THE ARMORED BRIGADE COMBAT TEAM (ABCT) IN THE FUTURE: AN ASSESSMENT OF CAPABILITIES AGAINST THE HYBRID THREAT IN THE FUTURE OPERATIONAL ENVIRONMENT

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The research plan used a qualitative approach that included an analysis of doctrine and literature, an analysis of the BCTs' capabilities compared to strategic requirements, followed by a tactical case study assessment, and a strengths, weaknesses, opportunities, and threats (SWOT) analysis of the BCTs against a hybrid threat. The results from the analysis generated findings organized according to the organization, training, materiel, and personnel, of the Doctrine, Organization, Training, Material, Leadership, Personnel, and Facilities (DOTMLPF) framework.

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

THE ARMORED BRIGADE COMBAT TEAM (ABCT) IN THE FUTURE: AN ASSESSMENT OF CAPABILITIES AGAINST THE HYBRID THREAT IN THE FUTURE OPERATIONAL ENVIRONMENT, by MAJ Ronald W. Sprang, 136 pages.

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TABLE OF CONTENTS

Page

ACRONYMS

ABCT	Armored Brigade Combat Team (Formerly known as the Heavy Brigade Combat Team)
AOE	Army of Excellence
BCT	Brigade Combat Team
DOD	Department of Defense
DOTMLPF	Doctrine, Organization, Training, Material, Leadership, Personnel, and Facilities
HBCT	Heavy Brigade Combat Team
IBCT	Infantry Brigade Combat Team
JIIM	Joint Interagency Intergovernmental Multinational
MTOE	Modified Table of Organization and Equipment
NSS	National Security Strategy
OE	Operational Environment
SBCT	Stryker Brigade Combat Team
SWOT	Strengths, Weaknesses, Opportunities, and Threats

TABLES

Page

CHAPTER 1

INTRODUCTION

> With deep budget cuts imminent, the U.S. Army has been under pressure to demonstrate a valid need for heavy brigade combat teams in the future security environment of irregular warfare and of possible air- and sea-centric conflicts with China—an environment in which many believe that such teams will be largely irrelevant.
>
> — David E. Johnson,
> *Heavy Armor in the Future Security Environment*

The operational environments (OEs) and the enemies of the future will not be like those the United States has encountered since 2001 in Afghanistan and 2003 in Iraq. Every conflict evolves from the environment, individual and collective competing interests, and a myriad of colliding variables across political, military, economic, social, cultural, and informational spheres. The Army must be able to operate across the full range of military operations with respect to the specific OE, the character and capabilities of the friendly forces, and the character and capabilities of the threat. The Army accomplishes these tasks while conducting unified land operations. Unified land operations, "describes how the Army seizes, retains, and exploits the initiative to gain and maintain a position of relative advantage in sustained land operations through simultaneous offensive, defensive, and stability operations in order to prevent or deter conflict, prevail in war, and create conditions for favorable conflict resolution" (Headquarters, Department of the Army 2011, 1).

Congressional budget cuts, sequestration in conjunction with a decade of conflict are leading to reductions in personnel to reduce overall defense costs. Active Army personnel increased by 95,000 in response to the requirements of the Afghanistan and

Iraq campaigns. The U.S. military commitment in Iraq is complete and a security transition in Afghanistan is underway. The upcoming Department of Defense (DOD) budget projections reduce the size of the active Army from a post-9/11 peak of approximately 570,000 in 2010 to 490,000 by 2014 (Department of Defense 2012a, 11-12). The Army plans to remove at least eight Brigade Combat Teams (BCT) from its existing forty-five brigade structure. The overall BCT numbers may drop as low as thirty two in the active duty force (Brannen 2012).

Additionally, the DOD has changed from an antiquated paradigm two war strategy to two, near simultaneous conflicts. “If we are engaged in a major combat operation in one theater, we will have the force necessary to confront an additional aggressor by denying its objectives or imposing unacceptable costs” (Department of Defense 2012a, 7). This fundamental shift is the product of several factors. Reduced budgets are requiring a reduction in overall force structure. Additionally, policy changes are shifting to leverage multi-national partnerships, advances in technology and the shift in concepts along space, cyberspace, special operations, and precision strike capabilities.

To meet the growing demand for force presence and reduced force structure, the DOD is also considering implementation of increased technology, “smart power,” with increased special operations forces and regionally aligned units. These units will implement security force assistance and deterrence operations to prevent conflict prior to the need for large-scale operations. This effort is expected to reduce the requirement for costly heavy forces and long duration stability operations. Former Secretary of Defense Gates, in a speech at West Point, remarked that, “But as the prospects for another head-on clash of large mechanized land armies seem less likely, the Army will be increasingly

challenged to justify the number, size, and cost of its heavy formations to those in the leadership of the Pentagon, and on both ends of Pennsylvania Avenue, who ultimately make policy and set budgets" (Gates 2011).

Background

Every military force in history that has successfully adapted to the changing character of war, did so by sharply defining the operational problems, threats, and future OEs. Such upfront analysis provides the opportunity to focus concept development, training, manning, and equipping across the Doctrine, Organization, Training, Material, Leadership, Personnel, and Facilities (DOTMLPF) domains. It is imperative that the Army guard against any single preclusive view of future war. The DOTMLPF construct drives an evolutionary process to develop an adaptable force which is prepared to meet any threat across the full range of military operations in any OE.

Additionally, other factors of the current force structure manning, defense budgets, and strategic defense policy play a critical role. These factors aid in determining how our forces will be adequately equipped, doctrinally employed, organizationally defined, and successfully operated within those constraints. The current administration continues to set targets for cuts in defense spending by eliminating $400 billion over the next ten years. Additionally, after a decade of troops deployed, the American people are tired of long deployments in support of stability operations and are eager for the government to solve the national debt crisis. These factors have also led to an increase of interest in concepts like AirSea Battle and "smart power" of special operations forces. The above concepts, combined with smart munitions, over-the-horizon air strikes

technology, and cyber capabilities are believed to mitigate the need to deploy troops to combat.

The 2010 National Security Strategy (NSS) recognizes, largely due to our national experience over the last nearly twelve years of war, no one nation can meet global challenges alone. The NSS calls for collaborative approaches among nations that can yield results. Therefore, the focus must be on renewing American international leadership. “Our national security strategy is, therefore, focused on renewing American leadership so that we can more effectively advance our interests in the 21st century. We will do so by building upon the resources of our strength at home, while shaping an international order that can meet the challenges of our time” (The White House 2010, 1). Fundamental to the NSS are relationships and partner capacity with our close friends and allies and deeper, more effective partnerships with other influential international players and emerging nations—China, India, Russia, Brazil, South Africa, and Indonesia (Pugh 2010).

In order to advance national security priorities, the NSS also lays out eight critical efforts, three of which will directly or indirectly affect the employment of Army forces. First, is the proliferation of nuclear weapons along with weapons of mass destruction “particularly the danger posed by the pursuit of nuclear weapons by violent extremists and their proliferation to additional states” (The White House 2010, 4). Second, the NSS specifically identifies al-Qa’ida as a threat to national security. “We will disrupt, dismantle, and defeat al-Qa’ida and its affiliates through a comprehensive strategy. . . . The frontline of this fight is Afghanistan and Pakistan, where we are applying relentless pressure on al-Qaida, breaking the Taliban’s momentum, and strengthening the security

and capacity of our partners" (The White House 2010, 4). A third priority is increased cooperation with Muslim nations. "Our broader engagement with Muslim communities around the world will spur progress on critical political and security matters, while advancing partnerships on a broad range of issues based upon mutual interests and mutual respect" (The White House 2010, 4).

The NSS determines success through achieving balance and integrating all elements of national power and updating United States national security capacity with respect to six key areas: maintain military's conventional superiority; enhance capacity to defeat asymmetric threats; modernized diplomacy and development capabilities; strengthened civilian expeditionary capacity; integrated intelligence and homeland security efforts with national security policies and those of our allies and partners; and communicate effectively with foreign publics to sustain global support (The White House 2010, 5). The NSS policy and guidance was then further defined with respect to the DOD. The DOD outlined requirements for the joint force.

In January 2012, the DOD released *Sustaining U.S. Global Leadership: Priorities for 21st Century Defense* outlining the requirements for the joint force of the future. The document reiterates the need for partners sharing the burden for international security and regional focus and stabilization. In this document, President Obama states, "Indeed, as we end today's wars, we will focus on a broader range of challenges and opportunities, including the security and prosperity of the Asia Pacific. As a new generation across the Middle East and North Africa demands its universal rights, we are supporting political and economic reform and deepening partnerships to ensure regional security" (Department of Defense 2012b). The changing international environment has driven the

emerging requirement for increased capacity of all forces. At the modular BCT level, joint force requirements dictate an increased ability and focus on providing security force assistance. The DOD document emphasizes building partner capacity to combat internal and external hybrid threats.

Additionally, *Sustaining U.S. Global Leadership: Priorities for 21st Century Defense* addresses the potential of extremist and hybrid threats globally. “For the foreseeable future, the United States will take an active approach to countering these threats by monitoring the activities of non-state threats worldwide, working with allies and partners to establish control over ungoverned territories, and directly striking the most dangerous groups and individuals when necessary” (Department of Defense 2012b, 1). The U.S. Armed Forces will accomplish national security objectives through success in ten mission areas: counter terrorism and irregular warfare; deter and defeat aggression; project power despite anti-access/area denial challenges; counter weapons of mass destruction; operate effectively in cyberspace and space; maintain a safe, secure, and effective nuclear deterrent; defend the homeland and provide support to civil authorities; provide a stabilizing presence; conduct stability and counterinsurgency operations; and conduct humanitarian, disaster relief, and other operations (Department of Defense 2012b, 4-6). The DOD also recognizes the need for a holistic government approach in the future Joint Interagency Intergovernmental Multinational (JIIM) environment. “The United States faces profound challenges that require strong, agile, and capable military forces whose actions are harmonized with other elements of U.S. national power” (Department of Defense 2012b, 8).

The *National Military Strategy* 2011 embraces the whole of government approach and the JIIM environment along with the need for the military forces to support other government agencies to advance national interests. Of note is the focus on building international partnership and capacity through security cooperation and regionally focused forces. “Strengthening international regional security requires that our forces be globally available, yet regionally-focused” (Joint Chiefs of Staff 2011b, 10). The *National Military Strategy* identifies five regional focus areas: North America, Caribbean, South and Central America, Broader Middle East, Africa, and Europe (Joint Chiefs of Staff 2011b, 10-12). The current strategic and national political environment and the potential future OE have led to discussions of force structure changes to provide faster deploying by increasingly lighter expeditionary organizations.

Problem Statement

The challenges faced by the Army over the last decade, combined with the plausible future OEs, potential adversarial hybrid threats, and budgetary constraints, have led to a strategic debate on future capabilities. “With deep budget cuts imminent, the U.S. Army has been under pressure to demonstrate a valid need for heavy brigade combat teams [Armored Brigade Combat Team] in the future security environment of irregular warfare and possible air- and sea-centric conflicts with China—an environment in which many believe that such teams will be largely irrelevant” (Johnson 2011b, 1).

The Army’s move to modular BCTs has created three distinct brigades with varying capabilities: The Infantry Brigade Combat Team (IBCT), the Stryker Brigade Combat Team (SBCT), and the Armored Brigade Combat Team (ABCT). All three BCTs are required to have the capability to operate across the full range of military operations

through simultaneous employment of combined arms maneuver and wide area security. The three BCT types, when combined together, provide the United States a force for decisive action against armored-equipped peer competitors.

The ongoing BCTs' capability debates continue based on the three distinct types of modular BCTs. What has worked best over the last ten years further complicates the debate as we look to the potential OEs and adversaries of the future. The Commander of Training and Doctrine Command, General Cone, recently remarked, "Our future success is dependent on building an operationally adaptable force capable of effectively operating in any environment" (Training and Doctrine Command 2012a, 1). As a result, an analysis of the ABCT's organic manpower, equipment, training, doctrine, and capabilities is necessary to answer the question of whether ABCTs are the right organization to face the hybrid threats. The ABCT has adapted in many ways over the last decade and has performed with distinction in major combat operations in the initial ground war in Iraq in 2003. Additionally, the ABCT has adapted well to the counter-insurgency fight in both Iraq and Afghanistan, with and without its organic armored platforms. ABCTs have improved training, implemented new doctrine, and received augmented equipment. Soldiers have improved their skill sets through training to improve their effectiveness on the battlefield. The problem remains: insufficient research to assess the modular ABCTs capabilities and effectiveness in future OEs versus potential hybrid threats.

Primary and Secondary Research Questions

The primary research question was: Does the ABCT have adequate capabilities to defeat potential hybrid threats in the future OEs? To answer this question, five secondary

research questions were used to focus the primary question on the ABCT organizational effectiveness. The secondary research questions were:

1. What are the potential future OEs?
2. What are the plausible hybrid threats in the future OEs?
3. What are the applicable Army doctrine and lessons learned from armored forces in Iraq and Afghanistan?
4. What are lessons learned from other nations' armored forces in similar conflicts and defense drawdowns?
5. How do the ABCT, SBCT, and IBCT compare in performance based on tactical assessment wargame against a hybrid threat in the future OE?

Assumptions

This research accounts for the following necessary assumptions:

1. ABCTs, IBCTs, and SBCTs authorized vehicles, equipment, and manpower will remain the same with minor upgrades to existing equipment and vehicles.
2. ABCTs, IBCTs, and SBCTs will continue to deploy to support the full range of military operations. The BCTs will conduct the Army's core competencies of combined arms maneuver and wide area security and the four elements of unified land operations.
3. Army doctrine will continue to be based on unified land operations across the full range of military operations.

Definition of Terms

Armored Brigade Combat Team (ABCT): ABCTs are balanced, combined arms units that execute operations with unmatched shock effect and speed. Capabilities and systems include main battle tanks, self-propelled artillery, and Bradley Fighting Vehicle equipped infantry which provide tremendous lethality and firepower. ABCTs include two combined arms battalions and one reconnaissance squadron, organic military intelligence, military police, artillery, signal, engineer, CBRN, reconnaissance, and sustainment capabilities (Headquarters, Department of the Army 2010a, 1-7).

Army of Excellence (AOE): During 1982-1983, under the leadership of General Wickham, the Army began to reorganize units under the division Table of Organization and Equipment and implementation of the AirLand Battle concept. Force structure changes included adjusting fighting units aligned to corps and by element—combat, combat support, and combat service support. The new rapidly deployable light infantry division was reduced to 10,000 Soldiers. Weapon modernization programs, including the Abrams tank, Bradley Fighting Vehicle, the Black Hawk and Apache helicopters, brought improved combat capabilities (Romjue 1993, 23-24).

Brigade Combat Team (BCT): BCT is a modular organization that provides the division, land component commander, or joint task force commander with close combat capabilities. Armored, Infantry, and Stryker, BCTs are the basic BCT structures and the smallest combined arms units that can be committed independently (Headquarters, Department of the Army 2010a, 1-1).

Force XXI: In 1994 the Army became focused on developing smaller organizations and capabilities. The focus turned to units which could be rapidly tailorable

and rapidly expansible, strategically deployable, and effectively employable as part of a joint and multinational team to achieve decisive results in future conflicts in all OEs. Force XXI is defined by five characteristics: doctrinal flexibility, strategic mobility, tailorability and modularity, joint and multinational connectivity, and the versatility to function in War and OOTW [stability operations] environments (Training and Doctrine Command 1994, 3-1).

Hybrid Threat: The key components of a hybrid threat, found as part of the strategy, are two or more of the following:

1. Military forces
2. Nation-state paramilitary forces (such as internal security forces, police, or border guards)
3. Insurgent organizations (movements that primarily rely on subversion and violence to change the status quo)
4. Guerrilla units (irregular, indigenous forces operating in occupied territory)
5. Criminal organizations (such as gangs, drug cartels, or hackers)

Hybrid threats have the ability to combine and transition between regular, irregular, and criminal forces and rapidly change tactical operational abilities to exploit U.S. force weaknesses (Training and Doctrine Command 2012a, 4).

Infantry Brigade Combat Team (IBCT): The IBCT is the Army's lightest BCT, and is organized around dismounted Infantry, capable of airborne or air assault operations. Each of the three types of IBCT (light Infantry, air assault, or airborne) has the same basic organization of two combined arms maneuver battalions and one reconnaissance squadron. Organic antitank, military intelligence, artillery, signal,

engineer, reconnaissance, and sustainment elements enable the IBCT commander to employ the force in combined arms formations (Headquarters, Department of the Army 2010a, 1-10).

Joint Interagency Intergovernmental Multinational (JIIM) environment: The term JIIM describes the complex environment that exists when two or more elements of the JIIM are required to perform operations or tasks whose scope and complexity require multiple JIIM elements (Simmons 2009, 2).

Modularity: Army transformation focuses on providing flexible and responsive capabilities to joint force commanders. Flexibility is vital to implementing new warfighting doctrine and to responding to the wide range of operational challenges. Responsiveness is characterized by three attributes:

1. Army forces are modular, allowing for a selective mix of units that meets the needs of combatant commanders at any time and place.
2. Army forces deploy more capable forces directly into the joint operations area when a campaign begins. This allows joint force commanders to exercise the full, complementary range of joint capabilities and confront enemies with a nearly insoluble dilemma.
3. The higher echelon command structure provides combatant commanders with a scalable battle command capability that facilitates command and control across the operational area with greater effectiveness and efficiency.

Modular organizations facilitate meeting the challenges of the 21st century operations. The BCT is now the largest fixed tactical combined arms organization. Three types of

BCTs exist: heavy, infantry, and Stryker (Headquarters, Department of the Army 2008, vii).

Operational Environment (OE): is a composite of the conditions, circumstances, and influences that affect the employment of capabilities and bear on the decisions of the commander (Joint Chiefs of Staff 2011a).

Stryker Brigade Combat Team (SBCT): SBCTs are designed around the Stryker wheeled armor combat system in several variants. SBCTs fight primarily as a dismounted infantry formation. The SBCT includes three maneuver battalions and one reconnaissance squadron, military intelligence, signal, engineer, antitank, artillery, reconnaissance, and sustainment elements (Headquarters, Department of the Army 2010a, 1-12).

Limitations and Delimitations

This paper focused on the IBCT, SBCT, and ABCT at the operational and tactical levels. This research encompasses both US and other nations' military experiences against hybrid threats in similar OEs. Focus areas include: the challenges faced by other nations in determining the future of armored forces given budgetary constraints, post war drawdown of military forces and spending, and future systems and organizational developmental challenges with respect to the hybrid threat. This research included lessons learned from the last decade of experience and application of armored forces, specifically, BCTs against threat conventional armored forces, asymmetric terrorist threats, and non-state actors. This research was based on unclassified information to present findings and the information cutoff date for this research was December 2012.

This research focused on the BCTs effectiveness across the full range of military operations with respect to unified land operations requirements against the hybrid threat. My analysis was limited to the current IBCT, SBCT, and ABCT structures and manning and does not include analysis if the third maneuver battalion is added back to the organizational structure. The analysis applied a DOTMLPF approach to determine effectiveness of the IBCT, SBCT, and ABCT organizations against the hybrid threat in order to determine strengths and weaknesses within each BCT organizational construct.

Significance

This thesis is significant to the military profession because the current debate over the composition of brigade combat teams and the current cost of defense directly relates to the efficacy of the three brigade combat teams' ability to defeat hybrid threats. The current Chief of Staff of the Army tasked the Maneuver Center of Excellence in conjunction with the Armor and Infantry Schools to conduct Army wide analysis through simulations and key leader involvement to determine the best composition for the future force based on ability to defeat the future plausible threats. The analysis conducted in this paper is not a crystal ball prediction, but rather an attempt to model the current BCTs organizational capabilities against plausible hybrid threats in the potential future OEs in order to determine strengths and weaknesses across DOTMLPF and make necessary recommendations for potential solutions.

Summary

This chapter provided an introduction and background to the problem of providing commanders with the right organization, equipment, and skill sets to be

effective against the hybrid threats in the five future OEs. There are potential gaps associated with the three BCTs meeting the requirements for future operations across the full range of military operations and the requirements of unified land operations. Currently, discussions revolve around regionally aligned brigades and a shift in focus to building partner capacity, increasing special operations forces, and decreasing the US military footprint abroad. Therefore armored forces may be too costly and of little use for the Army's missions in the future. The primary research question was: Does the ABCT have adequate capabilities to defeat potential hybrid threats in the future OEs? Chapter 2 is a review of literature relating to the primary and secondary research questions for this research.

