THE LESSONS OF MODULARITY IN INFORMING AUSTRALIAN ARMY TRANSFORMATION

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Art of War Scholars

by

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The Australian Army is in a process of transformation that will fundamentally change the way in which combat power is generated to achieve the nation's military objectives. As the Army shifts toward a modular force structure, it faces significant challenges to develop the most appropriate balance of organizational capabilities, while implementing the necessary training systems and processes to prepare the force for a wide range of military tasks along the spectrum of conflict.

This thesis examines the observations, insights, and lessons learned of the United States Army and the NATO Response Force, in implementing modular force structures. Organizational structures and training systems are examined specifically, as major elements of capability. The thesis identifies common themes and challenges, faced by these organizations throughout their modularization and applies these for relevance to the Australian Army's current transformation efforts. The research demonstrates that the experiences of these organizations offer multiple lessons and opportunities for application by the Australian Army, to minimize the friction associated with modular transformation. The Australian Army has already applied a number of these lessons to varying degrees. There remain however, a number of areas in which Australian transformation efforts can further be enhanced or improved by considering the lessons highlighted within.

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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 LESSONS OF MODULARITY IN INFORMING AUSTRALIAN ARMY TRANSFORMATION, by Major Kane D. Wright, 155 pages.

The Australian Army is in a process of transformation that will fundamentally change the way in which combat power is generated to achieve the nation's military objectives. As the Army shifts toward a modular force structure, it faces significant challenges to develop the most appropriate balance of organizational capabilities, while implementing the necessary training systems and processes to prepare the force for a wide range of military tasks along the spectrum of conflict.

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work long enough to experience the amazing country that is the United States. Our time in America has been unparalleled.

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ACRONYMS

3ID	3rd Infantry Division
ABCT	Armored Brigade Combat Team
ACR	Armored Cavalry Regiment
ADF	Australian Defence Force
ARFORGEN	Army Force Generation
APC	Armored Personnel Carrier
ARS	Armed Reconnaissance Squadron
BCT	Brigade Combat Team (United States)
CALL	Center for Army Lessons Learned (United States)
Cbt Bde	Combat Brigade (Australian)
CTC	Combat Training Center
DOTMLPF	Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities
FIC	Fundamental Inputs to Capability
FWF TMF	Foundation Warfighting Training Management Framework
IBCT	Infantry Brigade Combat Team
MFCC	Modular Force Coordination Cells
NATO	North Atlantic Treaty Organization
NRF	NATO Response Force
NTC	National Training Center (US Army)
OIF	Operation Iraqi Freedom
SIB	Standard Infantry Battalion
TOC	Tactical Operations Center

TRADOC	Training and Doctrine Command
US	United States

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CHAPTER 1

INTRODUCTION AND OVERVIEW

> [F]or too long we maintained single capabilities within brigades with deleterious effects on our force generation and career planning cycles. . . . The development of the standard multi-role brigade will enable Army to reach the objective set in the 2000 White paper.[1]
>
> — Lieutenant General David Morrison, AO
> Chief of Army Address to the Royal Australian Navy Maritime Conference

Overview

On 12 December 2011, the Australian Department of Defence announced a major restructure of the Australian Army under Plan BEERSHEBA, to transition the force to a more rapidly deployable, modular organization with greater capacity to undertake sustained operations.[2] This initiative was driven by the competing requirements of the Australian Defence Force's (ADF) strategic tasks as outlined in *Defending Australia in the Asia Pacific Century: Force 2030–Defence White Paper 2009,* and the ability of the ADF to sustain protracted operational deployments.[3]

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[1] Comments are taken from the Chief of Army address to the Royal Australian Navy Maritime Conference, Sydney, 31 January 2012.

[2] Australian Broadcasting Corporation, "Defence Announces Major Army Restructure," ABC News (Australian Broadcasting Corporation), accessed March 23, 2014, http://www.abc.net.au/news/2011-12-12/defence-announces-major-army-restructure/3726630.

[3] Australian Army, "Plan BEERSHEBA," Australian Army Webpage, accessed March 23, 2014, http://www.army.gov.au/Our-future/Projects/Plan-BEERSHEBA.

To meet the requirements outlined by the *Defence White Paper 2009* and the anticipated future operational environment posited in *Future Joint Operating Concept 2030*,[4] the Australian Government endorsed the restructure of the Army's combat power into three "like" combat brigades (Cbt Bdes). Applying the lessons of more than a decade of sustained operational tempo, commonality of force structures, capabilities and core skills, offered the Australian Army a balanced organization that could be task-organized for deployment and provide a sustained capability over multiple rotations. The changes to organization, doctrine, training, command and leadership, required to put this concept into effect will be considerable. This transformation requires not simply a change to structure, but also to the very foundations of how the Australian Army conducts its force generation and operational rotations.

Purpose

The purpose of this study was to examine, through a comparative analysis of historical examples, whether general lessons in modularity can be drawn from existing modular military organizations. These lessons were then assessed for their applicability to the Australian Army as a means to inform and facilitate its impending transformation.

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[4] Australian Government, *Department of Defence*, *Future Joint Operating Concept 2030* (Canberra ACT: Department of Defence, March 2011), 7-9. This concept paper provides development guidance for Australia's joint force out to 2030 in accordance with *Defence White Paper 2009.* The document paper proposes a complex future operational environment, which will necessitate a joint force required to undertake combat and security operations concurrently, with military operations occurring in a broader whole-of-government context. The force is expected to operate as part of wider coalitions, and in conjunction with non-military organizations and agencies, to deal with offshore contingencies. This broad spectrum of operational tasking necessitates a balanced and adaptable force.

Methodology

The research undertaken for this thesis examined the modular transformation efforts of two distinct military organizations in different contexts. A literature review was undertaken of the United States (US) Army's modular transformation efforts during and after Operation Iraqi Freedom (OIF) with specific regard to lessons drawn for future relevance. A separate review was conducted of the North Atlantic Treaty Organization's (NATO) Response Force (NRF), as a modular, coalition-based organization. The research sought to identify common lessons between these organizations in developing modular force structures and capabilities. Finally, a qualitative assessment was undertaken to assess the applicability of these lessons in facilitating the Australian Army's ongoing and future transformation, to meet the likely mission sets that the Australian Army will be tasked with.

Primary Research Question

Are there lessons in modularity that can be applied to the Australian Army's current transformation efforts?

Secondary Research Questions

Secondary Research Question: What force structure modifications do the major drivers behind the Australian Army's modularization process necessitate?

Secondary Research Question: What common lessons exist, considered, using the specific framework which identifies elements of capability, from the US and NATO experiences with modular organizations?

Secondary Research Question: How applicable are these lessons to the Australian Army's transformation efforts?

Assumptions

The main assumption present in this thesis is that past issues experienced by military organizations in implementing and operating with modular force structures, are predictive of the issues and friction points which can be expected in Australia's modular transformation.

Definitions

Military Terminology

Armored Cavalry Regiment (ACR): The proposed battalion-sized organization within the Australian Combat Brigade, possessing the brigade's resident armored and mechanized capabilities. The primary roles of the unit are to provide reconnaissance, surveillance, and security to the brigade through its armored cavalry assets, while concurrently augmenting the combat power of the brigade through the application of its armored and mechanized maneuver assets in support of the brigade's infantry battalions, or as a third maneuver battalion headquarters.

Combat Brigade: The proposed Australian Regular Army Brigade structure under transformation efforts. This organization will be structured to contain generic dismounted infantry organizations and applied across all of Australia's infantry-based brigades. The brigade will possess capabilities and equipment to task-organize its forces to perform light and-or mounted roles concurrently, consecutively, or as required by the operational and tactical situation.

DOTMLPF: A framework used by the US Department of Defense to describe the various inputs to capability. DOTMLPF is the acronym that categorizes and summarizes all elements that comprise a specific capability including; doctrine, organization, training, materiel, leadership and education, personnel, and facilities.[5]

Fundamental Inputs to Capability (FIC): A framework defined by the Australian Army for pursuing modernization criteria to satisfy future operational needs. The FIC are the Army's template for checking and assessing the physical requirements of the force for fighting power. The eight FIC are organization, personnel, collective training, major systems, supplies, facilities, support, and command and management.[6]

Maneuver Brigade: The current Australian Regular Army Brigade structure is based on infantry and constituting the primary combat forces of Army. Maneuver brigades are manned, equipped, and resourced to fulfill a specific functional combat task as either a light, motorized, or mechanized warfighting formation. Maneuver brigades within Australia vary in size and composition, but generally possess two or three infantry battalions; one or two armored battalion-sized organizations (tank, armored cavalry or armored personnel carrier); and one each of engineer, artillery, signals, and logistics battalion-sized organizations.

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[5] Joint Chiefs of Staff, Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms* (Washington, DC: Department of Defense, November 8, 2010), accessed 6 August 2014, http://www.dtic.mil/doctrine/new_pubs/jp1_02.pdf, A-49.

[6] Australian Government, Department of Defence, *Land Warfare Doctrine 1 - The Fundamentals of Land Warfare* (Canberra: Australian Army, 2008), annex C.

Modular: "[C]omposed of standardized units or sections for easy construction or flexible arrangement."[7] For the purpose of this research, the term modular is applied as an adjective to describe any military organization that has been structured, manned, and equipped in such a way as to meet the terms of the aforementioned definition. The term modular will be applied to any organization that can be task-organized in such a way as to interchangeably reconfigure and substitute its subordinate organizations as part of force generation, operational generation, or tactical employment; or be capable of being used as a discrete entity in an interchangeable manner as part of a larger organization.

Limitations

The primary limitation imposed on the author for the preparation of this thesis was access to classified information. Many lessons identified and lessons learned captured by the US Army and NATO remain classified and are not authorized for distribution outside these organizations. With this point in mind, the majority of research conducted within this thesis has involved open source and unclassified documents, and has generalized certain themes and lessons, in order not to compromise the security caveats associated with presently classified information.

Scope and Delimitations

Irrespective of any lessons or issues identified with historical modular organizations that this thesis may identify, the existing Australian governmental direction and budgetary allocations shaping the transformation of the Australian Army dictate that

[7] Dictionary.com, "Modular," last modified 2014, accessed April 11, 2014, http://dictionary.reference.com/browse/modular.

Plan BEERSHEBA will be implemented in concept and reality. With this point in mind, the research undertaken in this thesis sought not to address whether modular structures are appropriate for the Australian Army, but to identify those lessons that best enable and facilitate a transformation of the force with minimal friction.

Considering the seven elements which comprise the DOTMLPF framework, this thesis limited its scope to the examination of those components of capability which are within the remit of Army leadership and commanders to influence in their entirety. Organization and training were examined specifically, as the DOTMLPF elements which are the direct responsibility of Army leaders to shape the future force. In examining these elements, linkages were drawn to the related elements of doctrine and leadership where appropriate. As elements of capability, which are all influenced to varying degrees by external factors beyond the control of commanders (such as budgetary pressures, procurement systems, and force personnel ceilings), materiel, personnel, and facilities were not examined in this thesis.

This thesis examined organizations that employ comparable structures to the proposed Australian Cbt Bde: the NRF as a brigade-sized, multinational modular organization and US Brigade Combat Team (BCTs), as part of divisional level operations within Iraq. The focus of examination was combined arms organizations, as these units will more closely resemble the Australian Cbt Bde in structure and capability. Supporting and enabling organizations such as US aviation, fires, maneuver enhancement and sustainment brigades, as well as joint capabilities, were not examined in detail.

Significance of Study

This study is significant as the ADF is currently implementing the initial changes to structure and force organization necessary to transition to a modular force. Trials are underway in Australian brigades to test and evaluate these structures based on Australia's forecast future mission sets, to inform supporting capability and facilities requirements. In an iterative and cyclical process, these capability requirements and the materiel solutions delivered, will in turn inform the future structures of the Australian Army. Changes to the Cbt Bde construct will be continuous and incremental throughout these trials and may result in amendments to structures, training, and command and control arrangements. This study aims to make a contribution to the preparations of the Army in transitioning to Plan BEERSHEBA structures, by highlighting those issues identified and lessons learned by militaries who have already undertaken modularization. In doing so, this thesis seeks to offer some insight and recommendations to minimize the organizational and cultural friction which may result from force transformation. Specifically, recommendations within this study apply directly to those components of capability which can be shaped and influenced by leaders at the battalion, brigade and service level.

Summary and Conclusions

This chapter has introduced the concept of modular organizations as an impending transformation effort in the Australian military. The chapter has defined the background to this issue in Australia, and proposed the primary scope and purpose of this thesis. Scope, delimitations, assumptions, and definitions have all been defined to frame

the thesis topic and establish the necessary parameters, which will guide the research to be undertaken in following chapters.

The next chapter will review the literature on this topic, to provide background context and assess the significance of existing material to this study. It will conclude with an explanation of the methodology to be employed in assessing historical examples of modular organizations. Subsequent chapters will examine each of these organizations in detail, before providing analysis on the applicability of any common themes to the Australian Army.

CHAPTER 2

LITERATURE REVIEW AND METHODOLOGY

Introduction

The purpose of the research undertaken in this thesis is to confirm whether common themes and lessons exist in modularity, which can be applied to the Australian Army as a tool to assist transformation efforts. The research aims to identify core lessons and-or issues, grouped by select components of capability, which can be assimilated and applied by Australian military leadership and commanders.

Chapter 2 has been organized into several parts. First, a review of literature on the Australian Army is conducted to establish the strategic context, which has shaped efforts to introduce modularity and define what form modular structures in the Australian Army will take. Second, US literature is reviewed to describe the transformative efforts that led to modular structures in the US Army, and what analysis has been conducted on these structures to date. Third, literature on the NRF will be reviewed using the same approach as applied to the United States. Finally, the chapter will conclude by defining the qualitative research methodology which was applied, to guide the analysis of research conducted and findings of the following chapters.

Review of Australia's Current Strategic Environment and Outlook

The transformation of the Australian Army is a process driven by strategic and force structure requirements. At its most simplistic, the impetus behind the Army's move to modular structures is the function of three competing and complementary factors: the

strategic requirements which drive the mission sets the Army is expected to achieve; the force sizing and budgetary requirements, which define the overall size and composition of the force; and the operational requirement to maintain a sustainable military presence in support of protracted operations.

The first step to understanding the "drivers" of modularity in the Australian Army is to examine the strategic threats that shape Australia's security environment. The operational environment in which the Australian Army will operate toward the future is one which necessitates balanced and flexible structures.

Defending Australia in the Asia Pacific Century: Force 2030 provided the national strategy that established the future operating environment for the Australian Army's modular redesign. This document was Australia's 2009 Defence White Paper, outlining several key factors shaping Australia's defense strategy towards 2030: declining US strategic primacy, strategic implications on the global security order from the rise of China, the persistent threat of Islamist terrorism and the potential for regional conflicts and destabilizing forces to impact regional security.[8] Subsequent reviews of governmental direction have not significantly altered this assessment: the *Australian Defence Force Posture Review 2012*, *Strong and Secure: A Strategy for Australia's*

[8] Australian Government, Department of Defence, *Defending Australia in the Asia Pacific Century: Force 2030: Defence White Paper 2009* (Canberra: Department of Defence, 2009).

National Security 2013, and the *Defence White Paper 2013*, each reinforced these concepts as enduring for Australia's national strategic outlook.[9]

The national guidance provided in the 2009 Defence White Paper defines four strategic interests to shape ADF policy within the context of the strategic outlook: a secure Australia, secure immediate neighborhood, stable Asia-Pacific region, and a stable rules-based global order. Each interest has in turn generated a Principal Task for the ADF. The guiding tasks within this document provide the strategic framework for Australia's impending force transformation. Principal Task One is to deter and defeat attacks on Australia. Principal Task Two is to contribute to stability and security in the South Pacific and East Timor. Principal Task Three is to contribute to military contingencies in the Asia-Pacific region, and the final Principal Task is to contribute to Military Contingencies in support of global security.[10]

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[9] Allan Hawke and Ric Smith, *Australian Defence Force Posture Review* (Australian Government, Department of Defence, March 30, 2012), accessed March 19, 2014, http://www.defence.gov.au/uAT/oscdf/adf-posture-review/docs/final/Report.pdf, 6; Department of Prime Minister and Cabinet, *Strong and Secure: A Strategy for Australia's National Security* (Canberra ACT: Department of Prime Minister and Cabinet, 2013), accessed March 19, 2014, http://www.ieee.es/Galerias/fichero/OtrasPublicaciones/Internacional/ResenaIEEE_EstrategiaNacionalSeguridadAustralia_feb2013.pdf; Australian Government, Department of Defence, *Defence White Paper 2013* (Canberra: Department of Defence, 2013), accessed March 19, 2014, http://www.defence.gov.au/whitepaper2013/docs/WP_2013_web.pdf.

[10] Department of Defence, *Defending Australia in the Asia Pacific Century*, 41-45. These interests have been listed as defined in the Defence White Paper 2009. Revised Strategic Interests according to the Defence White Paper 2013 (pages 24-26) make minor grammatical amendment only, to defined strategic interests from 'secure immediate neighbourhood' to reflect 'a secure South Pacific and Timor Leste'; and from 'strategic stability in the Asia-Pacific Region' to 'a stable Indo-Pacific'.

Judgments drawn from the 2009 Defence White Paper and subsequent strategic guidance[11] highlight that, to achieve these tasks and preserve Australia's associated strategic interests, the ADF must be capable of projecting power for expeditionary operations as a lead nation, or as a contributor to global coalitions. The diverse scope and nature of these tasks underscore an expeditionary strategy that supports an operational environment ranging across conventional warfighting (Principal Task One), humanitarian assistance, disaster relief and-or stabilization operations (Principal Tasks Two through Four).[12]

The likelihood of high-intensity warfighting on the future scale of conflict, further guides Australia's future brigade structure. Australia's Chief of Army, Lieutenant General David Morrison, has proposed that one of the few strategic certainties for the Australian Army is that it will continue to operate "in an unstable region where the global balance of power may be contested."[13] Morrison argues that state-on-state conventional warfare cannot be discounted as a thing of the past; Australia's combined arms teams must be balanced to maintain both conventional warfighting capability and the ability to deal with hybrid or irregular warfare. This point is reinforced by supporting assessments

[11] Department of Prime Minister and Cabinet, *Strong and Secure: A Strategy for Australia's National Security*, 17.

[12] Australian Government, Department of Defence, *Defending Australia in the Asia Pacific Century,* 53-58.

[13] David Morrison, "The Army as an Instrument of National Power," *Australian Defence Force Journal,* no. 190 (2013): 14.

of the future threat environment in the Army's future force guiding direction, *Army Objective Force 2030.*[14]

To meet the strategic guidance, the Army has been directed to generate a force with the ability to concurrently sustain up to one deployed brigade and one separate battlegroup within the archipelagic approaches to Australia.[15] The Cbt Bde represents the basic unit of action which will achieve these operational tasks. As the base organization for deployment into Australia's operational environment, the Cbt Bde will be deployed as the headquarters and land component for an Australian Joint Task Force, or alternatively as a subordinate land component maneuver organization within a coalition Joint Task Force. The operational tasks assigned to this organization will then dictate the requirement for task-organization of the Cbt Bde's subordinate units, to achieve balanced company- or battalion-level combat teams to suit combat, stability, or humanitarian tasks across the spectrum of operations.[16]

Review of the Army's Force Transformation Guidance

The future environment posited by Australia's strategic guidance necessitates that any land force commitment, charged to meet the ADF's Principal Tasks possess a flexible and balanced force structure, tailored and task-organized at short notice. As an army of only three maneuver brigades, Australia's existing "functional" brigade structure,

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[14] Land Warfare Development Centre, *Army Objective Force 2030 Primer* (Canberra ACT: Defence Publishing Services, 2011), 9-10, http://www.army.gov.au/Our-future/~/medi/Files/Our%20future/Publications/Army%20AOF%202030.ashx.

[15] Morrison, "The Army as an Instrument of National Power," 17.

[16] Australian Army, "Plan BEERSHEBA."

based on light, motorized, and mechanized capabilities (with a separate airborne battalion), did not historically provide the flexibility to meet these short-notice contingencies, with a force that could efficiently sustain multiple rotations.[17] The mix of four infantry types with three types of supporting armor (tank, armored personnel carrier, and armored cavalry), created an Army of "one-shot" capabilities: functionally pure forces with greater proficiency in niche skills, albeit at the expense of the wider Army's flexibility to deploy sustainable rotational forces across a broad spectrum of operations. Common structures and balanced capabilities across all three maneuver brigades by contrast, enable a rotational model which would alleviate the force generation pressures historically presented by the Army's requirement to permanently maintain a single light-infantry brigade as the nation's; one-shot, high-readiness deployment force capability.[18]

As the second strategic driver of modularity, Australia's force transformation has been impacted by force sizing budgets and the future capability systems that will drive the force structure. The procurement of these systems is intrinsically linked to the requirement of the Army to generate a rotational, sustainable force. Over 10 years of Australia's continued presence in Iraq and Afghanistan necessitated ad hoc task-organization and re-roling of light and mechanized forces from across all three brigades, to sustain operational tempo, resulting in degradation of core skill sets and varying levels

[17] Craig Bickell, "Plan Beersheba: The Combined Arms Imperative Behind the Reorganisation of the Army," *Australian Army Journal* X, no. 4 (Summer 2013): 36-52.

