Romjue, John L. "Evolution of the AirLand Battle Concept," *Air University Review* (May-June 1984) <http://www.airpower.maxwell.af.mil/airchronicles/aureview/1984/may-jun/romjue.html#romjue> (accessed online August 5, 2012).
- Rusling, Matthew. "For the Military, A Future of Hybrid Wars," *National Defense* (September 2008).
- Snyder, Jack, "One World, Rival Theories," *Foreign Policy* Issue 145 (November/December 2004), pp.52-61.
- Skaggs, Michael "Tank-Infantry Integration," *Marine Corps Gazette* (June 2005), 41-42.
- Starry, General Donn A. "Extending the Battlefield," *Military Review* (March, 1981), 31-50.
- Steadman, Kenneth A. "The Evolution of the Tank in the U.S. Army," Combat Studies Institute, U.S. Army Command and General Staff College, April 21, 1982 , <http://usacac.army.mil/cac2/cgsc/carl/resources/csi/steadman2/steadman2.asp> (accessed August 3, 2012)
- The Commission for the Examination of the Events of the 2006 Campaign in Lebanon, The Second Lebanon War: Final Report, Vol. I (January 2008), 232-233.
- United Nations Department of Economic and Social Affairs, Population Division/DESA at www.unpopulation.org (accessed online May 14, 2012).
- UN Security Council, Resolution 814 (1993) Adopted by the Security Council at its 3188th Meeting, on 26 March 1993, S/RES/814 (1993), available at: <http://www.unhcr.org/refworld/docid/3b00f21143.html> (accessed August 19, 2012).
- United States Army Maneuver Center, MG Robert Brown's Lecture www.benning.army.mil/.../PPT/MCoE_Update_MG_Brown.ppt, (accessed online July 16, 2012).

Vuono, Carl E. "Armor and the Future Army: The Challenges of Change and Continuity." *Armor Magazine*, (May-June 1991): 28-32.

Wass De Czege, Huba and Echevarria II, Antulio J., "Land Power and Future Strategy: Insights into the Army after Next," *Joint Force Quarterly*, (Spring 1999)

Winton, Harold R. "Partnership and Tension: The Army and Air Force Between Vietnam and Desert Shield", *Parameters* (Spring 1996), 100-119.