CHAPTER 2

LITERATURE REVIEW

> The global war on terrorism has demonstrated that the Army must continuously assess and adapt its capabilities in order to successfully operate in challenging and diverse environments, defeat ever-adapting threat forces, and effectively partner with various joint, interagency, intergovernmental and multinational (JIIM) organizations.
>
> — MG David E. Quantock, *ARMY*

The purpose of this research was to develop analysis to determine if the ABCT has adequate capabilities to defeat hybrid threats. Chapter 1 provided background to the topic and described the problem of determining the right structure, mix of equipment, and skill sets for countering the hybrid threat in future OEs. The review of literature has the aim of developing a framework to guide development of a response to the research question.

This chapter contains six major sections. The first section sources review historical structure changes from the Army of Excellence (AOE) following the Vietnam War, Force XXI, and current modularity. Section two sources discuss hybrid threats in future OEs. Section three addresses Army doctrine changes, with the unified land operations concept. Section four sources establish key parameters for the future OEs in which the Army land forces are projected to operate. Section five summarizes key experiences learned from U.S. armored forces in Iraq and Afghanistan. Section six reviews the responses of other nations' experience against a hybrid threat. The summary provides a collective conclusion reinforcing the importance of this study.

Historical Army Force Structure Changes

Through years of experience the United States Army has transformed the structure, organization, and equipment of its tactical units. The need was driven to meet the demands of a changing strategic environment, budget constraints, anticipated threats, and NSS. The Army force structure changes for this study begin following the close of the Vietnam War. The initial design of the AOE heavy and light infantry divisions then transitioned to the combined arms Force XXI concept and even more recent modular BCT structure organized for the expeditionary force.

The AOE design of the 1980s faced challenges of the Cold War against the Soviet Union as well as combating a large mechanized force in Eastern Europe. The heavy corps design, prescriptive doctrinal command, control, and execution were essential to defend against the large Soviet threat (Romjue 1993, 1). The light infantry divisions provided flexibility and rapid response to worldwide contingencies in support of NATO operations. Light force requirements filled the void until heavy AOE forces could be deployed to the OE (Overland 2009, 3). Doctrinally, by the end of the 1980s, AirLand Battle doctrine was well embedded in training literature. The Army fielded fighting units from the Vietnam era in order to implement new weaponry and the corps-directed battle with rapidly deployable light infantry units (Romjue 1993, 3). New combat systems dominated the Army landscape including the Abrams tank, the Bradley Fighting Vehicle, the Black Hawk helicopters, the Apache helicopters, the Multiple Launch Rocket System, the Stinger Man-Portable Air-Defense System (MANPAD), and Patriot air defense systems. The AirLand Battle doctrine and AOE force structure were validated during the Gulf War in 1991 against a larger Iraqi Army.

Force XXI followed the AOE in the late 1990's. The changing strategic environment led to force reductions and a shift to smaller global engagements requiring a highly mobile and deployable force. Force XXI was defined by five characteristics: flexibility, mobility, modularity, joint multinational connectivity, and the versatility to function in war and OOTW [now referred to as stability operations] (Training and Doctrine Command 1994, 3-1). Force XXI developed digital command and control systems improving situational awareness for commanders and flattening the organization in an effort to improve effectiveness with smaller, more agile divisions.

The Army again sensed a shift in the strategic environment prior to the beginning of the twenty-first century. The ever emerging environment required a mobile and deployable force with characteristics that enabled it to initiate combat on U.S. terms: retaining the initiative, building momentum quickly, and winning decisively. In March 2000 the Army Chief of Staff, General Eric Shinseki, defined an objective force known as the Interim Brigade. This concept required a brigade with the ability to deploy in 96 hours, a division on the ground in 120 hours, and 5 divisions in theater within 30 days (U.S. Congress 2000, 6). The interim brigade combat team became the precursor of the SBCT, which is highly deployable and provides the missing link in capabilities and deployability between the IBCT and the ABCT.

Divisions transitioned to serve as a command and control headquarters providing enablers to the modular BCTs. Divisions also aligned BCTs with the three ARFORGEN readiness pools to provide forces for enduring operations and contingencies (Giovannelli 2008, 21). Under the new modular design, brigades became the basic maneuver unit with increased staff, and capabilities formerly under division and corps control. Modularity

enabled the brigade combat team to be not only highly deployable but self sustainable and uniform across the three types of BCTs, providing effective planning and capabilities for combatant commanders. The three distinct types of BCTs became the ABCT, IBCT, and SBCT, with heavy, light, and medium equipment types. While all BCT designs were validated, there are new questions on whether the future OE makes some BCT designs obsolete. The hybrid threat will be discussed in the following section.

Hybrid Threats in Future Operational Environments

The *2010 Quadrennial Defense Review* outlines the hybrid threat vividly and succinctly:

> The term 'hybrid' has recently been used to describe the seemingly increased complexity of war, the multiplicity of actors involved, and the blurring between traditional categories of threats . . . today's hybrid approaches demand that U.S. forces prepare for a range of conflicts. These may involve state adversaries that employ protracted forms of warfare, possibly using proxy forces to coerce and intimidate, or non-state actors using operational concepts and high-end capabilities traditionally associated with states (Department of Defense 2010).

The Army will be required to conduct offensive, defensive, and stability operations simultaneously across the full range of military operations. Support from the local population cannot be assumed and information operations security will be required to continuously shape perceptions in support of the host nation government and coalition operations. Additionally, the possibility of major combat operations remains real and must be considered with the increased complexity of the JIIM environment. Our nation will be fighting an ill defined enemy while securing the host nation population and setting conditions to enable the success of the host nation's government. This complex environment represents one of the leading challenges of the future.

Hybrid threats have two or more of the following components: military force, nation-state paramilitary forces, insurgent groups, guerilla units, and/or criminal organizations (Headquarters, Department of the Army 2010b, 2-1). “A hybrid threat is the diverse and dynamic combination of regular forces, irregular forces, and/or criminal elements all unified to achieve mutually self benefitting effects” (Headquarters, Department of the Army 2010b, 1-1). These threats are innovative, adaptive, globally-connected and networked through varying forms of media. They can operate effectively in their terrain and quickly adapt their networks to provide speed, increased lethality, and transition into the population. Hybrid threats are a formidable opponent. They are able to blend into the population which makes targeting the organization difficult. They can evolve rapidly, to strike an enemy, and then disperse to survive against an equipped and perhaps numerically superior opponent.

The ability to identify the various threats across an OE requires a continuous, in-depth understanding of the region. Hybrid threats can be loosely coordinated or completely disconnected, yet share the same end result for desired end states. One probable common goal is the removal of U.S. and coalition forces from their area of operations.

For example, “Hezbollah proved itself a formidable adversary, with extensive training received from Lebanon, Syria, and Iran in blending guerilla tactics with conventional military tactics and weapons to create an innovative concept for defending southern Lebanon from Israel, a hybrid war. Hezbollah organized military units to conduct decentralized operations, built well-equipped bunkers across southern Lebanon, stockpiled supplies, and armed itself with standoff weapons (ATGMs, RPGs,

MANPADS, mortars, and varying types of rockets)" (Johnson 2011a). Hezbollah is often described as the model for the hybrid threat theory. The Israeli Defense Force is perhaps the most experienced military in addressing such a threat. The Second Lebanon War in 2006 sent a shock through the capable Israeli military as they faltered against Hezbollah. The Israeli experience in 2006 and 2008 offers compelling lessons to be learned for U.S. forces, especially emerging from10 years of stability operations conflicts.

The Army Capstone Concept recognizes the increase in the complexity of the strategies, and tactics of the hybrid threat—regular, irregular, criminal and terrorist (Training and Doctrine Command 2012b). Current operations will continue to evolve, presenting future ground forces with an ever-increasing challenge to defeat hybrid threats, that are interconnected through access to technology, global information access, media, social media and the internet. The next section outlines the doctrinal references describing the BCT capabilities, tasks required in future OEs and future requirements for operations.

Army Doctrinal Review

There are three key doctrinal references in this study to establish the foundational doctrinal construct. First, ADP 3-0 *Unified Land Operations* will lay the guidelines for what the BCT must be able to execute in any regional OE. Second, *the U.S. Army Capstone Concept* (2012) defines future requirements for operations. Third, Field Manual 3-90.6, *The Brigade Combat Team* (September 2010) defines the structure, the capabilities, and requirements of the BCTs for offensive, defensive, and stability operations for the brigade combat team.

ADP 3-0, *Unified Land Operations* (October 2011) is the newest of the Army capstone concepts for employment of Army forces. It replaced the full spectrum operations concept with unified land operations. The foundations of unified land operations are decisive action, core competencies of combined arms maneuver, wide area security, and mission command. “To seize, retain, and exploit the initiative, Army forces strike the enemy, both lethally and nonlethally, in times, places, or manners for which the enemy is not prepared” (Headquarters, Department of the Army 2011, 5). Army forces conduct decisive action through the simultaneous combination of offensive, defensive, stability, and defense support of civil authorities tasks appropriate to the mission and the OE. The focus of this study is on the ABCT capabilities against a hybrid threat while conducting unified land operations. Force capability requirements are then defined in *The U.S. Army Capstone Concept* (2012).

The U.S. Army Capstone Concept (2012) defines future requirements and tasks to prevent conflict, shape the OE, and win the nation’s wars (Training and Doctrine Command 2012b, 11-15). Prevention tasks include: “provide trained and ready forces,” “improve expeditionary capability,” “posture for influence and deterrence,” “equip a modern force,” and “operate in the homeland” (Training and Doctrine Command 2012b, 11-12). Shaping the OE tasks include: “provide a sustained and stabilizing presence,” “build partner capacity,” “support security cooperation activities,” “conduct steady state activities,” and “provide humanitarian assistance and disaster relief” (Training and Doctrine Command 2012b, 12-13). Winning the nation’s wars tasks include: “deploy rapidly,” “set theaters of operations,” “conduct unified land operations,” and “sustain and conduct military campaigns” (Training and Doctrine Command 2012b, 12-13). Apart

from the “win the nation’s wars” tasks, the additional tasks go beyond the unified land operations requirements, around which BCTs were designed. Assessment of these requirements determines a need for additional enablers, training, and equipment to facilitate mission success at the BCT level.

The capabilities and structure for each BCT were derived from Field Manual 3-90.6, *The Brigade Combat Team* (September 2010). Field Manual 3-90.6 lists the components and capabilities of the ABCT and will serve to assist in analysis of the limitations and functions of an ABCT against a hybrid threat across a regional OE. BCTs are the foundational building block for the Army and conduct offensive, defensive, stability and civil support operations. The ABCT’s mission “is to fight and win engagements and battles in support of operational and strategic objectives. By design, the ABCT seizes enemy territory, destroys the enemy’s armed forces, and eliminates his means of civil population control” (Headquarters, Department of the Army 2010a, 21). The ABCT’s capabilities and limitations frame analysis of the BCT and its effectiveness against a hybrid threat.

The ABCT’s capabilities and limitations are based on the current fiscal year 2013 modified table of organization and equipment (MTOE). ABCTs are balanced combined arms units that execute operations using organic enablers with unprecedented lethal firepower and speed. In personnel, the ABCT includes organic enablers across the warfighting functions to increase effectiveness, including: military intelligence, military police, artillery, signal, engineer, CBRN, reconnaissance, and sustainment capabilities (Headquarters, Department of the Army 2010a, 1-7). Its lethal firepower and speed are a result of the M1A2 SEP main battle tanks, the M109A6 self-propelled artillery (155MM),

and the M2A2/3 Bradley fighting vehicle. Subsequent paragraphs will discuss the IBCT and the SBCT respectively.

Of the three BCTs, the IBCT is the lightest of the Army's BCTs. It is composed of infantry battalions capable of airborne or air assault operations and are organized around dismounted infantry. IBCTs are rapidly and highly deployable to any foreseeable OE because they require less strategic lift and logistical support than other BCTs (Headquarters, Department of the Army 2010a, 1-10). Organic antitank, military intelligence, artillery, signal, engineer, reconnaissance, and sustainment elements enable the IBCT to conduct combined arms maneuver and independently conduct wide area security. Range and scope of an IBCT are limited without ground transportation augmentation from the division level. IBCTs are optimized for operations in restrictive terrain such as swamps, woods, hills, mountains, or densely populated areas, which prevent effective use of vehicle mounted forces (Headquarters, Department of the Army 2010a, 1-10).

The final BCT for discussion is the SBCT. The SBCTs balance combined arms capabilities with significant strategic, intra-theater mobility, and bridge the gap in capabilities and deployability of the IBCT and ABCT (Headquarters, Department of the Army 2010a, 1-12). Security is enhanced through the use of military intelligence, signal, engineer, antitank, artillery, reconnaissance, and sustainment elements (Headquarters, Department of the Army 2010a, 1-12). The Stryker wheeled armor combat system is the primary weapons platform providing the SBCT operational reach, tactical mobility, and speed on the battlefield. It is more deployable than the ABCT and has greater protection, and firepower than the IBCT systems. The Stryker vehicles are used for mission

command, situational awareness, and mobility. However, the focus for the vehicle is on delivering infantry to the fight, coordinating mission command, and support by fire. The decisive component for the tactical fight is the dismounted infantry. The capabilities of the three BCTs were outlined throughout this section. The following section will discuss future OEs.

Future Operational Environments

An OE is, "a composite of the conditions, circumstances, and influences that affect the employment capabilities and bear on the decisions of the commander" (Joint Chiefs of Staff 2011a, xv-xvi). Regardless of the force structure applied, the commander and his staff must first understand the impact of the OE in order to accurately address the problem set. Critical aspects of potential future OEs, depend on an accurate definition of the requirements for successful maneuvers against hybrid threats in the future operations. Military forces which have been successful in the past in adapting to the changing nature of war with its evolving threats did so by first understanding and defining the problem sets or OEs they faced. In essence, they have successfully executed the operational process and specifically the intelligence preparation of the battlefield (IPB). The steps of IPB are vital to framing the environment: "define the operational environment, describe environmental effects on operations, evaluate the threat, and determine threat courses of action" (Headquarters, Department of the Army 2012b, 1-12). To enhance upon the IPB additional analysis is conducted during mission analysis using the operational variables to further frame and understand the environment.

Doctrinally, operational variables are used to evaluate the threat toward the unit by building situational understanding, as well as defining the parameters of the OE. *The*

Operations Process is composed of, "eight interrelated operational variables: political, military, economic, social, information, infrastructure, physical environment, and time (PMESII-PT)" (Headquarters, Department of the Army 2012b, 1-7). Table 1 lists the operational variables along with a brief description of each as defined by ADRP 5-0. The operational variables allow the planner to analyze the environment and the potential hybrid threats.

Table 1. Operational Variables definitions ADRP 5-0

Variable	Description
Political	Describes the distribution of responsibility and power at all levels of governance—formally constituted authorities, as well as informal or covert political powers.
Military	Explores the military and paramilitary capabilities of all relevant actors (enemy, friendly, and neutral) in a given operational environment
Economic	Encompasses individual and group behaviors related to producing, distributing, and consuming resources.
Social	Describes the cultural, religious, and ethnic makeup within an operational environment and the beliefs, values, customs, and behaviors of society members.
Information	Describes the nature, scope, characteristics, and effects of individuals, organizations, and systems that collect, process, disseminate, or act on information.
Infrastructure	Is composed of the basic facilities, services, and installations needed for the functioning of a community or society.
Physical Environment	Includes the geography and manmade structures, as well as the climate and weather in the area of operations.
Time	Describes the timing and duration of activities, events, or conditions within an operational environment, as well as how the timing and duration are perceived by various actors in the operational environment.

Source: Headquarters, Department of the Army, Army Doctrine Reference Publication (ADRP) 5-0, *The Operations Process* (Washington, DC: Government Printing Office, 2012), 1-7.

TRADOC G-2 produced Operational Environment Assessments of six regional focus areas as determined through TRADOC analysis nested to national strategic documents. The regional OEs focused on the Asia-Pacific, Middle East and Southwest

Asia, Europe and Russia, Africa, Central and South America, the Caribbean, as well as North America (Training and Doctrine Command 2012a, 56). The North American region is primarily a Defense Support to Civilian Authority requirement. For this study, the North American region was excluded for analysis. This thesis focused on offense, defense, and stability tasks conducted separately from the U.S. national borders. The remainder of this section is dedicated to summarizing the analysis with respect to the three specific operational variables of each of the remaining five OEs to provide depth of understanding and the grounds for analysis of the ABCT against a hybrid threat.

Providing for an appropriate scope for the analysis of this study, a breakdown for each of the five OEs was conducted. This homogenized OE will be the basis for analysis of the three BCT types; ABCT, IBCT, and SBCT. The following will illustrate how U.S. forces will conduct unified land operations against the variable range of a hybrid threat capability. For this research, the three essential variables used for analysis will be the military, social, and information aspects of an OE. These aspects will be analyzed with respect to the possible range of hybrid threat capabilities.

Military-"Conflict is a constant condition across the strategic environment, with intrastate conflict increasing while state-on-state conventional fights are decreasing" (Training and Doctrine Command 2012a, 15). "During the forecast period, governments worldwide will face networks of adversaries with a wide range of sophistication, capabilities, and goals" (Training and Doctrine Command 2012a, 15). Multiple threats to U.S. interests exist globally, and the increasing interdependency of the international community leads to multiple entity involvement. The potential for armed conflict between nation-states remains a difficult challenge. Many hostile nations such as Iran,

North Korea, and China have large mechanized forces and are improving military capabilities and access to technology. China, for example, has the overall largest army in the world with 2.3 million active duty personnel, 800,000 in reserve, with approximately 8,000 tanks, and 19,000 armored fighting vehicles (globalfirepower 2011). North Korea has more than 1.1 million personnel on active duty, 8.2 million reserves with 5,400 tanks and 2,580 armored fighting vehicles (globalfirepower 2012). Iran has an active duty force of 545,000 personnel and an additional 650,000 on reserve status with 2,895 tanks and 1500 armored fighting vehicles (globalfirepower 2012). Standing armies are not the only plausible threats emerging in the future.

Additionally, the influence of non-state actors, including transnational terrorist organizations and organized criminal elements, has ever-increasing regional and worldwide reach. Threats within an OE include terrorism, illegal drug trafficking, illegal firearms, piracy, and intentional environmental damage. Potential adversaries will use hybrid tactics to avoid U.S. military strengths investing in sophisticated cyber capabilities, electronic warfare, and standoff weapons (Training and Doctrine Command 2012b, 8).

As more foreign governments increase their regional capabilities and begin to explore avenues for regional and international investment to access additional resources, the risk of conflict will continue to rise. Traditional armies are advancing their capabilities through investing in research and development in their own technology and weapon systems. They are also conducting extensive foreign military sales and partnerships. For example, China and India have sparked an international arms race and proxy competition on the African continent as well as economic competition for natural

resources. “From 2003 to 2006, China’s arms sales to Africa made up 15.4% ($500 million) of all conventional arms transfers to the continent, including weapons sales to Burundi, Equatorial Guinea, Eritrea, Ethiopia, Sudan, Tanzania, and Zimbabwe” (Training and Doctrine Command 2012a, 68). “India has also begun to expand its military presence in Africa by signing defense cooperation agreements with Kenya, Madagascar, Mozambique, and the Seychelles, due in part to concerns over Chinese expansionism” (Training and Doctrine Command 2012a, 68).

The frame of the hybrid threat along with the regional investment in and search for natural resources offer criminal elements ample opportunity to engage in criminal activity and exploit unstable nations and regions. A possible result of regional leaders extending beyond their borders will in turn actually weaken themselves making them a target. Criminal elements will seek to exploit weakened borders to increase financial gains and dominate in an already weak nation. Irregular forces and terrorist organizations will seek to recruit the disenfranchised nationals and quickly indoctrinate their views as a way to undermine the host nation’s government. Africa is the most recent glaring example of this regional instability and exploitation by terrorist, criminals, and pirates. “A recent wave of coups, civil conflicts, and political stalemates between opposing factions suggest a trend of democratic backsliding across the region” (Training and Doctrine Command 2012a, 72).