[18] Hawke and Smith, *Australian Defence Force Posture Review*, 36.

of combined arms skills proficiency.[19] Army's Project Land 400 seeks to address this challenge by developing and procuring a Combined Arms Fighting System to provide a future alternative capability by 2020 and beyond to the Infantry: common combined arms structures, based on a single type of infantry battalion and (potentially) a single type of armored vehicle, that would permit greater skills proficiency through reduced force generation complexity.[20]

Meeting the requirement to operationally sustain high-intensity warfighting with an effective combined arms capability has been logistically constrained however, due in large part to the pressures of the Army's "capability-resource dilemma."[21] Allison Casey illustrates that, as part of Plan BEERSHEBA's development, Army budget allocations for future capability largely preclude the resourcing and procurement of additional combined arms capabilities, not currently resident in light and motorized infantry brigades.[22] Some capability acquisitions have been approved, such as M777A2 155mm Howitzers, to develop a common indirect fire capability.[23] As the timeline for Project Land 400 introduction extends several years beyond the implementation of Plan BEERSHEBA

[19] Chris Smith, Tony Duus, and Simeon Ward, "Contemporary Warfare, the Utility of Infantry, and Implications for the Project Land 400 Combined Arms Fighting System," *Australian Army Journal* VII, no. 2 (Winter 2010): 15-32.

[20] Ibid.

[21] Allison Casey, "Knife, Can Opener or Screwdriver? Training Australia's Land Force to Be the Swiss Army Knife of the Future," *Australian Army Journal* IX, no. 3 (Summer 2012): 76-77.

[22] Ibid.

[23] Australian Government, Department of Defence, *Defence White Paper 2013*, 86.

however, other critical combat platforms, notably existing medium (M113AS4 armored personnel carriers) and heavy (M1A2 Abrams tank) armored capabilities within the Army must be divided and reallocated across the Army's future Cbt Bdes, to enable the establishment of common mechanized capabilities. The Army's modular force structure, as a result, will be the function of the competing requirements of strategic needs, procurement timelines, and budgetary allocations. The anticipated benefit of this standardization of Cbt Bdes and vehicle fleets will be to achieve dual purposes of generating a rotational force of identical structures, while concurrently achieving cost efficiencies and savings.[24]

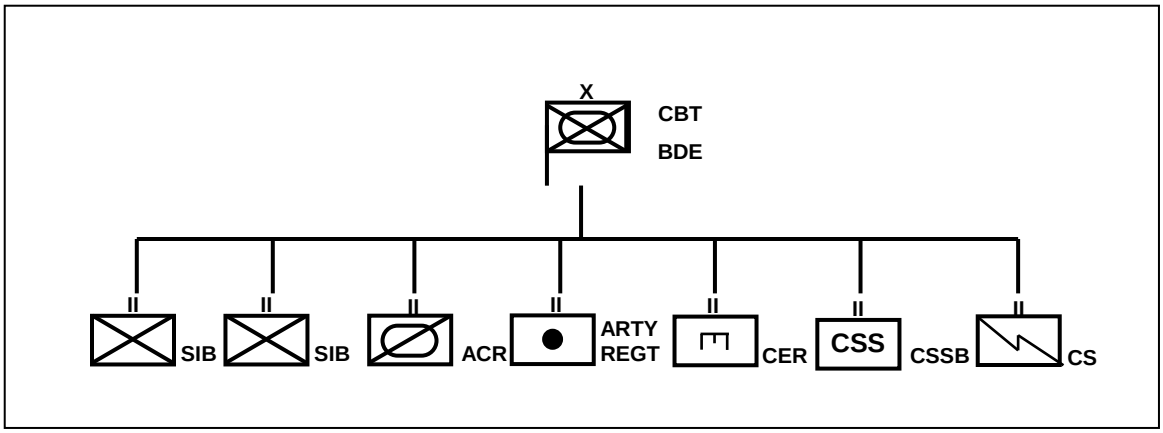

Figure 1. The Australian Cbt Bde Structure

Source: Created by author.

[24] Morrison, "The Army as an Instrument of National Power," 17.

The endorsed design for the Australian Cbt Bde, reaffirmed in the 2013 Defence White Paper,[25] is shown in figure 1. Each Cbt Bde will be structured with two standard infantry battalions (SIBs), an armored cavalry regiment (ACR), artillery regiment, combat signals regiment, combat engineer regiment, and a combat service support battalion. This structure reflects a combined arms organization that possesses the core combat, combat support, and combat service support capabilities for the Cbt Bde to operate as a self-sustaining capability.[26]

The most significant structural change within this organization is the formation of the ACR. Australia's extant force structure comprises only two regular cavalry regiments, equipped with Australian Light Armored Vehicles, and a single tank regiment. By equally apportioning them amongst three Cbt Bdes, each of these armored capabilities can no longer be fielded as battalion-sized organizations. Plan BEERSHEBA will therefore reorganize all armored capabilities, historically resident within Australia's 1st Brigade, into three battalion-sized ACRs. Each ACR will comprise one tank squadron, one light armored reconnaissance squadron (Australian Light Armored Vehicles) and one armored personnel carrier squadron. This structure is shown in figure 2.

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[25] Australian Government, Department of Defence, *Defence White Paper 2013*, 85-86.

[26] Australian Army, "Plan BEERSHEBA."

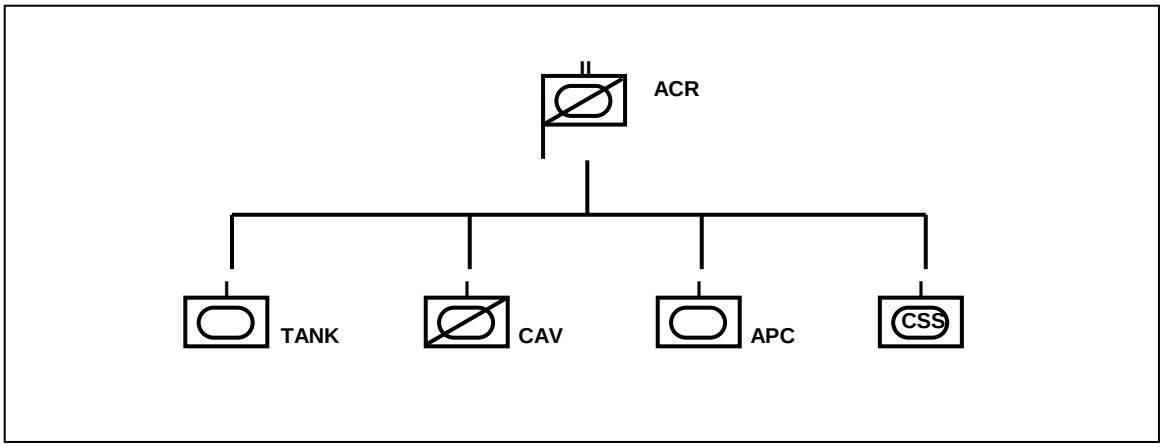

Figure 2. The Australian ACR Structure

Source: Created by author.

Debate on the Cbt Bde structure to date has divided military professionals and academics. Advocates of the like-structures have highlighted enhanced combined arms team interoperability,[27] core skills proficiency among infantry, commonality of equipment fleets, and ability to sustain operational tempo[28] as the primary benefits of the Cbt Bde. Other authors have balanced these arguments with the risks associated with the modular structure in the Australian context: the division of limited existing armored capabilities risks a diminution of their effectiveness, degradation of skills, and inability to field basic warfighting capabilities.[29] Still other critics argue the structures proposed may

[27] Smith, Duus, and Ward, "Contemporary Warfare," 28-29.

[28] Morrison, "The Army as an Instrument of National Power," 17.

[29] Bickell, "Plan Beersheba: The Combined Arms Imperative Behind the Reorganisation of the Army." A principal risk of the establishment of the ACR is that, by establishing one company-sized tank element within each of the three Cbt Bdes, battalion-level gunnery skills will be degraded. Additionally, equipment serviceability

not provide sufficient combat power to meet the strategic challenges that the Army may face.[30] These assertions will be tested over the coming years as Australia implements its modular Cbt Bde structures; the results to date will be discussed in following chapters.

Review of US Modular Organization Literature

The genesis of the US Army's move toward modular brigades is evident from the 1990s. Criticism of the Army's slow deployment to the Persian Gulf during the Desert Shield/Desert Storm campaign in 1991 prompted discussion of future force structures that could configure task forces to meet short-notice expeditionary missions.[31] In 1999, the Chief of Staff of the Army, General Eric Shinseki, determined that the Army required a transformation to a lighter force, capable of deploying more rapidly across the spectrum of operations. This transformation highlighted the required key attributes of the force as responsive, deployable, agile, versatile, lethal, survivable, and sustainable.[32] The organizational structure applied to effect this transformation would be the Objective Force, part of which would include establishment of an interim BCT project fielding wheeled armored vehicles that would bridge the gap between light infantry deployability

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and maintenance issues may preclude the ability of the ACR to constitute even a company sized tank capability.

[30] Casey, "Knife, Can Opener or Screwdriver?," 82.

[31] Richard L. Kugler, "Case Study in Army Transformation: Creating Modular Forces" (National Defense University, Center for Technology and National Security Policy, Washington, DC, 2008), accessed March 11, 2014, http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA480011, 7-8.

[32] Office of the Chief of Staff, *Army Posture Statement Fiscal Year 2001* (Washington, DC: Office of the Chief of Staff, 1999), 6.

and mechanized infantry survivability.[33] The redesign of brigade structures to meet these attributes consequently took the form of transformation efforts that sought "commonality of design and systems and building fixed organizations with discrete sets of capabilities [to] contribute to a modular construct that enables rapid force tailoring."[34]

The 2004 *Army Transformation Roadmap* highlighted the end result of this transformation as the development of three distinct brigade types; the restructured Infantry BCT (IBCT) as a light and deployable organization, the Heavy BCT as the Army's armored—mechanized capability, and the Stryker Brigade Combat Team as a third BCT type that could achieve shorter deployment timeframes than the Heavy Brigade Combat Team (now renamed the Armored BCT (ABCT)), while providing greater lethality and survivability than the IBCT. Each of these organizations was structured with organic support capabilities (reconnaissance, engineers, artillery, and logistics) to achieve a degree of combined arms self-sufficiency.[35] The Army's shift toward BCTs as the primary tactical warfighting Unit of Action created modular organizations that could be assigned and allocated to the Objective Force's Units of Employment, divisional headquarters, by type and number to suit the operational

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[33] John J. McGrath, *The Brigade: A History - Its Organization and Employment in the US Army* (Fort Leavenworth, KS: Combat Studies Institute Press, 2004), 107.

[34] Department of the Army, *White Paper. Concepts for the Objective Force* (Department of the Army, 2001), accessed March 12, 2014, http://www.army.mil/features/WhitePaper/ObjectiveForceWhitePaper.pdf, 12.

[35] Department of the Army, *2004 Army Transformation Roadmap* (Department of the Army, 2004), accessed March 12, 2004, http://www.army.mil/references/2004TransformationRoadmap/4%20ATR%202004Sum.pdf, 3-2.

requirement. BCTs would then fight under the command and control of divisional headquarters, augmented by specialist capabilities (aviation, engineer, air and missile defence) also assigned to the Units of Employment.[36] Figure 3 shows the generic layout for each of the three BCT types.

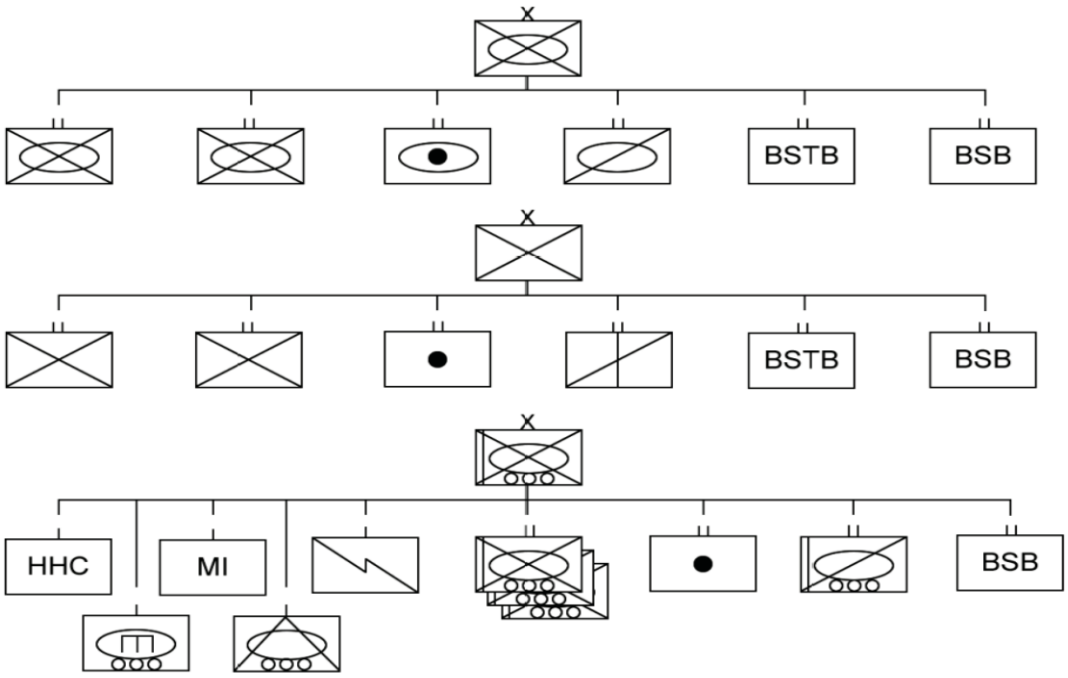

Figure 3. The US ABCT, IBCT, and Stryker Brigade Combat Team

Source: U.S. Department of the Army, Field Manual (FM) 3-90.6, *Brigade Combat Team* (Washington, DC: Government Printing Office, 2010), 1-7.

[36] Department of the Army, *2003 Army Transformation Roadmap* (Department of the Army, 2003), accessed March 12, 2014, http://www.oft.osd.mil/library/library_files/document_201_army_transformation.pdf, 9-27.

The US Army's initial application of brigade-centric, independent, and dispersed operations in Iraq as part of OIF provide the practical justification for the concepts articulated in the US Army's 2004 transformation guidance. The operations of the 3rd Infantry Division (3ID) specifically have been highlighted as a successful application of the brigade-centric, modular construct, and were used to inform the development of the *Army Comprehensive Guide to Modularity*. The success of the self-capable brigades during OIF-1 demonstrated the utility of modular structures and informed the rationale for the Army's redesign.[37]

In his 2004 Book, *The Brigade: A History,* John McGrath provides a case study of the 3ID "spearhead" of the V Corps ground assault to depose Saddam Hussein's regime. McGrath's examination of the 3ID advance to Baghdad illustrated dispersed brigade-level operations to contain and isolate population centres at Nasiriyah, Samawah, and Najaf, employing task-organized combined arms brigades with digitally-networked command and control structures. The efficacy of the modular concept is demonstrated further by the continued success of the division, as it reconfigured and task-organized the combined arms capabilities within its brigades for the subsequent advance to, and assault on, Baghdad. The reconfigured brigades again employed combined arms teams so that

[37] Department of the Army, *Army Comprehensive Guide to Modularity* (Headquarters US Army Training and Doctrine Command (TRADOC), 2004), accessed March 12, 2014, http://www.forscom.army.mil/weather/Army_Tranformation/Mod_OO_v._1.0.pdf, 1-10 - 1-14.

one could contain Karbala, another secure the crossing site over the Euphrates River, and the third advance on to Baghdad.[38]

These successes provided operational validation of the transformation concept posited by General Shinseki during his appointment as Chief of Staff of the Army. By September 2003, the US Army's official conversion to modularity had begun under Shinseki's successor, General Schoomaker; the next 15 months would entail a detailed transformation of the initial modular brigades (based on 3ID and the 101st Airborne Division's BCTs preparing for redeployment to Iraq) under the direction of the Army-appointed Task Force Modularity.[39] The imperative to extend this concept to the remainder of the US Army in 2006 arose from the continued US military presence in Iraq, and the Army's requirement to amend their force generation process to a cyclical readiness system, that could field continuous rotational pools of standardized forces available for deployment.[40] In this regard, Australia's own modularity initiative demonstrates similar strategic drivers for implementation.

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[38] McGrath, *The Brigade*, 113-131. During an operational pause between March 22 and 29, 2003, 3ID consolidated its brigades in the vicinity of Najaf and task-organised for subsequent operations. Tank battalions and mechanized infantry taskforces were detached between brigades in order to configure a better balanced, mechanized and armored force throughout the division.

[39] William M. Donnelly, *Transforming an Army at War: Designing the Modular Force, 1991-2005* (Washington, DC: Center of Military History, United States Army, 2007), 24-25.

[40] Andrew Feickert, *US Army's Modular Redesign: Issues for Congress* (Washington, DC: Congressional Research Service, May 2006), accessed March 16, 2014, http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA436231, 20.

Richard Kugler has also examined the modular BCT construct through the operational lenses of Afghanistan and Iraq. He argues that the traditional, light infantry structure employed using maneuver brigades from the 101st Airborne and 10th Mountain Divisions during Operation Anaconda lacked the requisite balance of artillery and armor, creating a reliance on joint capabilities for massed air strikes. Kugler also points to the success of 3ID in Iraq as justification for modular BCTs as one solution to this problem.[41]

Further examination of brigade-centric structures in OIF is present in the Combat Studies Institute's *On Point: The United States Army in Operation Iraqi Freedom.* In this work, Colonel Gregory Fontenot (retired), et al., provide significant detail on the planning, mobilization for and conduct of OIF-1. Their work chronologically traces the events of OIF-1, and provides both details on the modular organizations and operations of ground forces, as well as the insights and lessons learned for combined arms and joint operations, command and control, and sustainment of the Army forces involved.[42]

Anthony Cordesman has also indirectly provided comment on modular structures in Iraq, emphasizing the value of balancing maneuverability, heavy armor, and firepower in brigade organizations in high-intensity warfighting.[43] This analysis has particular relevance to the organization of modular BCT structures, and may provide relevance for the Australian Army transformation. These "lessons learned" are complemented and

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[41] Kugler, *Case Study in Army Transformation,* 11-12.

[42] Gregory Fontenot et al., *On Point: The United States Army in Operation Iraqi Freedom* (Fort Leavenworth, KS: Combat Studies Institute Press, 2004), 42-58, 391-414.

[43] Anthony H. Cordesman, *The Iraq War: Strategy, Tactics, and Military Lessons* (Washington, DC: CSIS Press, 2003).

reinforced in several Congressional Research Service reports, highlighting deficiencies to organizational structures in combined arms firepower and combat enablers (such as engineers) as justification for modular structures.[44]

The implementation of the modular BCT concept has not been devoid of criticism however. Analyses undertaken by the US Training and Doctrine Command (TRADOC) highlight risks to accomplishment of combat operations, associated with a perceived lack of combat power in approved BCT organizational structures.[45] Other critics argue that structures do not adequately support the manning requirement for BCTs to transition from combat to stability and reconstruction tasks at various points throughout an operation. These analyses, conducted by the TRADOC Analysis Center and Army Capabilities Integration Center, span both the initial BCT design phase and subsequent iterative reviews, incorporating operational feedback from Iraq.[46]

Further insights and lessons learned into US modularity have been fielded by the Center for Army Lessons Learned (CALL), through analyses and studies conducted both within Iraq, and by brigades based within the Continental United States undertaking

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[44] Feickert, *US Army's Modular Redesign,* 2006, 22; Andrew Feickert, *US Army's Modular Redesign: Issues for Congress* (Washington, DC: Congressional Research Service, January 2007), accessed March 16, 2014, http://www-conf.slac.stanford.edu/cryo2006/proc/present/HODGSON.PDF, 5-6.

[45] Donnelly, *Transforming an Army at War,* 43, 48.

[46] Brian G. Watson, "Reshaping the Expeditionary Army to Win Decisively: The Case for Greater Stabilization Capacity in the Modular Force" (Monograph, Strategic Studies Institute, U.S. Army War College, Carlisle, PA, 2005), 1; Feickert, *US Army's Modular Redesign,* 2006, 22.

transformation to modular structures.[47] Capture of observations, insights, and lessons from these experiences was enabled through the publication of a series of CALL modularity newsletters beginning in 2004; these will be investigated further as part of the document analysis in subsequent chapters, to determine their validity and impact on the US modular experience.

Review of NATO Modular Organization Literature

The NATO Response Force was first proposed as a concept out of the 2002 Prague Summit. As one of several structural initiatives announced at the Summit, the NRF was established to provide NATO a capability across seven mission sets. These mission sets were grouped into three broad areas. First of these was deployment as a demonstrative force package to show the resolve of member nations. The second area covered deployment as an Initial Entry Force to facilitate arrival of follow-on forces, in a Joint Operational Area from a benign to hostile environment. Finally, the NRF could be deployed as a stand-alone force for both NATO Article 5 (collective defense) and non-Article 5 missions. These crisis response missions encompass non-combatant evacuation operations; support to consequence management such as Chemical, Biological,

[47] Center for Army Lessons Learned, CALL Newsletter, *BCT Building 101, Tactics, Techniques, and Procedures* (Fort Leavenworth, KS: Center for Army Lessons Learned, March 2008); Department of the Army, *Army Transformation: Report to the Congress of the United States, February 2007* (Washington, DC, February 7, 2007); Watson, "Reshaping the Expeditionary Army to Win Decisively"; Feickert, *US Army's Modular Redesign*.

Radiological, or Nuclear threat or humanitarian crisis; crisis response operations including peacekeeping; support to counter terror operations and embargo operations.[48]

The North Atlantic Treaty Organization's imperative to establish the NRF was driven by an assessed operational requirement to effect a shift away from the traditional large bodies of massed forces that had characterized the Cold War. In light of contemporary assessments of the operational environment,[49] NATO leadership identified a capability gap in fielding a rapidly deployable expeditionary force. In the words of then NATO Supreme Allied Commander Europe, General James Jones, the NRF was designed to provide "agile and capable forces at Graduated Readiness levels that will better prepare the Alliance to meet any threat that it is likely to face in this 21st century."[50]

The NRF basic structure comprises three parts: a command and control element drawn from the NATO Command Structure, an Immediate Response Force, and a Response Forces Pool. The NRF command element rotates between the NATO Joint

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[48] Headquarters, Allied Rapid Reaction Corps, "Question and Answer," last modified 2014, accessed March 12, 2014, http://www.arrc.nato.int/allied rapidreactioncorps/page24121044.aspx.

[49] Mark Joyce, "NATO's Return to Politics," *The RUSI Journal* 150, no. 3 (June 2005): 10-11. In this document, two primary factors are listed as influencing the operational environment which would generate the requirement for the NRF: widespread support for the development of a common European Security and Defence Policy after the Kosovo war, and the opportunity to follow US transformation efforts and develop a 'plug and play' approach to any force that would implement this policy.

[50] North Atlantic Treaty Organization, "The NATO Response Force," last modified 2014, accessed March 12, 2014, http://www.nato.int/cps/en/SID-E0D6CFD8-E96FAF53/natolive/topics_49755.htm.

Force Commands in Brunssum and Naples. The Immediate Response Force is based on a brigade-sized land component, comprising three battalions and supporting elements. Contribution to the land component is alternated amongst six High Readiness Force commands, resident within NATO member nations. Land component organizations incorporate comparable capabilities to the Australian Cbt Bde: three light infantry battalions (vice the two battalions in the Cbt Bde construct); a minimum of one light armored battalion; artillery, engineer, and logistic enablers. The NRF land component is further complemented with joint capabilities not resident in the Cbt Bde construct: a maritime component based on the Standing NATO Maritime Group, a combat air and air support element, special operations forces, and a Chemical, Biological, Radiological, or Nuclear defense task force. The Response Forces Pool constitutes the final component of the NRF. This organization is designed only to supplement the Immediate Response Force when necessary, and is based upon discretionary contributions of troops and capabilities by member nations when deemed necessary.[51]

The NRF is designed primarily to serve as NATO's rotational, short notice deployable force. NATO's aspirational readiness notice for the NRF is to effect deployment of the command element and Immediate Response Force within five to thirty days of notification, with self-sustaining capability of deployed forces for 30 days prior to reinforcement or rotation.[52] The rotational nature of contingents allocated to the NRF

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[51] Ibid.

[52] NATO Public Information Office, "Prague Capabilities Commitment (PCC)," accessed March 31, 2014, http://www.nato.int/cps/en/SID-5C207E17-740D327E/natolive/topics_50087.htm.

demonstrates its true modularity as a force. Troop contributing nations assign forces on standby to the NRF on a 12 month rotational basis. This operational commitment must be preceded by national preparation and multinational training over six to eighteen months, under the operational command element, before the collective organization can achieve interoperability and proficiency to reach Full Operational Capability.[53]

Despite its relative infancy as a NATO capability, the NRF has been deployed to meet several operational requirements. Prior to reaching Full Operational Capability in 2006, the nascent organization had already been deployed in multiple roles, encompassing peace support operations to the 2004 Athens Olympics and Afghan presidential elections,[54] peacekeeping in support of Iraqi elections, and disaster relief in response to Hurricane Katrina in 2005 and the Pakistan earthquake in 2006.[55] The range of these tasks and the task-organized structure of the forces which were allocated to effect them, underscores the NRF's nature as a modular organization that can be tailored to suit a diverse mission set.

As a basis for comparison, the NRF represents a comparable organization in size and structure to the Australian Cbt Bde. The NRF roles and tasks closely resemble those mission sets that a Cbt Bde could be expected to undertake in support of Australia's

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[53] North Atlantic Treaty Organization, "The NATO Response Force."

[54] Richard L. Kugler, "The NATO Response Force 2002-2006: Innovation by the Atlantic Alliance" (Case Study, National Defense University, Center for Technology and National Security Policy, Fort Lesley J. McNair, Washington DC, 2007), accessed March 28, 2014, http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA463071, 9-10.

[55] North Atlantic Treaty Organization, "The NATO Response Force."

strategic interests. These would range across the spectrum of operations from humanitarian aid and non-combat evacuation, to peacekeeping and crisis response, to major combat missions.

Examination and operational analysis of the NRF to date has occurred primarily through discussion papers and evaluative reports. Kugler[56] offers an examination of the NRF through its initial conception and development, as a NATO exercise in transformation to respond to the full spectrum of military options with a more interoperable force. His work illustrates the utility of the NRF as an option for NATO, but highlights the difficulties associated with developing the NRF as a mature, interoperable organization, due to capability gaps amongst contributing elements. This has implications for the interoperability of the NRF from both collective training and command and leadership perspectives, which will be addressed in subsequent chapters.

Further research has been conducted on command and control issues within the NRF as a modular force. During the NRF's initial development as a capability, the US Army Operations Research Center of Excellence commissioned a report into the establishment of the NRF's deployable Joint Task Force Headquarters. This report makes several observations on command and control relationships within the NRF during Operation Stavanger, a deployment exercise conducted in 2004 to assess the NRF's ability to plan and conduct Effects-Based Operations.[57] G.J. Kanis and M.R. van Ettinger

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[56] Kugler, "The NATO Response Force 2002-2006."

[57] Mike McGinnis and Rick Lynch, "Operation Stavanger: Standing up a Deployable Joint Headquarters for the NATO Response Force" (Technical Report, Operations Research Center of Excellence, West Point, NY, 2004), accessed March 28,

have also conducted operational assessments of command and control within the NRF,[58] using network enabled capabilities as a technical framework by which to examine both technical and operational interoperability of the NRF, across FIC considerations including doctrine (as part of the command and leadership FIC) and training. Julian Lindley-French and Paul Cornish examined the effectiveness of the NATO Allied Rapid Reaction Corps as a functional headquarters for the NRF, in generating and applying expertise, structures, and resources to achieve NATO missions using the Comprehensive Approach.[59] Finally, Jeffrey Bialos and Stuart Koehl's study on the NRF's ability to repeatedly generate and rotate modular forces argues the importance of forward planning, information sharing, and technology transfer in developing common doctrine and effective training to build modular organizations.[60] The critical observations and lessons learned within these examples have direct relevance to the organization and training

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2014, http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA424168.

[58] G. J. Kanis and M. R. van Ettinger, *Operational Assessment of a NATO Response Force* (NATO Command and Control Centre of Excellence, 2010), accessed March 12, 2014, http://natolibguides.info/nrf.

[59] Julian Lindley-French, Paul Cornish, and Andrew Rathmell, "Operationalizing the Comprehensive Approach" (Paper, Allied Rapid Reaction Corps (ARRC), Commanders Initiative Group (CIG), 2010), accessed March 11, 2014, http://us.coffey.com/Uploads/Documents/Operationalising-the-Comprehensive-Approach_20120713100831.pdf.

[60] Jeffrey P. Bialos and Stuart L. Koehl, "The NATO Response Force: Facilitating Coalition Warfare through Technology Transfer and Information Sharing" (Report, Center for Technology and National Security Policy, National Defense University, Fort Lesley J. McNair, Washington DC, 2005), 77-84, accessed March 12, 2014, http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA450219.

elements of the DOTMLPF capability framework required to generate modular forces and will be examined in subsequent chapters for their applicability to the Australian Army.

The majority of the NRF's operational capability assessments have occurred through multinational training exercises. Exercise Steadfast Jaguar 2006 represented the final certification activity from which the NRF was first certified at Full Operational Capability.[61] Subsequent major joint training exercises have primarily been conducted as a vehicle to certify rotating NRF contingents at Full Operational Capability; Exercises Noble Mariner, Noble Award, and Kindred Sword 2007; Noble Midas 2008; Loyal Jewel 2009 and Steadfast Jazz 2013 represent several of these. The research undertaken in this thesis sought to analyze the Post Operational and Post Exercise Reports for these activities, to highlight key lessons learned across the components of DOTMLPF and ascertain relevance to the Australian Army shift to modularity.

Methodology

Selection of Bases for Comparison

The US BCT and NRF have each been carefully selected as bases for comparison to the proposed Australian Cbt Bde, due to their similarity in composition, size, and mission types. More specifically however, several criteria have been applied in the selection of each organizational type as a model for examination. The US BCT will be examined first, with NRF following.

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[61] North Atlantic Treaty Organization, "The NATO Response Force."

Structurally, the US BCT model is very similar in size and composition to the Australian Cbt Bde. The presence of two maneuver battalions within the brigade, augmented by various armored, reconnaissance, engineer, and logistic enablers, places the Cbt Bde somewhere between a US IBCT and ABCT in terms of resident capabilities. While the Cbt Bde lacks the complete mechanization of an ABCT, the organic armor capability resident in the Cbt Bde's ACR has greater combat power than an IBCT.

With consideration to role and function, the US BCT is an appropriate historical example for examination, to consider lessons in modularity under high-intensity warfighting conditions. The operations of the subordinate BCTs in 3ID during OIF-1 are the clearest example of modular warfighting in recent history, and in lieu of any recent practical Australian experience in high-intensity modular warfighting, provide a likely indication of the operations Australian Cbt Bdes may be expected to undertake in future conflicts.

Finally, the US BCT experience in Iraq represents an example of modular brigades transitioning through a range of operational taskings that reflect the full spectrum of conflict. Following conventional warfighting operations and the fall of Saddam Hussein's regime in Iraq, BCTs rapidly transitioned from high-intensity warfighting to low-intensity conflict operations. These operations specifically focused on stability-type tasks, including humanitarian aid, restoration of essential services, and over time, counterinsurgency. The United States experience thus further represents an appropriate example that can be examined as an indicator of future mission requirements for Australia's Cbt Bdes.

As the second base for comparison, the NRF has been selected for examination. Primarily, the NRF's applicability for consideration is the similarity in broad-ranging mission sets that the NRF shares with Australian Cbt Bdes. While the NRF employs a similar structure in the constitution of its brigade-size ground forces, the specific structure of its combat elements has not been examined in detail for this thesis. This decision was made deliberately, as the composition of the NRF's ground forces is more a function of national commitment then standardized structure, and is subject to modification and amendment between alternating rotations. Constraints exist on the NRF structure due to the political will of member nations to provide forces,[62] more so than the budgetary and manning constraints applicable to US BCTs and Australian Cbt Bdes.

The utility in selecting the NRF as a base for comparison however, comes from the lessons in organization and training that the NRF offers as a complex organization with a rotating force structure. Specifically, the NRF represents an organization with challenges in facilitating and maintaining command and control over its disparate, and often geographically dislocated, subordinate elements. From an organization perspective then, the command and control structures implemented by the NRF are a valuable tool to inform the development of an effective command and control structure over Australia's Cbt Bdes.

[62] Joyce, "NATO's Return to Politics," 13.

Information Collection Methods

Information analyzed in this thesis was drawn from a combination of primary and secondary sources on modular military organizations. Primary sources were drawn mainly from the observations and lessons learned contained within operational analyses, post-exercise, and post-operational reports raised on the various NRF rotations, and modular US BCTs while deployed to Iraq. In the case of US BCTs, additional primary sources were obtained from interviews conducted by members of the US Army's Combat Studies Institute, with commanders and staff deployed to Iraq in modular BCTs. Secondary sources which synthesize lessons and observations were also utilized from published books, discussion papers, and journal articles to draw relevant lessons for the Australian Army.

Information Analysis Method

This thesis conducted a qualitative analysis of primary and secondary sources to analyze information collected. Primary and secondary source material was examined using document analysis as part of a descriptive study research methodology.

Qualitative observations and deductions drawn from the documents and interviews were grouped into broad categories based on the US DOTMLPF capability generation framework. Only those lessons and observations relevant to the Organization and Training functions were examined in detail, however linkages were drawn throughout to elements of Doctrine and Leadership impacted by these areas. Major themes evident in the US and NATO modular experiences were then applied to the Australian modular construct, to determine their relevance in shaping Australia's transformation efforts. Although the DOTMLPF framework utilized for this comparison

is specific to the US military, these elements align with the elements of Australia's own capability framework, the FIC. Table 1 compares these frameworks to show their alignment, and supports the relevance of DOTMLPF as a framework for examination.

Table 1. Comparison of Australian and US Capability Inputs

US capability inputs (DOTMLPF)	**Australian capability inputs (FIC)**
Doctrine	Command and Management
Organization	Organization
Training	Collective training
Leadership and Education	Command and Management, Personnel (Individual training)

Source: Created by author.

Validation

The data analyzed in this thesis has been validated through a combination of two validation strategies. Where specific lessons and issues as experienced by modular organizations have been used to draw and categorize observations according to DOTMLPF themes, a process of triangulation has been applied as described by John Creswell, to ensure multiple sources are available to corroborate the evidence within.[63] Although applicable to the majority of observations made within this thesis, there were

[63] John W. Creswell, *Qualitative Inquiry and Research Design: Choosing among Five Approaches*, 3rd ed. (Los Angeles, CA: SAGE Publications, 2013), 252.

several instances whereby the evidence which substantiates an observation could not be corroborated by a second or third instance of a similar observation or experience. In these instances, the validity of an observation drawn has been assessed through the application of a second validation strategy: rich, thick description.

Rich, thick description has been applied primarily in chapters 3, 4, and 5. As a secondary validation strategy, this process describes the shared characteristics and details of observations and conclusions drawn. This is then used as a means to inform the applicability of these lessons to the Australian military context.[64]

Summary and Conclusions

This chapter has reviewed available literature to establish the current state of modularity within the organizations to be examined. The chapter has defined the Australian strategic imperative behind modularity, and described the modular Cbt Bde structure that the Australian force transformation effort seeks to implement. It has briefly examined the US BCT construct and the NRF as organizations with similar structures and roles to the Cbt Bde that have undertaken transformation efforts to achieve modularization. Existing literature on these organizations has also been reviewed to highlight key observations identified from their employment in operations to date. Finally, the chapter has defined the methodology applied for the research and analysis following in subsequent chapters.

[64] Ibid., 253.

The following chapters of this thesis will conduct a qualitative study of the major issues and lessons learned from the implementation of modular, combined arms structures in the US Army. Brief comparisons will be made also to the NRF as a multinational organization with rotating modular structures. Each organization will be examined in isolation to identify relevant points. Major themes will be assessed against Australia's current military transformation in chapter 5, to determine their applicability as concepts to inform transformation. Chapter 3 will begin this analysis by examining the organization aspects of US and NRF modular structures.

CHAPTER 3

MODULAR LESSONS IN ORGANIZATION

Introduction

This chapter will analyze the available primary and secondary source material for the modular transformation of the US Army and NATO respectively, applying the descriptive study research methodology and rich, thick description highlighted in chapter 2. This chapter will address the major area of capability concerning organizational structure, in which observations, insights, and lessons are drawn from modular transformation. The first section will address the observations and lessons learned by the US Army in designing BCT organizational structures, with the flexibility to accomplish a broad range of mission sets. These observations are contrasted against the NRF experience, to highlight the key organizational insights and complexities pertinent to commanding and controlling an organization that possesses a rotational force structure. Throughout this chapter, linkages will be drawn to other aspects of the DOTMLPF framework which have been impacted by insights and lessons relevant to each organization examined (US and NATO), specifically in the capability domains of doctrine and leadership.

Lessons from the US BCT Experience

The lessons offered by the US Army's move toward modularity primarily highlight the conflict between designing a force structure with the flexibility to perform a broad range of military roles, while limited by availability of personnel and resources. The incremental and iterative approach to designing BCT structures has therefore

necessitated a compromise in capabilities resident within the organization, to balance the presence of combat and specialist capabilities, as well as the need to assume risk in certain areas of capability. Where risk has been assumed, the US experience demonstrates that commanders can mitigate this risk through the employment of combat enablers outside their specialist roles; this mitigation is at best a temporary measure however, that must be weighed carefully against the resultant loss to specialist capability.

The following sections will not attempt to address every specialty or capability resident within the BCT. They will instead selectively examine maneuver, engineers, and armored reconnaissance capabilities as major enablers of combat power. Finally, the underlying lesson drawn from modular organizations with shifting task-organization requirements and roles is the challenge presented to command and control these organizations. The structures and processes in place to coordinate the BCT's operations are thus paramount to mission success. These lessons will be discussed in detail in the following sections.

Maneuver Elements

The first lesson to be drawn from US modularization is how best to equip the BCT for its primary role of warfighting; this begins with the maneuver battalion. Design initially undertaken by TRADOC's Task Force Modularity in 2003 sought qualitative input on BCT structure, from the organizations responsible for implementing modular structures (specifically, 3ID as the US Army's first designated modular division) and the

Joint Force Command's Joint Futures Lab to consider tri-service issues.[65] Under a Chief of Staff of the Army-directed mandate that modular BCTs must match the capabilities of legacy brigades as a baseline transformation requirement, the various BCT model simulations run by the TRADOC Analysis Center across the range of expected mission sets, consistently demonstrated that three maneuver elements were necessary for effective operations.[66] Despite fundamental shortcomings of a "two-battalion" BCT, the three-battalion structure was deemed unsupportable by Headquarters, Department of the Army, due to operational requirements to generate greater numbers of BCTs, without commensurate increases in Army total end strength, from existing brigades.[67]

Subsequent to this decision, the risk associated with adopting a BCT structure based on two maneuver battalions has generally been accepted as appropriate for the contemporary operating environment. Simulations modeled with augmented enabling capabilities (such as additional armored reconnaissance capabilities at the BCT level and increased quantities of indirect platforms in artillery battalions) demonstrated that reductions to combat power from maneuver elements could be mitigated by enhanced

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[65] Donnelly, *Transforming an Army at War*, 30-31.

[66] Ibid., 12-34, 40.

[67] Ibid., 43. As the appointed head of Task Force Modularity during the BCT design phase, General Robert Mixon identified the culmination of BCTs in a number of simulations as a "most fundamental challenge." The major limitations of this structure included the lack of depth and endurance incurred by the absence of the third battalion, as well as the need to potentially fight 'on a line' for high-intensity conventional combat, which could force the commitment of a higher level reserve.

intelligence, protection, and fires capabilities.[68] The internal restructure of the maneuver battalions in the ABCT as Combined Arms Battalions reinvested the operational experiences of BCTs during OIF-1, which consistently espoused the utility of enduring habitual relationships and the employment of infantry-armor combinations in both conventional and close urban fights.[69] The subsequent Combined Arms Battalion structure thus further mitigated the reduction in maneuver battalions through the inclusion of heavy armor, organic to the maneuver unit.[70] Qualitative feedback from Army units and commanders during both initial design and as the result of subsequent operational experience in Iraq and Afghanistan, have generally reinforced this

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[68] Ibid., 44. Recommendations from subsequent simulation models included an increase in artillery tubes in the Field Artillery battalion from six to eight per battery and the addition of a third ground reconnaissance troop to the Armed Reconnaissance Squadron; Department of the Army, *Army Comprehensive Guide to Modularity*, 10-2; Kugler, "Case Study in Army Transformation," 17. Additional quantitative recommendations to mitigate the reduction in maneuver elements included the allocation of an engineer company to maneuver battalions and increases to scout numbers in the IBCT RSTA squadron and ABCT Armed Reconnaissance Squadron respectively.

[69] LTC Edric Kirkman, Interview with COL David Perkins, Cmdr 2BCT 3ID, May 19, 2003, Operation Iraqi Freedom Study Group, Combined Arms Research Library (CARL) Archive; LTC Manning, Interview with COL William Grimsley, Cmdr, 1 BCT, 3ID, June 25, 2003, Operation Iraqi Freedom Study Group, Combined Arms Research Library (CARL) Archive; Art Durante, Interview with COL Daniel Allyn, Cmdr, 3 BCT, 3ID, November 5, 2003, Operation Iraqi Freedom Study Group, Combined Arms Research Library (CARL) Archive. COLs Grimsley, Perkins and Allyn were the BCT commanders of 1, 2, and 3 BCT, 3ID respectively during 3ID's advance to Baghdad during OIF. Their respective organizations undertook frequent task-organizing and restructuring throughout the division's 21-day advance, employing a variety of combined arms structural combinations across a range of complex warfighting tasks.

[70] Department of the Army, *Army Comprehensive Guide to Modularity*, 10-2. The approved ABCT CAB design was a 2:2 model based on two companies of mechanized infantry and two tank companies.

assessment.[71] Little evidence has been made publically available however, to indicate that this organization would be sufficient to meet the future requirements of a high-intensity, protracted conflict involving peer or near-peer adversaries.