The preeminent threats of North Korea, China, and Iran also have the ability to pose a significant hybrid threat. If threatened, all three nations have extensive manpower and operational capabilities which would enable them to exploit various criminal networks and cyber capabilities if the targeted nation were invaded or attacked. These

three nations have the capacity for the most dangerous course of action. They have the potential to combine large internal forces as a hybrid threat. Key military aspects have been addressed. The following section addresses the analysis of the social variable.

Social-Two major trends socially threaten governments globally. First, is the declining population trend in nations whose populations have been the largest over the last twenty years like China, Japan, Russia, and Korea. Additionally, "China, Japan, Russia, Korea, and most of Europe will experience aging populations and gradual population decline that will test their governments' abilities to maintain economic growth, provide health care and pensions to growing senior populations, and provide for national defense. The number of older people will likely double in the developed world by 2028" (Training and Doctrine Command 2012a, 21).

Second, the majority of the world's population growth will be in the developing world, which is experiencing a youth expansion. The shift in population, coupled with urbanization in the developing world, will stress the abilities of limited governments to provide for their people, essential services and resources. "The competition for resources-aggravated by a larger world population-also increases the possibility of armed conflict, with populations desperate for essential resources being more likely to resort to extreme measures" (Training and Doctrine Command 2012a, 22). Failed or failing states unable to provide for their people create a fertile opportunity for organized crime or terrorist organizations to quickly infiltrate and agitate disaffected people. This will allow the attacking force to quickly penetrate the populace and create support for their organizations, and facilitate power against a weak government.

Hybrid threats can quickly move to fester in these social environments. Criminal elements are apt to exploit the limitation of resources for profit. Terrorist organizations will also be able to combine irregular threats against the weakened government as they exploit the poorest segments of population for recruiting. Combining irregular forces, the criminal and terrorist organizations will likely form to protect their interests, and revenue. These forces will exploit information and ideology to counter the national government.

Central and South America have seen several examples of this combined criminal and terrorist threat. In Colombia, three threats have loosely partnered together to achieve results. The three groups are the Fuerzas Armadas Revolucionarias de Colombia (FARC); the Ejercito de Liberacion Nacional (ELN); and the Autodefensas Unidas de Colombia (AUC) (Training and Doctrine Command 2012a, 72). These three elements were able to successfully join as a hybrid threat to provide combined efforts, mutual support, and funding for operations. Their tactics included kidnapping, torture, and mass executions.

A more severe threat scenario would exist in China, North Korea, or Iran if those nations were invaded by a coalition force. The most likely course of action would place coalition forces against a regular and irregular threat, with a paramilitary threat similar to the above terrorist organizations targeting the host nation population. The host nation's goal would be to undermine coalition operations and newly formed government credibility. Similar to Iraq and Afghanistan, the hybrid enemy would seek to draw out the conflict and erode international and U.S. national support and avoid large scale operations. With the social variable analysis complete, the following section will transition to a study of the information variable.

Information-In the realm of information, three major changes are developing rapidly due to emerging technologies at a much lower price. First, access to technology is no longer limited to first-world nations. “The implications of technology proliferation are multiple and varied, but four stand out in particular: transparency, actor empowerment, strategic narrative, and technological vulnerability” (Training and Doctrine Command 2012a). Many nations, formerly lacking in information technology infrastructure, are able to capitalize on rapid advancements and to quickly build their national communication architecture.

Second, just as social media has a direct impact on individual communication; it is also effectively used as an information operations tool for non-state actors and groups. Youtube was successfully used during the Egyptian uprising of 2012 as the disaffected people created videos showing their demonstrations, thus illuminating their cause internationally. “As technology is placed in the hands of more and more people, social media will make it easier to instantly mobilize large crowds, be it political, military, or social in nature” (Training and Doctrine Command 2012a, 24).

Third, U.S. forces are bound by legal and moral restrictions requiring accurate reporting. Transparency and actor empowerment have created a competition for first release of information (Training and Doctrine Command 2012a, 24). Hybrid threats are bound by no such legal or moral code and will seek to win the information war through first reporting and deceptive information operations undermining legitimacy of coalitions and host nation governments. “This has strong implications for both the political and military, as modern governments and militaries are usually constrained by some form of

approval chain that limits their ability to rapidly respond to events, whereas their opponents have no such constraints" (Training and Doctrine Command 2012a, 24).

Hybrid threats around the globe have mastered the ability to manage and manipulate information. Information technology and social media are prolific and cheap to access. Throughout the Arab Spring and across all the nations involved, information dominance provided a decisive advantage at the strategic level by communicating effectively with the international community. Information dominance at the tactical level is more reliant on insurgent and irregular presence to dominate the message. Hybrid threats seek to maintain dominance in information through continual presence, threats, and indigenous involvement to carry the message to counter any coalition. Criminal and terrorist organizations have the advantage of existing networks and are not required to function with respect to national or international law. Coalition forces must focus across media outlets to gain the information initiative to communicate information operations.

The most dangerous information capabilities will exist if the hybrid threat includes a nation state. Nation state threats, like China, North Korea, and Iran, are effective beyond the tactical level. All three have robust international, strategic, and operational information efforts and cyber capabilities to counter coalition efforts on host nation's internet and social media. Cyber offensive capabilities also exist to attack coalition capabilities and limit coalition effects. Additionally, paramilitary and irregular threat capabilities exist within their borders to exploit local population support and counter coalition operations. Their land mass and population also present additional challenges requiring coalition presence and involvement to effectively win an information fight. This additional combat power requirement would degrade combat

capabilities from a major combat operation or require a large number of coalition forces to effectively gain initiative from a hybrid threat, in any of the three locations.

This research addressed the three essential variables of military, social, and information aspects of an OE. These aspects were analyzed with respect to the possible range of hybrid threat capabilities. The next section will address U.S. Army and Marine Corps lessons learned from Afghanistan and Iraq with respect to the employment of armor capabilities and forces.

US Army and Marine Corps Lessons Learned from Iraq and Afghanistan

Throughout the last decade of experience in combat, the ABCT has successfully operated across the full range of military operations conducting decisive action through combined arms maneuver and wide area security. The ABCT has proved an invaluable resource from the beginning of major combat operations in Operation Iraqi Freedom and through offense, defense, and stability operations through 2010, when Iraq was transitioned back to host nation control. Armored forces have also served admirably in Afghanistan as well with both their armored platforms and as dismounted formations without their platforms. The ABCT has proven versatility and functionality with its most valued resource, the soldiers who fill its ranks.

During the initial invasion of Iraq, the utility of the ABCT allowed the U.S. Army to achieve victory over a heavily armored enemy in unprecedented time, with high degrees of protection, firepower, and survivability. No other brigade combat team formation, whether IBCT or SBCT, could have achieved such decisive victory over a heavily armored opponent. Composition of the total armored force for the initial invasion

phase of the war was staggering with a joint and multi-national effort comprised of approximately 450 tanks. “The 3d Infantry Division included over 200 M1A1s tanks. The 1st Marine Expeditionary Force had two tank battalions with some tanks being provided to each of the three RCTs of 1st Marine Division. The British Army deployed two tank battalions in 7th Armored Brigade with a total of 120 Challenger 2 tanks” (Gordon and Pirnie 2005). Armored forces during major combat operations proved invaluable as critical ground combat weapon systems. The armored elements that led the advance compensated for poor situational awareness, survived hostile fire, and terrorized the enemy psychologically (Gordon and Pirnie 2005, 2).

Gordon and Pirnie (2005) also point out several major lessons from the use of armored forces in the invasion of Iraq. Armored forces, specifically tanks, led the advance which provided protection for coalition forces to maneuver, even when situational awareness was poor and the enemy threat possessed armored capabilities. “Indeed, this operation [Operation Iraqi Freedom 2003] demonstrated the inverse relationship between force protection and situational awareness. In circumstances where situational awareness was poor, as it normally was at the brigade/ regimental level and below, there was a clear need for strong armor protection” (Gordon and Pirnie 2005, 2).

Tanks were able to move against an armored enemy with increased survivability by immediately reacting with intense firepower and maneuverability. “Tanks were immediately responsive when contact was made with the enemy. Compared to artillery that could respond in 2 to 4 minutes, or fighters or bombers that could arrive on scene in 5 to 20 minutes, tanks could open fire within seconds” (Gordon and Pirnie 2005, 2).

Armored platforms were used effectively in urban operations. Tanks and infantry fighting vehicles were partnered effectively in combined arms teams to seek out, attack, and finish the Iraqi enemy threat. “The Army's 3d Infantry Division developed an urban operations technique in which two Abrams would be closely followed by two Bradleys with mounted infantrymen and often an engineer vehicle behind the Bradleys. The tanks would flush the enemy when Iraqi forces fired on the tanks or ran from them, allowing the Bradleys to employ their 25mm cannons and machineguns” (Gordon and Pirnie 2005, 2).

The armored vehicles provided a psychological shock effect demoralizing the enemy. This immediately turned the battle and momentum toward the U.S. forces who engaged in direct fire. For example, “one senior Marine described an intense firefight at a bridge in An Nasiriyah on March 24. The decibel level of the firefight was “about 90.” As two Marine Corps tanks rumbled onto the bridge, the volume of enemy firing “immediately went to about a 20” (Gordon and Pirnie 2005, 2).

Armored vehicles provided unparalleled force protection against both small arms and anti-tank systems. A tank battalion commander in the 3d Infantry Division, “stated that one of his Abrams tanks took 45 hits from various weapons, including heavy machineguns, anti-aircraft guns, mortar rounds, and rocket-propelled grenades, with no penetration” (Gordon and Pirnie 2005, 2). Tanks and Bradley fighting vehicles would also prove invaluable during stability operations throughout the war because they could operate in urban terrain and survive Improvised Explosive Devices (IEDs), Explosively Formed Penetrators (EFPs), and Rocket Propelled Grenade (RPGs) direct hits, allowing Soldiers to survive first contact and immediately react, maneuver and destroy the enemy.

Despite a proven record in combat, many have argued against the armored platforms because of their fuel consumption rates. There is a fear that armored forces would bring U.S. forces to prematurely culminate based on class III and Class V consumption and maintenance issues. However, throughout Operation Iraqi Freedom the armored vehicles maintained high operational ready rates and other forces were unable to maintain the pace and intensity of the ABCT formations. “Nevertheless, in Iraqi Freedom both the Army and Marines were able to keep their tanks fueled without undue difficulty. In the case of 3d Infantry Division, the maneuver brigades were provided with extra fuel trucks prior to the offensive, thus making resupply relatively easy” (Gordon and Pirnie 2005, 2).

Armored Forces continued to prove their capability throughout the stability operations and surge operations in Iraq and Fallujah in November 2004 where they led the offensive actions to defeat insurgents (Oliver 2011, 63). Counter-insurgency operations were also successfully conducted by the 3rd Armored Cavalry Regiment in Tal Afar, Iraq (Oliver 2011). The 1st BCT, 1st Armored Division, was also used successfully in Ramadi, Iraq (Oliver 2011, 63). “Armored and mechanized forces have shown their effectiveness in built-up areas in numerous engagements in Iraq and have exhibited a great deal of utility in other operations short of war. The key determinant to their effectiveness in irregular warfare is force employment—how we use them, not necessarily where” (Oliver 2011, 67). The next section analyzes lessons learned from our international partners and allies.

Israel, Great Britain, and Canada Lessons Learned

The Israeli Defense Forces (IDF) learned many valuable lessons operating against a hybrid threat. The IDF clashed with Hezbollah, between the 2006 Second Lebanon War and in 2008 against Hamas in Gaza during Operation Cast Lead. Following the Second Lebanon War in 2006, the IDF went "back to basics," adapting organizational, doctrinal, and training changes. Emphasis shifted to building up ground forces and training in major combat operations skills, particularly combined-arms warfare tactics and air ground integration of attack and ISR assets. In the regular forces, training time was doubled, and combined-arms, live-fire exercises were instituted for brigade combat teams (Johnson 2011a). Additionally, combined arms maneuver regained focus with respect to the Israeli Army and the Israeli Air Force also increasing cooperation in the integration of UAVs, ISR and close air support. Tactical air control capabilities were returned back to the Brigade level as well. IDF artillery and air strikes paved the way for ground maneuver by brigade combat teams and the IDF successfully conducted combined arms maneuver with engineer support and armored units (Johnson 2011a).

In a RAND study Johnson (2011) identified seven major lessons with application for the U.S. Army. First, the ability of hybrid opponents to gain capabilities and training of effective standoff weapons are "game changers." Threats that attain them can change intensity and the threat to force protection measures. Defeating these opponents requires different skills than are used in counterinsurgency efforts during stability operations (Johnson 2011a). Second, solutions to hybrid threat challenges require interservice and interagency cooperation and solutions (Johnson 2011a). Third, precision standoff systems are critical and provide added measures of success, but are only a part of the solution and

cannot eliminate a hybrid threat alone (Johnson 2011a). Joint operations are required to effectively target, capture, or kill hybrid threats, regardless of the OE. Fourth, persistent ISR assets are critical against a dispersed enemy and high value targeted systems or individuals (Johnson 2011a). Mission command and a common operating picture, providing situational awareness across the combined arms team is critical in avoiding collateral damage and successfully prosecuting targets. Fifth, there is a requirement for comprehensive air-ground-ISR integration at subordinate tactical unit levels down to battalion; common references (GRGs, control measures, etc) to coordinate ground and air movement and fires integration, and a common system for communication and display of ISR full motion video feeds (Johnson 2011a). Sixth, successfully striking targets in urban environments require a combination of interagency intelligence (JIIM and fusion) and precision strike weapon systems to minimize collateral damage and meet proportionality requirements (Johnson 2011a). Seventh, armored forces are essential against a hybrid threat. Similar to lessons learned from OIF I, Israeli armored forces reduced operational and tactical risk, provided force protection minimizing friendly casualties, and provided stand-off weapons capability, and counter mine and IED ability (Johnson 2011a).

During the 2003 invasion of Iraq, British forces had 120 Challenger II main battle tanks and Warrior infantry fighting vehicles (Johnson and Gordon 2010, 3). The United Kingdom Minister of Defense for Procurement, stated, “Operation Telic [the British designation for Iraqi Freedom] underscored the value of heavy armor in a balanced force.” He also stated that Iraqi Freedom confirmed “protection is still vital” and reemphasized “the effect of heavy armor in shattering the enemy's will to fight” (Gordon and Pirnie 2005).

During the stability operations, although they emphasized light infantry dismounted operations, the British maintained armored capabilities. The British used the tanks to support dismounted counter insurgency operations, and the platforms served as a support by fire platform when needed at the small unit level. “British Army sources described their heavy units as still being vital during the protracted insurgency” (Johnson and Gordon 2010, 3).

The British units were able to use the armored vehicles to great psychological effect against the enemy as well as effective support by fire platforms and force protection based on high survivability against rocket propelled grenades and IEDs. “The British sources said that tanks tended to “intimidate” the enemy and noted that when tanks were around, the level of insurgent activity declined significantly” (Johnson and Gordon 2010, 3). The armor did, however, have a high sustainment requirement for maintenance and supply for fuel, parts, and ammunition.

The Canadian Army has reached many of the same conclusions as the British. The Canadian Army has deployed armored vehicles, both Light Assault Vehicles (LAVs) and tanks, both German and Dutch variant Leopard I and IIs. The experience in southern Afghanistan has convinced the Canadian Army that armored forces have a very important role in counter-insurgency and stability operations (Johnson and Gordon 2010, 4).

As Taliban forces surged in 2006, in concert with U.S. forces shifting to surge in Iraq, the Canadian forces in southern Afghanistan found that their LAVs lacked adequate fire power and force protection to meet mission requirements. “The 25mm gun on their LAVs was not powerful enough to penetrate some targets, such as well-constructed buildings, and the vehicles did not have sufficient armor protection against anti–armor

mines, mortar fire, RPGs, and recoilless rifles that the Taliban were using" (Johnson and Gordon 2010, 4). Mobility was also restricted to roads due to the LAVs weight and as a wheeled vehicle would get stuck and require additional recovery assets.

Similar to the British Army, the Canadians employed their tanks as support by fire elements at the small unit tactical level in support of dismounted infantry increasing lethal and non-lethal effect on the enemy, and increasing force protection and survivability. The Canadians used the tanks for psychological effect to intimidate the enemy, and the tanks were more mobile than LAVs (Johnson and Gordon 2010, 4). "Only three Canadian tanks have been seriously damaged in Afghanistan: one Leopard I and two Leopard IIs. Only one tank crewman has been killed" (Johnson and Gordon 2010, 4).

Summary

This chapter was a review of literature necessary to provide a framework to guide development of a response to whether the ABCT has a role against hybrid threats in future OEs. This chapter described U.S. security strategies and the hybrid threat. It gave a review of relevant doctrine and summarizing lessons learned from U.S. Army and Marine Corps experiences over the last twelve years. The final aspect reflected lessons learned from other nations against a hybrid threat. The doctrinal review section demonstrates the change in Army doctrine to prepare for the future requirements in the regional OEs as well as the current doctrinal structure for the ABCT, SBCT, and IBCT. This structure will be used in assessment of the BCTs against the hybrid threat capabilities. The lessons learned section included a review of recent engagements from U.S. and multinational forces in Iraq and Afghanistan. Additionally, Israeli Defense Forces failures and

successes against Hezbollah and Hamas highlighted successful approaches to countering hybrid threats and using armored forces. The next chapter describes the research methodology used to generate and analyze data to answer the primary and secondary research questions.

CHAPTER 3

RESEARCH METHODOLOGY

Introduction

The purpose of this research was to assess the three BCTs effectiveness in unified land operations conducting offense, defense, and stability operations against a hybrid threat. The BCTs were evaluated based on their structure, equipment, and skill sets available based on 2013 MTOEs. The aim of this chapter is to describe the research methodology used to answer the primary research question: Does the ABCT possess adequate capabilities to defeat potential hybrid threats in the future OE?

This chapter has five main sections. The research approach section describes the qualitative research design and introduces the case approach, requirements used in the tactical assessment, and evaluation criteria used in the analysis. The data sources section describes the sources for data collection and BCT capabilities analysis, as well as the basic model for the hybrid threat. The procedures section describes the process used to collect and analyze data. The analysis section describes the process for applying the data gathered from the tactical assessment against the evaluation criteria to address the primary research question. The next section will outline the research approach.

Research Approach

The research used a qualitative approach to develop responses to the primary and secondary research questions. The research plan included an analysis of doctrine and literature, an analysis of the BCTs capabilities compared to strategic requirements, followed by a tactical case study assessment, and a strengths, weaknesses, opportunities,

and threats (SWOT) analysis of the BCTs against a hybrid threat. The purpose of the doctrine and literature review was to determine the requirements against which to assess the BCTs. The purpose of the BCT capabilities analysis for strategic requirements was to determine and compare the BCTs capabilities for strategic and operational deployment. This information further developed the case study SWOT analysis of the BCTs against a hybrid threat. The SWOT analysis identified strengths, weaknesses, opportunities and threats for the BCTs in unified land operations. The purpose of the evaluation criteria analysis was to determine the capabilities the BCTs require for effective unified land operations across movement and maneuver, enablers, and sustainment categories against plausible hybrid threats. The results from the analysis generated findings organized according to the organization, training, materiel, and personnel of the DOTMLPF framework which answered the secondary research questions. The next section sets the bounds of the data sources.

Data Sources

The previous chapters included an investigation of strategic and operational guidance for conducting future operations against potential hybrid threats. This research focused on the strategic and operational levels for deployment into an OE and tactical level assessment for operations against a hybrid threat. Additionally, the analysis focused on the BCT's organizational structure in accordance with doctrine and FMSweb assessment of personnel, weapons, vehicles, and equipment. The strategic capabilities assessment uses cost data created from the Army FORCES website for analysis and comparison of the brigade combat teams. The tactical assessment depicted IBCTs, SBCTs, and ABCTs against a hybrid threat based on the literature review from chapter 2.

The baseline capabilities for the hybrid threat for this study will be those capabilities as defined in the Department of the Army, Training Circular 7-100, *Hybrid Threat*. Further details of the hybrid threat will be defined in chapter 4. The same threat capabilities will be wargamed against all three BCTs in the generic OE with evaluation across the maneuver, enablers, and sustainment categories, with a SWOT analysis. The next section addressed is the analysis. The analysis is comprised of the strategic capabilities assessment and the tactical assessment wargame.