The US experience offers lessons also in how best to mitigate the limitations of a two maneuver battalion BCT. In fielding an organization that can support diverse mission sets, the greatest criticism of the BCT structure to date, has been its ability to achieve the full range of tasks required of it. Early analyses and operational feedback provided to Congress highlighted the reduction in BCT maneuver elements, as detrimental to the accomplishment of stability operations. Specifically drawing upon lessons learned from the employment of BCTs in stability and counterinsurgency operations in Iraq, reports by the Congressional Research Service cite reduced maneuver elements as a key limitation in achieving a sufficient presence for stability operations.[72] Further research conducted by the RAND Corporation in 2011 reinforced these early assessments; through a study which incorporated both qualitative lessons learned from OIF and interviews with former BCT commanders, to assess tactical and operational risk against conventional and irregular threats, both heavy and light BCTs were assessed as incapable of generating the

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[71] Stuart E Johnson et al., *A Review of the Army's Modular Force Structure* (Santa Monica, CA: RAND, 2011), xii, 38. In this report, a series of interviews conducted with BCT commanders by the RAND Corporation demonstrated a general consensus that the risk to the mission from a decreased combat ratio (based on maneuver elements) was reduced as combat enablers within the BCT were augmented. Interviewees mostly demonstrated a preference for a third maneuver battalion within their organization, however assessed that the risk assumed was acceptable for contemporary taskings, based on the GWOT operational environment.

[72] Feickert, *US Army's Modular Redesign,* 3-4, 22.

same troop presence for stability operations as pre-modular structures. Quantitative comparisons of these organizational structures supported this assessment.[73] These results have implications for the ability of a BCT to exert control over areas of operation with large populations.

Mitigations for this deficiency have been considered as part of Army transformation. Congressional proposals in 2006 and 2007 to create "peacekeeping divisions" constructed exclusively for stability, support, and reconstruction tasks (implicitly "freeing" BCTs to focus on combat operations) were identified as insufficient in maintaining the combat power necessary to transition rapidly between combat and stability operations, as volatile operational environments may necessitate. At the strategic and operational levels, the US Army solution was to increase the capacity of BCTs to undertake stability tasks (through training measures which will be identified in subsequent sections), and to restructure organizations with specific stability-related capabilities external to the BCT (such as military police, civil affairs, and logistics) to enable their attachment to and "task-organization" within BCTs as required.[74] At the tactical level however, one of the most commonly employed and enduring mitigators for the lack of maneuver unit troop presence, has been the task-organization and "re-roling"

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[73] Johnson et al., *A Review of the Army's Modular Force Structure*, 4, 21-23. The analysis undertaken as part of this study by RAND quantitatively compared pre-modular brigade and BCT structures using Modified Tables of Organization and Equipment (TOE). Findings demonstrate that BCT personnel authorizations generate less patrolling presence for stability operations then pre-modular structures.

[74] Department of the Army, *Army Transformation: Report to the Congress of the United States*, 30.

of enabler units internal to the BCT. Operational experience in Iraq has reinforced this as a common practice, with multiple instances of artillery battalions, engineers, and reconnaissance assets retasked as infantry to constitute up to seven maneuver units, under field grade leadership.[75]

The broad conclusion reached from the evidence presented is that the combat power generated by a BCT's maneuver units will not be a panacea for every possible operational scenario. At best, the combat power and troop presence afforded by maneuver units provide the basic structure for the organization to function as a "jack-of-all-trades," and master of none. In high-intensity conflict and conventional warfighting, the reduction in combat power must be mitigated through other combat enablers; at the other end of the scale of conflict, stability operations require the decreased security presence to be mitigated through additional specialist enablers and re-roled internal elements.

Engineers as Combat Enablers

As a critical enabler to combat power, the command arrangements, allocation, and skill sets of engineers within BCTs has received much scrutiny, and has been subjected to several structural modifications throughout modular transformation. The earliest experiences of BCTs in high-intensity warfighting in Iraq (as evidenced by the 3ID "march to Baghdad") highlighted both the criticality of combat engineers to BCT

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[75] Johnson et al., *A Review of the Army's Modular Force Structure*, 52. These tactical innovations were assessed by both operational commanders and RAND Corporation analysts as being the function of mission and operational factors necessitating organizational restructure (mission, enemy, weather, terrain, civil considerations), and "should not be viewed as a symptom of faulty organizational design."

maneuver and the inherent lack of engineer support resident within the BCT.[76] Subsequent operational feedback further validated this assessment, and the shortcomings of gap crossing and assault breaching capabilities were acknowledged at all organizational levels up to and including Congress.[77] TRADOC's initial modular designs sought to redress this deficiency through the allocation of a combat engineer company within each of the combined arms battalions.[78] However, subsequent operational experience by BCTs deployed to Iraq between 2004 and 2006 proved that while inclusion of engineer companies within maneuver battalions was effective in developing habitual working relationships, it removed the BCT commander's flexibility to employ engineers in support of other brigade priorities (including mobility and countermobility support to other brigade units, command post and patrol base construction).[79]

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[76] Operation Iraqi Freedom Study Group, "3 BCT 3 ID History in Operation Iraqi Freedom-Notes," 2003, Operation Iraqi Freedom Study Group, Combined Arms Research Library (CARL) Archive, 5-10. As just one of many examples listed in the 3ID operational history, combat engineer bridging and gap crossing capabilities were critical to 3 BCT's success in An Najaf March 25-28, 2003, and subsequently in enabling 3 BCT's seizure of Objectives Peach and Saints on April 3, 2003.

[77] Feickert, *US Army's Modular Redesign*, 2006, 22; Feickert, *US Army's Modular Redesign*, 2007, 5; Kugler, "Case Study in Army Transformation, " 17-18; Department of the Army, *Army Transformation: Report to the Congress of the United States*, 31. These documents all draw upon operational lessons learned from 3ID, 4ID, 101st Airborne Division and other deployed organizations to OIF highlighting the paucity of combat engineer enablers organic to the BCT.

[78] Department of the Army, *Army Comprehensive Guide to Modularity*, D-2, C-2.

[79] Valerie Tystad, Center for Army Lessons Learned, CALL Newsletter 8-36, *3ID Transformation*: *Tactics, Techniques, and Procedure* (Fort Leavenworth, KS: Center for Army Lessons Learned, September 2008), 29-31. During their redeployment to Iraq in 2004-5, 3ID served as the US Army's first deployed brigade under approved modular structures. The opinion of commanders and specialist engineers favored the allocation of

Subsequent design iterations returned engineer capability to the BCT in both doctrine and practice as part of the Brigade Special Troops Battalion;[80] however, the weight of opinion from operational experience was that this capability was insufficient and that additional specialist engineer capabilities were required within the BCT. The necessity for specialist horizontal and vertical construction assets was made evident as early as OIF-1, when the rapid transition from combat to stability operations, after the occupation of Baghdad, illustrated a notable deficiency on the part of US forces to support the restoration of essential power, water, and sewage services.[81] Several examples captured in lessons learned documents from subsequent OIF rotations by CALL (and validated by engineer force structure models conducted during BCT design) highlight the necessity to the BCT for organic construction engineer capabilities, to develop habitual relationships and support construction tasking.[82] These

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more engineer capability to the BCT; Samuel A. Escobar, "Engineer Company Force Structure Force Modularization in Support of Decisive Action. Does the Corps of Engineers Need to Re-Structure Engineer Construction Companies Again in Order to Support Decisive Actions?" (Master's thesis, US Army Command and General Staff College, Fort Leavenworth, KS, 2012), 43-47, accessed March 22, 2014, http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA569339.

[80] Department of the Army, Field Manual (FM) 3-90.6, *Brigade Combat Team* (Washington, DC: Government Printing Office, 2010), 1-7, 1-10. This structure was applicable to both the IBCT and ABCT. In the SBCT, a combat engineer company was allocated under the BCT's headquarters company.

[81] Art Durante, "Interview with COL Daniel Allyn, Cmdr, 3 BCT, 3ID."

[82] Center for Army Lessons Learned, CALL Newsletter 10-48, *Army Transformation: Division, Corps, and Theater Army* (Fort Leavenworth, KS: Center for Army Lessons Learned, August 2010), 52, 75. In this document, the 25ID Divisional Engineer and other key engineer staff provide detailed descriptions on the operational

recommendations have received much scrutiny as part of the continuing transformation efforts, with several academic and concept papers advocating the requirement for the return of an Engineer Battalion to the BCT, possessing sufficient capability to task-organize one company of combat engineers between two maneuver battalions concurrently, with an additional company of horizontal and vertical construction capability in support of the BCT.[83]

While the evolving structure of engineer capabilities within BCTs offers insight into what may be considered the right allocation and command arrangements for engineer capabilities in a modular structure, the more important lesson to be drawn from US BCTs is the resultant friction arising from how engineers are employed to support the BCT. Historical evidence of engineer organizations re-roling to support generic security and maneuver unit taskings has already been offered in previous sections. Discussion and academic papers have examined in detail the efficacy and limitations of engineers

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requirements for plumbers, electricians, carpenters and horizontal construction assets in facilitating BCT stability operations; Tystad, *3ID Transformation,* 29-31. During OIF V, 3ID found that many construction assets held at divisional level would be better employed as an organic BCT asset for greater flexibility.

[83] Escobar, "Engineer Company Force Structure Force Modularization," 43-47, 90. In his thesis on engineer force design within BCTs, Major Escobar argues the utility of construction capabilities within the BCT, and advocates a construction company of two vertical construction platoons and one horizontal construction platoon resident in the Brigade Engineer Battalion; Directorate of Future and Capabilities Development, *Future Engineer Force Operations and Organizational Concepts* (Fort Leonard Wood, MO: United States Army Corps of Engineers, 2010); Force Development, *Brigade Engineer Battalion Concept Brief* (Fort Leonard Wood, MO, February 10, 2011).

conducting maneuver taskings.[84] The broader implication of these instances is that, with engineers centralized for command and control under the BCT, the decision to employ these specialists outside their core role is a tactical trade-off the BCT commander must make, which will (at least temporarily) denude the organization's combat support capability and may, over extended periods, impact specialist skill proficiency.

Armored Reconnaissance as Combat Enablers

The lessons drawn from the US structure of armored reconnaissance organizations within BCTs, parallel those of engineer enablers. Modularization has fundamentally created an "identity crisis" for reconnaissance organizations' by creating an incongruity between the structure of the reconnaissance organizations within BCTs and the roles they are tasked to perform. With the Australian implementation of an ACR within each Cbt Bde constituting arguably the most significant change to existing force structures, the US design and employment of armored reconnaissance organizations offer a valuable historical example for consideration.

Initial designs for the ABCT's Armed Reconnaissance Squadron (ARS) structured the unit primarily for the conduct of formation reconnaissance and surveillance

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[84] Mark R. Schoenemann, "Army Engineers in a Joint and Multinational Environment" (Monograph, School of Advanced Military Studies, Fort Leavenworth, KS, 2008), 38-39, accessed March 16, 2014, http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA485471. Schoenemann's discussion goes into detail on the structural impediments which limit an engineer battalion's ability to fight as an independent maneuver element for a protracted period of time, including fires support staff, intelligence capabilities and other enablers; Escobar, "Engineer Company Force Structure Force Modularization"; Johnson et al., *A Review of the Army's Modular Force Structure*, 52.

tasks.[85] This structure received widespread criticism however, as lacking sufficient combat power to achieve its main role. These assessments were based primarily on a lack of organic combat power with which to "fight for information."[86] In his thesis examining cavalry organizations in BCTs, Major M. Ryan Howell analyzed in detail the key shortcomings of this structure, citing lack of depth in ground reconnaissance troops as a factor limiting the ability of the organization to conduct wide area reconnaissance in support of a BCT. The second significant limitation of this structure, evident even in approved doctrine, was the inability of the ARS to effect reconnaissance-in-force and key security tasks (specifically, guard and cover tasks) for the BCT, without significant augmentation from combat elements such as mechanized infantry and tanks.[87]

As the above point highlights the importance of augmenting ARS with fighting elements to more effectively fulfill its core role, a second observation is made evident: the utility of the ARS as a maneuver element, independent of its primary role, is illustrated. Operational experience in high-intensity combat has validated this concept:

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[85] Department of the Army, *Army Comprehensive Guide to Modularity*, 8-2 – 8-4. Initial designs equipped the ARS with three company-sized ground reconnaissance troops of two platoons each. Platoons were mounted in M3 Bradley Fighting Vehicles.

[86] Department of the Army, *Army Transformation: Report to the Congress of the United States,* 31; Feickert, *US Army's Modular Redesign,* 2007, 5; M. Ryan Howell, "A Critique of the US Army Force Redesign of Cavalry Formations within the Brigade Combat Teams" (Master's thesis, US Marine Corps Command and Staff College, Quantico, VA, 2009), 13-14, accessed March 16, 2014, http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA513692.

[87] Howell, "US Army Force Redesign of Cavalry Formations," 13-14; Department of the Army, *Army Comprehensive Guide to Modularity*, 8-2 - 8-4; Department of the Army, FM 3-90.6, *Brigade Combat Team,* 1-8 - 1-9.

the 3-7 Cavalry Regiment's operations in OIF-1, in support of 3ID, demonstrate numerous instances of the unit's employment as an additional maneuver element.[88] Subsequent operational feedback has indicated that this practice was common amongst subsequent rotations under modular structures; with frequent task-organization of infantry elements from maneuver battalions, to enable the necessary combat power for ARS units to be employed as a third maneuver battalion.[89] This practice has invited some detractors throughout the US Army's modularization, who have argued that even an ARS (or in the case of IBCTs, Reconnaissance, Surveillance, and Target Acquisition Squadron) augmented with additional combat elements, still lacks the comparative combat power of the maneuver battalions. Despite these observations from several BCT commanders, the RAND Corporation's comparative study of modular and pre-modular structures in 2011 confirmed conclusively, that although the BCT's ARS and Reconnaissance, Surveillance, and Target Acquisition combat power does not exactly match a Combined Arms Battalion, it still has an overmatch of combat power against pre-modular reconnaissance structures and is suitable for employment across the spectrum of

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[88] McGrath, *The Brigade: A History-Its Organization and Employment in the US Army*, 119-121. During 1/3 BCT and 2/3 BCT operations to isolate An Najaf March 23-25, 2003, 3-7 Cavalry Regiment was employed in a maneuver role to secure bridges and involved in heavy fighting on three fronts; Operation Iraqi Freedom Study Group, "3 BCT 3 ID History in Operation Iraqi Freedom-Notes," 11-12. The 3ID History highlights the critical role played by 3-7 Cavalry Regiment during the seizure of Baghdad International Airport April 3-5, 2003, during which time the unit was accredited with more than 20 confirmed T72 tank kills.

[89] U.S. Army Training and Doctrine Command (TRADOC), "Evolving Roles and Responsibilities of the Modular Division Staff" (Center for Army Lessons Learned, January 9, 2009), 39.

operations.[90] While the utility of the ARS as a maneuver element is thus validated by operational experience, the implications of its assigned mission and role again become a BCT commander's tactical dilemma; employment of the unit outside its primary role denudes formation-level reconnaissance and security capabilities, and over a sustained period risks degradation of core skill sets.

BCT Command and Control

The lessons and observations drawn from BCT design implementation, modification, and operational employment in the sections preceding demonstrate an increasingly flexible and responsive organization that must adapt and tailor its structures to support mission and operational requirements. A chief criticism leveled at modular BCT structures to date, has been the span of control and scope of responsibilities placed within the remit of one BCT commander, by placing "enabling" capabilities historically held at the divisional level, such as logistics, fires, and reconnaissance, in the BCT.[91] The most apparent challenge the BCT structure presents then, is how best to command and control an organization that operates across a dispersed, non-contiguous environment, with multiple subordinate maneuver elements conducting a wide spectrum of missions.

The increased command and control burden incurred by frequent task-organization of maneuver units and combat enablers was a critical observation emerging from OIF-1. During the high tempo combat operations undertaken during the 3ID's

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[90] Johnson et al., *A Review of the Army's Modular Force Structure*, 41-42.

[91] Kugler, "Case Study in Army Transformation," 18.

21-day advance to Baghdad, the geographical dislocation and conduct of simultaneous operations by subordinate units necessitated split headquarters structures and functions across each of the division's three BCTs. As the first example, 2nd BCT dispersed operations around Karbala which rendered control from a single Tactical Operations Center (TOC) impossible, due to infrastructure and communications limitations.[92] The BCT's TOC was thus echeloned into three separate TOCs, with clear delineation of responsibilities for each organization. Specifically, the 2nd BCT Tactical Command Post assumed responsibility for coordination of major maneuver and enabler integration, while the additional TOCs maintained responsibility for control of the remaining subordinate elements, deliberate planning, reports and returns, and more detailed fires synchronization.[93]

Echelonment of command and control structures was evidenced by both the 1st BCT and the 3rd BCT also, throughout this operation. Both BCT commanders split their headquarter elements to constitute forward, or "assault," command posts separate of their Tactical and TOC command posts, to overcome communications and control issues associated with extended operational distances and greater spans of control. In both cases,

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[92] Interview with COL David Perkins, Cmdr 2BCT 3ID. During this period, COL Perkins was only capable of maintaining communications with two of the seven subordinate units he had task-organized for operations. Through the communication of clear commander's intent and use of an echeloned CP system, COL Perkins was able to delegate responsibility for control of the other five units to the other TOCs.

[93] LTC David Tohn, Interview with COL David Perkins, Cmdr, and Staff, 2BCT 3ID, May 18, 2003, Operation Iraqi Freedom Study Group, Combined Arms Research Library (CARL) Archive; Mr Connor, Interview with CPT Kinsey, OIC TAC CP, 2BCT, 3ID, May 15, 2003, Operation Iraqi Freedom Study Group, Combined Arms Research Library (CARL) Archive.

similar divisions of responsibility to the 2nd BCT were detailed between each command post.[94]

The insights from OIF-1 played a significant role in the Task Force Modularity design of headquarters and command and control structures for modular BCTs. The initial design process used comparative analysis of modular BCT and existing structures in offensive warfighting scenarios against a conventional adversary, to confirm that the increased span of control and scope of responsibilities undertaken by BCTs would necessitate restructure and augmentation of headquarters personnel. The results of this analysis formalized headquarters structures to constitute two functional command posts and a mobile command group, and further enhanced BCT headquarters manning to provide greater redundancy for modular augmentation. Staff manning was further enhanced to accommodate command and control of an additional two maneuver battalions, while air and other service liaison officers were allocated to IBCT and ABCT headquarters' for the integration of joint fires and effects. Specialist staff, including public affairs, civil affairs, and psychological operations personnel were also incorporated into headquarters staffs, to facilitate non-lethal effects across the spectrum of operations.[95]

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[94] Interview with COL William Grimsley, Cmdr, 1 BCT, 3ID; Interview with COL Daniel Allyn, Cmdr, 3 BCT, 3ID. In both interviews, respondents indicated that while the majority of planning functions remained centralized with their designated TOCs, the BCT Commander's 'assault' CP included principal advisors to the BCT commander, such as the artillery and engineer battalion commanders.

[95] Department of the Army, *Army Comprehensive Guide to Modularity*, 7-1 – 7-2, 10-1, C-3, D-3.

Split and augmented headquarter structures were validated through further operational experience, as BCTs completed modular transformation and then undertook counterinsurgency and stability operations in subsequent OIF rotations. The augmented and split headquarters functions were generally considered acceptable for mission sets undertaken (notwithstanding continued modifications to individual positions based on iterative feedback), with only minor exceptions recommended. The most notable amendment advocated by both operational commanders and analysts was the inclusion of an interagency capability in BCT headquarters, to address noted deficiencies in BCT planning and better facilitate the coordination of "whole-of-government" responsibilities undertaken by BCTs in stability and reconstruction missions.[96]

Continuous operational feedback on appropriate command and control structures for BCT operations has been implemented into organizational structures and doctrine, with relative success. Operational reviews conducted by the RAND Corporation in 2011 validated the increased staffs and presence of specialist personnel as having improved the

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[96] Dr Pete Connors, Interview with COL Stephen Lanza, Cmdr, 5 BCT, 1 CAV DIV," November 2, 2005, Operation Iraqi Freedom Study Group, Combat Studies Insititute-COST, Combined Arms Research Library (CARL) Archive. In his deployment as BCT commander conducting stability and counterinsurgency operations, COL Lanza identified the lack of a dedicated interagency representative as a critical detractor from the BCT's ability to coordinate operations across the five generic lines of operation undertaken in stability operations; G. Scott Taylor, "Beyond the Battlefield: Institutional Army Transformation Following Victory in Iraq" (Letort papers, no. 55, Strategic Studies Institute, U.S. Army War College, Carlisle, PA, 2012), 50-51. In this research paper, Taylor cites a common BCT practice of delegating interagency and intergovernmental organization coordination in stability to inexperienced, junior staff officers due to a lack of dedicated personnel. Taylor suggests this as an area requiring redress, and one which would significantly enhance the ability of BCTs to leverage external capabilities in stability operations.

BCT commanders' ability to task-organize their forces over a wider span of control.[97] Current BCT doctrine further reinforces this assessment, having retained the three structural command post groupings advocated in initial modular analysis, albeit with slightly different naming conventions. Similarly, the delineation of responsibilities as detailed in doctrine reflect the coordination processes applied by units deployed to OIF during early rotations (whereby Tactical Command posts assumed short-term planning horizon responsibilities, while TOCs or Main Command Posts accepted deliberate planning and detailed coordination responsibilities), and represent an effective reinvestment of lessons learned. Most notable however, is the structure of Main Command Posts along major warfighting functions in contemporary doctrine.[98] The doctrine demonstrates an evolution of staff structures from the traditional S-G-J1—9 cell structures historically employed within the US Army and wider military, to structures more closely aligned with the broad process groupings undertaken as part of BCT command and control.[99] Reorganization along these lines reflects a shift in the US Army's conduct of command and control activities, and may facilitate enhanced communication and coordination within a headquarters, through removal of the "stovepiped" structures formerly established under the S-G-J1—9 system.