Analysis

Strategic Capabilities Assessment

The strategic capabilities assessment was the process for developing data from the analysis of the three BCTs against four critical requirements of a modular Force XXI capable formation. The four requirements include: strategic mobility, tailorability and modularity, versatility to operate across the full range of military operations, and cost to equip and train each BCT type. Each BCT type was assessed against the four strategic characteristics of modular requirements, and data was organized within the framework of detrimental, insufficient, sufficient, and optimal by the common OE. The four strategic capabilities and the framework for assessment are defined in the following paragraphs.

The future Army must be prepared to conduct decisive action across the full range of military operations while facing the full spectrum of OEs discussed in chapter 2. Force XXI is defined as characteristics that include “doctrinal flexibility, strategic mobility, tailorability and modularity, joint and multinational connectivity, and the versatility to function in War and OOTW environments” [Operations other than War are now referred to as stability operations] (Training and Doctrine Command 1994, 3-1).

Strategic mobility includes being “at the right place at the right time with the right capabilities” (Training and Doctrine Command 1994, 3-1, 3-2). It is the combination of anticipation, movement, and skillful pre-positioning using existing prepositioned stocks and strategic air and sea lift. Lethality and survivability of early entry forces will continue to be a requirement in order to allow follow on forces and force capabilities in any given OE to achieve national security objectives. In addition to the Force XXI definition, strategic mobility will also be assessed on cost and time required to deploy each BCT type and cost to maintain pre-positioned in regional commands.

Tailorability and modularity aid the Army to quickly deploy the right size force, in support of missions across the full range of military operations. The varying requirements embedded with offense, defense, and stability operations tasks in conjunction with the specific OE and threat requirements allow the appropriate level of force be sent to accomplish the mission. Modularity also enables BCTs to command and control larger formations and receive attached assets to further enable independent operations. “Strategic lift limitations, other service capabilities, time limits, and other factors may compel the Army to use only those forces absolutely necessary” (Training and Doctrine Command 1994, 3-2).

Versatility across the full range of military operations is an absolute requirement in future operations with a reduced force structure. All three BCTs must be able to simultaneously conduct defense, offense, and stability operations in any OE. The main imperative guiding future joint operations will be mission command, shared situational understanding, and information management in a JIIM environment. Information will allow the conduct of future full-dimensional operations by informing units of the full

effect of all actions throughout the depth, height, width, and time of the OE (Training and Doctrine Command 1994, 3-2). Such information will allow greater synchronization of effort while conducting combined arms maneuver or wide area security and control of operational tempo lethal and non-lethal force application. Finally, versatility also includes the ability to employ joint military capability in conjunction with other government functions to achieve national security objectives in the respective OE.

Costs to equip and train will be analyzed across all three BCT types. Cost to equip will be defined as cost of MTOE equipment based on property book value. Cost to sustain will include annual operational costs for maintaining equipment as well as training costs for personnel and systems based on an assessment of an annual training, operating, and maintaining costs.

The results from the strategic capabilities assessment yielded a classification of detrimental, insufficient, sufficient, or optimal. Detrimental is defined as a lack of capabilities resulting in failure and harmful to future mission accomplishment and organizational structure. Insufficient is defined as, “capabilities severely lacking and resulting in failure” (Overland 2009, 35). Sufficient is defined as, “that not all required capabilities were present but adaptation resulted in limited success” (Overland 2009, 35). Optimal is defined as, “necessary capabilities were present to fulfill requirements resulting in success” (Overland 2009, 35). Table 2 shows the model for the assessment of the BCTs against modularity and Force XXI requirements when deploying to an OE. The results from the strategic capabilities assessment provided the data required to assess the BCTs in the tactical assessment wargame.

Table 2. Strategic Capabilities Assessment				
Four characteristics of Force XXI formations	ABCT	IBCT	SBCT	Assessment
				Detrimental Insufficient Sufficient Optimal
Equipping and training costs				
Strategic Mobility				
Tailorability and Modularity				
Versatility to operate across the full range of military operations				

Source: Created by author.

Tactical Assessment Wargame of BCTs against the Hybrid Threat

The next part of the research methodology was to apply the data collected from the BCT strategic capabilities assessment into the tactical assessment wargame of the BCT against the hybrid threat and the three evaluation criteria using a SWOT analysis. The wargame assessed the BCTs organic capabilities against a hybrid threat using movement and maneuver, enablers, and sustainment categories as evaluation criteria. The wargame analysis included a SWOT assessment. The results from the tactical assessment wargame provided the basis for the discussion to answer the secondary research questions:

1. What are the potential future OEs?
2. What are the plausible hybrid threats in the future OEs?

3. What are the applicable Army doctrine and lessons learned from armored forces in Iraq and Afghanistan?
4. What are other nations' armored forces lessons learned from similar conflicts and defense draw downs?
5. How do the ABCT, SBCT, and IBCT compare in performance based on case study analysis against a hybrid threat in the future OE?

SWOT analysis is a framework for analysis of external and internal organizational factors and those factors bearing on competitive advantage (Chermack and Kasshanna 2007, 384). The SWOT tool, "helps look at the organization's current performance (strengths and weaknesses) and the organizations future (opportunities and threats) by accounting for the factors that exist in the external environment" (Chermack and Kasshanna 2007, 384).

This analysis allows organizations to determine requirements for revision of strategy, implementation of organizational strategy, or both. The Army uses a similar analysis during the military decision making process when friendly unit capabilities are compared to the enemy in a particular OE conducting a relative combat power analysis across the war fighting functions. This process identifies strengths, weaknesses, and relative advantages. The following definitions will be used for SWOT. Strengths are "internal competencies and capabilities—What we have" (Chermack and Kasshanna 2007, 388). Weaknesses are "lack of internal competencies and capabilities—What we lack" (Chermack and Kasshanna 2007, 388). Opportunities are "external positive circumstances—What we could get" (Chermack and Kasshanna 2007, 390). Threats are

"external negative circumstances—What we could lose" (Chermack and Kasshanna 2007, 390).

The three evaluation criteria selected for this study were movement and maneuver, enablers, and sustainment. Movement and maneuver are defined in ADRP 3-0 as, "the related tasks and systems that move and employ forces to achieve a position of relative advantage over the enemy and other threats" (Headquarters, Department of the Army 2012a, 3-3). Tactical and operational maneuver are intertwined with sustainment requirements and tasks. Movement and maneuver includes several tasks including "deploy, move, maneuver, and employ direct fires" (Headquarters, Department of the Army 2012a, 3-3).

Enablers have been defined as, "noncombat troops who specialize in areas such as intelligence, surveillance and reconnaissance; explosive ordnance disposal; medical and mental health; and personnel administration" (McMichael 2009). For the purpose of this study, enablers focused on the essential combat skills of fire support, intelligence, surveillance, and reconnaissance. Enablers fall under temporal advantages that "enable Army forces to set the tempo and momentum of operations and decide when to fight so the enemy loses the ability to respond effectively" (Headquarters, Department of the Army 2012a, 2-9).

Sustainment is the "related tasks and systems that provide support and services to ensure freedom of action, extend operational reach, and prolong endurance" (Headquarters, Department of the Army 2012a, 3-4). Sustainment is critical to maintaining momentum, gaining the initiative, and directly contributes to operational tempo and mission success. For the purpose of this study sustainment will be assessed

only through the aspect of logistics. Logistics is the "planning and executing the movement and support of forces" (Headquarters, Department of the Army 2012a, 3-4). Logistics includes "maintenance, transportation, supply, field services, and distribution, operational contract support, and general engineering support" (Headquarters, Department of the Army 2012a, 3-4).

The ability of the BCTs to meet the tasks associated with the three evaluation criteria yielded an outcome of detrimental, insufficient, sufficient, or optimal. The evaluation was based on the ability to accomplish the tasks associated with each variable when compared against a hybrid threat. The SWOT analysis highlighted the capabilities that enhanced and degraded each BCT's overall effectiveness. The analysis included a cross walk of baseline capabilities and organic assets provided to the BCTs in order to conduct decisive action across the range of military operations. The cross-walk of the BCTs with organic assets across the variables demonstrates capabilities BCTs require to be effective. Comparing the three case events highlighted the considerations common to all future OEs for augmentation. These improvements will be addressed within the DOTMLFP construct in the research findings. Table 3 shows the model used for analyzing the case events against the evaluation criteria.

Table 3. BCT Capability and Evaluation Criteria				
	Maneuver	Enablers	Logistics	Assessment
[redacted]	S/W/O/T	S/W/O/T	S/W/O/T	Detrimental Insufficient Sufficient Optimal
ABCT				
IBCT				
SBCT				

Source: Created by author.

Summary

This chapter described the research methodology used to generate and analyze data used to address the research questions. This was a qualitative study designed to develop a response to the primary research question: Does the ABCT have adequate capabilities to defeat potential hybrid threats in the future OEs? The first part of the research methodology described was the data collection process. The BCT strategic capabilities assessment included three case events of ABCT, SBCT, and IBCT organizations assessed within a common OE. The data generated from the assessment fed into the evaluation criteria analysis. The evaluation criteria analysis included a cross-walk of the BCTs capabilities across the three critical variables against a hybrid threat. The strengths, weakness, opportunities, and threats analysis highlighted the capabilities that enhanced and degraded the BCT's overall effectiveness. This model showed BCT's in terms of capabilities, as well as enablers that improve their effectiveness in unified land operations against a hybrid threat in any given OE. The results of this study were then assessed with respect to recommendations for DOTMLPF improvements and are

presented in chapters 4 and 5 followed by a discussion of responses to the research questions.

CHAPTER 4

ANALYSIS

Introduction

This research assessed effectiveness of the three BCTs in unified land operations conducting offense, defense, and stability operations against a hybrid threat. The BCTs were evaluated based on their structure, equipment, and skill sets available, based on the 2013 MTOE. This chapter applies the research methodology designed in chapter 3, to generate and analyze information in accordance with the qualitative research design. The data will be structured around the BCT capabilities analysis, and further SWOT analysis of the tactical assessment of the three BCT types against a hybrid threat. The application of the research method will answer the primary and secondary research questions.

This chapter has four sections, the strategic capabilities assessment, the tactical assessment wargame, the findings, and the chapter summary. The purpose of the strategic capabilities assessment was to analyze each BCT individually and then compare results against four requirements; strategic mobility, equipping and training costs, tailorability and modularity, and versatility to operate across the full range of military operations.

The second section is the tactical assessment wargame. The purpose of the tactical assessment wargame was to put into operation the data collected from the BCT strategic capabilities assessment. Three evaluation criteria were used in a SWOT analysis to conduct the tactical assessment wargame of the BCTs against the hybrid threat. The SWOT review identified requirements for revision of strategy, implementation of organizational structure, or both. The BCTs were evaluated on their ability to accomplish tasks against a hybrid threat using the criteria of maneuver, enablers, and logistics. The

cross-walk of the BCTs organic assets across the variables demonstrates capabilities that BCTs require to be effective and identifies potential changes.

Section three deals with the findings, following the SWOT analysis of the BCTs and comparing three case events to highlight the considerations common to all future OEs. Discussion of the analysis addresses the potential changes the BCTs should make. Additionally, the findings address improvements within the DOTMLPF structure which will aid improved future operational capability and success. The chapter summary provides a review of the chapter as well as a transition to the final chapter that deals with conclusions and recommendations.

Strategic Capabilities Assessment

The strategic capabilities assessment was the process for collecting data from the analysis of the three BCTs against four critical requirements of a modular Force XXI capable formation, defined in chapter 3. The four requirements are: strategic mobility, tailorability and modularity, and versatility to operate across the full range of military operations as well as the cost to equip and train the BCT.

Results from the assessment yielded one of the four classifications for each of the BCTs to be: detrimental, insufficient, sufficient, or optimal. Detrimental is defined as a lack of capabilities resulting in failure and harmful to future mission accomplishment. Insufficient is described as “capabilities severely lacking and resulting in failure” (Overland 2009, 35). Sufficient is defined as “that not all required capabilities were present but adaptation resulted in limited success” (Overland 2009, 35). Finally, optimal is defined as “necessary capabilities were present to fulfill requirements resulting in success” (Overland 2009, 35). The table below shows the model for the assessment of the

BCTs against modularity and Force XXI requirements when deploying to an OE. The purpose of the Strategic capabilities assessment is not to rank order or determine which BCT is best. Each BCT was designed for varying purposes and will not be rank ordered as a comparison. The analysis conducted provides recommendations for future research and DOTMLPF improvements to enhance the performance of the BCTs.

Table 4. Strategic Capabilities Assessment

Four characteristics of Force XXI formations	ABCT	IBCT	SBCT	Assessment
				Detrimental Insufficient Sufficient Optimal
Equipping and training costs				
Strategic Mobility				
Tailorability and Modularity				
Versatility to operate across the full range of military operations				

Source: Created by author.

Equipping and Training Costs

Equipping and training costs are based on a MTOE on property book value. Cost to train includes annual operational costs for personnel and equipment, operational ammunition requirements, training ammunition costs, and deployment of each type of BCT's equipment to the National Training Center. All budget comparisons were generated through the Army FORCES website analysis tool. Personnel and equipment costs are based on selection criteria for a representative of SBCT, IBCT, and Heavy

Brigade Combat Team (HBCT). HBCT within the FORCES website refers to the current ABCT throughout this chapter. Table 5, BCT personnel and equipment cost, demonstrates the ABCT as the most expensive cost for equipment. However, the SBCT is the most expensive with respect to personnel cost. The IBCT is the most cost effective in both categories of personnel and equipment.

Table 5. BCT Personnel and Equipment Cost

BCTs	Personnel Cost	Equipment Cost
ABCT	$250,421,234.00	$1,962,449,966.00
SBCT	$269,585,755.00	$1,323,565,771.00
IBCT	$228,335,663.00	$460,376,712.00

Source: Created by author. Note: The Army FORCES website, sources the CTU, SB700-20, MPA/RPA, NGPA Budget justification books, DIV Personnel and Equipment Cost. The outputs contain the FY 2011 total pay and allowances and total cost of equipment for Army divisions and brigades (Headquarters, Department of the Army 2013).

The next equipping cost analysis factor is the operational ammunition requirements for each type of brigade. Table 6, BCT operational ammunition requirements, is a representative example of daily operational costs of ammunition cost and weight for each BCT type. The ABCT has the highest requirements for both cost and weight. The SBCT, although much less in weight is nearly comparably in cost. The IBCT is the lightest and cheapest of the BCTs to supply with ammunition. The weight being the more significant factor when considering strategic requirements to move the ammunition into theater either through strategic air lift or sea lift capabilities.

Table 6. BCT Operational Ammunition Cost

BCTs	STON	MTON	Cost
ABCT	142	117	$2,310,373.00
SBCT	97	81	$2,052,825.00
IBCT	50	41	$778,154.00

Source: Created by author. Note: Army FORCES website uses source information from CASCOM OPLOGPLNR 7.0, AMDF March 2009. The data recorded contains the FY 2009 estimated daily cost, Short tons (STONS), and metric tons (MTONs) of Class V (munitions) required by various units during wartime. OPLOGPLNR default parameters for Offense/Dominate were used [WARAMMO] (Headquarters, Department of the Army 2013).

Training ammunition costs were also calculated for each BCT. In order to provide data for the training ammunition requirements costs, the individual ammo costs were calculated based on major maneuver battalions for each brigade. The SBCT total was calculated by adding three infantry battalions and one reconnaissance squadron costs. The ABCT was calculated based on two combined arms battalions and one reconnaissance squadron equipped with M2A3/M3A3/M1A2 vehicles. The IBCT was calculated on two infantry battalions and one light infantry reconnaissance squadron. Table 7, BCT total training ammunition cost, demonstrates that the ABCT is the most expensive for training ammunition requirements. The SBCT is a close second and the IBCT is the least expensive for training ammunition requirements.

Table 7. BCT Total Training Ammunition Cost

BCTs	Infantry Battalion/CAB	Recon Squadron	Total Training ammunition cost
ABCT	$4,061,748.00	$5,599,708.00	$13,723,204
SBCT	$3,055,751.00	$2,267,888.00	$11,435,141
IBCT	$2,845,579.00	$2,205,823.00	$7,896,981

Source: Created by author. Note: The Army FORCES site source information was based on ODCOPS TAMIS. The analysis tool estimated FY2012 training ammunition requirements for active, guard, and reserve component equivalents. The training management information system tracks expenditures by DODIC at the UIC level. UICs were crosswalked to the SRCs used in the model. DODICs were crosswalked to the weapon systems that fire them and prices from the AMDF. A weighted average cost factor per weapon system by SRC was calculated over a multi-year period. These factors were then applied to the quantity of each weapon system in the SRC (Headquarters, Department of the Army 2013).

The final level of analysis for training and equipping costs is an analysis of a deployment for each type of BCT's equipment to the National Training Center. The parameters of the analysis will include the BCTs deploying with their vehicles. The distance for deployment and origin is the same for all BCTs from, Fort Benning, Georgia, a distance of 2,137 miles. Table 8 provides a summary of the outputs for total cost per BCT. Tables in appendix A provide further individual brigade analysis of deployed equipment. The ABCT is the most expensive with respect to deployment cost to the NTC. The SBCT is the second most expensive and the IBCT is the least expensive.

Table 8. BCT Deployment Cost to the NTC

BCT Type	Deployment cost to the NTC
ABCT	$13,555,467.00
SBCT	$10,708,002.00
IBCT	$7,018,101.00

Source: Created by author. Note: The Army FORCES analysis function for deployment to the NTC source is the DASA-CES FORCES. The file contains the FY 2011 calculated transportation costs for moving selected units to the NTC or the JRTC from the designated army installations. Distance is number of miles from the origin to the training center. Vehicles analysis includes analysis for all tracked and wheeled vehicles within the unit type MTOE. The cost is calculated by multiplying the total short tons of equipment in the unit, by the rail cost ton per mile, by the distance, and includes the number of personnel times the air rate per mile times the distance (Headquarters, Department of the Army 2013).

To meet their operational design requirements, equipping and training costs are critical factors in providing capable and effective BCTs. Future budget constraints, increased deployments and the regionally aligned units' concept will have to consider the costs to train BCTs. The above factors will be key to equipping senior leaders for deciding training requirements and modular composition of forces for deployment. Based on the chosen parameters for analysis of cost comparison, the ABCT is the most expensive BCT to train and equip, and the IBCT is the least expensive of the BCTs. However, the cost alone does not account for their significantly different capabilities on the battlefield. Based on costs to equip and train, research shows that any of the BCTs are prepared at a sufficient level to accomplish their doctrinally required mission.

Cost alone cannot be the discriminating factor to determine future force structure. Strategic mobility is a critical consideration addressed in the following section.

Strategic Mobility

Strategic mobility is defined as being, “at the right place at the right time with the right capabilities” (Training and Doctrine Command 1994, 3-1, 3-2). It is the combination of anticipation, movement, and skillful positioning of prepositioned stocks, strategic air and sea lift. Early entry forces will continue to depend on lethality and survivability in any given OE to achieve national security objectives. In addition to the Force XXI definition for strategic mobility this evaluation will also give an overview on cost and time required to deploy each type of BCT.

Several studies have been conducted since the advent of the SBCT concept emerged as the interim brigade combat team. The idea was initially developed in order to provide a bridge of capability between the ABCT and the IBCT. A major factor is the need for increased combat capabilities, lethality, and force protection upon initial entry into a theater. The initial Interim Brigade Combat Team was designed to deploy within 96 hours. “To achieve this 96-hour goal, the Army has designed the entire IBCT [SBCT] around being air deployable” (Brockman 2002, ii). All the modeling provided during the outset of the Interim Brigade Combat Team study produced negative results for the BCT to achieve the 96 hour window. All the modeling provided during the structuring phase of the Interim Brigade Combat Team produced negative results for the BCT to achieve the 96 hour window and the best case scenario “using USTRANSCOM-apportioned lift, it takes 7.3 days or 175 hours” (Ward 2001, i). In 2003, the RAND Arroyo Center provided an analysis case study, *Speed and Power: Toward an Expeditionary Army*, to determine how the Army can improve its ability to enhance strategic responsiveness with respect to power projection (Peltz, Halliday, and Bower 2003). The analysis provided results with

some comparison against the IBCT and the ABCT and will be used for analysis of the strategic mobility portion of this studies strategic capabilities assessment.