To generalize, command and control of the modular BCT is a difficult and complex task. Increased spans of control, a broader range of mission sets, and the

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[97] Johnson et al., *A Review of the Army's Modular Force Structure,* xii, 28.

[98] Department of the Army, FM 3-90.6, *Brigade Combat Team,* 1-19.

[99] Ibid., 1-18 - 1-20.

presence of enabling capabilities both internal and external to the BCT have necessitated the development of a command and control structure, that has the flexibility to split its operations across dispersed locations, delineate responsibilities appropriate to the capabilities of its subordinate cells, and integrate a diverse range of specialist positions. The maturation of BCT doctrine and results of independent analysis have validated this structural evolution.

Lessons from the NRF Experience

The NRF represents an interesting organization for contrast to the US BCT, insofar as the continually rotating force structure and multinational capability contributions create a far greater challenge toward achieving interoperability of the force's component capabilities, than does a BCT's permanent establishment. The inherent challenges associated with the coordination of disparate troop contributions from multiple countries largely underscore a requirement for common doctrine, standing authorized force structures, and habitual training relationships that share information.[100] Fundamental then to coordinating these aspects effectively, is a command and control structure that suits the diverse nature of roles executed by the NRF's component parts, while facilitating information flow and transfer to minimize the friction created from organizations lacking in these key aspects of interoperability. The NRF has faced this

[100] Bialos and Koehl, "The NATO Response Force," 7-10. In their review of the NRF's establishment as a multinational, rotational organization, Bialos and Koehl highlight the historical deficiencies in interoperability that have resulted from a lack of common standards and practices. While not explicitly compared to doctrine, the Standard Agreements (STANAGs) advocated for use by the NRF within this document would form the political and conceptual framework within which doctrine is developed.

issue since its inception, and through multiple rotations in training and on operations, has experimented with command and control organizational structures which offer broad insights in three areas; internal cell structure and operational processes used to coordinate NRF elements, splitting of headquarters structures to provide multiple command nodes, and augmentation of specialist individuals to facilitate key functions. This section will address these areas.

NRF Command and Control–Headquarters Internal Structure

In initially designing a command and control structure for the NRF in 2003, NATO's Supreme Allied Commander Europe, General James Jones, identified specific requirements for a headquarters required to facilitate the integration of multiple national contingents. Most notably, Jones highlighted a requirement for the headquarters to be capable of independent 24-hour operations for 30 days, while replicating all the capabilities of the traditional J1-9 cell system. Recent NATO operational experience in Bosnia, Kosovo, Afghanistan, and Iraq had exposed weaknesses in this structure, and by extension exposed planning and synchronization gaps, as a stovepiped organization that lacked the responsiveness to meet the command and control requirements of a disparate organization employable across broad mission sets.[101] Operation Stavanger, conducted in February 2004, consequently provided a vehicle to test new headquarter concepts,

[101] McGinnis and Lynch, "Operation Stavanger," 14, 16-17.

develop cell structure, define cell functions, and write standard operating procedures on NRF command and control.[102]

Using training events encompassing a broad spectrum of likely threat scenarios (including complex terrorist attacks, mass casualty exercises, and convoy attacks), this activity resulted in a redesign of headquarters structures to reflect information flow, decision flow, and workflow based around broad process groupings. The proposed Deployable Joint Task Force and NRF command and control structure was thus organized into major process-based cells or groupings; a Command Group, an Operations and Intelligence Cell, an Effects Cell, and a Sustainment Cell, each working together and tying into a central Combined Joint Operations Center. A Crisis Action Team and Joint Planning Team were also constituted separately for immediate and deliberate contingency planning respectively.[103] Anecdotal observations from this activity indicated that the flat, modular structures adopted by the headquarters element enhanced both information flow and the decision cycle with respect to managing ongoing operations and critical events, and "demonstrated superb agility throughout the exercise in responding to both routine and crisis actions."[104] This redesigned structure offered a more effective and efficient method for command and control over a modular organization operating across broad mission sets. Unfortunately however, the evidence for reinvestment of these lessons into approved NRF organizational structures, common doctrine, and operating procedures is

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[102] Ibid., 15.

[103] Ibid., 20-25.

[104] Ibid., 26.

lacking. While some concepts such as Crisis Action Teams have been retained within headquarters structures, available reports on post-exercise and post-operational analyses generally indicate, that subsequent rotations of the NRF have struggled in applying a series of ad hoc staff structures that are frequently unique to a specific rotation and reflect traditional staff cells and planning systems.[105]

Use of Multiple and "Split" Command Nodes

The second major observation in constituting command and control elements to facilitate modular NRF operations pertains to the requirement to support dispersed and geographically distributed operations. Observations and analyses provide a balanced view of the strengths and weaknesses associated with organizing a modular command structure into a single headquarters, or multiple headquarter organizations. Early attempts at splitting headquarters structures, to control dispersed operations (a common practice in US BCTs) met with varying levels of success and frustration. NRF certification in 2008 occurred as part of Exercise Arrcade Fusion 2008, an exercise designed in part to test the NATO Allied Rapid Reaction Corps as the NRF parent headquarters. The employment of a Deployable Joint Support Element as an intermediate, or forward headquarters, to create a closer link between tactical component headquarters and the operational headquarters outside the theater, was validated by staff within the element as providing

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[105] Lindley-French, Cornish, and Rathmell, "Operationalizing the Comprehensive Approach," 13-14; North Atlantic Treaty Organization (NATO), *Joint Headquarters Coordination-As Observed in the NRF Exercise LOYAL JEWEL 2009* (Monsanto, Portugal: Joint Analysis and Lessons Learned Centre, NATO), iv, accessed May 28, 2014, https://nllp.jallc.nato.int/IKS/Sharing%20Private/Joint_Headquarters_Coordination_(As_Observed_in_the_NRF_Exercise_LOYAL_JEWEL_2009).pdf.

the Land Component Commander with enhanced situational awareness and operational-level capability.[106] A report by NATO's Joint Analysis and Lessons Learned Center in 2010 furthered these arguments following examination of Exercises Steadfast Juncture 2009 and Loyal Jewel 2009. During these exercises the Deployable Joint Support Element was again employed for the purposes of permitting the NRF to constitute a Joint Force Command Headquarters (Forward) controlling a single operation, and a Main Headquarters controlling multiple operations, to support the commander in "fighting the battle."[107]

The NRF experience in fielding multiple headquarters however, has proven in several instances to be sub-optimal. Across three discrete training occasions from January to June 2009, the headquarters for NRF rotation 13 identified that the forward headquarters provided by the Deployable Joint Support Element created an unnecessary layer of bureaucracy within the command structure.[108] Contributing to this, and similar assessments across separate NRF training activities, are a duplication of staff functions and staff effort between separate headquarter elements, when roles and functions have not been effectively delineated and deconflicted. Failure to apportion task allocation and

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[106] North Atlantic Treaty Organization (NATO), "Allied Land Component Command-Lessons Learned Data" (Joint Allied Lessons Learned Centre, NATO, March 9, 2013), accessed May 28, 2014, https://nllp.jallc.nato.int/cmnt/lfp/Documents/LCC Heidelberg/Database/ALCC-LLDB.xlsx.

[107] North Atlantic Treaty Organization (NATO), *Joint Headquarters Coordination-As Observed in the NRF Exercise LOYAL JEWEL 2009*, iii-iv.

[108] Lindley-French, Cornish, and Rathmell, "Operationalizing the Comprehensive Approach," 12.

management responsibilities for subordinate units between forward and rear headquarter staffs decreased effectiveness markedly.[109] This lack of coordination also manifested in duplicated working groups and scheduling conflicts demanding increased staff attention.[110]

Responsibility for these failings has been traced in many instances to two contributing factors. The first of these has been the tendency for successive NRF rotations to depart from established NATO chain of command concepts in favor of ad hoc structures, which undermine not only the interoperability afforded by adherence to familiar command and control constructs,[111] but also the ability of staff rotations to develop and refine common doctrine and standard operating procedures across successive rotations. Failure to consistently apply recognized structures diminishes the ability of the force to gain familiarity with the constructs. This first factor is then exacerbated by the

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[109] North Atlantic Treaty Organization (NATO), *Joint Headquarters Coordination-As Observed in the NRF Exercise LOYAL JEWEL 2009,* 8-9.

[110] Ibid., 15-17, 24, 27. In their analysis of headquarter effectiveness and performance across Exercises Steadfast Juncture and Loyal Jewel in 2009, the Joint Allied Lessons Learned Center identified that the splitting of HQs effectively diluted staff effort by replicating identical working groups and meetings across both headquarter elements. This then increased the proportion of time staff spent in meetings at the expense of coordinating operations, and imposed a further impediment on efficient and responsive operations by necessitating scheduled conferences between headquarter elements to ensure split functions were aligned. Forward element staff spent approximately 40 percent of their time involved in meetings and conferences. Similarly, the Chief of staff spent approximately 55 percent of his time during Exercise Loyal Jewel purely on internal coordination of elements.

[111] Diego R. Palmer, "Two Decades of NATO Operations: Taking Stock, Looking Ahead," *NATO Review*, last modified 2012, accessed March 12, 2014, http://www.nato.int/docu/review/2012/Chicago/Stock-Looking-Ahead/EN/index.htm.

tendency of NRF contributing nations to rotate individuals through headquarters staff positions, restricting the ability of commanders and staffs to develop habitual training relationships;[112] a point which will be expanded upon in the subsequent section on training.

Headquarter Augmentation

The final insight afforded by the NRF experience in building and testing command structures, is the utility of individual augmentee positions within headquarter organizations. As the NRF has been required to train and deploy across broad mission sets spanning humanitarian aid, support to elections, and conventional warfighting, the increasing number of internally task-organized subordinate elements, coupled with the integration of intergovernmental and non-government organizations into NRF activities, has exponentially increased coordination and liaison requirements for commanders and staff. Both training and operational experience have consequently validated the requirement for staff augmentation in the form of liaison officers and additional specialist military, and non-military, staff within headquarters.

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[112] Lindley-French, Cornish, and Rathmell, "Operationalizing the Comprehensive Approach," 12; North Atlantic Treaty Organization (NATO), "NRF Pakistan Assistance Lessons Identified.xls" (Joint Allied Lessons Learned Centre, NATO, March 9, 2013), accessed May 28, 2014, https://nllp.jallc.nato.int/cmnt/lfp/Documents/LCCMadrid/djse1/olrt/PAK LIs.xls. In a series of lessons identified and captured from the NRF deployment to Pakistan for humanitarian relief, a recurring theme highlighted was the lack of coordination between personnel in the Joint headquarters and various contributing elements. Observations also highlight confusion over coordination responsibilities among the headquarters (particularly with regard to managing information and following doctrine) as individuals were allocated to support the contingency at short notice. These are process-based issues which are unlikely to have occurred in a staff with familiarity and established working relationships.

Liaison officers have been validated as critical within the NRF's continually rotating force structure, to overcome interoperability issues associated with unfamiliar staffs.[113] Liaison officers also may offer an effective conduit for task-organized subordinate elements constituted from multiple parent organizations and nations. The creation of Component Command Liaison Teams within headquarters staffs during Operation Stavanger not only acted as conduits between superior headquarters and subordinate components, but more importantly, provided advice and expertise on processes and procedures developed unique to the subordinate organization for the period of its task-organization.[114] In a dynamic operational environment with rapid transition between both tasks and task-organization, this position is crucial to facilitate unimpeded continuity of command and control. Where liaison officers have not been employed as an integral position on the staff from the outset, or assigned only to headquarters staffs as an afterthought, the planning ability of headquarter organizations has been degraded and subordinate capabilities and limitations have not been adequately considered or represented.[115]

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[113] Kanis and van Ettinger, *Operational Assessment of a NATO Response Force*, 10.

[114] McGinnis and Lynch, "Operation Stavanger," 23.

[115] North Atlantic Treaty Organization (NATO), "NRF Pakistan Assistance Lessons Identified." In this database collection of observations from the NRF planning and deployment in support of earthquake disaster relief in Pakistan, several instances are cited where the lack of liaison officers for critical force components impeded the ability of the NRF headquarters to accurately plan alternate courses of action. Lack of information on the capabilities and limitations of the land component in particular degraded the fidelity of planning that could be done, resulting in proposed options

The other aspect of headquarter augmentation made evident by the NRF experience is the inclusion of specialist and subject matter expert representatives as either permanent or temporary members within the headquarter staff. Successive iterations of the NRF construct have identified several niche capabilities that were not present within NRF headquarters structures. NRF certification training in 2009 identified deficiencies in critical enablers such as counter-improvised explosive device, geospatial, and chemical, biological, radiological, and nuclear cells.[116] Separate operational experience has recognized the growing importance of information operations in maintaining operational legitimacy through an effective narrative in the conduct of NRF operations, and identified requirements to augment and restructure information operations cells, to eliminate manning deficiencies.[117] Finally, the evolution of the NRF demonstrates an increasing requirement for coordination with non-governmental and private volunteer organizations as part of NATO's "Comprehensive Approach."[118] Analysis conducted on the NRF's

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lacking detail. Staff identified this absence as creating a "Garbage in/Garbage out situation."

[116] North Atlantic Treaty Organization (NATO), *Exercise Steadfast Joist 09: First Impression Report* (Madrid, Spain: Component Command Land Headquarters Madrid, 2009), 5-6.

[117] North Atlantic Treaty Organization (NATO), "NRF Pakistan Assistance Lessons Identified."

[118] Lindley-French, Cornish, and Rathmell, "Operationalizing the Comprehensive Approach," 2. The NATO Comprehensive Approach is defined as "the cross-governmental generation and application of security, governance and development services, expertise, structures and resources over time and distance in partnership with host regions, allied and partner governments and partner institutions, both governmental and non-governmental."

implementation of this approach demonstrates that interactions with non-military organizations will continue to feature heavily in NRF activities. To most effectively coordinate these efforts, NRF headquarter structures require positions established (whether on permanent establishment or as attachments) for representatives or special appointees representing these organizations' interests.[119]

The available literature and operational insights from the NRF do not offer an "ideal" headquarter structure and detailed manning list for augmentees and specialist staff; nor should one be inferred. The requirement to include specific subject matter expertise within the staff of the NRF, or any modular organization, requires a balance that ensures a robust and efficient staff with access to critical expertise and coordination capabilities, whilst maintaining a sustainable headquarter size that does not become a "bloated" bureaucracy under the weight of its own excessive manning and personnel.

In summarizing the lessons of command and control within the NRF, the frequent task-organization of subordinate units for broad ranging tasks necessitate a responsive command and control structure. This can be achieved through the implementation of flatter, process oriented internal structures that reduce organizational silos and facilitate more responsive and collaborative decision making. The conduct of modular operations across dispersed locations can be better controlled through constitution of separate, or split, command elements, however the effectiveness of these structures is contingent

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[119] Ibid., 5; McGinnis and Lynch, "Operation Stavanger," 23. Although available analyses reinforce the requirement for inclusion of non-military expertise for liaison with non-governmental, private volunteer or other non-military organizations, there is limited literature to suggest that these positions have been formally established within NRF headquarter organizations.

upon intra-staff coordination to deconflict tasking and responsibilities, and eliminate duplication of effort. Finally, the broad range of capabilities and stakeholders that the NRF is required to coordinate have necessitated the expansion of command and control staffs, to incorporate subject matter experts for critical enabling capabilities, and effective representation of subordinate organizations and partner agencies through liaison officers.

Summary and Conclusions

Examination of the United States and NRF organizational structures offer several lessons and insights relevant to modular transformation. Primarily drawing from the US experience, effective structure of modular organizations to meet broad tasking requires a careful balance between combat power and critical specialist enablers. When required to generate combat power using these diverse organizations, commanders must consider and be prepared to consciously accept risk to the force by denuding specialist organizations, in order to generate combat power in organizations with higher priority. Commanders must also be prepared to "trade-off" specialist capability when demanded by the operational situation, to re-role subordinate organizations as a compensator for manning limitations.

Most importantly, the fundamental lesson for modular organization structure is the complexity of command and control generated by diverse, modular organizations subject to rapid and regular regrouping. To effectively command and control these organizations, modular headquarters must be robustly structured with an internal organization that leverages specialist expertise, builds manning around process-based areas, and is capable of constituting split and echeloned nodes for dispersed operations. A summary of the modular lessons in organization is provided at table 2.

Table 2. Summary of Organization Lessons in Modularity

Area	Lesson—Issue—Observation	Applicable Organization
Maneuver Battalions	Reduction in modular brigade maneuver battalions can be mitigated with increased firepower	US
	Poor troop presence ratio in stability tasks can be mitigated by re-roling other combat enablers	US
Engineers	Modular maneuver battalions required dedicated engineer capability for range of taskings	US
	Command and control for engineers should reside with Engineer Battalion headquarters, to provide flexibility to support Brigade tasking	US
	Employment of engineers outside core role requires trade-off and diminished specialist capability	US
Armored Reconnaissance	Armored reconnaissance units are suitable for employment as third maneuver battalion when task-organized with infantry	US
	Employment of armor outside core role requires trade-off and diminished specialist capability	US
Command and Control	Split and echeloned headquarters can mitigate increased modular spans of control	US—NATO
	Modular structures benefit from process-aligned internal structures, over stovepiped cells	US—NATO
	Diverse capabilities under modularity require augmentation of specialist staff in headquarters for command and control	US—NATO

Source: Created by author

In chapter 4, this thesis will conduct further analysis of US and NATO modular transformation by examining the training frameworks, models, and approaches employed to generate and sustain rotational, brigade-size, modular organizations. As with the previous chapter, key lessons will be drawn for possible application to the Australian Army.

CHAPTER 4

MODULAR LESSONS IN TRAINING

Introduction

The design and implementation of organizational structures to suit diverse mission sets is but one facet of capability critical to the implementation of modularity. A transformation of force structure and roles inherently demands a shift in approach toward the training system which facilitates and underpins these organizations' capability to perform assigned roles. This chapter will therefore address several key insights derived from the development of training structures to support modular military organizations. The first section will address the insights and lessons learned by the US Army in implementing the supporting training structures and mechanisms that facilitate the generation of mission-capable modular BCTs. This will then be followed by a brief examination of lessons learned by the NRF in training its rotational forces to meet a wide spectrum of missions.

Lessons from the US BCT Experience

The training lessons identified by the US Army in implementing modular BCTs have emerged as an ongoing and iterative process, invariably linked to the evolution of BCT structures. As modifications to organization and mission have been implemented, so to have training requirements shifted to support these changes. As the force transformed to an Army that was structured and fights differently, the two key areas that required resolution included: "what" tasks does the modular army need to train for, and "how" best is this training implemented?

Modular BCTs–What to Train

As the fundamental premise of the modular BCT was to create an organization that could task-organize its subordinate and attached forces to support the entire spectrum of conflict (and transition along this spectrum accordingly), the BCT role demands proficiency across all operational themes: major combat operations, irregular warfare, limited interventions, peace operations, and peacetime military engagement.[120] Army-wide training structures and mechanisms therefore needed to develop a system which could support this requirement. At the furthest end of the spectrum of conflict, training for combat was not a new concept for BCTs. The early BCT experience in Iraq did however illustrate the challenges that modular structures create in achieving proficiency in this field. Drawing once more from the 3ID experience fighting a hybrid threat of regular army, special forces, unconventional paramilitary, and regime death squads,[121] the decentralized, shifting command and control arrangements and continuous reorganization of these modular structures increased the burden of coordination, not only during conventional offensive missions, but also during complex supporting activities, like formation-level link-up, passage of lines, and consolidation. Departing from conventional practice which advocated a more centralized approach to brigade-level operations, effective conduct of these activities was made possible only through an extensive period of lead-up training to develop the command and control process and

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[120] Johnson et al., *A Review of the Army's Modular Force Structure*, 4.

[121] Operation Iraqi Freedom Study Group, "3 BCT 3 ID History in Operation Iraqi Freedom-Notes," 4.

familiarity to execute these actions.[122] Initial forces present quickly established, and subsequent deployed rotations reinforced, that task-organization under modular structures would be effective only by building "habitual relationships between support elements and rifle companies to reduce friction."[123] The implied lesson from this experience is the necessity of training modular organizations in task-organization against effective adversaries in complex warfighting, in order to build familiarity within the combined arms team and form these habitual relationships.

As the operational environment in Iraq rapidly shifted from combat to stability operations however, the importance of proficiency in high-intensity warfighting (arguably the most demanding activity for command and control) was quickly subordinated to training for stability operations, against an irregular threat. The overwhelming commitment of US forces to Iraq invariably necessitated a focus on training for the specific mission, albeit at the expense of training across broader skill sets. A study by the Government Accountability Office from 2006 to 2007 identified a deficiency in the US Army's ability to train for full spectrum operations. Of the three

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[122] Art Durante, Interview with COL Daniel Allyn, Cmdr, 3 BCT, 3ID, November 5, 2003; LTC Knowlton, Interview with COL Daniel Allyn, Cmdr, 3 BCT, 3ID, May 12, 2003, Operation Iraqi Freedom Study Group, Combined Arms Research Library (CARL) Archive. In training 3 BCT for complex operations in Iraq, COL Allyn acknowledged that the continual reorganization of subordinate maneuver elements and changes to command and control arrangements, conducted in both preparatory training and during operations would most likely have failed under assessment conditions at the US National Training Center, however was successful in combat.

[123] 173d Airborne Bde, "173d Airborne Bde After Action Review," January 22, 2004, Operation Iraqi Freedom Study Group, Combat Studies Institute - COST, Combined Arms Research Library (CARL) Archive.