The study provides analysis of tradespace which is, “how much has to be moved, the rate at which materiel can be moved through the deployment system, and how far materiel has to move” (Peltz, Halliday, and Bower 2003, 21). The study used the 96-hour deployment timeline as a reference point. The study focused on overall analysis for possible improvements which are applicable to any of the three BCTs as joint planners determine time-phased force and deployment data (TPFDD) management, strategic air and sea lift capacity, and modular task force capabilities.

The Army’s current structure of forces provides three choices between response speed and combat power capabilities which can be delivered to a theater of operation in response to a combatant commander’s needs. There remain differences in lethality, firepower; maneuver and mobility between the three BCTs. Capabilities become a deciding factor in managing risk at the strategic, operational, and tactical levels. Depending on the level of risk in the OE, with the pending threat, less time may be available requiring a need for a lighter deployable force composition. A holistic approach must be taken to determine the right force mix and BCT type and structure to meet the desired end state.

The RAND study first addressed the deployment footprint (Peltz, Halliday, and Bower 2003, 23-24). The analysis demonstrates that the amount of equipment by total weight that has to be moved for the SBCT is approximately halfway between the levels of an IBCT and an ABCT. With respect to total weight to deploy, the IBCT has just under 5,000 short tons. The SBCT has 15,000 short tons of equipment. The ABCT has

25,000 short tons of equipment (Peltz, Halliday, and Bower 2003, 24). Additionally, combat power capabilities to be deployed, along with deployment closure time, and operational risks increase as total time to deploy increases.

The second element is how to move the equipment by air, sea, or both. The deployment footprint is, "the resulting numbers of C-17 mission equivalents required to air deploy a unit" (Peltz, Halliday, and Bower 2003, 24). All three BCTs were evaluated focusing on equipment sizes and weights. Based on study parameters, the SBCT would require almost 270 flights of C-17 missions. "Conversely, a USTRANSCOM study indicates as few as 235, more than 10 percent lower than our 270 estimate, could be needed with optimal loads of 57 STONs per C-17" (Peltz, Halliday, and Bower 2003, 24). An IBCT requires 94 C-17 mission equivalents. The study produced three variants for the SBCT based on optimum loads, study estimates, and planning factors. The ABCT would require 477 C-17 mission equivalents (Peltz, Halliday, and Bower 2003, 24). This analysis demonstrates that only the IBCT is cost and time effective to deploy by air alone. Both the SBCT and ABCT need augmentation by strategic sea lift to effectively close on a theater.

The study established parameters for the final effect of the deployment footprint, impact on closure time. The first assumption was that the airfield available has a working maximum on ground (MOG) of 3 aircraft (Peltz, Halliday, and Bower 2003, 28). Maximum on ground (MOG) "refers to the maximum number of aircraft which can be accommodated on the airfield (usually the parking MOG), it is often specialized to refer to the working MOG (maximum number of aircraft which can be simultaneously "worked" by maintenance, aerial port, and others" (Air Force 1997). The number was

based on analysis of previous deployments and limited capabilities in an austere environment, the MOG may even be lower. Even in a developed nation the MOG may be three or fewer based on additional requirements at the available airfields. The Aerial Port of Embarkation (APOE) for all three BCTs was Fort Lewis, Washington. The Aerial Port of Debarkation (APOD) was Skopje in the Republic of Macedonia.

Given those constraints a SBCT could deploy in "7.4 days given realistic estimates of current deployment throughput capabilities and best-case conditions" (Peltz, Halliday, and Bower 2003, 28). An ABCT with the same best case condition would require approximately 13 days. The IBCT is the only BCT which can deploy within the 96-hour goal timeline. An IBCT could deploy in this scenario in just over three days with 94 C-17 mission equivalents (Peltz, Halliday, and Bower 2003, 28). "To achieve these times the forces would require an allocation of 38 percent of the strategic lift fleet as of FY05 or 92 C-17s (33 percent as of the end of FY09) if only C-17s were used. Alternatively, if a mix of 70 C-17s and 30 C-5s were used instead (producing equivalent times), this would be 46 percent of the lift fleet" (Peltz, Halliday, and Bower 2003, 29).

A significant amount of the strategic airlift would have to be dedicated to achieve these results with any of the BCT types. Budget constraints, an aging strategic airlift fleet and a reduction in aircraft available will require strategic leaders to analyze the appropriate BCT structure and air and sea lift assets to use for deployments.

A key factor for analysis for strategic mobility is the cost to deploy the BCTs. This analysis was based on the estimation of total short tons per BCT from the RAND study. The equipment weight factors range from a low 4,000 STONS for the IBCT, to 14,000 STONS for the SBCT, to 25,000 STONS for the ABCT. These weight estimates

were then multiplied by the current data for airlift costs as provided in the Army FORCES website. A common point of origin and destination was used for all three BCT types to provide common cost per STON. All three BCTs data for cost were calculated based on cost to redeploy from Iraq to the continental United States (CONUS). The cost per STON in dollars from Iraq to CONUS is $6,913.44 (Headquarters, Department of the Army 2013).

Table 9. BCT Equipment Strategic Air Deployment Cost Analysis

BCT Type	Total cost to redeploy equipment from Iraq to CONUS
ABCT	$172,836,000
SBCT	$96,788,160
IBCT	$27,653,760

Source: Created by author. Note: Source data for the site come from the air cargo rates and air zone list tables. These files contain the most recent FY2013 channel rates for transporting equipment by air between designated locations (Headquarters, Department of the Army 2013).

Table 9 lists the cost to redeploy the three BCTs equipment sets from Iraq to the continental United States. The comparison demonstrates the increased cost requirements based on total combat power deployed and the associated weight requirements. The cost comparison demonstrates the ABCT is the most expensive to deploy, the SBCT the second most expensive, and the IBCT is the least expensive to deploy of the BCTs.

Based on cost and time to deploy the BCTs, I assess each of the BCTs at a sufficient level to accomplish their doctrinally required mission based on their authorized personnel and equipment in accordance with their MTOE. The requirement for efficiency in strategic mobility will increase in the future as the Army moves to a budget constrained environment. It will become essential to seek and maintain effective deployment training for all three types of BCTs to ensure optimization of aircraft loading and footprint requirements to deploy. Additionally joint planners will need to be familiar with BCT capabilities, equipment, and personnel to determine the right mix of forces for deployments. They will determine how the BCT's equipment will flow in the TPFDD to reduce costs without increasing risk at the operational and tactical levels. The remainder of this section will discuss key recommendations with respect to strategic mobility.

The RAND study discussed key recommendations to produce effective training and deployment execution. Forward basing of forces by BCT will assist in reducing the total requirements for strategic airlift, use of sea lift capabilities, and pre-positioned stocks (Peltz, Halliday, and Bower 2003). Forward basing will also continue to be an issue as the total Army force overseas continues to decrease. Total numbers have been reduced from approximately 300,000 Soldiers in the 1980's to approximately 30,000 Army Soldiers, and an additional 30,000 other service members across Europe (Hodges 2013). Force reductions in Europe have reduced combat power significantly with only one of each type of BCT now in the European theater. Forward basing opportunities will likely be limited in the future.

Further analysis needs to be conducted under the auspices of the regional alignment forces concept to provide a rotational training and partnership program that

will provide temporarily forward based forces. This concept will reduce operational risk, strategic air, and sea lift requirements. Regional alignment analysis will include all three BCT capabilities globally to determine which regions will require force capabilities and combat power by modular BCT type. Additionally, regional analysis can use the training deployments and partnerships to provide more accurate data for deployment and RSOI in each region based on APODs and SPODs available.

Finally, pre-positioned stocks and sea-lift capabilities are critical for deployment of forces. Pre-positioned stocks exist for IBCTs and ABCTs around the globe. Both land and sea based platforms provide capabilities to deploy into theaters. Analysis needs to be conducted to ensure the C4I capabilities are upgraded and compatible with current systems and capabilities. Additional sets of equipment to provide pre-positioned stocks on either land or sea for the SBCT are limited based on fielding requirements. “At about $780 million dollars in equipment cost per set, it is not financially feasible for the Army to buy additional sets of SBCT equipment, recapitalize current forces, procure 6 brigades’ worth of equipment, and fund investments in the future force. However, all of the soft-skin tactical wheeled vehicles in an SBCT cost just $80 million or about 10 percent of the procurement cost for an SBCT equipment set” (Peltz, Halliday, and Bower 2003, 44). An alternative option will be to retrograde and refit the SBCT set of equipment from Afghanistan and provide as pre-positioned stock (PPS) equipment.

Three possible solutions need to be further analyzed with respect to pre-positioned stocks. First, is the shortage of SBCT equipment sets. An additional set, v-hull equipped, exists in Afghanistan in support of current operations. As the theater begins to drawdown in 2014 a possible solution would be to retrograde and refit this set of SBCT

equipment in order to provide an interim set, which can be sea loaded as a pre-positioned set.

Second, the RAND study recommends "selected" prepositioning. This would be to preposition a common set of the soft skin tactical vehicles in order to reduce total air or sea lift requirements to essential mission command and combat vehicles (Peltz, Halliday, and Bower 2003, 44). The three BCT force types share commonality with modularity in basic soft skin vehicles.

Finally, there is a need for further analysis to determine if prepositioned stocks can provide a regional focus based on the three BCT types aligned against the region. Further experimentation can be conducted during regional training deployment operations. As the regional alignment concept comes to fruition, optimizing modular force structure will include requirements for operations and deployments. Prepositioned stock analysis may provide further opportunities to reduce cost and time required for deployments through regional prepositioned stocks based on requirements.

Tailorability and Modularity

Tailorability and modularity aid the Army to quickly deploy the right size force in support of missions across the full range of military operations. Analysis of the task requirements, the OE, and the threat determines the appropriate level of forces required for the mission. Modularity enables BCTs to command and control larger formations and receive attached assets to further enable independent operations. "Modularity would create a more efficient way of organizing a force with more standardized brigades, enabling direct interchangeability when it is necessary to replace a unit" (Johnson et al. 2012, 11). Additionally, the Army brought enabling units from division and made them

part of the organic BCT composition (Johnson et al. 2012, 21). The modular BCTs are now larger, more capable and self-sufficient. The BCT structure supports the regional alignment of forces concept.

RAND completed a study entitled *A Review of the Army's Modular Force Structure* in 2012 comparing the current modular brigade combat teams against their pre-modularity predecessors of the legacy force. The study compared both the HBCT and IBCT against their predecessors with respect to their MTOEs and other factors to determine the level of effectiveness in achieving the strategic requirements of modularity. The RAND study assessed that the current modular force BCTs are superior to the premodular forces in "contributing land power to current and reasonably foreseeable joint operations" (Johnson et al. 2012, 26-27). The study reveals adequate capabilities in the current modular force using comparisons of support personnel, personnel data, force-to-space, and force-to-population ratios; to crew-served weapons densities, and comparative vehicle density. The study compares both the HBCT and the IBCT to their pre-modular predecessors using historical data compared against the FY12 FMS web data for the MTOEs.

The study cited four critical factors in determining efficacy of the modular force compared to premodular brigade formations (Johnson et al. 2012, 26-27). First, the modular force increased size of key organic capabilities, combat support and combat service support personnel and equipment. The current BCTs are more self-sufficient than their predecessors. Second, with the advent of modularity the overall BCT numbers increased. This provided more interchangeable forces and BCTs with near equal capabilities through the ARFORGEN process. Third, the modular BCTs have more

organic firepower than premodular BCTs, even with the loss of the third maneuver battalions in the IBCT and ABCT. Finally, modular BCTs are better equipped and designed to become part of a joint task force or operation.

Two other key points were addressed in the RAND study on force structure. First, prior to modularity, the division was the foundational building block for deployments in the Army (Johnson et al. 2012, 28). However, if one or more BCTs were deployed from within any given division overall effectiveness of the division would be degraded. The combat support and combat service support assets, which would deploy in support of the BCTs separately, would come from the Division. The BCTs would deploy with required capabilities, leaving the remaining division and BCTs at home station without sufficient support for training or possible deployment. Second, current modularity has brought increased situational awareness, communication, and technology capabilities to all three BCTs (Johnson et al. 2012, 28). Not only does this aid in joint capability and functionality, but improves the BCT's ability to conduct independent operations as the Army moves to regional alignment and building partner capacity.

Based on analysis of BCT modularity and tailorability capabilities, both the ABCT and the IBCT are at a sufficient level to accomplish their doctrinally required mission. The SBCT is optimal. To clarify, sufficient meaning, "that not all required capabilities were present but adaptation resulted in limited success" (Overland 2009, 35). Optimal meaning, "necessary capabilities were present to fulfill requirements resulting in success" (Overland 2009, 35). The ABCT and IBCT are assessed as sufficient in their current state because they have two maneuver combined arms battalions and one RSTA squadron.

Doctrinal support exists to support the argument to add back the third maneuver battalions to the ABCT and IBCT formations. Traditional doctrinal planning considerations for combat power ratios for a friendly mission conducting an attack against an enemy in a prepared or fortified position requires a friendly to enemy ratio of 3:1 (Headquarters, Department of the Army 2011, B-17). In counterinsurgency operations force ratios are often measured with the additional consideration of the population. “Most density recommendations fall within the range of 20 to 25 counterinsurgents for every thousand residents in an AO” (Wade 2011, 2-33). Based on these considerations for major combat operations and counterinsurgency operations a greater force ratio is required when facing a hybrid threat operating among the population. Both the ABCT and IBCT will be able to operate in larger areas and interact with the population to counter the threat while mitigating risk to both the population and U.S. and host nation forces.

The SBCT is assessed as optimal not based on specific inherent capabilities, but because it has three maneuver infantry battalions and a RSTA squadron. The additional battalion is critical as it provides additional command and control, situational awareness, maneuver, and mobility for the BCT. The third maneuver battalion was not absolutely necessary during the last ten years of counter-insurgency. However, when the entire range of military operations is assessed and requirements of major combat operations are revisited the third maneuver battalion is essential for all BCTs. The remainder of this section will cover recommendations for tailorability and modularity.

Following the literature review and analysis of this study and others, some key recommendations became apparent. First, the RAND study in 2012 *A Review of the*

Army's Modular Force Structure, completed an excellent study of the BCTs against their pre-modular predecessors. This study's elements for analysis and comparison should be further studied with two key changes. Comparison and analysis should be conducted to determine differences and capabilities of the BCTs against each other. A focus should be on critical enabler military occupational skills (MOS) which enhance mission command, intelligence, fires, information operations, and cyber capabilities to determine key MOS shortages and numbers required for future regional alignment operations against a hybrid threat.

Next, the study should conduct a review of the optimal BCTs with improved enabler capabilities with and without a third maneuver battalion against regional, hybrid threats. This analysis will provide regional alignment assessment for BCTs aligned with each region to determine changes in requirements for MTOEs. Additionally, the analysis will determine which BCT type and capability is best suited against the specific regional hybrid threat requirements.

The final point for discussion deals with specific capabilities of the IBCT regarding situational awareness and mission command technologies. The IBCT is limited on tactical maneuver capabilities and platforms based on requirements to operate in austere and often non-trafficable terrain. The Nett Warrior system is the current program of record to develop the situational awareness down to the individual Soldier level. In order for the IBCT to continue to maintain the dismounted requirement and integrate innovative communication and awareness technology this system needs to continue to be developed. The IBCT is in danger of falling behind the ABCT and SBCT capabilities to integrate with a joint task force. The next section covers versatility analysis.

Versatility to Operate Across the Full Range of Military Operations

Versatility across the full range of military operations is a requirement for all brigade formations in the future. All three BCTs must be able simultaneously to conduct defense, offense, and stability operations in any OE. The main imperative guiding future joint operations will be command and control, shared situational understanding, and information management in a JIIM environment. The ability to share information allows greater synchronization of effort while conducting combined arms maneuver and wide area security. Versatility also includes the ability to employ joint military capabilities in conjunction with other government functions to achieve national security objectives.

The RAND study in 2012 *A Review of the Army's Modular Force Structure* additionally assessed the versatility and flexibility of the current modular BCT structure. With regard to versatility, the study assessed the "responsiveness of a force structure to demands arising from force packaging, and the abundance of different, replicable capabilities available within a given BCT structure" (Johnson et al. 2012, 33). The study also compared the current force superior in versatility to the legacy division based force. Four elements are cited for increased capability (Johnson et al. 2012, 35). First, the BCTs are better armed and staffed than their predecessors. Second, the full range and quantity of combat support and combat service support capabilities at the BCT level is greater. Third, a larger number of capabilities are now present in the active component structure. Fourth, from an Army perspective, the number of BCTs available for the ARFORGEN cycle is greater under modularity than would have been available in the old division centric model.

Versatility is critical in the current and future OE. Force requirements with respect to future operations and regional alignment will not necessarily have the command and control structure of a complete division or corps. The current force structure provides smaller units as the principal foundational building blocks of force packages for combatant commanders. Based on the analysis in the RAND study, all three BCTs are assessed as sufficient in their versatility and flexibility. Additionally, division level headquarters have increased in size across the light infantry divisions and armored divisions providing more versatility and flexibility, to perform command and control while operating as part of a joint element. The versatility at the BCT level has increased the overall ability of the Army to meet ARFORGEN requirements during counter-insurgency operations. The deployment requirements will continue, albeit on a smaller scale, as the regional alignment concept becomes further developed across the Army.

Based on this study's assessment and review of existing studies future requirements emerged. Analysis should be conducted on regional alignment requirements, matched against, current force structure, to determine how the current reduction in total BCTs will affect the Army's ability to adequately align divisions and BCTs against regions. Risk mitigation factors need to be developed on areas which may not be covered due to lack of BCTs available. A possible mitigation factor would align reserve component and National Guard brigades against regions assessed as lower risk for conflict. Evaluations should be conducted to determine if adequate enabler capabilities exist with regard to key MOS skills, specifically with intelligence, communication, cyber provisions, and deployment capability requirements by region.

The next section covers the tactical assessment wargame of the BCTs against the hybrid threat.

Tactical Assessment Wargame of BCTs against the Hybrid Threat

The results from the strategic capabilities assessment provided the data required to evaluate the BCTs in the tactical assessment wargame. The wargame assessed the BCTs organic capabilities against a hybrid threat, using movement and maneuver, enablers, and sustainment categories as evaluation criteria and included SWOT. The results from the tactical assessment wargame provided the basis for the discussion to answer the secondary research questions:

1. What are the potential future OEs?
2. What are the plausible hybrid threats in the future OEs?
3. What are the applicable Army doctrine and lessons learned from armored forces in Iraq and Afghanistan?
4. What are other nations' armored forces lessons learned from similar conflicts and defense draw downs?
5. How do the ABCT, SBCT, and IBCT compare in performance based on case study analysis against a hybrid threat in the future OE?

The ability of the BCTs to meet the tasks associated with the three evaluation criteria yielded an outcome of detrimental, insufficient, sufficient, or optimal. Each brigade's outcome was based on the ability to accomplish the tasks associated with each variable as compared against a hybrid threat. The SWOT analysis highlighted the capabilities that enhanced and degraded the BCT's overall effectiveness. The review

included a cross-walk of baseline capabilities, and organic assets provided to the BCTs in order to conduct decisive action across the range of military operations. The cross-walk of the BCTs organic assets across the variables demonstrated capabilities that BCTs require to be effective. Comparing the three case events highlighted the considerations common to all future OEs for augmentation. The table below shows the model used for analyzing the case events against the evaluation criteria.

Table 10. BCT Capability and Evaluation Criteria

	Maneuver	Enablers	Logistics	Assessment
[redacted]	S/W/O/T	S/W/O/T	S/W/O/T	Detrimental Insufficient Sufficient Optimal
ABCT				
IBCT				
SBCT				

Source: Created by author.

Prior to conducting the analysis of the BCTs against the hybrid threat, the hybrid threat characteristics and capabilities will be defined. Hybrid threats have two or more of the following components: military force, nation-state paramilitary force, insurgent groups, guerilla units, and/or criminal organization (Headquarters, Department of the Army 2010b, 2-1). “A hybrid threat is the diverse and dynamic combination of regular forces, irregular forces, and/or criminal elements all unified to achieve mutually self benefitting effects” (Headquarters, Department of the Army 2010b, 1-1). These threats are innovative, adaptive, globally-connected and networked through varying forms of

media. They can operate effectively in their terrain and quickly adapt their networks to provide speed, increased lethality, and transition into the population.