Combat Training Centers (CTCs) tasked with preparing US forces for deployments, manning constraints combined with a significant training liability to prepare US Army units for deployment, thus precluding delivery of training packages in any area other than Iraq-specific mission readiness exercises.[124] A subsequent study by the Office reinforced this analysis, highlighting that while observations and lessons learned from Iraq continued to be reinvested into mission readiness exercises for deploying BCTs (thereby improving the quality of training for forces deploying to OIF), this occurred to the detriment of other warfighting proficiencies along the full spectrum of conflict.[125]

Resolution of this training deficiency was proposed by training centers through the development of an Exportable Training Capability. The National Training Center (NTC) developed a concept for mobile, exportable training packages to be conducted locally by BCTs, as a means to mitigate the lack of national institutions' capability to

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[124] Sharon L. Pickup et al., *Military Training: Actions Needed to More Fully Develop the Army's Strategy for Training Modular Brigades and Address Implementation Challenges* (Washington, DC: Governmental Accountability Office, August 2007), 5-6, 21, accessed March 16, 2014, http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA470611. The GAO study examined training program deliver at the National Training Center (NTC), Joint Multinational Readiness Center (JMRC) and Battle Command Training Program (BCTP). All organizations were assessed as providing inadequate training to BCTs across the spectrum of operations. The NTC in particular had been subjected to a training liability for BCTs which exceeded their capacity to support, and as at the time of the report, had been incapable of delivering any training other than stability-focused mission readiness exercises since February 2004.

[125] John H. Pendleton et al., *Force Structure: The Army Needs a Results-Oriented Plan to Equip and Staff Modular Forces and a Thorough Assessment of Their Capabilities* (Washington, DC: Government Accountability Office, November 2008), 24, accessed June 5, 2014, http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA489966.

conduct the training. The packages would include an operations group, instrumentation system, and opposing force component, which would facilitate the conduct of full spectrum training under the direction of the BCT. This concept was not without flaws however, as the resources necessary to deliver these packages were drawn "out of hide," denuding existing capability within the NTC required to support operational rotations.[126] The fundamental challenge for training modular BCTs during the Iraq conflict quickly emerged then as a trade-off between proficiency to perform the specific role BCTs had been assigned to, against long-term proficiency across the spectrum of roles a modular BCT may be required to perform.

An equally relevant insight from the US modular transformation was the friction that emerged over the specific roles of elements internal to the BCT: the "soldier versus specialist" dilemma. As early as November 2003, Chief of Staff of the Army General Schoomaker had identified that the two maneuver battalion construct would limit combat power within the BCT. His direction to mitigate this deficiency was that other enabler elements, such as engineers and military police, must be trained to be capable of performing secondary roles as general infantry.[127] This was not a new concept, and was pre-validated by the employment of engineers and cavalry as task force maneuver elements during OIF-1.[128] This solution however creates a burden on the force generation

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[126] Pickup et al., *Military Training,* 23-25.

[127] Donnelly, *Transforming an Army at War,* 42-43.

[128] Interview with COL David Perkins, Cmdr, and Staff, 2BCT 3ID; Operation Iraqi Freedom Study Group, "3 BCT 3 ID History in Operation Iraqi Freedom-Notes," 11-12.

system to support. By virtue of their specialist roles, combat enablers generally lack the level of training and proficiency that can be achieved with maneuver elements trained primarily for combat, and to a lesser extent, stability operations (through both initial Military Occupational Specialty and career-long collective training). To improve collective proficiency in maneuver skill sets, the training liability is inevitably shifted to the enabler elements' parent unit or BCT. This practice has incited professional debate within the US Army. In his thesis on army transformation, Major Jeffrey Niemi highlights ongoing experience in OIF to demonstrate that the "short-term" operational solution of employing artillery and reconnaissance units in general light infantry or stability tasks in lieu of maneuver units, has contributed to an "atrophy" of specialist skill sets.[129] A concept paper on modular force structure prepared by Brian Watson in 2005 however, acknowledges that BCT elements will be forced to respond to competing task requirements of decisive action and stability operations.[130] There is a lack of discussion in the available literature on what exactly constitutes the correct "balance" of training for enabler capabilities as soldiers versus specialists. The evident theme however, is that enablers will be required to perform both roles dependent on the situation, invariably necessitating a command requirement to ensure soldier training programs prepare them for this.

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[129] Jeffrey S. Niemi, "Army Transformation: Optimizing Command and Control for the 21st Century" (Monograph, School of Advanced Military Studies, Fort Leavenworth, KS, 2010), 24-25, accessed March 16, 2014, http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA546260.

[130] Watson, "Reshaping the Expeditionary Army to Win Decisively," 16-20.

Modular BCTs–How to Train

Within the context established in the preceding section for the scope of training, the United States adoption of modular structures provides several relevant lessons in how training may be structured to support modular BCT capability generation. These lessons primarily apply to the duration and timeframe required to develop collective BCT proficiency, the techniques best suited to facilitate BCT training, the level at which BCT training requirements are developed, and the utility of enabling staff to support BCT training and development.

As the first lesson yielded by the modular experience, training duration and preparatory timeframes have been subjected to considerable analysis and discussion. Force preparation received much attention as the US Army attempted to implement modular structures during a period of high operational tempo and limited equipment availability. This necessitated a fundamental shift in training to a cyclical readiness system under the Army Force Generation (ARFORGEN) process.[131] Under this process, collective training at the battalion and BCT level was largely achievable only when BCTs were prioritized for equipment and CTC-led training support, as they entered the ARFORGEN "Train—Ready" phase. Studies both preceding and during the

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[131] Feickert, *US Army's Modular Redesign*, 2006, 15, 20. The ARFORGEN process sought to address the deficiencies associated with limited equipment for training within continental US, by allocating BCTs to a cyclical readiness process that alternated between three time-based phases–Reset, Train—Ready and Available. BCTs would be afforded priority for equipment and access to CTC-sponsored training and certification activities during the Train—Ready phase of ARFORGEN, then would be allocated against a known deployment (such as Iraq) or contingency operation during the Available phase. On completion of their deployment or assigned period in support of contingency operations, BCTs would then rotate into the Reset phase for reconstitution.

implementation of the ARFORGEN cycle however, identified weaknesses in this system. Studies of BCT training at the NTC and the Joint Readiness Training Center, conducted by RAND Arroyo from 2001 to 2002, confirmed that the synchronization and combined arms integration necessary for a BCT to be mission-ready were generally only attainable after the completion of an entire rotation.[132] Following the introduction of ARFORGEN, further RAND corporation analysis confirmed the resource allocation and training priority afforded to BCTs during the "Reset" phase, generally limited their ability to develop collective skill sets and prepare for NTC rotations, prior to entering the Train—Ready phase.[133] BCTs were thus limited in how well they could establish baseline proficiency across broad mission sets, and were subjected to a compressed training cycle that did not fully remediate perishable skill sets as BCTs returned from specific, stability-focused deployments.

G. Scott Taylor's examination of army transformation post-Iraq proposes one solution to better balance full spectrum skills proficiency across training periods. Taylor advocates a two-year alternate training cycle for BCTs: one year would be devoted to collective training in high-intensity warfighting and combat, with the second year alternating focus toward training in stability and counterinsurgency related activities.[134] While this model does not account for the US Army's cyclical ARFORGEN

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[132] RAND Arroyo Center, *An Army Transforming While At War-Annual Report 2004* (Santa Monica, CA: RAND Corporation, 2004), 15.

[133] Johnson et al., *A Review of the Army's Modular Force Structure*, 17.

[134] Taylor, "Beyond the Battlefield," 35-37.

requirements, Taylor's suggestions can be modified to support the existing training framework. Through the implementation of exportable training packages by CTCs (much like the Exportable Training Capability concepts advocated in the previous section), Army training centers could divest themselves of responsibility for counterinsurgency and stability training and instead focus exclusively on high-intensity BCT warfighting.[135] As stability operation training focuses more on small team actions rather than collective BCT maneuvers, this training can then be addressed by BCTs during their Reset phase, or as continuity training during the "Available" phase of ARFORGEN.

The second area of training from which lessons in modularity can be drawn is in the range of techniques to best support modular BCT training. For a large-scale maneuver, it is the general consensus of many within the military (a view which is reinforced by the focus of RAND analyses mentioned previously), that there is no substitute for live training.[136] Limitations on resources however, preclude live training at the BCT-level across every operational eventuality. Lessons learned and operational feedback provided by modular BCTs in Iraq have reinforced this, and espoused the benefits of simulation training in developing and enhancing the habitual relationships critical to commanding and controlling, a tailorable and task-organization warfighting organization. Particularly when operating as part of a time-constrained force generation

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[135] Ibid., 36.

[136] Author's personal experience, based on a career that has included command at the ranks of Lieutenant, Captain and Major within Australia's maneuver brigades, as well as operational experience commanding company-sized organizations as part of the coalition in Afghanistan in 2007 and 2012.

and training process that competes for resources, the perishable skills highlighted previously can be maintained through simulation and vignette training.[137] This is an important tool within modular structures, whereby junior leaders may be required to regularly undertake greater responsibility for command and control of subordinate elements, as a result of more frequent and extensive task-organization: CALL feedback from several NTC rotations and collective training serials indicated that many of the deficiencies of these organizations in training stemmed from a lack of junior leaders.[138] An inference from these reports would suggest that the new modular structures incur a greater burden on BCTs for the numbers of junior leaders required to command and control elements. By extension, simulation can offer a resource-efficient alternative to live combined-arms training, which can offer similar learning outcomes and enhance junior leaders' experience in operating within a combined arms organization.

In other BCTs deemed successful in implementing modular structures, an emphasis was placed on training mechanisms internal to the BCT which addressed the "combined arms culture" foremost, before focusing on "mechanical" proficiencies like

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[137] Center for Army Lessons Learned, *Modular Force Newsletter* (Fort Leavenworth, KS: Center for Army Lessons Learned, June 2005), 7. This document captures the lessons learned of BCTs undertaking modular transformation in 2005, and specifically captures critical training observations of the 10th Mountain Division following their participation in JRTC rotations. It highlights the benefit gained to small-team leaders and combined arms commanders from using simulation as a means to maintain the command and control skills and decision-making proficiency required in modular structures.

[138] Center for Army Lessons Learned, *Modular Force Newsletter* (Fort Leavenworth, KS: Center for Army Lessons Learned, May 2005), 9. The observations were raised by 4ID during its modular transformation, based on collective training serials undertaken during division 'warfighter' exercises and NTC rotations.

the operation of weapon systems or execution of tactics, techniques, and procedures. Observations published by CALL during the implementation of the Interim BCT structures, validated the use of regular vignette training sessions by BCT commanders to establish combined arms proficiency and habitual relationships. When conducted as part of a regular routine (weekly or fortnightly), and involving leaders across all functional branches and levels within a BCT, these activities were shown to be effective in preparing leaders for "adaptive requirements," across combined arms tasking in combat, stabilization operations, and humanitarian missions.[139]

An additional lesson to be drawn from these examples is the level of command which must drive collective proficiency within a modular organization. While US transformation was driven by strategic requirements and executed at the divisional level across the Army, the effective implementation of modular training and BCT development ultimately resides with the BCT. Commanders involved in the initial deployment to OIF argue the benefits of a training system that afforded them the flexibility to assess and develop their own organizations' training requirements. This applied not only to NTC-led rotations conducted within the continental United States (which allowed commanders to replicate anticipated operational conditions and retrain likely threat scenarios for

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[139] Center for Army Lessons Learned, *Army Transformation Taking Shape . . . Interim Brigade Combat Team*, CALL Newsletter (Fort Leavenworth, KS: Center for Army Lessons Learned, July 2001), 21-27. Vignettes conducted in these training sessions required participants to undertake planning at levels spanning platoon to BCT, and provided scenarios requiring officers to exercise technical, tactical, conceptual and interpersonal judgment.

maneuver units);[140] but also to command post exercises designed to test BCT staffs under complex conditions, involving split nodes and command and control "on the move."[141] As documented through multiple papers on modularity by CALL, BCT commanders and their staff have continued to remain the key drivers of, and influence upon, modular BCT training for operations, as the US Army has progressively implemented modularization from 2004 to the present.[142]

The efforts of BCT staff to drive change, transformation, and training from within the BCT have been enhanced within multiple instances however, when supported by external augmentees dedicated exclusively to facilitating modularization. As one of the earliest initiatives to facilitate modular transformation, the US Army constituted Modular Coordination Cells, later renamed Modular Force Coordination Cells (MFCC), to assist

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[140] Col Greg Fontenot (ret), Interview with COL William Grimsley, Cmdr, 1 BCT, 3ID, November 19, 2003, Operation Iraqi Freedom Study Group, Combined Arms Research Library (CARL) Archive. COL Grimsley explains in his interview that one of the most important contributors to his success in Iraq was the collaborative engagement he had with NTC staff to shape the scenarios his BCT undertook prior to deployment. In one particular example he drew direct correlations between one such scenario and a subsequent contact that 1 BCT participated in at Al Najaf.

[141] LTC Edrick Kirkman, Interview with COL David Perkins, Cmdr 2BCT 3ID, May 19, 2003. COL Perkins attributes a large degree of 2 BCT's successful conduct of dispersed and decentralized options to an extensive exposure to command post exercise training while in Kuwait, particularly in the areas of command and control over multiple subordinate organizations while moving, during 'step-up' activities and while 'leapfrogging' command nodes.

[142] Center for Army Lessons Learned, *Modular Force Newsletter*; U.S. Army Training and Doctrine Command (TRADOC), Center for Army Lessons Learned, *BCT Building 101*; Center for Army Lessons Learned, *3ID Transformation*; U.S. Army Training and Doctrine Command (TRADOC), Center for Army Lessons Learned, *Army Transformation: Division, Corps, and Theater Army*.

BCT commanders in addressing concerns and resolving issues; while Modular Force Observation Teams were established to observe and evaluate BCT training rotations at the NTC and Joint Readiness Training Center following modular conversion. Lessons learned and feedback from these organizations were then reinvested into force design updates to refine modular structures and better develop supporting training programs.[143] The utility of these organizations was validated through After Action Reviews and feedback provided by numerous modularized units; as of 2008, MFCC had been employed successfully within BCTs across six of the US Army's 10 active divisions.[144]

The lessons observed within garrison and training environments were also complemented by the combined efforts of CALL and the Combined Arms Center G-8 cell to establish a Collection and Analysis Team, to assess the operational effectiveness of 3ID in Iraq in 2005, as the first deployed division with approved modular BCT structures. Incorporation of staff not only from the TRADOC Analysis Center, but also from the Army's major functional schools ensured that strengths and weaknesses of the modular force design on operations could be reinvested into collective and functional-

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[143] Department of the Army, *Army Transformation: Report to the Congress of the United States,* 32.

[144] Center for Army Lessons Learned, *BCT Building 101*, 4, 50-51. MFCC embedded within divisions to support BCT transformation were comprised of staff from Army's Directorate of Plans, Training and Mobilization; Directorate of Logistics; Department of Public Works; and augmented with Department of Defense contractors. As at the publication of this document, modular liaison officers and elements had been successfully employed in 3ID, 4ID, 10th Mountain Division, 1st Cavalry Division, 82nd Airborne Division and 101st Air Assault Division.

area training for subsequent rotations.[145] Across both garrison and operational environments, the US Army's constitution of dedicated modularity teams to enhance BCT training and transformation represent an effective initiative in enhancing performance and facilitating the transfer and reinvestment of lessons learned.

Lessons from the NRF Experience

The observations and lessons available on the NRF approach to training its modular force share some similar characteristics with those of the United States. These lessons primarily reflect the difficulties encountered in defining both what to train as key competencies and mission types, and how to train the multinational constituency that forms the basis of their troop contributions.

The Modular NRF–What to Train

As is demanded of US BCTs, the NRF's mandate requires proficiency across broad skill sets and likely mission tasks. In implementing a training and development model that specifically links its force development to the transformation of its structure and achievement of interoperability between components, the NRF historically lacked a clear understanding and description of the long-term mission requirements of the force.[146]

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[145] Ibid., 2. The CAAT included representatives from the US Army Infantry, Armor, Aviation, Signal and Military Intelligence Schools. This afforded the US Army the opportunity not only to reinvest operational experience into collective BCT training iterations, but also to shape and guide the development of doctrine within the functional schools.

[146] Bialos and Koehl, "The NATO Response Force," vi-vii. While Bialos and Koehl's study addresses NRF development from a technology and capability acquisition standpoint, it underscores that while the NRF's purpose is clear, there is no clear plan to develop long term interoperability between member nations or address its specific

Confusion over future requirements invariably inhibited the development of an effective training program through which to build capability. Recommendations to address this, based on studies conducted during the NRFs ongoing development in 2005, specifically advocated the development of a force planning roadmap based on mission-oriented planning. The crux of this recommendation was to conduct a detailed evaluation and definition of the type of potential missions the NRF would be involved in, as the driver of capability development.[147] By extension, this roadmap would inform the core competencies to be developed by the NRF and thus shape the specific tasks to be exercised and assessed during collective training. This process is essential to adequately "scope" the range of activities to train; its effectiveness has been validated through the gradual evolution of NATO policy, strategic documentation and doctrine, which allows NRF planners to more effectively translate these capability requirements into training events on NATO Master Scenario Events Lists, for collective training activities.[148]

Within the broad task requirements established by a mission-oriented planning roadmap the NRF has identified lessons; not only specific missions in which to train for, but also in which audiences must be involved in these training events, to ensure effective mission performance as part of the NATO Comprehensive Approach. Noting the broad

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capability requirements. This assessment reflects a deficiency in planning which can be extended to training: without clear definition of future mission and capability requirements, it is not possible to develop an accurate and effective training program.

[147] Ibid., 79.

[148] North Atlantic Treaty Organization (NATO), "Conducting and Resourcing Combined Training Events and Exercises" (Joint Allied Lessons Learned Centre, NATO, November 6, 2012), 1-2, accessed May 28, 2014, https://nllp.jallc.nato.int.

range of taskings the NRF must train for across the spectrum of conflict, the NRF's participation in these missions in most circumstances will require interaction and coordination with intergovernmental agencies, non-government organizations, and private volunteer organizations. The NRF has had a chequered history however, in integrating elements from multiple nations, as well as non-military organizations, into training. At the military level, individual NRF contributor nations are prone to conducting joint force training to the exclusion of other nations. The US is cited specifically by Bialos and Koehl, as a nation with a large contribution to the NRF that fails to capitalize on opportunities like the Joint Forces Command Advanced Warfighting Experiments, opening participation to NATO nations for enhanced training opportunities and interoperability. Exclusion of multinational partners from these activities restricts interoperability and familiarity with training processes, when US participants in the NRF must then integrate with foreign elements.[149] This observation provides insight on the utility of deliberate advanced planning to involve partner nations and multinational participation in collective training. Given the frequency with which contemporary operations occur in a coalition or multinational context, the value of this observation extends beyond multinational modular organizations like the NRF, to national modular organizations (such as the Australian Cbt Bde) that can expect to operate within a multinational environment.

On occasions where multinational participation is achieved through dedicated NRF combined training, key training audiences and participants essential to the whole-of-

[149] Bialos and Koehl, "The NATO Response Force," 63.

government concept underpinning the Comprehensive Approach, have also been excluded. Lindley-French, Cornish and Rathmell repeatedly highlight a requirement for more regular exercises and activities incorporating non-military organizations in their analysis of NATO's Comprehensive Approach,[150] To do so serves the dual purpose of affording NRF military planners, and other modular organizations involved in whole-of-government missions, a greater exposure to the nuances and considerations of integrating non-military efforts with military activities, as well as developing organizational ties and relationships which can be leveraged for real-time operations.

The final lesson drawn from the NRF on what to train pertains to which levels of command are able to influence training activities undertaken and objectives assessed. In this area, the NRF experience reflects that of the US modular Army. The "top down" approach to defining mission training requirements highlighted previously in a planning roadmap, is an effective tool to scope and align broad training requirements to a modular organization's role, purposes, and anticipated mission sets. The commander of the unit of action requires flexibility and authority however, to provide input to the development of training serials and objectives. This input is based on the commander's assessment of the operational environment in which they will operate, the strengths and limitations of the force they command, and the expected threats and challenges, the modular organization can expect to encounter as a result of these. In the NRF's case, evidence exists of inflexible and rigid training structures which did not permit NRF leadership to provide

[150] Lindley-French, Cornish, and Rathmell, "Operationalizing the Comprehensive Approach," 4-5.

training serial “injects” during collective training and certification. In these examples, training authorities criticized attempts by ground level commanders to obtain input into evolutionary training events.[151] Effective modular organizations should seek not only to engage commanders for input into training scope and requirements prior to the commencement of training activities, but also to build flexibility into assessment structures to permit iterative amendment to training serials during training, based on unit progress.