The hybrid threat capabilities for this wargame fall in line with the Army Training Circular 7-100, *Hybrid Threat* definition and capabilities. Capabilities were based on the assessment of chapter 2, for the most dangerous enemy course of action and near peer competitor challenges of North Korea, Iran, and China. The hybrid threat for this tactical assessment wargame contained a military force component equipped with a mix of heavy and light armor capabilities. The threat was comprised of a combination of insurgent and guerilla groups, committed to the old system of government. Finally, there was a criminal element capability loosely connected to the insurgency and guerilla operations.

The tactical assessment wargame did not assess deployment of the BCT equipment or personnel into the OE. Deployment modeling is beyond the scope of this study and the author's ability to independently conduct such analysis. The tactical assessment wargame will be conducted and considered at the tactical and operational level with BCTs already completing deployment operations and initial combat operations. The OE will be comprised of a diverse population across urban and rural environments, with both restrictive and open terrain. The BCTs will be required to conduct simultaneous application of defense, offense, and stability tasks and operations.

Field Manual 3-90.6, *Brigade Combat Team*, defines the BCTs' capabilities which were summarized and addressed in chapter 2 of this thesis. Each of the three following sections will assess the BCT capabilities separately, using SWOT. Finally, each BCT's ability will be assessed as either detrimental, insufficient, sufficient, or

optimal as defined in chapter 3. The following analysis is not an exhaustive list, but rather a list to address key issues that arose during the tactical wargame assessment.

Maneuver

Movement and maneuver are defined with respect to ADRP 3-0, *Unified Land Operations* as, "the related tasks and systems that move and employ forces to achieve a position of relative advantage over the enemy and other threats" (Headquarters, Department of the Army 2012a, 3-3). The following assessment will analyze each BCT against the hybrid threat as defined above. The analysis demonstrated similarities existing across the BCTs with respect to the categories of SWOT based on the modularity concept and similarities in the BCT staff capabilities and battalion or squadron composition.

Strengths

Strengths are "internal competencies and capabilities—What we have" (Chermack and Kasshanna 2007, 388). The ABCT is highly effective against a hybrid threat containing a military force component equipped with a mix of heavy and light armor capabilities, insurgency, and criminal elements. Operations in Iraq and Afghanistan over the last ten years demonstrate the full scope of the ABCT against a near peer armor equipped force and insurgency operations. The ABCT in comparison to the other BCTs has superior firepower, protection, and lethality with its organic platforms and formations.

The ABCT C4I capabilities also assist in maneuver and command and control of the highly mobile and effective forces. Modern digital systems including Blue force Tracker (BFT), Force XXI Battle Command Brigade and Below (FBCB2), Command

Post of the Future (CPOF), and Enhanced Position Location Reporting System (EPLRS) are fielded down to the company level and each combat platform is equipped. The systems provide unprecedented situational awareness enabling quicker command and control and maneuver of the forces. The C4I components and capabilities also allow the entire BCT to quickly update situational awareness against a hybrid threat through populating graphics, enemy contact, and targeting information through the systems.

Maneuver battalions are the SBCTs' greatest strength for maneuver. The SBCT has three infantry battalions and one RSTA Squadron. Extra battalions provide additional maneuver assets, personnel, and equipment, but more importantly it provides the BCT with more battalion level command and control. The SBCT is equipped with the same C4I equipment as the digitally enhanced ABCT. The C4I equipment provides the BCT commander's situational awareness and quick reporting capabilities. The SBCT infantry battalions have larger infantry companies and more dismounted Soldiers increasing dismounted maneuver. Finally, the Stryker system allows for maneuver at high speeds in unrestrictive terrain. The Stryker platform has proven extremely valuable in an urban environment for both movement and support by fire platforms. The Stryker's mounted light weapons (M2 .50 cal) and automatic grenade launcher (MK19) create less collateral damage than the 25mm and 120mm weapon systems on the ABCT's Bradleys (M2A2/3) and Abrams (M1A2 SEP) platforms.

The IBCT, unlike its counterparts, is highly maneuverable in highly restrictive terrain. However, the IBCT MTOE lacks adequate vehicles to effectively maneuver in the demands of future OEs. When augmented with additional mobility assets, whether up-armored M1151 HMMWVs or MRAPs, the IBCT has performed to standard over the

last decade of war. The mobility assets which have made the IBCT more effective over the last ten years are not organic to its MTOE. The IBCT meets all the criteria for its design and has proven extremely effective in the urban terrain. The IBCT is also equipped with weapon systems which are lighter and of smaller caliber limiting collateral damage in restrictive urban environments, or while operating under restrictive ROE. The IBCT is the most maneuverable for joint forcible entry when trained and equipped as an airborne brigade or air assault brigade. The IBCT requires the least lift requirements to maneuver the BCT quickly within theater to facilitate the JFC's mission and intent.

Weaknesses

Weaknesses are defined as a "lack of internal competencies and capabilities—What we lack" (Chermack and Kasshanna 2007, 388). The primary weakness of the ABCT to maneuver is the lack of a third maneuver battalion. With the advent of modularity and in order to provide adequate BCT numbers to facilitate the ARFORGEN process, the third maneuver battalions were taken from the ABCT and IBCT formations. The two BCTs were given a reconnaissance squadron, increasing situational understanding, but limiting overall maneuver when compared with the pre-modular counterparts. The addition of a third maneuver battalion will increase the ABCTs ability to maneuver and command and control additional assets.

When compared with the IBCT and SBCT, the ABCT is designed for firepower and lethality against an armored threat. The two armor companies per CAB are therefore manned for the vehicle platform and not equipped with the same number of Soldiers as their infantry company counterparts. Over the last decade of war this has limited the ability of the armor companies to interact with a population, against an insurgent threat

with limited dismounted capabilities. The armor companies are therefore limited, in dismounted operations capability based on MTOE authorizations for personnel.

Evaluating maneuver response, the SBCT's greatest weakness is the limitations of the Stryker combat vehicle. Although highly mobile, the Stryker vehicle has its limitations as a wheeled vehicle, especially with its considerable weight. The Stryker does require additional considerations for recovery and limitations on its movement as experienced in Afghanistan over the last ten years. Secondly, protection is limited, considering improvised explosive devices (IEDs), especially explosively formed penetrators (EFPs), or other weapon capabilities against a hybrid threat equipped with light or heavy armor capabilities. The Stryker was not designed for vehicle on vehicle combat, but a delivery system for the infantry. A hybrid threat with anti-armor threat poses the greatest threat to the SBCT.

The IBCT when compared to the SBCT lacks the third maneuver battalion and C4I equipped platforms to deliver, support, and provide enhanced situational awareness to the BCT commander. The size of FBCB2 and BFT equipment limits the majority of the equipment to vehicle mounted systems, which the IBCT organically by MTOE doesn't have. The IBCT, without maneuver enhancement of vehicles or aircraft, would have limited effects against a hybrid threat equipped with armor capabilities, especially in unrestricted terrain. The IBCT is the weakest of the BCTs for tactical maneuver and mobility. As Army 2020 comes into effect the IBCT will lose its organic truck capabilities for mobility. The IBCT will continue to require augmentation of aviation assets or TPE vehicle equipment to maintain mobility. The noncontiguous areas of

operations and wide area security requirements have stressed the IBCT mobility and maneuver beyond its capability.

Opportunities

Opportunities are “external positive circumstances—What we could get” (Chermack and Kasshanna 2007, 390). Opportunities exist for all three BCTs to enhance their modular capabilities for training and deployment into a theater against a hybrid threat. With regard to maneuver, the greatest enhancement would be the addition of the third maneuver battalion to the ABCT and IBCT. The addition would allow for more combat capabilities and Soldiers, but the additional command and control provided by the additional battalion headquarters and staff is greatly needed against a versatile and complex hybrid threat.

The second opportunity for all three BCTs is digitization and enhanced situational awareness down to the squad level. The IBCT has the least capabilities of the BCTs when it comes to digital enhancement for maneuver and command and control. The IBCT would clearly be of greatest benefit from upgrades to digital command and control components. Dismounted and mobile C4I equipment down to the squad level would allow timely communication of critical information for targeting and employment of weapons. It would enhance situational awareness for commanders and allow safe and quick employment of lethal direct and indirect fires as well as close air support and close combat attack. When facing a complex and adaptive hybrid threat, the ability to send information and share intelligence across the formation is critical and the NETT system variants will provide that capability.

Threats

Threats are “external negative circumstances—What we could lose” (Chermack and Kasshanna 2007, 390). The greatest BCT vulnerability against a hybrid threat for any of the BCTs is over-extension of capabilities and manpower. BCTs who have performed well against a hybrid threat or insurgency over the last ten years perform troop to task analysis and do not over extend subordinate battalions past their ability to collect information and intelligence and act upon threats to coalition forces or stability. A hybrid threat of the future will still be focused on influencing the host nation population. Maneuver of all the BCTs must conversely focus on securing the population and maintaining effective information and intelligence operations to facilitate the security, reinforce the host nation government, and counter the hybrid threat capabilities.

An additional threat to consider is the BCTs’ ability to train and integrate other combined arms capabilities into its formation. BCTs, regardless of type, must be able to receive and integrate ABCT, IBCT, or SBCT capabilities into their formations in order to effectively counter a hybrid threats maneuver capabilities. Parochialism and lack of experience need to be overcome quickly through training and leader development to allow for maximum optimization of varying capabilities quickly to counter a threat.

Movement and maneuver are critical components to a BCT’s combat effectiveness and ability to accomplish the assigned mission. Regional alignment of forces will require more agile and self-contained capabilities for the BCT. Therefore, identified weaknesses will be harder for the BCT to overcome and easier for the hybrid threat to capitalize on and target. The tactical assessment wargame results for maneuver determined that the ABCT is sufficient in capability. The SBCT is optimal based largely

on its third maneuver battalion. The IBCT is insufficient based on its reliance on outside augmentation for mobility and tactical maneuver.

Enablers

Enablers have been defined as, “noncombat troops who specialize in areas such as intelligence, surveillance and reconnaissance; explosive ordnance disposal; medical and mental health; and personnel administration” (McMichael 2009). For the purpose of this study, enablers focused on the essential combat skills of fire support, intelligence, surveillance, and reconnaissance. Enablers are combat force multipliers for the maneuver force allowing them the ability to quickly identify the enemy forces and provide for the employment of lethal and non-lethal fires in support of the maneuver commander’s mission and intent. Enablers are critical to maintain momentum, speed, and maneuver allowing the commander to reach the decisive point against the hybrid threat.

Strengths

All three BCTs when compared with MTOEs have comparable and relatively equal composition of fire support at the Brigade staff level, and are supported by a fires battalion. The SBCT has a slight advantage with three maneuver battalions that have three firing batteries, while the fires battalions supporting the IBCT and ABCT have only two firing batteries. As the debate nears resolution with bringing back the third maneuver battalion, the ABCT and IBCT would need to add an additional firing battery as well to support the maneuver of the regained battalion.

Three additional strengths are common to the BCTs. First, the creation of the RSTA squadrons brought unprecedented surveillance and reconnaissance assets to the

brigade level. The RSTA is critical in both a linear battlefield or in a noncontiguous OE against a hybrid threat. The RSTA provides the brigade commander a greater situational understanding, and allows the brigade to develop the intelligence preparation of the battlefield in identifying the hybrid threat. Second, as mentioned earlier in the discussion of the importance of the third maneuver battalion, equally important is the fires capabilities for the BCT against a hybrid threat. The RSTA, coupled with the fires battalion, allow the brigade to shape the battlefield against an armor equipped hybrid threat and support maneuver operations in both urban and rural terrain. Third, modularity brought the tactical unmanned aerial vehicle (TUAV) with the creation of TUAV platoon equipped with the shadow UAV. The TUAV platoon allows the military intelligence companies to answer CCIRs for the brigade commander and augment the RSTA capabilities to develop situational awareness and determine enemy course of action selection.

Weaknesses

The major weakness for each of the BCTs is the lack of intelligence analysts below the battalion level. The company intelligence support teams (COISTs) created during operations over the last ten years of conflict have been adhoc and usually taken from the MTOE authorization of the fire support officer (FSO), fire support noncommissioned officer in charge, and the fires support element. This selection for intelligence support has required additional training outside the military occupational skill (MOS) of the fire supporters. Although it has filled a need for targeting during stability operations against insurgent threats, it has greatly degraded the fire supporters' ability to fulfill their primary mission.

Opportunities

Two primary opportunities exist for all the BCTs with respect to enablers. Modularity has brought three critical enablers to the fight at the brigade level with the addition of civil affairs, information operations officers, and electronic warfare capabilities. However, the current manning is not adequate. Common across all three BCT types is manning for one information operations officer, a two man civil affairs team, and an electronic warfare cell of five. As discussed in chapter 2, the future OE will require increased information and cyber operations to counter a hybrid threat targeting a local national population. Although the addition of the cells demonstrates the importance of the capabilities at the brigade and below level, the manning is inadequate against a capable and diverse hybrid threat. Cyber is an additional capability that needs to be added to the electronic warfare section to allow increased capability against a hybrid threat with increased informational technology experience.

The second opportunity exists with capitalizing on the Special Forces community. Discussions have emerged with the potential of adding special operations as a seventh warfighting function. The regionally aligned unit concept, whether at the division or brigade level, would partner well with the regional alignment that Special Forces already maintain. The addition of a Special Forces liaison cell would greatly add to the capabilities and integration of the special operations community and the integration of the foreign internal defense forces with which they would partner.

Threats

Two major threats are common to all BCTs. First, the current BCTs' MTOEs for information operations, civil affairs, and electronic warfare are inadequate based on

emerging hybrid threat capabilities for the future. The demands of the future OE and the capabilities of the hybrid threat as defined by the Army provide for effective information and psychological operations. A BCT staff information operations cell of one person, civil affairs cell of two personnel, and electronic warfare cell of five is clearly inadequate to maintain effective operations. Information operations are critical to monitor and proactively counteract the effects of a hybrid threat as they undermine the security and legitimacy of a coalition task force and host nation government. Civil affairs operations are also key in creating effective operations among the government and establishing a civil military operations center (CMOC) that will be required to effectively integrate other government agencies and non government organizations. Electronic warfare capabilities currently are defensive in nature and focus on required jamming capabilities. With the adaptability of hybrid threats, the BCT will need to be able to counter jamming attempts. The BCT under current operations can draw additional assets from divisions and corps. However, under the regionally aligned forces concept the enabling functions above will need larger organic capabilities.

The second common threat to all BCTs is the lack of cyber capabilities, either defensive or offensive. The proliferation of information technology allows hybrid threats access to equipment to attack U.S. military technological capabilities. The U.S. military is dependent on technology for command and control and situational awareness. Our dependency becomes a high value target and high priority target for the enemy and a capable hybrid threat will target to degrade our abilities and steal information on U.S. operations. Currently, cyber capabilities are consolidated at the Army level and have not been proliferated to the division and brigade levels. As BCTs begin to deploy under

regional alignment, cyber capabilities and personnel must be added to the MTOE for all three brigades.

Based largely on the threats common to the BCTs all three BCTs are assessed insufficient against the hybrid threat. First, the deficiencies with respect to the current BCTs' MTOEs for information operations, civil affairs, and electronic warfare are inadequate. Second, all three BCTs lack essential cyber capabilities, either defensive or offensive, which are critical for the future OE. The proliferation of information technology allows hybrid threats access to equipment to attack U.S. military technological capabilities. A BCT operating independently as part of a regionally aligned mission will be even more vulnerable to cyber attack. The hybrid threat is better equipped to execute offensive information and psychological operations and counter U.S. operations with host nation governments and security forces.

Logistics

Logistics is, "planning and executing the movement and support of forces" (Headquarters, Department of the Army 2012a, 3-4). Logistics includes "maintenance, transportation, supply, field services, and distribution, operational contract support, and general engineering support" (Headquarters, Department of the Army 2012a, 3-4). *A Review of the Army's Modular Force Structure* found that the sustainability of the "modular force is superior to that of its predecessor" (Johnson et al. 2012, 54). However, the study concluded that the modular brigades are more vehicle dependent than their pre-modularity predecessors. The ABCT and IBCT organic support assets are capable of maintaining the fleet and have adequate logistical capabilities to support the BCTs'

operations. For the purpose of this logistics will be assessed with respect to maintenance, transportation, and distribution against the hybrid threat scenario.

Strengths

One of the greatest lessons for the Army as a whole, over the last ten years is the ability to logistically sustain all three BCTs in both Iraq and Afghanistan. Maintenance, repair parts flow, distribution, and transportation were honed to a science. Where ground transportation was inadequate or not timely enough, Army and Air Force aviation were available to provide movement of capabilities and personnel to logistically support operations. Against a hybrid threat, this strength must be carried forward. The regionally aligned forces concept will allow sustainment and logistical forces to train in opening a theater, establishing maintenance, transportation, and distribution in an undeveloped and austere theater. The IBCT and ABCT have enough capabilities within their organic BSBs to provide for logistical support. These capabilities will be tested against a hybrid threat, but, when compared to a hybrid threat the BCT will be dominant in providing and maintaining combat power when required.

Weaknesses

The greatest weakness of the BCTs is the lack of forward support companies in the SBCT. The SBCT is unable with current MTOE to complete all the required maintenance and services for its vehicles. The battalions do not receive adequate maintenance, transportation, and distribution support through the BSB. However, they require reachback capability to Corps or theater level to provide adequate long term sustainment and logistic support. The ABCT and IBCT are much more self-contained and

have FSCs from their organic BSB supporting each maneuver, fires, and RSTA squadron. The SBCT weakness could prove detrimental under the regionally aligned force concept if an SBCT were to deploy independently against a hybrid threat. The SBCT would have to leverage theater and joint capabilities to maintain acceptable sustainment and logistics.

The ABCTs requirement for fuel and parts for maintenance would also create a strain on the logistical and sustainment support in an immature and austere theater. The IBCT with the lowest of requirements would require the least support from non-organic division, corps, or theater level support. An additional weakness common to all BCTs is the current dependence on theater provided equipment for vehicles and weapon systems. The theater provided equipment (TPE) provided much needed equipment which was either not MTOE specific or not available in sufficient quantity to facilitate training and equipping outside the theater. The majority of armored protected sustainment vehicles are also provided through TPE as well.

Opportunities

Although the current TPE system is listed as a weakness, it also provides an opportunity for future operations. TPE equipment includes logistical equipment and vehicles that are up-armored and protected from small to larger munitions. Based on the regional alignment of forces and ongoing threat assessments by regions, this equipment needs to be assessed for priority and provided to BCTs as they deploy in support of regional operations. Another opportunity exists in force composition and modularity. The regionally aligned forces are currently being assessed by number and types of brigades to be in support of each region. An additional recommendation to assess the possibility of matching divisions with each BCTs capability, and aligning the divisions regionally,

would be beneficial. If each division had an IBCT, SBCT, and ABCT it would provide adequate support and command and control ,the weaknesses of each BCT could be mitigated with task forces that have each capability and adequate logistical and sustainment support.

Finally, as future regional operations target hybrid threats, host nation partnership is critical for security force cooperation and foreign internal defense. A lesson learned from both Iraq and Afghanistan is the partnership and training required to provide adequate logistical and sustainment capabilities in the host nation forces. Army sustainment forces down to the brigade level must be prepared to partner and train their logistical counterparts, while operating against a hybrid threat. This requirement needs to be evaluated to ensure adequate capabilities exist to both, logistically train host nation partners, while maintaining and sustaining the BCT capabilities.

Threats

The greatest threat for the BCTs against a hybrid threat will be operating in restrictive terrain and limited lines of communication. Logistics operations will continue to be targeted in a linear or noncontiguous battlefield. A noncontinguous battlefield allows the enemy to blend into the urban and human terrain, similar to the insurgency we have fought in Afghanistan and Iraq. The greater risk to logistics capability with the ABCT and SBCT would be fuel and maintenance, based on vehicular capabilities and constraints. The IBCT is the least mobile, but the increased demand for wide area security will bring an increase in vehicular dependence as well.

The shift to the MRAP variants only created increased demand for logistics as a tradeoff for the protection. The desire for protection is driving an increase in logistics for

maintenance and distribution of parts and replacement vehicles. Although these vehicles offer more protection they are still under TPE and not part of the MTOE and require civilian augmentation to maintain. If these vehicles are to continue to be a part of the deployment concept, the MTOEs need to be altered to address the vehicles and their logistical requirements for personnel and maintenance.