The Modular NRF–How to Train

Parallels again exist between the US Army and the NRF in identifying how a modular force should tailor its training approach and specific training packages. The NRF differs from US BCTs (and other standing modular structures) in that each iteration represents a one-shot capability; the force elements and command teams contributed, will as a general rule, exist only for the duration of that rotation’s designated training and operational tasking period. After this period, NRF duties will transfer to the next rotation and the existing organization’s constituent parts will be disbanded. In this regard, the NRF does not face the same pressures for continuity of training that a permanent modular military structure would. In other respects though, the NRF faces greater pressure to

[151] North Atlantic Treaty Organization (NATO), “Lessons Learned Action Plan: Exercise/Operation Noble Light 08” (Land Component Command Madrid, December 2008), accessed May 28, 2014, https://nllp.jallc.nato.int; North Atlantic Treaty Organization (NATO), “Allied Land Component Command-Lessons Learned Data Base.” Both sources cited here provide direct observations of staff participants involved in NRF certification as part of Exercises Noble Light 2008 specifically, and NRF training more generally.

develop collective competency within a compressed timeframe; lacking the Reset phase that BCTs possess to develop individual and some collective proficiency prior to transition to the Train—Ready phase of the ARFORGEN. The NRF is required to ensure these competencies are already achieved prior to commencement of NRF training and certification, or rectify any individual deficiencies as part of collective training.

As NRF rotations were originally required to concentrate for intense periods of collective training and certification, the six month training and certification cycle was observed as insufficient to achieve adequate interoperability between multinational partners without habitual relationships. Some efforts were made by NATO to mitigate the barriers of different doctrines, techniques, and procedures, not to mention culture and language, by directing "the primary maneuver component (i.e., the armored and infantry battalions) in initial rotations come from a single national contingent or multinational force with a longstanding 'habitual association.'"[152] This point notwithstanding, the training cycle offered a very limited timeframe to consolidate learning and develop effective teams, drawing criticism from NRF members who felt they received insufficient training, specifically in joint capabilities.[153] Observations from participants in NATO operations specifically recommended increases in the concentration time of combined and modular organizations to 12 months,[154] in order to better prepare constituent

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[152] Bialos and Koehl, *The NATO Response Force*, 14.

[153] Kanis and van Ettinger, *Operational Assessment of a NATO Response Force*, 5.

[154] North Atlantic Treaty Organization (NATO), "Allied Land Component Command-Lessons Learned Data Base."

elements for operations in a multinational environment. With this in mind, as well as due consideration to the resources required to train an NRF rotation across the entire range of mission sets, a 2010 review of the NRF determined that the organization's "standby" period would increase from six to twelve months.[155] This increased window provides greater flexibility for ongoing collective training, to better consolidate core skills and working relationships.

An additional lesson for training drawn from the NRF is the value of exposing a dedicated staff to collective training, to develop effective relationships within the staff, between the staff and subordinate organizations, and to establish more effective internal command and control processes. In practice however, various iterations of NRF headquarter elements have repeatedly rotated individuals through staff positions in a piecemeal fashion.[156] From a training perspective, failure to incorporate all members in dedicated planning activities and command post exercises throughout collective training activities, serves only to reduce tempo and diminish the organization's effectiveness in controlling modular operations in practice.

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[155] Lindley-French, Cornish, and Rathmell, "Operationalizing the Comprehensive Approach," 13.

[156] Palmer, "Two Decades of NATO Operations: Taking Stock, Looking Ahead"; Lindley-French, Cornish, and Rathmell, "Operationalizing the Comprehensive Approach," 13-14. Palmer draws on broad NRF training experiences to generalize about staff rotation impacting operational tempo due to a lack of familiarity with headquarter processes, while Lindley-French, Cornish and Rathmell specifically cite NATO High readiness Force operations in Afghanistan as an example where a cohesive and trained staff was not provided to support headquarter functions. The 'piecemeal' staff of individual augmentees assembled instead lacked collective understanding of headquarter operations that impeded effective operations.

The final lesson offered by the NRF on how to train a modular organization, made particularly evident as an indirect result of the research conducted for this thesis, is the importance of continuity and capture of lessons. The requirement to continually develop collective capability for NRF contingents on a rotational basis, inevitably creates situations whereby NRF elements are "relearning" the lessons of task-organization, interoperability, and modular operations experienced by prior contingents. To better facilitate this process, enable continuous learning and avoid making the same mistakes as their predecessors, NRF contingents require access to lessons learned and captured from previous rotational training and operations. NATO's Joint Forces Training Center facilitates a similar role to the US Army's CTCs in this regard; the Center provides training support to NRF rotations and has directly participated in several NRF certification exercises since its inception in 2004.[157] NRF rotations do not have an equivalent organization to the US MFCC or Modular Force Observation Team however, to directly augment rotation manning and provide assistance in working through modular issues, as each rotation commences its force preparation and training. Access to post operational reports and analyses thus becomes a critical substitute for lack of experience. Obtaining this access has historically been problematic.

Assessments of the NRF have routinely observed that commanders and staff have encountered difficulties in finding the necessary documentation which captures these

[157] North Atlantic Treaty Organization, "Joint Force Training Center," accessed August 26, 2014, http://www.jftc.nato.int/about-contracting/organization/history.

lessons.[158] This is due in large part to the unwieldy structure of the formal systems for capturing lessons. Documentation available through the NATO Lessons Learned database reflects only a small portion of the exercises and operational activities in which the NRF has participated; documentation for many of the NRF certification exercises is noticeably absent. Additionally, many lessons learned documents for NRF activities and operations have been captured in an ad hoc form and are incomplete or in draft, lacking significant detail on observations or offering valid recommendations to improve training deficiencies encountered.[159] Finally, while NATO does regularly publish factsheets and information circulars from its Joint Allied Lessons Learned Center, these documents tend to focus more on informing awareness of activities recently undertaken or planned, and lack detail on specific observations, insights, and lessons that can be readily found in US Army Modularity Newsletters.[160] As a lesson to be learned for similar organizations undergoing

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[158] Kanis and van Ettinger, *Operational Assessment of a NATO Response Force*, 5. Commanders in particular have highlighted that they are aware that information exists and has been captured, however the location of this information cannot be found or the required information is poorly organized and presented. To quote one commander "[the information] is so buried within the software application that it is difficult to identify for actionable use."

[159] North Atlantic Treaty Organization, "NATO Lessons Learned Portal," accessed August 26, 2014, https://nllp.jallc.nato.int/Pages/default.aspx. This portal uses a filter system to allow select individuals with access to NATO documentation to search for items by keywords. Items within the portal are not grouped by force component, such as NRF, or by activity undertaken, such as specific NRF exercises. As there is no dedicated file hierarchy or filepath structure for much of the documentation available, searches for particular information are lengthy and often return unrelated information of no value to the individual searching.

[160] North Atlantic Treaty Organization (NATO), "Conducting and Resourcing Combined Training Events and Exercises." This source is a representative example of the Factsheets promulgated regularly by NATO's Joint Allied Lessons Learned Centre.

transformation, the crucial insight that the NRF example offers is the importance of a well established and current system to not only capture lessons learned, but also make them available in a forum and manner that preserves posterity and encourages widespread use.

Summary and Conclusions

The analysis of United States and NRF modular structures in the area of training again yields several pertinent lessons for organizations undertaking transformation. First, any training frameworks and models implemented must successfully address what to train; modular military organizations require a defined scope of missions in which to be proficient and a comprehensive list of proficiencies to achieve this. Commanders must be personally involved in defining which proficiencies their brigades must train toward, to meet mission sets, and should have the flexibility to focus training in areas where proficiency is low or mission requirements demand a high level of proficiency. Fundamental to this is a training approach which makes task-organization of subordinate elements not just common practice, but an ingrained part of the brigade's culture.

Of equal importance, modular organizations must define how to implement training programs and modular structures. Force generation and training cycles must permit appropriate timeframes for organizations to build and maintain collective

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These circulars provide overviews of intiatives and activities undertaken by NATO elements, as well as activity aims and broad outcomes. The generic information detailed within however, provides broad thematic observations on working relationships, without specifying procedural, doctrinal or organizational changes identified as lessons from these activities.

proficiency, and must schedule and deconflict training activities, so that elements are provided training across the entire spectrum of conflict. Linked to this requirement is the necessity to ensure training audiences are as broad as possible, incorporating not only military enablers to the modularity organization, but also the non-military and coalition partners that are integral to operating in diverse global environments. Finally, the process of establishing modular structures and training frameworks can be enhanced through the establishment of dedicated staff and experts with which to guide the process, and codifying and disseminating lessons and experience to inform other modular organizations. Table 3 summarizes the lessons in modularity observed relevant to training.

Table 3. Summary of Training Lessons in Modularity

Area	Lesson—Issue—Observation	Applicable Organization
What to Train	Modular brigades must be proficient in entire spectrum of warfighting (modular brigades require a comprehensive list of mission types and skills to be proficient in. No single mission type should be trained to detriment of other skills)	US—NATO
	Training foundation warfighting and general soldier skills should not occur to detriment of specialist capabilities	US
	Brigade and unit commanders require input into the training process, to tailor training and certification to suit their mission requirements	US—NATO
	Training in task-organization and battle-grouping must occur frequently and be practiced by all elements to build habitual relationships	US
How to Train	Force generation and training cycles must allow sufficient time to consolidate skills and remediate perishable skill sets	US—NATO
	Training in low-intensity and high-intensity conflict should be offset to allow for skills progression	US
	Exportable training capabilities provide an option for modular brigades to train low-intensity conflict skills within brigades, without overburdening combat training centers	US
	Simulation, vignettes, and professional development activities provide combined arms training and acculturation when live training opportunities are limited	US
	Staff should be trained collectively for familiarity in controlling modular organizations	NATO
	Training should include interagency, intergovernmental and non-governmental organization involvement	US—NATO
	Modularization is better facilitated through the allocation of dedicated staff and teams	US
	Modular lessons should be captured and disseminated throughout the military for reinvestment into the organization	NATO

Source: Created by author.

In the next chapter, the major themes and lessons identified in chapters 3 and 4 will be applied to the Australian Army's current transformation efforts. Detailed consideration will be given to how they can be applied within Australia's Cbt Bdes. A brief examination will also be conducted to determine whether Australia has already applied these lessons, consciously or by circumstance, and to what degree.

CHAPTER 5

THE RELEVANCE OF MODULARITY LESSONS TO THE AUSTRALIAN ARMY

Introduction

The purpose of this thesis is to assess the applicability of broad lessons in modular transformation to the Australian Army, as it undertakes its own process of transformation. As has been demonstrated in chapters 3 and 4, a number of relevant lessons exist from modular transformation, which may have applicability in the Australian context. In the following sections, these lessons will be applied to Australia's current transformation efforts, to determine what opportunities may exist for Australia to better facilitate modular change under Plan BEERSHEBA. Throughout this chapter, where initiatives have already been implemented by Australia, which reflect these lessons, discussion will be provided on the level of progress attained thus far.

The chapter concludes by demonstrating that Australia is progressing well toward implementation of modular Cbt Bde structures. In the areas of organization and training, many of the common issues and lessons addressed by the United States and NRF experiences are being dealt with to varying degrees. Opportunities exist in areas where progress has been limited or not made at all, to apply the lessons of the United States and NRF. Finally, this chapter outlines recommendations for continued research, as well as providing a reflection on alternate approaches which could have been employed in researching and preparing this thesis.

Relevance to Organizational Structure

Maneuver Battalions

The two-battalion Cbt Bde structure under Plan BEERSHEBA fundamentally reflects similar pressures in manning and personnel to the United States experience with BCTs. With limitations placed on available budget funding and manpower to provide SIBs to each Cbt Bde, the Australian Army is constrained to this structure. The experience of the United States demonstrates that what is lost in mass can be gained in lethality. The introduction of armor to each Cbt Bde through the allocation of Armored Personnel Carriers (APCs) and tanks in the ACR significantly augments combat power that was previously deficient, in two of Australia's three infantry brigades. The individual infantry battalions within the Cbt Bde have further compensated for the limitation on the number of maneuver units, by enhancing capabilities organic to each battalion. Maneuver sub-units (at company size) have been allocated increases to manning, while additional direct fire weapons systems and anti-armor assets have been introduced to each maneuver sub-unit.[161] The Australian Army has performed well in anticipating and mitigating the limitations of maneuver unit quantities by enhancing unit lethality. This is an important step in building the ability of the Cbt Bde to fight conventional threats during high-intensity warfighting.

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[161] 3rd Brigade, "Exercise Hamel 2013 Discussion Papers" (Australian Army, 2013), 67-77. Under Plan BEERSHEBA structural reforms and materiel acquisition processes, each rifle company within the Cbt Bde's SIB will grow from an approximate establishment of 100 soldiers to 130 soldiers, while enhancing capability through the allocation of medium direct fire weapon systems, such as Mag 58, Maximi and 84mm anti-armor platforms, to the platoon level. None of these capabilities were resident in the infantry platoon prior to the development of Cbt Bde structures.

The issues experienced by the United States in generating combat power against irregular threats and for stability operations however, warrant consideration by the Australian Army. United States experience has demonstrated that the two-battalion structure is insufficient to exert control over large populations. As BCTs have been forced to re-role enabler organizations to mitigate the lack of troop presence in stability operations, so to must the Australian Army acknowledge the likelihood of this requirement. Plan BEERSHEBA's conceptual "pairing" of one reserve infantry battalion with each Cbt Bde as part of Army's future force structure provides a third maneuver unit which mitigates this deficiency,[162] however this element is not organic to the Cbt Bde and hence is not a guaranteed capability. The obvious implication for Cbt Bdes is that the commander must be prepared to employ organic capabilities, including engineers, artillery, armored reconnaissance, and even logistic elements, in general security and stability roles to achieve troop to population presence. Further, Cbt Bdes are lacking other key enabling capabilities that are suitable for employment in these roles, namely military police. The Cbt Bde must therefore be willing to engage capabilities not resident in the organization to supplement this presence. This would require a clearly defined

[162] Ibid., 47-49. Cbt Bdes can only expect to integrate this third maneuver unit under their command arrangements when directed at the Army Headquarter level for collective training, or at the national level when notified for deployment. This largely precludes the development of effective and habitual relationships. Further, the collective proficiency of a reserve unit will in most circumstances not match that of their full-time counterpart, which again detracts from their capability. The author's personal experience participating in the Australian Army's major collective training exercises, Exercises Hamel 2012 and Hamel 2013, demonstrated that reserve infantry battalions allocated to Cbt Bdes generally had collective proficiency suitable only to conduct rear arera security tasks.

status of command between Cbt Bdes and enabling support organizations that authorize the Cbt Bde Commander to reassign missions to specialist attachments, when the operational task necessitates.

Major Combat Enablers

Structurally, the Cbt Bde's Combat Engineer Regiment inherently addresses many of the deficiencies identified in the US modular engineer organization. Through habitual pairing of a company-sized engineer element, with each of the two SIBs in the Cbt Bde in a garrison environment and while operationally deployed,[163] maneuver battalions are afforded an enabler that enhances their combat power through mobility, counter-mobility, and survivability. Retention of these capabilities under an engineer battalion command structure however, provides both the flexibility required of the Cbt Bde Commander to redirect engineer effort in support of higher brigade-level priorities as the situation dictates, as well as an appropriate command organization to facilitate specialist individual and collective training and development.[164]

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[163] Major Kenneth Golder, email message to author, October 9, 2014. In this e-mail source from a Combat Engineer Company Commander in Australia's 3rd Brigade, the assignment of Combat Engineer squadrons to habitually support maneuver units is described as an informal practice exercised in Australia's maneuver brigades. There is currently no specified direction or doctrine which formalizes this practice. Formal direction from Brigades to engineer units specifies a requirement for Combat Engineer regiments to support maneuver units, however 'pairing' of specific combat engineer squadrons to designated infantry battalions remains a process perpetuated through tradition and common understanding.

[164] Australian Army, "Interim 3 CER Command and Training Directive 2014" (3rd Combat Engineer Regiment, February 18, 2014). Through annual training directives, Australia's combat engineer regiments provide central direction and guidance for the prioritization of all engineer specialist individual and collective training. These directives

The limitations of the engineer battalion design however, reflect those limitations encountered by US BCTs. Foremost, the lack of armored breaching capability highlighted by maneuver units in US BCTs during OIF-1 is a capability gap also present in the Australian Army. This is an area which the Australian Army should examine and commit to developing as a capability, to ensure that the modular Cbt Bde possesses the critical breaching capabilities required for high-intensity warfighting.[165] Manning and structure limitations preclude the development of this capability as a discrete element; hence this must be built into the existing organizational structure and resourced accordingly.

The other notable issue for consideration in the Australian engineer battalion is the amount of horizontal and vertical construction capability present. Better equipped than early US BCT structures (which lacked construction capability altogether), the single company-sized construction element present within the Australian Cbt Bde

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are nested within the higher training requirements directed by Cbt Bde headquarters and ensure general soldier skills and collective warfighting proficiencies are balanced with, and deconflicted from, engineer-specific training requirements.

[165] Australian Army, *Centre for Army Lessons QuickLook Report-Exercise Hamel 2013 Lessons* (Army Knowledge Group, Puckapunyal: Center for Army Lessons, October 30, 2013), 4; 3rd Brigade, "Exercise Hamel 2013 Discussion Papers," 11. Army's major collective training exercise in 2013, Exercise Hamel, was the first field trial of a Cbt Bde structure operating in high-intensity conflict. These sources highlight the deficiency in armored breaching capability identified during the trial, which limited the ability of the Australian Army's 3rd Brigade to effectively prosecute conventional warfighting tasks. The second source in particular highlights that, although Plan BEERSHEBA has identified a requirement for specialist tank attachments such as mine ploughs to be procured as part of future capability, there are currently no clear plans to develop armored breaching capability in the engineer structure or to procure the line charging equipment and ancillary proving equipment for armored fighting vehicles.

provides a capability to support the Cbt Bde for limited construction taskings, particularly during stability operations and disaster relief tasks. The capabilities present in this organization tend to be "single-shot" however, able only to support a single specialized engineer task at one time. This presents a challenge to the engineer battalion to develop habitual relationships between construction elements and their supported maneuver dependencies, which has not historically been formalized.[166] One option open to Cbt Bdes is to divide the construction company into individual capability "bricks," such as "blade teams" and individual tradesmen, and attach these assets to combat engineer companies already habitually aligned with maneuver battalions. This option risks degrading the capabilities of the construction company however by "piecemealing" its assets across the Cbt Bde. An alternate option would be to deconflict major training events between maneuver battalions, in order to attach the construction company completely, or its discrete vertical or horizontal capabilities, on a rotational basis between both maneuver units. This would permit a working familiarity with the two maneuver organizations, while ensuring that the construction company retains its collective proficiencies when deployed. Any experimentation with either of these options must of course be analysed in detail, with the results reinvested into doctrine to guide the employment of construction engineers in modular Cbt Bdes.

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[166] Golder, email message. Under informal arrangements presently in place in Australia's 3rd Brigade, the Construction Squadron of the Combat Engineer Regiment will collocate with Brigade-level combat service support elements in a deployed environment and be tasked as required to support brigade dependencies. On occasion, elements of this capability will be attached to Combat Engineer Squadrons to support maneuver units for specific tasking, however this is conducted only as dictated by situation, and does not generally foster habitual working relationships.

The Australian Army's ACR is better designed as an organization to support brigade-level security tasks than the US BCTs, ARS, or Reconnaissance, Surveillance, and Target Acquisition. Specifically, the incorporation of tanks into the ACR structure provides an organic asset that enhances combat power necessary to facilitate screen, guard and reconnaissance-in-force tasks. The counterargument to this observation is the degradation of formation-level reconnaissance capability within the ACR, to a single company-sized organization of armored cavalry. This impacts both the geographical area that can be covered by a formation for zone and area reconnaissance, as well as the speed at which the brigade can execute these tasks. Cbt Bde trials in Australia have already demonstrated this deficiency in capability;[167] the lesson drawn here for the Australian Army is the requirement to reevaluate the doctrinal employment of armored reconnaissance at the brigade level, to review the methods used and capabilities required to achieve these tasks. Further field evaluation in this area may necessitate more frequent attachment of aviation reconnaissance assets to Cbt Bdes as a compensator for the reduction in armored ground reconnaissance capability. Any increased reliance on partnered armor–aviation reconnaissance operations would of course have second order effects on the command and control of these assets. Clear command measures need to be defined to provide the Cbt Bde Commander the appropriate authority over aviation

[167] 3rd Brigade, "Exercise Hamel 2013 Discussion Papers," 8. Field evaluations of the Cbt Bde ACR in 2013 encompassed brigade level operations in three major exercises: Exercises Silicon Brolga 2013, 3rd Brigade Combined Arms Training Activity 2013, and Hamel 13. Across all three exercises the ability of the ACR to facilitate brigade-level reconnaissance was highlighted as reduced (in comparison to pre-Cbt Bde reconnaissance battalion structures); necessitating an increased reliance on aviation assets.

tasking to facilitate the brigade's reconnaissance tasks, while also defining which organization (the Cbt Bde ACR or the enabling brigade's aviation battalion) has overarching command of the task.

The final lesson for the Cbt Bde's ACR drawn from the United States experience, is its suitability as an additional maneuver unit for the Cbt Bde. Proven operationally across multiple rotations in OIF, reconnaissance organizations in BCTs were capable of performing broader maneuver roles and tasks, albeit at the expense of the BCT's reconnaissance capability. This observation is equally applicable to the Australian ACR in high-intensity warfighting, which possesses the armored capability of an APC company for task-organization with a company of infantry, allowing the unit to fight as another maneuver unit.[168] The Cbt Bde should thus embrace the possibilities for the ACR as a third maneuver unit, drawing on the BCT experience in Iraq, however must apply due caution to its employment. Specifically, commanders must not mistake the ability of the unit to be task-organized with infantry and broken down as an organization to support two SIBs, with an expectation that this should always occur. The effectiveness of the 3ID BCTs in Iraq in task-organizing was made possible through the concentration of combat power. When detaching elements of the ACR to enhance SIB combat power therefore, the tendency to "penny-packet" lethal capabilities, such as tanks amongst multiple units,

[168] Through the author's personal experience as a company commander during the Exercise Hamel 2013 Cbt Bde trials, this practice was observed on several occasions. The ACR task-organized its elements, and attached and detached supporting infantry, on several occasions as it transitioned from guard tasks during the brigade's reconnaissance battle, to conventional offensive forms of maneuver during the brigade's decisive operations.

should be avoided. These capabilities should continue to be concentrated at the appropriate level to achieve a desired battlefield effect, which may require that not every maneuver unit is apportioned tanks or armored cavalry for all phases of an operation.