The logistical SWOT analysis of the BCTs produced varying results for the BCTs. The ABCT and the IBCT were assessed as sufficiently capable to logistically support operations against the hybrid threat. The SBCT was assessed as insufficient based on its lack of organic capability to conduct maintenance on its equipment and its lack of forward support companies to resupply and maintain its maneuver battalions. The SBCT would be vulnerable logistically while operating as a regionally aligned brigade deployed independently.

Table 11. Final BCT Capability and Evaluation Criteria Results

	Maneuver	Enablers	Logistics	Assessment
[redacted]	S/W/O/T	S/W/O/T	S/W/O/T	Detrimental Insufficient Sufficient Optimal
ABCT	Sufficient	Insufficient	Sufficient	
IBCT	Insufficient	Insufficient	Sufficient	
SBCT	Optimal	Insufficient	Insufficient	

Source. Created by author.

In summary, the BCTs were evaluated against a hybrid threat model in the future OE. Maneuver was assessed in accordance with the ADRP 3-0 definition as, “the related tasks and systems that move and employ forces to achieve a position of relative

advantage over the enemy and other threats" (Headquarters, Department of the Army 2012a, 3-3). The modular ABCT was assessed as sufficiently capable and the SBCT was assessed as optimal. The discriminating factor was the lack of the third maneuver battalion in the ABCT and the IBCT. The IBCT was assessed insufficient with its lack of C4I capability to provide situational awareness of maneuver to assist the commander to provide effective command and control and employment of combat power. Additionally, the IBCT is unable to adequately tactically maneuver without vehicle augmentation to conduct wide area security against the hybrid threat.

The next evaluation standard was an assessment of the BCTs enabler capabilities. All three BCTs were assessed as insufficient based on assessment of the MTOE capabilities against a hybrid threat. The greatest lesson from the wargame with attention to enablers was the lack of capability against a major strength of hybrid threats, in future OEs with information and cyber operations. All three BCTs have organic representation for information operations and civil affairs to assist in targeting the population as the center of gravity. Additionally, electronic warfare exists to provide primarily defensive jamming ability. The electronic warfare cell does not have offensive cyber capabilities. These three functions will play a much larger role against hybrid threats in the future.

The final criterion for evaluation was an assessment of the BCT logistics capabilities against a hybrid threat. The ABCT and IBCT were reviewed as sufficient. The SBCT was assessed insufficient with regard to the future regionally aligned forces concept based on its lack of organic capability. The SBCT MTOE needs to be reevaluated to determine a better way to maintain independent operations and create FSCs within the BSB. Two other points for future review, the need to provide logistics

training support to host nations and theater provided equipment. Requirements for partnership support needs to be analyzed for regional requirements to ensure BCT organic BSBs can support U.S. logistical requirements and facilitate the increased capability of host nation forces. TPE is another concern to ensure the equipment leaving Iraq and Afghanistan is matched against MTOE modifications.

Findings

The results from the strategic capabilities assessment provided the data required to assess the BCTs in the tactical assessment wargame. The wargame assessed the BCTs organic capabilities against a hybrid threat using movement and maneuver, enablers, and sustainment categories as evaluation criteria and included SWOT assessments. The results from the tactical assessment wargame provided the basis for the discussion to answer the secondary research questions:

1. What are the potential future OEs?
2. What are the plausible hybrid threats in the future OEs?
3. What are the applicable Army doctrine and lessons learned from armored forces in Iraq and Afghanistan?
4. What are other nations' armored forces lessons learned from similar conflicts and defense draw downs?
5. How does the ABCT, SBCT, and IBCT compare in performance based on case study analysis against a hybrid threat in the future OE?

Questions 1, 2, 3, and 4 were addressed in detail in chapter 2, Literature Review. The following addresses and summarizes the key points and lessons of each question.

Question 1: What are the potential future OEs?

The DOD defines an OE as, “a composite of the conditions, circumstances, and influences that affect the employment capabilities and bear on the decisions of the commander” (Joint Chiefs of Staff 2011a). Regardless of the force structure applied, the commander and his staff must first understand the impact of the OE in order to accurately address the problem set. Critical aspects of potential future OEs, depends on an accurate definition of the requirements for successful maneuvers against hybrid threats in the future operations. Military forces which have been successful in the past in adapting to the changing nature of war with its evolving threats did so by first understanding and defining the problem sets or OEs they faced. In essence, they have successfully executed the operational process and specifically the intelligence preparation of the battlefield (IPB).

The Army will be required to conduct offensive, defensive, and stability operations simultaneously across the full range of military operations. Support from the local population cannot be assumed and information operations security will be required to continuously shape perceptions in support of the host nation government and coalition operations. Additionally, the possibility of major combat operations remains real and must be considered with the increased complexity of the JIIM environment. Our nation will be fighting an ill defined enemy while securing the host nation population and setting conditions to enable the success of the host nation’s government. This complex environment represents one of the leading challenges of the future.

Training capabilities, facilities, and the training centers at Fort Irwin, Fort Polk, and Hohenfels are reflecting the complexity and challenges of the future OE and the

hybrid threat. Modularity and the current concept of regionally aligned forces are beginning to address the emerging challenges and how best to align combat forces against regional threats and requirements. Further study and analysis still needs to be conducted to address force composition and capabilities required at the BCT and division levels to effectively equip deploying forces with adequate organic capabilities and Soldier skill sets.

Question 2: What are the plausible hybrid threats in the future OEs?

Hybrid threats have two or more of the following components: military force, nation-state paramilitary force, insurgent groups, guerilla units, and/or criminal organization (Headquarters, Department of the Army 2010b, 2-1). “A hybrid threat is the diverse and dynamic combination of regular forces, irregular forces, and/or criminal elements all unified to achieve mutually self benefitting effects” (Headquarters, Department of the Army 2010b, 1-1). These threats are innovative, adaptive, globally-connected and networked through varying forms of media. They can operate effectively in their terrain and quickly adapt their networks to provide speed, increased lethality, and transition into the population. Hybrid threats are a formidable opponent. They are able to blend into the population which makes targeting an organization difficult. They can evolve rapidly to strike an enemy and disperse to survive against a well-equipped and perhaps numerically superior opponent.

The ability to identify the various threats across an OE requires a continuous, in-depth understanding of the region. Hybrid threats can be loosely coordinated or completely disconnected, yet share the same end result for desired end states. One common goal is the removal of U.S. and coalition forces from their area of operations.

Hybrid threats in the future OE pose an increased threat against host nation government, and forces legitimacy and credibility. The regionally aligned forces concept must adequately prepare the BCT and division with enablers to ensure effective operations can be conducted with respect to information operations, civil affairs, and cyber. The current BCT structure is not fully adequate for information operations, civil affairs, and cyber for independent operations against a highly capable hybrid threat targeting the population. Additional analysis needs to be conducted to determine adequate staffing and capabilities to ensure the BCTs can combat the information and psychological operations of a hybrid theat.

Question 3: What are the applicable Army doctrine and lessons learned from armored forces in Iraq and Afghanistan?

Throughout the last decade of experience in combat, the ABCT has successfully operated across the full range of military operations conducting decisive action through combined arms maneuver and wide area security. The ABCT has proved an invaluable resource from the beginning of major combat operations in Operation Iraqi Freedom and through offense, defense, and stability operations through 2010, when Iraq was transitioned back to host nation control. Armored forces have also served admirably in Afghanistan as well with both their armored platforms and as dismounted formations without their platforms. The ABCT has proven versatility and functionality with its most valued resource, the soldiers who fill its ranks.

During the initial invasion of Iraq, the utility of the ABCT allowed the U.S. Army to achieve victory over a heavily armored enemy in unprecedented time, with high degrees of protection, firepower, and survivability. No other brigade combat team

formation, whether IBCT or SBCT, could have achieved such decisive victory over a heavily armored opponent.

Armored platforms were used effectively in urban operations. Tanks and infantry fighting vehicles were partnered effectively in combined arms teams to seek out, attack, and finish the Iraqi enemy threat. “The Army's 3d Infantry Division developed an urban operations technique in which two Abrams would be closely followed by two Bradleys with mounted infantrymen and often an engineer vehicle behind the Bradleys. The tanks would flush the enemy when Iraqi forces fired on the tanks or ran from them, allowing the Bradleys to employ their 25mm cannons and machineguns” (Gordon and Pirnie 2005, 2).

Armored Forces continued to prove their capability throughout the stability operations and surge operations in Iraq and Fallujah in November 2004 where they led the offensive actions to defeat insurgents (Olive, 2011, 63). Counter-insurgency operations were also successfully conducted by the 3rd Armored Cavalry Regiment in Tal Afar, Iraq (Oliver 2011). 1st BCT, 1st Armored Division, was also used successfully in Ramadi, Iraq (Oliver, 2011, 63). “Armored and mechanized forces have shown their effectiveness in built-up areas in numerous engagements in Iraq and have exhibited a great deal of utility in other operations short of war. The key determinant to their effectiveness in irregular warfare is force employment—how we use them, not necessarily where” (Oliver 2011, 67).

Lessons learned from armor forces experiences in Iraq and Afghanistan have proven their invaluable capabilities with respect to combat power and mission accomplishment. The ABCT will be needed on the future battlefield against near peer and

hybrid threats. The ABCT clearly provides capabilities that a SBCT and IBCT cannot match in firepower, protection, and maneuverability against an armor equipped hybrid threat. The ABCT is significant in an immature theater and against armored threat forces. The ABCT provides unprecedented protection when operating against threats with little situational awareness and intelligence. The capability must remain to allow the commander the ability to decisively gain initiative across the full range of military operations.

Question 4: What are other nations' armored forces lessons learned from similar conflicts and defense draw downs?

Other nations' armored forces lessons learned from similar conflicts, and defense draw downs, led to similar lessons with respect to the value of armored forces, and required capabilities for the current and future OEs. Fiscal realities have created situations for other allied partners to reduce armor capabilities, and rely on U.S. capabilities. This is another factor and argument to maintain the armored forces and the ABCT in our force structure. Compelling lessons were also taken from the Israeli Defense Forces experience against Hezbollah as the premier hybrid threat. Critical as we transition out of stability operations is to regain combined arms maneuver proficiency and our ability to integrate fires, maneuver and joint air integration. These lessons are being reflected in doctrine 2015 and decisive action rotations now being implemented at our training centers.

The Israeli Defense Forces (IDF) learned many valuable lessons operating against a hybrid threat, Hezbollah, between the 2006 Second Lebanon War and the 2008 engagement against Hamas in Gaza during Operation Cast Lead. Following the Second

Lebanon War in 2006, the IDF went "back to basics," adapting organizational, doctrinal, and training changes. Emphasis shifted to building up ground forces and training in major combat operations skills, particularly combined-arms warfare tactics and air ground integration of attack and ISR assets. In the regular forces, training time was doubled, and combined-arms, live-fire exercises were instituted for brigade combat teams (Johnson 2011a). Additionally, combined arms maneuver regained focus with respect to the Israeli Army and the Israeli Air Force also increasing cooperation in the following areas: ISR, the integration of UAVs, and close air support. Tactical air control capabilities were returned back to the Brigade level as well. IDF artillery and air strikes paved the way for ground maneuver by brigade combat teams, and the IDF successfully conducted combined arms maneuver with engineer support and armored units (Johnson 2011a).

The British units were able to use the armored vehicles to great psychological effect against the enemy as well as effective support by fire platforms and force protection based on high survivability against rocket propelled grenades and IEDs. "The British sources said that tanks tended to "intimidate" the enemy and noted that when tanks were around, the level of insurgent activity declined significantly" (Johnson and Gordon 2010, 3). The armor did, however, have a high sustainment requirement for maintenance and supply for fuel, parts, and ammunition.

The Canadian Army has reached many of the same realizations as the British. The Canadian Army has deployed armored vehicles, both Light Assault Vehicles (LAVs) and tanks, both German and Dutch variant Leopard I and IIs. The experience in southern Afghanistan has convinced the Canadian Army that armored forces have a very important role in counter-insurgency and stability operations (Johnson and Gordon 2010, 4).

As Taliban forces surged in 2006, in concert with U.S. forces shifting to surge in Iraq, the Canadian forces in southern Afghanistan found that their LAVs lacked adequate fire power and force protection to meet mission requirements. “The 25mm gun on their LAVs was not powerful enough to penetrate some targets, such as well-constructed buildings, and the vehicles did not have sufficient armor protection against anti –armor mines, mortar fire, RPGs, and recoilless rifles that the Taliban were using” (Johnson and Gordon 2010, 4). Mobility was also restricted to roads due to the LAVs weight and its being a wheeled vehicle would cause it to get stuck and require additional recovery assets. Similar to the British Army, the Canadians employed their tanks as support by fire elements at the small unit tactical level in support of dismounted infantry increasing lethal and non-lethal effect on the enemy, and increasing force protection and survivability.

Primary question: How does the ABCT, SBCT, and IBCT compare in performance based on case study analysis against a hybrid threat in the future OE?

In the primary research question, the finding is that the ABCT, SBCT, and IBCT compare relatively equal in performance based on tactical wargame assessment against a hybrid threat in the future OE. The BCTs were compared on three key elements for analysis; maneuver, enablers, and logistics. Analysis for maneuver resulted in the modular ABCT and IBCT assessed as sufficiently capable and the SBCT was assessed as optimal. Analysis for enablers resulted in all three BCTs assessed as sufficient based on review of the MTOE capabilities. The final criteria of logistics assessed the ABCT and IBCT as sufficient. The SBCT was insufficient. When measured against the requirements for regionally aligned forces concept the SBCT is lacking in organic logistics capability.

Summary

This chapter applied the research methodology designed in chapter 3 to generate and analyze information in accordance with the qualitative research design. The analysis generated data with the three BCT capabilities and further SWOT analysis of the tactical assessment against a hybrid threat. The application of the research methodology provided answers and points of discussion of the secondary research questions. The BCT strategic capabilities assessment included three case events of ABCT, SBCT, and IBCT organizations assessed and compared within a common OE. The data generated from the assessment fed into the evaluation criteria analysis. The evaluation analysis included a cross-walk of the BCTs capabilities across the three critical variables of maneuver, enablers, and logistics against a hybrid threat. The strengths, weakness, opportunities, and threats analysis highlighted the capabilities that enhanced and degraded the BCT's overall effectiveness. This model showed BCT's in terms of capabilities, as well as enablers that improve their effectiveness in unified land operations against a hybrid threat in any given OE. The findings section discussed the results of the analysis and discussed the results with respect to the secondary research questions and DOTMLPF improvements. Chapter 5 will answer the primary research question and discuss opportunities for future study and development.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

> The U.S. military's armored forces have played a vital role in deterring aggression, toppling regimes, and defeating conventional forces and insurgents alike. And they will become even more important as potential adversaries continue to adapt to the U.S. military's advantages in airpower, sea power, surveillance, and targeting. Operating alongside the army's light and medium forces, armored brigade combat teams possess the protection, mobility, and firepower needed to defeat capable state and state-sponsored enemies.
>
> — McKinney, Elfendahl, and McMaster
> *Foreign Affairs*

The purpose of this research was to assess the three BCTs effectiveness in unified land operations conducting offense, defense, and stability operations against a hybrid threat. The BCTs were evaluated based on their structure, equipment, and skill sets available based on 2013 MTOE. The primary research question asked: Does the ABCT possess adequate capabilities to defeat potential hybrid threats in the future OE? The answer to the primary research question is yes, ABCTs have adequate capabilities to defeat potential hybrid threats in the future OE.

The research used a qualitative approach to develop responses to the primary and secondary research questions. The research plan included an analysis of doctrine and literature, an analysis of the BCTs capabilities compared to strategic requirements, followed by a tactical case study assessment, and a SWOT analysis of the BCTs against a hybrid threat. The analysis yielded findings which provided recommendations according to the DOTMLPF which helped answer the following secondary research questions:

1. What are the potential future OEs?

2. What are the plausible hybrid threats in the future OEs?

3. What are the applicable Army doctrine and lessons learned from armored forces in Iraq and Afghanistan?

4. What are other nations' armored forces lessons learned from similar conflicts and defense draw downs?

5. How does the ABCT, SBCT, and IBCT compare in performance based on case study analysis against a hybrid threat in the future OEs?

The findings presented in chapter 4 suggested that ABCTs are effective based on the analysis of the organic capabilities within the areas of maneuver, enablers, and logistics. The ABCTs improvements and adaptation of the formation as a result of modularity has increased the BCTs' ability to operate independently against hybrid threats.

This chapter first summarizes the findings and conclusions from the analysis of the ABCTs represented in the strategic capabilities analysis and tactical assessment wargame. The chapter then summarizes the findings that answered the secondary research questions through DOTMLPF analysis and addresses recommendations for future research followed by the chapter conclusion.

Conclusions

The strategic capabilities assessment was the process for collecting data from the analysis of the three BCTs against four critical requirements of a modular Force XXI capable formation, defined in chapter 3. The four requirements are as follows: strategic mobility, tailorability and modularity, and versatility, to operate across the full range of military operations, the cost to equip and train the BCT.

Results from the assessment yielded one of the four classifications: detrimental, insufficient, sufficient, or optimal for each of the BCTs. Detrimental is defined as, a lack of capabilities resulting in failure and harmful to future mission accomplishment and organizational structure. Insufficient is described as, “capabilities severely lacking and resulting in failure” (Overland 2009, 35). Sufficient was defined as, “that not all required capabilities were present but adaptation resulted in limited success” (Overland 2009, 35). Finally, optimal, “necessary capabilities were present to fulfill requirements resulting in success” (Overland 2009, 35).

The ABCT based on the chosen parameters for analysis of cost comparison, is the most expensive BCT to train and equip. However, based on costs to equip and train, research shows that the ABCTs are prepared at a sufficient level to accomplish its doctrinally required mission. Based on cost and time to deploy the BCTs, the research assessed the ABCT at a sufficient level to accomplish its doctrinally required mission with respect to its assigned personnel and equipment in accordance with the ABCT MTOE. The conclusion is that pre-positioned stock capabilities are best suited for the ABCT in the future OEs with minor improvements to the C4I equipment of the existing stocks.

Based on analysis of BCTs modularity and tailorability capabilities, the ABCT is assessed at a sufficient level to accomplish its doctrinally required mission. The critical need with respect to tailorability and modularity is the addition of the third maneuver battalion to the ABCT. The additional battalion is critical as it provides additional command and control, situational awareness, maneuver, and mobility for the BCT. The third maneuver battalion was not absolutely necessary during the last ten years of

counter-insurgency. However, when the entire range of military operations is assessed and requirements of major combat operations are revisited the third maneuver battalion is essential for all BCTs. The third maneuver battalion will allow the ABCT to more effectively accomplish operations across the range of military operations based on doctrinal analysis of requirements and force ratios with respect to decisive action or counterinsurgency operations. In addition, the ABCT will require the additional firing battery in the fires battalion and a FSC in the BSB to support the operations of the third maneuver battalion. The conclusion is that the addition of the third battalion will magnify the BCTs' ability to command control, develop the situation for the brigade commander, and maneuver against a hybrid threat.

The final aspect for strategic capabilities assessment was versatility. The current force structure provides smaller units as the principal foundational building blocks of force packages for combatant commanders. Based on the analysis in the RAND study all three BCTs are assessed as sufficient in their versatility and flexibility. The versatility at the BCT level has increased the overall ability of the Army to meet ARFORGEN requirements during counter-insurgency operations. The deployment requirements will continue as the regional alignment concept becomes further developed across the Army. The conclusion is that further analysis needs to be conducted on the joint and multinational inter-operability at the BCT level to meet regional alignment requirements. The strategic capabilities analysis provided findings and conclusions for possible changes to the BCTs and further analysis required. The tactical assessment wargame and SWOT analysis provided recommendations for changes in the three areas of analysis of maneuver, enablers, and logistics. Factors associated with each are described in the following sections.

DOTMLPF Factors

The results from the strategic capabilities assessment provided the data required to evaluate the BCTs in the tactical assessment wargame. The wargame assessed the BCTs organic capabilities against a hybrid threat, using movement and maneuver, enablers, and logistics categories as evaluation criteria and included SWOT. The tactical assessment wargame provided assessment and recommendations across DOTMLPF. The SWOT analysis highlighted the capabilities that enhanced and degraded the BCT's overall effectiveness. The review included a cross-walk of baseline capabilities, and organic assets provided to the BCTs in order to conduct decisive action across the range of military operations. The cross-walk of the BCTs organic assets across the variables demonstrates capabilities BCTs require to be effective.

Movement and Maneuver

The ABCT is highly effective against a hybrid threat containing a military force component equipped with a mix of heavy and light armor capabilities, insurgency, and criminal elements. Operations in Iraq and Afghanistan over the last ten years demonstrate the full scope of the ABCT against a near peer armor equipped force and insurgency operations. The ABCT in comparison to the other BCTs has superior firepower, protection, and lethality with its organic platforms and formations.

Materiel

The ABCT C4I capabilities also assist in maneuver and command and control of the highly mobile, effective forces, and platforms. Modern digital systems including, Blue force Tracker (BFT), Force XXI Battle Command Brigade and Below (FBCB2),

Command Post of the Future (CPOF), and Enhanced Position Location Reporting System (EPLRS) are fielded down to the company level and each combat platform is equipped. The systems provide unprecedented situational awareness enabling quicker command and control and maneuver of the forces. The C4I components and capabilities also allow the entire ABCT to quickly update situational awareness against a hybrid threat through populating graphics, enemy contact, and targeting information through the systems.

Organization

The primary weakness of the ABCT to maneuver is the lack of a third maneuver battalion. With the advent of modularity, in order to provide adequate BCT numbers to facilitate the ARFORGEN process the third maneuver battalions were taken from the ABCT formations. The BCTs were given a reconnaissance squadron, increasing situational understanding, but limiting overall maneuver when compared with the pre-modular counterparts. The addition of a third maneuver battalion will increase the ABCTs ability to maneuver and command and control additional assets. The future OE will present OEs where threats will be focused on influencing the population in urban environments to achieve strategic, operational, and tactical ends. The future environment will require greater integration at the tactical level as Soldiers interact with the population and host nation forces. The additional battalion will provide much needed command and control and situational awareness to the BCT commander. The requirement for maneuver will be greater in the future against a versatile and mobile hybrid threat.

The ABCT is designed for firepower and lethality against an armored threat. The two armor companies per CAB are therefore manned for the vehicle platform and not equipped with the same number of Soldiers as their infantry company counterparts. Over

the last decade of war this has limited the ability of the armor companies to interact with a population, against an insurgent threat with limited dismounted capabilities. The armor companies are therefore limited, in dismounted operations capability based on MTOE authorizations for personnel.

Training

An additional threat to consider is the BCTs' ability to train and integrate other combined arms capabilities into its formation. BCTs regardless of type must be able to receive and integrate ABCT, IBCT, or SBCT capabilities into its formation in order to effectively counter a hybrid threats maneuver capabilities. Parochialism and lack of experience need to be overcome quickly through training and leader development to allow for maximum optimization of varying capabilities quickly to counter a threat. Additionally, joint operations interoperability is critical for the ABCT and training must focus on integration of air capabilities for close air support and intelligence, surveillance, and reconnaissance requirements.

Enablers

Enablers have been defined as, "noncombat troops who specialize in areas such as intelligence, surveillance and reconnaissance; explosive ordnance disposal; medical and mental health; and personnel administration" (McMichael 2009). For the purpose of this study, enablers focused on the essential combat skills of fire support, intelligence, surveillance, and reconnaissance. Enablers are combat force multipliers for the maneuver force allowing them the ability to quickly identify the enemy forces and provide for the employment of lethal and non-lethal fires in support of the maneuver commander's

mission and intent. Enablers are critical to maintain momentum, speed, and maneuver allowing the commander to reach the decisive point against the hybrid threat.

The ABCT has four major strengths and capabilities. The ABCT has adequate fires capabilities within the brigade staff and the fires battalion. The creation of the RSTA was an added capability for reconnaissance. The RSTA is critical in both a linear battlefield or in a noncontiguous OE against a hybrid threat. The RSTA provides the brigade commander a greater situational understanding, and allows the brigade to develop the intelligence preparation of the battlefield in identifying the hybrid threat. As mentioned earlier in the discussion of the importance of the third maneuver battalion, equally important is the fires capabilities for the BCT against a hybrid threat. The RSTA coupled with the fires battalion allow the brigade to shape the battlefield against an armor equipped hybrid threat and support maneuver operations in both urban and rural terrain. Finally, modularity brought the tactical unmanned aerial vehicle (TUAV) with the creation of the TUAV platoon and the shadow UAV. The TUAV platoon allows the military intelligence companies to answer CCIRs for the brigade commander and augment the RSTA capabilities to develop situational awareness and determine enemy course of action selection.

Organization

A major weakness for each of the BCTs is the lack of intelligence analysts below the battalion level. The company intelligence support teams (COISTs) created during operations over the last ten years of conflict have been ad hoc and usually taken from the MTOE authorization of the fire support officer (FSO), fire support noncommissioned officer in charge, and the fires support element. The addition of intelligence analysts

down to the company level will enable intelligence development from the bottom up and across the formation as well as allow the fire support element to focus on their critical tasks.

Additionally, the current manning is not adequate for information operations, civil affairs, electronic warfare, and cyber activities. Common across all three BCT types is manning for one information operations officer, a two man civil affairs team, and an electronic warfare cell of five. As discussed in chapter 2, the future OE will require increased information and cyber operations to counter a hybrid threat. Although the addition of the cells demonstrates the importance of the capabilities at the brigade and below level, the manning is inadequate against a capable and diverse hybrid threat. Cyber is an additional capability that needs to be added to the electronic warfare section to allow increased capability against a hybrid threat with increased informational technology experience. Additionally, the fires battalion will need to gain another firing battery and assets required to support the addition of the third maneuver battalion as it returns to the BCT. Finally, the BSB will also need an additional FSC to support the additional third maneuver battalion.

Training

The lack of cyber capabilities and training, either defensive or offensive, at the brigade level is a critical vulnerability in the future OEs. Within the context of the future OE and the proliferation of information technology hybrid threats will use access of equipment to attack U.S. military technological capabilities. The U.S. military depends on technology to facilitate command, control and situational awareness. Our dependency becomes a high value target and high priority target for the enemy. A capable hybrid

threat will target to degrade our abilities and steal information on U.S. operations. Currently, cyber capabilities are consolidated at the Army level and have not been proliferated to the division and brigade levels. As BCTs begin to deploy under regional alignment cyber capabilities and personnel must be added to the MTOE for all three brigades. The cyber augmentation for training and deployment are critical.

Logistics

Logistics is, "planning and executing the movement and support of forces" (Headquarters, Department of the Army 2012a, 3-4). Logistics includes "maintenance, transportation, supply, field services, and distribution, operational contract support, and general engineering support" (Headquarters, Department of the Army 2012a, 3-4). For the purpose of this logistics will be assessed with respect to maintenance, transportation, and distribution against the hybrid threat scenario.

Doctrine

The regionally aligned forces concept will allow sustainment and logistical forces to train opening a theater, establishing maintenance, transportation, and distribution in an undeveloped and austere theater. The ABCT has enough capabilities within its organic BSBs to provide for logistical support. These capabilities will be tested against a hybrid threat, but when compared to a hybrid threat the BCT will be dominant in providing and maintaining combat power when required. Modularity and the adjustments to doctrinal and organizational changes for the ABCT have demonstrated great strengths and capabilities when compared to the pre-modular HBCT.

Organization and Materiel

TPE equipment includes logistical equipment and vehicles that are armored and protected from small to larger munitions. Based on the regional alignment of forces and ongoing threat assessments by regions this equipment needs to be assessed for priority and provided to BCTs as they deploy in support of regional operations. Another opportunity exists in force composition and modularity. The regionally aligned forces are currently being assessed by number and types of brigades to be in support of each region. Based on additional logistics requirements for specific regions and OEs BCTs aligned to the region may need additionally modified MTOEs to allow for logistics requirements.

Training

As future regional operations target hybrid threats, host nation partnership is critical for security force cooperation and foreign internal defense. A lesson learned from both Iraq and Afghanistan is the partnership and training required to provide adequate logistical and sustainment capabilities in the host nation forces. Army sustainment forces down to the brigade level must be prepared to partner and train their logistical counterparts, while operating against a hybrid threat. This requirement needs to be evaluated to ensure adequate capabilities exist to both, logistically train host nation partners, while maintaining and sustaining the BCT capabilities.

Recommendations for Future Research

Several recommendations emerged from the strategic capabilities analysis and the tactical assessment wargame of the ABCT against a hybrid threat. Recommendations for future research will better analyze the BCTs capabilities to efficiently employ capabilities

while mitigating risk. Regional alignment of forces will maximize the modularity concept and design, but the weaknesses of the BCTs will create greater risk when deployed independently in future OEs. Recommendations for research will be addressed with respect to the strategic capabilities assessment and the tactical assessment wargame criteria of maneuver, enablers, and logistics.

Strategic Capabilities Assessment

The strategic capabilities analysis provided two key recommendations for future study with respect to strategic mobility. The regional alignment of forces concept will require increased strategic mobility for all three BCT types. The ABCT is clearly the most expensive to train, equip, and deploy based on MTOE structure. However, both cost and time required to deploy, can be mitigated through pre-positioned stocks and forward based forces. Forward basing of forces by BCT will assist in reducing the total requirements for strategic airlift, use of sea lift capabilities, and pre-positioned stocks (Peltz, Halliday, and Bower 2003). Further analysis needs to be conducted under the auspices of the regional alignment, and begin providing a rotational training and partnership program that will provide temporarily based forces with capabilities. This concept will reduce operational risk, strategic air, and sea lift requirements. Regional alignment analysis will include all three BCT capabilities globally to determine which regions will require total percentages of force's capabilities and combat power. Additionally, regional analysis can use the training deployments and partnerships to provide more accurate data for deployment and RSOI in each region based on APODs and SPODs available.

Pre-positioned stocks and sea-lift capabilities are critical for deployment of forces. Pre-positioned stocks exist for IBCTs and ABCTs around the globe. Both land and sea based platforms provide capabilities to deploy into theaters. Analysis needs to be conducted to ensure the capabilities are upgraded; C4I upgrades need to be conducted to ensure PPS can communicate with current systems and capabilities. Another cost mitigation measure possibility is the "Selected" prepositioning concept. Selective preposition would create a common set of the soft skin tactical vehicles in order to reduce total air or sea lift requirements to essential mission command and combat vehicles for each BCT type (Peltz, Halliday, and Bower 2003, 44). The three BCT force types share commonality with modularity in basic soft skinned vehicles and command vehicles. The combatant commander would then have the flexibility to determine the right size modular force and BCT type to employ.

Maneuver

The BCTs were evaluated against a hybrid threat model in the future OE. Maneuver was assessed in accordance with the ADRP 3-0 definition as, "the related tasks and systems that move and employ forces to achieve a position of relative advantage over the enemy and other threats" (Headquarters, Department of the Army 2012a, 3-3). The modular ABCT was assessed as sufficiently capable. The discriminating factor was the lack of the third maneuver battalion in the ABCT. The addition of the third maneuver battalion will be critical for mobility and maneuver against a capable and adaptive hybrid threat. The third battalion will increase over all command and control capabilities, intelligence collection, situational understanding, and maneuver and mobility at the tactical and operational level. Further research will need to be conducted to determine the

number of additional battalions that can be fielded based on limited budgets, equipment fielding, and total personnel requirements for the Army. The third maneuver battalion requirement must also be balanced against the need for additional enabler MOS shortages within the BCTs. The next section will address future research with respect to enablers.

Enablers

The next evaluation standard was an assessment of the BCTs enabler capabilities. All three BCTs were assessed as insufficient based on assessment of the MTOE capabilities against a hybrid threat. The greatest lesson from the wargame with attention to enablers was the lack of capability against a major strength of hybrid threats, in future OEs with information and cyber operations. All three BCTs have organic representation for information operations and civil affairs to assist in influencing the host nation population. Additionally, electronic warfare exists to provide primarily defensive jamming ability. The electronic warfare cell does not have offensive cyber capabilities. These three functions will play a much larger role against hybrid threats in the future. Finally, with the addition of the third maneuver battalion additional enablers will also need to be added. An additional firing battery will need to be added to the fires battalion to support operations and maneuver. Future research needs to be conducted to determine the appropriate personnel manning requirements for the critical MOS requirements mentioned above. As mentioned under movement and maneuver, the need for enabler MOS skill sets must be balanced and researched against the effects gained by an additional third maneuver battalion. The following section will address future research recommendations concerning logistics.

Logistics

The final criterion for evaluation was an assessment of the BCT logistics capabilities against a hybrid threat. The ABCT was reviewed as sufficient. The ABCT is heavily reliant on logistical forces for fuel and maintenance support. The ABCT's logistic forces are vulnerable to attack while conducting logistical resupply operations in a noncontiguous battlefield. The MTOE authorization of vehicles are light skinned and not protected from IEDs or RPGs. The vehicle fleet needs to be upgraded to include the TPE improvements for protection for sustainment forces. Additionally, another FSC will need to be added to the BSB to support the third maneuver battalion's operations. Two other points for future review, the need to provide logistics training support to host nations and theater provided equipment. Requirements for partnership support needs to be analyzed for regional requirements to ensure BCT organic BSBs can support U.S. logistical requirements and facilitate the increased capability of host nation forces. TPE is another concern to ensure the equipment leaving Iraq and Afghanistan is matched against MTOE modifications. The final aspect for future research is the effect of regional alignment of forces and independent BCT operations. Fuel and parts flow and consumption analysis needs to be conducted to determine effects on an ABCT operating independently. The final section offers the conclusion for the chapter.

Conclusion

In conclusion, analysis demonstrated that the ABCT has adequate capabilities to combat potential hybrid threats in the future OEs. The ABCT has proven its value over the last ten years of conflict against both near peer competitors equipped with armor and insurgencies. Unified land operations require the armor lethality, firepower, and

protection in order to meet tactical, operational, and strategic end states. The DOTMLPF recommendations gained from the strategic capabilities assessment and tactical assessment wargame provide solutions for increased effectiveness and optimization of available combat power or needed requirements. Future study will enhance cost effectiveness and modular versatility and abilities to meet future combatant commanders' needs.

APPENDIX A

BCT DEPLOYMENT DATA TO THE NTC

ABCT Deployment Cost Data to the NTC

SRC	TITLE	W_VEHICLES
06385R001	FIRES BN 155SP (HBCT) (M109A6)	$712,009.00
07205R101	COMBINED ARMS BN (M2A3/M3A3/M1A2)	$1,717,276.00
17205R101	RECON SQUADRON (HBCT) (M3A3)	$817,324.00
63325R001	BRIGADE SUPPORT BN (HBCT)	$4,083,069.00
87302R101	HHC HEAVY BDE CBT TEAM (HBCT)	$317,376.00
87305R001	BDE SPECIAL TROOP BN (HBCT)	$1,116,145.00
06385R001	FIRES BN 155SP (HBCT) (M109A6)	$208,905.00
07205R101	COMBINED ARMS BN (M2A3/M3A3/M1A2)	$503,852.00
17205R101	RECON SQUADRON (HBCT) (M3A3)	$239,804.00
63325R001	BRIGADE SUPPORT BN (HBCT)	$1,197,981.00
87302R101	HHC HEAVY BDE CBT TEAM (HBCT)	$93,119.00
87305R001	BDE SPECIAL TROOP BN (HBCT)	$327,479.00
07205R101	COMBINED ARMS BN (M2A3/M3A3/M1A2)	$1,717,276.00
07205R101	COMBINED ARMS BN (M2A3/M3A3/M1A2)	$503,852.00
	Total	$13,555,467.00

Source: Created by author. Note: The Army FORCES analysis function for deployment to the NTC source is the DASA-CES FORCES. The file contains the FY 2011 calculated transportation costs for moving selected units to the NTC or the JRTC from the designated army installations. Distance is number of miles from the origin to the training center. Vehicles analysis includes analysis for all tracked and wheeled vehicles within the unit type MTOE. The cost is calculated by multiplying the total short tons of equipment in the unit, by the rail cost ton per mile, by the distance, and includes the number of personnel times the air rate per mile times the distance (Headquarters, Department of the Army 2013).

SBCT Deployment Cost Data to the NTC

SRC	TITLE	W_VEHICLES
05063R301	ENGINEER CO (SBCT)	$401,117.00
06325R001	FIRES BN 155T (SBCT) (M777)	$661,046.00
07093R301	ANTIARMOR COMPANY (SBCT) (M1134)	$123,231.00
07095R501	INFANTRY BN (SBCT)	$1,092,009.00
11103R301	BRIGADE SIGNAL COMPANY (SBCT)	$98,337.00
17095R501	RECONNAISSANCE SQUADRON (SBCT)	$931,123.00
34143R301	MI CO (SBCT)	$105,637.00
47102R501	HHC STRYKER BCT (SBCT)	$320,583.00
63105R001	BRIGADE SUPPORT BN (SBCT)	$2,361,842.00
05063R301	ENGINEER CO (SBCT)	$117,689.00
06325R001	FIRES BN 155T (SBCT) (M777)	$193,952.00
07093R301	ANTIARMOR COMPANY (SBCT) (M1134)	$36,156.00
07095R501	INFANTRY BN (SBCT)	$320,398.00
11103R301	BRIGADE SIGNAL COMPANY (SBCT)	$28,852.00
17095R501	RECONNAISSANCE SQUADRON (SBCT)	$273,193.00
34143R301	MI CO (SBCT)	$30,994.00
47102R501	HHC STRYKER BCT (SBCT)	$94,060.00
63105R001	BRIGADE SUPPORT BN (SBCT)	$692,969.00
07095R501	INFANTRY BN (SBCT)	$1,092,009.00
07095R501	INFANTRY BN (SBCT)	$1,092,009.00
07095R501	INFANTRY BN (SBCT)	$320,398.00
07095R501	INFANTRY BN (SBCT)	$320,398.00
	Total	$10,708,002.00

Source: Created by author. Note: The Army FORCES analysis function for deployment to the NTC source is the DASA-CES FORCES. The file contains the FY 2011 calculated transportation costs for moving selected units to the NTC or the JRTC from the designated army installations. Distance is number of miles from the origin to the training center. Vehicles analysis includes analysis for all tracked and wheeled vehicles within the unit type MTOE. The cost is calculated by multiplying the total short tons of equipment in the unit, by the rail cost ton per mile, by the distance, and includes the number of personnel times the air rate per mile times the distance (Headquarters, Department of the Army 2013).

IBCT Deployment Cost Data to the NTC

SRC	TITLE	W_VEHICLES
06125R001	FIRES BN 105T (IBCT) (M119A1)	$414,011.00
07215R001	INFANTRY BN (IBCT) (M41)	$624,815.00
17215R001	RECON SQUADRON (IBCT) (M41)	$447,478.00
63335R001	BDE SUPPORT BN W/FSC (INF BCT)	$2,428,966.00
77302R201	HQS INFANTRY BRIGADE CBT TM	$224,518.00
77305R001	BRIGADE SPECIAL TROOPS BN (IBCT)	$661,476.00
06125R001	FIRES BN 105T (IBCT) (M119A1)	$121,472.00
07215R001	INFANTRY BN (IBCT) (M41)	$183,322.00
17215R001	RECON SQUADRON (IBCT) (M41)	$131,291.00
63335R001	BDE SUPPORT BN W/FSC (INF BCT)	$712,663.00
77302R201	HQS INFANTRY BRIGADE CBT TM	$65,874.00
77305R001	BRIGADE SPECIAL TROOPS BN (IBCT)	$194,078.00
07215R001	INFANTRY BN (IBCT) (M41)	$624,815.00
07215R001	INFANTRY BN (IBCT) (M41)	$183,322.00
	Total	$7,018,101.00

Source: Created by author. Note: The Army FORCES analysis function for deployment to the NTC source is the DASA-CES FORCES. The file contains the FY 2011 calculated transportation costs for moving selected units to the NTC or the JRTC from the designated army installations. Distance is number of miles from the origin to the training center. Vehicles analysis includes analysis for all tracked and wheeled vehicles within the unit type MTOE. The cost is calculated by multiplying the total short tons of equipment in the unit, by the rail cost ton per mile, by the distance, and includes the number of personnel times the air rate per mile times the distance (Headquarters, Department of the Army 2013).

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