The other consideration for the Cbt Bde Commander from an employment perspective, which must be further evaluated and then codified in modular Cbt Bde doctrine, is that changing the task-organization of the ACR for various roles may require specific alignment with the phasing of the Brigade's operations. The fundamental change to unit composition associated with a transition from a reconnaissance task, to an offensive maneuver task, to a security or stability task, is disruptive and taxing on the organization's diverse and limited capabilities. With this in mind, procedures and processes should be implemented within Cbt Bdes and ACRs to ensure that regrouping along these lines is driven by operational requirement and phasing, such as when a Cbt Bde has achieved initial objectives and is prepared to shift effort to subsequent objectives. Put simply, the ACR cannot conduct offensive maneuvers against a conventional enemy, while task-organized purely for brigade reconnaissance tasks.

Command and Control Structures

As highlighted in the preceding section, the Australian Cbt Bde structure is suitably robust to generate combat power and conduct a broad range of mission types, albeit with appropriate consideration given to the decisions and tactical trade-offs made by commanders in task-organizing and re-roling capabilities. The most critical area, in which the Cbt Bde must be organizationally structured to effectively "fight" the Cbt Bde however, is in the command and control structures which plan, lead, and direct the Cbt Bde's operations.

Use of Split Headquarter Elements

The modular Cbt Bde doctrine has already embraced the concept of employing echeloned and split headquarter elements to control disparate subordinate organizations. Although in draft form, Cbt Bde Standard Operating Procedures advocate the employment of "Commander's Tactical Command Headquarters" and "Headquarters Forward" elements to facilitate theater entry or "step-up" capabilities for command and control during deployment and redeployment of the Cbt Bdes' "Headquarters Main."[169] Conceptually, the Cbt Bde Headquarters Forward element replicates the critical functions of the Headquarters Main, including intelligence, current operations, and fire support, until battle handover to the main element is possible. Available doctrine limits the employment of these echeloned structures however, by defining their employment only to facilitate control during the movement of the Headquarters Main organization.[170] There is presently no mention of these separate elements operating as discrete entities over an indefinite period, or in exercising command and control "in parallel" over separate subordinate elements of the Cbt Bde, when differing mission scope or geographical separation necessitates. As evidenced by US BCTs in Iraq and the NRF across various certification exercises, the Cbt Bde may benefit from further doctrinal consideration, field testing and evaluation of the split headquarter concept over a protracted period. Particular

[169] Headquarters Forces Command, "Combat Brigade Standard Operating Procedures" (Australian Army, October 25, 2013), 0-4-2 - 0-4-5, accessed September 4, 2014, http://lwdc.sor.defence.gov.au/alo/MCB%20Standing%20Orders%20 Dashboard.swf. This reference is drawn from Standard Operating Procedure 0-4, The Multi-Role Combat Brigade Headquarters and Command Post.

[170] 3rd Brigade, "Exercise Hamel 2013 Discussion Papers," 39-40.

consideration should be given to how the span of control can be reduced, when appropriate to the tactical situation, by delegating responsibility to the Headquarter Forward element for a portion of the Cbt Bde's forces.

In testing the split headquarters concept and dividing the span of control for subordinate elements between the Forward and Main elements, the Cbt Bde would also require a reevaluation of the structure of these organizations. Draft procedures currently position all Cbt Bde principal staff officers and critical subject matter experts in the Headquarters Forward element during initial entry operations, which provides good situational awareness for the commander, facilitates key leader engagement, and enhances command and control in the early phases of an operation.[171] If operating as discrete elements over a protracted period however, the weight of effort apportioned to the Forward element may jeopardize the effectiveness of the Headquarter Main organization, which lacks redundancy and principal staff officer expertise. This is an area warranting further examination and modification by the Australian Army.

Internal Headquarters Structure

Reorganization of headquarters manning, from stovepiped cell structures to functional groupings along broad process lines, is another area in which the Australian Army can develop a more effective headquarters structure to command and control modular brigades. There is evidence of attempts to implement this in the Australian Army however; the concept is not yet mature nor formalized across all Cbt Bdes. Draft Cbt Bde

[171] Ibid., 39.

procedures have discarded reference to traditional S1 through S9 structures in favor of six broad process groups: Personnel and logistics, Intelligence, Operations, Communications, Commander's Advisory Group, and "Other Battlespace Operating Systems."[172] In one particular Cbt Bde, working practice has been amended to reflect these groupings, with the structures tested on major collective training exercises.[173] Anecdotal evidence implies that this practice is not uniform among all three of Australia's Cbt Bdes and that amendments to certain Brigade Headquarters structures continue to be approached incrementally through a legacy process that adds and removes individual positions,[174] rather than undertaking a complete redesign of headquarters structures to better suit the

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[172] Headquarters Forces Command, "Combat Brigade Standard Operating Procedures," 0-3-6. This reference is drawn from Standard Operating Procedure 0-3, Command and Control.

[173] Australian Army, "The 3 Bde," Australian Army Sharepoint Site, last modified September 2014, accessed September 4, 2014, http://legacy/TeamWeb2010/ARMY/forcomd/3BDE/SiteAssets/3%20BDE%20HOME.aspx. The 3rd Brigade has internally restructured its legacy manning structures (along the S1–S9 system) to better reflect the process groups required to coordinate operations. Under the current working structure, the 3rd Brigade Operations Group is constituted from the S3 Current Operations and S5 Planning staff, an S6 communications representative, an S8 Capability development representative, the S05 Finance Officer and a Public Affairs officer. This working arrangement is informal practice however, and has not yet been reflected through changes to Army-approved manning structures.

[174] Major Simon Hompas, email message to author, September 8, 2014. In this e-mail provided to the author, Major Hompas as the S3 for Australia's 7th Brigade, describes that NATO Staff System positions (S1–S9) continue to be the primary tool for structuring Brigade Headquarters manning. Major Hompas also confirms that the Australian Army's Unit Establishment Review (UER) continues to be the primary tool through which amendments are made to manning on the 7th Brigade headquarters. This review process is used to redesign organizational structures, however to date has focused moreso on the addition and removal of individual positions, rather than a complete redesign of the headquarters structure.

command and control requirements of a modular organization. The Australian Army can therefore benefit by universalizing its Cbt Bde Headquarters redesign and ensuring uniformity of design and implementation across all three Cbt Bdes.

Specialist Augmentation within Headquarters Structures

The final area of relevance in which the United States and NATO experience can inform Australian organizational structure, is in the augmentation of Cbt Bde headquarters' structures with specialist expertise and liaison officers. The Australian Army appears to have experienced some level of success in conducting this already, but requires further effort to ensure that appropriate capabilities and specialist expertise is included, within manning constraints. For military augmentees and capabilities, Cbt Bdes have predominantly established non-permanent positions within the Brigade Headquarters for supporting organizations to provide liaison officers.[175] The efficacy of Cbt Bdes in implementing this practice varies however, with initial trials of modular brigades in warfighting exercises demonstrating that liaison officers and specialists continue to be assigned to a headquarters too late during, or after, planning and then

[175] Headquarters Forces Command, "Combat Brigade Standard Operating Procedures," 0-3-6. This reference is drawn from Standard Operating Procedure 0-3, Command and Control, and allocates non-permanent liaison officers positions within the Cbt Bde Headquarters for subordinate Battlespace Operating Systems. This includes engineers, artillery, ground based air defence, and information dominance and influence. Non-permanent positions have also been allocated for capabilities from supporting brigades, including aviation, combat service support and information, surveillance, targeting acquisition and reconnaissance organizations.

underutilized.[176] To better utilize these assets, the Australian Army should therefore formalize the employment of liaison officers as a mandated requirement in Cbt Bde Headquarters not only in doctrine, but in practice also. For external capabilities which can be expected to feature heavily in Cbt Bde operations, such as joint capabilities, the Australian Army should also give appropriate consideration to establishing liaison officers as permanent positions within the headquarters.[177]

The major area of deficiency for Cbt Bde Headquarter augmentation continues to be in the integration of interagency, other government agencies, non-government organizations, and coalition partners. While draft Cbt Bde procedures allocate non-permanent positions for liaison officers from each of these four organizational types,[178] their incorporation into Cbt Bde Headquarters structures has not been well-defined. Specifically, many of these augmentees are apportioned within the headquarters' Operations Group, creating a significant span of control for the Cbt Bde Chief of Operations to manage. Integration and management of non-government organizations, in particular, requires further consideration, as draft procedures define how Cbt Bdes will

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[176] Australian Army, *Centre for Army Lessons QuickLook Report-Exercise Hamel 2013 Lessons,* 5, 7.

[177] Major Grant Shottenkirk, email to author, September 8, 2014. In this e-mail Major Grant Shottenkirk, S4 of 3rd Brigade, discusses critical liaison officer positions to the 3rd Brigade Headquarters. Among them are position for a Royal Australian Navy Liaison Officer and a Brigade Air Operations Liaison Officer. As of the date of this e-mail, while both positions are established on the formal headquarters manning, both are also currently accepted as vacant positions due to manning constraints.

[178] Headquarters Forces Command, "Combat Brigade Standard Operating Procedures," 0-3-6.

conduct civil-military operations and interact with non-governmental organizations,[179] yet the existing Cbt Bde Headquarters structure does not identify a dedicated Civil Military Cooperation Officer. Further, existing procedures fail to specifically apportion the responsibilities of the Civil Military Cooperation Officer to any of the principal staff officers within the Cbt Bde Headquarters.[180] Given the scope and responsibilities of this role in engaging agencies Cbt Bdes will operate with and also in, facilitating foreign nation support in stability and humanitarian operations, this role may warrant a dedicated position in the Cbt Bde Headquarters.

The Australian Army is thus progressing toward a more effective modular headquarters structure that incorporates augmentees and specialists however, it will require further adjustment before these structures are mature. An essential caveat to be placed on the recommendations highlighted is this: to create a "set menu" of every augmentee, liaison officer, and enabler that will enable a Cbt Bde to effectively anticipate and respond to every mission it is assigned would be excessive, and create a bloated headquarters prone to paralysis through its own bureaucracy. Cbt Bdes must therefore balance specialist augmentation deemed essential for permanent allocation to the headquarters, with the option to utilize liaison officers that cannot provide expertise and serve as a conduit to neighboring and supporting organizations.

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[179] Ibid., 10-1-1 – 10-1-9. This reference is drawn from Standard Operating Procedure 10.1, Multi-role Combat Bde Civil Military Operations Cell.

[180] Ibid., 0-3-8 – 0-3-11.

Synopsis on Organizational Lessons

Structurally, the Australian Army is postured well within its current manning and structural limitations, to respond to the challenges of a modular organization. Limitations in force size have been mitigated through the enhancement of firepower within the Cbt Bde, to ensure that combat power is maintained. The application of this combat power against hybrid threats however, or in protracted counterinsurgency or stability-type operations, may necessitate a conscious acceptance of risk by the commander, to denude certain specialist capabilities in order to achieve troop density for general stability tasks. The most important structural lesson for the Australian Army is in the design of an appropriate command and control system to plan and direct the Cbt Bde's operations. The current state of modular conversion within the Australian Army demonstrates that this is progressing well, with major concepts like echeloned headquarters and augmented specialist capabilities having been built into the force. To refine these changes however and maximize the efficacy of the headquarters, some adjustment of internal structures, clarification of responsibilities, and evaluation through further field trials is still required. Table 4 summarizes these findings.

Table 4. Application of Modular Organization Lessons to Australian Army Cbt Bdes

Area	**Lesson—Issue—Observation** (note: these points are summaries of the lessons identified in table 2)	**Australian Progress in Applying Lessons**
Maneuver Battalions	Increase firepower in battalions	**Complete—**Structures implemented
	Re-role enablers for stability tasks	Option for commanders which will vary by tactical situation
Engineers	Engineer support to maneuver battalions	In progress—Habitual relationships practiced, but not formalized
	Centralized command under Engineer headquarters	**Complete—**Structures implemented and formalized
	Lost engineer capability when re-roled	Option for commanders which will vary by tactical situation
Armor	Armor can be employed as third maneuver unit	Concept being trialed—field exercises have supported concept
	Lost security capability when re-roled	Deserves further examination to develop doctrine and procedures which mitigate lost capability
Command and Control	Split headquarter elements	Concept being developed—requires additional consideration for protracted operations
	Process-based internal structures	Concept being trialed in some brigades—requires uniform application across all Cbt Bdes
	Specialist augmentation	Doctrine being developed—requires additional consideration of span of control over augmentees

Source: Created by author.

Relevance to Training

What to Train

The lessons of both US BCTs and the NRF in implementing modular structures to achieve a broad range of mission sets are particularly pertinent to the Australian Army. To best prepare Cbt Bdes for proficiency across the entire spectrum of likely taskings they may be assigned, the Australian Army must first establish a comprehensive list of

collective proficiencies with which to achieve the full range of mission types. The Australian Army's approach to this is in a nascent stage of development. As with US BCTs, an excessive focus on training in support of operational contingencies in Iraq and Afghanistan has led to a diminution of high-intensity warfighting skills.[181] The Australian Army is in the process of remediating this deficiency through the development of a Foundation Warfighting Training Management Framework (FWF TMF), which will establish collective training proficiency standards and levels across a range of warfighting skill sets.[182]

The FWF TMF has been designed specifically to redress combined arms warfighting deficiencies. Almost completely absent from discussion papers and formal direction from the Army however, is how the Army retains and maintains proficiency in low-intensity conflict skills gathered from the past decade of operational experience. As the United States experience proves that training in one skill set should not occur to the detriment of others, the Army's FWF TMF should ensure that collective skills in low-intensity conflict, specifically those associated with stability tasks such as counterinsurgency and humanitarian relief, are not excluded. To do so would risk atrophy of these valuable proficiencies. As the FWF TMF is designed as an iterative framework

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[181] Australian Army, *Centre for Army Lessons QuickLook Report-Exercise Hamel 2013 Lessons,* 4.

[182] Australian Army, "Commander Forces Command Directive 69/14-FORCOMD Operations Order (OPORD) Training Year 15/16 Version 2" (Headquarters Forces Command, July 16, 2014), 8.

and is still in development,[183] its scope exists for the Australian Army and Cbt Bdes in particular, to codify the proficiencies associated with the entire spectrum of warfighting and develop a more robust training model.

An associated lesson for the Australian Army linked to the previous point is the balance required of commanders in training soldiers for foundation warfighting and general soldier skills, whilst avoiding an atrophy of specialist skills. The US experience shows that there is no simple panacea for this dilemma and that commanders must trade-off either soldier skills or specialist skills when scheduling training within limited available periods. Efforts by Australia to prioritize specialist training and individual qualifications during the 12-month Reset phase of the Australian 36-month force generation cycle, represent an effective attempt to ensure specialist skill sets are developed and maintained.[184] Highly technical skills may require refresher training more frequently than a 36-month cycle permits however, which will necessitate consideration

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[183] 1st Brigade, "HQ 1 Bde TASKORD 157/13 - HQ FORCOMD Foundation Warfighting Training Management Framework (FWF TMF) Progression Map Working Groups" (Australian Army, August 6, 2013). This document is the official tasking for participation by Australia's 1st Brigade in the initial working groups to design the FWF TMF framework, held August 26 - September 12, 2013. The paper demonstrates the active role that Australia's Brigades play in shaping our training models and defining what are considered essential proficiencies; Australian Army, "Commander Forces Command Directive 69/14 - FORCOMD Operations Order (OPORD) Training Year 15/16 Version 2," 8. This directive highlights the FWF TMF as an iterative framework that will be revised and updated to reflect contemporary proficiency requirements.

[184] Australian Army, "Commander Forces Command Directive 69/14 - FORCOMD Operations Order (OPORD) Training Year 15/16 Version 2," 6-7. The Australian Army's Force Generation Cycle allows Cbt Bdes to rotate through each of three phases, 'Reset', 'Readying' and 'Ready', every twelve months. Training focus during the Reset phase is at the individual level, to develop core and specialist competencies.

by commanders to schedule additional specialist training outside the Reset phase. This paper does not attempt to advocate a specific template with which to achieve this, but rather to highlight the importance for individual consideration by Cbt Bde commanders.

In determining what to train, both the United States and NATO experiences have demonstrated that training scope and activities require input from the "ground" level. Modular brigade commanders require the flexibility not only to tailor the scope of training to meet mission requirements, but also to selectively target those competencies that their subordinate elements will expect to use more frequently, or may require additional training in. The Australian Army is presently very well postured in this regard, with Cbt Bdes taking an active role not only in shaping specific training proficiencies,[185] but in actually developing and testing the modular operating concepts to guide how modular Cbt Bdes operate. These efforts have culminated in a series of post activity reports and discussion papers raised to Australia's Forces Command for consideration and codification into doctrine.[186]

Underpinning the recommendations already highlighted, if Australia is to be truly successful in implementing modular structures, Cbt Bdes must invariably train their subordinate elements in task-organization and "battle-grouping." The premise of

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[185] 1st Brigade, "HQ 1 Bde TASKORD 157/13 - HQ FORCOMD Foundation Warfighting Training Management Framework (FWF TMF) Progression Map Working Groups." This working group was just one of several conducted, which provided each of Australia's Cbt BDes the opportunity to define which collective proficiencies they considered necessary for inclusion into the FWF TMF.

[186] 3rd Brigade, "Exercise Hamel 2013 Discussion Papers"; Australian Army, *Centre for Army Lessons QuickLook Report-Exercise Hamel 2013 Lessons*.

modularity is fundamentally based on regrouping elements as required to suit diverse missions. Cbt Bdes must therefore develop a culture of “habitual relationships” between all elements of their organization, including combat arms, combat support, and combat service support elements. The structure of the Australian Cbt Bde is conducive to this practice, by placing critical combat support and combat service support organizations within the brigade commanders span of command. The onus is thus placed on the Brigade Commander and his subordinate staff to develop the mechanisms by which task-organization becomes common practice. This can only be achieved through exposure to frequent task-organization both within garrison and in a field or deployed setting. Specific methods to achieve this will be discussed in the next section.

How to Train

The first lesson drawn from the United States and NATO experiences in how to train modular brigades is in defining an appropriate training cycle timeframe within which to generate capability and proficiency. The current Force Generation Cycle utilized within Australia permits Cbt Bdes a 12-month period within each of the phases. Whether intentionally designed with due consideration to the US experience or determined independently, this timeframe is consistent with the broad timeframes identified by the United States and NRF in developing skills proficiency.

The cycle provides clear direction on the level of collective proficiency that is to be attained within each phase of the cycle, however, based on current guidance and documents, this proficiency is focused heavily on high-intensity conflict, and FWF TMF

skill sets progressing from small team level to brigade-level proficiency.[187] As highlighted in the previous section, little consideration is given to the scheduling of training for collective proficiency in low-intensity conflict skills, focused on stability or humanitarian tasks. This omission is further reflected in current Cbt Bde training programs, which have robust progressive training programs for high-intensity warfighting but do not dedicate training periods to stability tasks.[188] To achieve the broad-spectrum proficiency advocated in the previous section, Cbt Bdes could benefit from deliberate incorporation of specific "stability-focused" training into the Force Generation Cycle. The US experience has validated counterinsurgency and stability as an activity that may be planned centrally but is executed primarily at the small-team and platoon level. This training would best be scheduled therefore toward the end of the Reset, or start of the Readying' phases, prior to a Cbt Bde's progression to battalion- and brigade-level collective training, in the second half of the Readying phase. Stability skills and techniques can then be consolidated at the company and battalion levels during major

[187] Australian Army, "The Army Training Continuum" (Headquarters Land Command, July 16, 2014), Annex D.

[188] Australian Army, "3 Brigade 2014-2015 Formation Synchronisation Matrix" (Headquarters 3rd Brigade, September 30, 2014), accessed September 30, 2014, http://legacy/TeamWeb2010/ARMY/forcomd/3BDE/SitePages/Synch%20Matrix.aspx. As one example of this point, the 3rd Brigade synchronization matrix provides a 'roadmap' charting the escalation of collective training for high-intensity warfighting from 2014–2015. While it is possible that one or more of these activities may incorporate elements of stability-type training into the warfighting exercises, this is not the primary focus for these activities. Further, there is no deliberate scheduling of collective training for discrete counterinsurgency or stability training activities.

warfighting exercises, through incorporation of serials and training objectives into the Cbt Bde's Master Events Lists.

Incorporating additional training activities into an already crowded schedule is a difficult task for Cbt Bdes to achieve. Additionally, the training standards and objectives against which to train stability tasks must be common to all Cbt Bdes; as with high-intensity warfighting, if modular brigades are to be proficient in stability operations there must be commonality of methods, techniques and proficiency. Australia's CTC is the best-placed organization to facilitate this training, as the Army's primary provider of collective training in combined arms warfighting and certification. The CTC is limited in manning however and already maintains heavy commitments to supporting warfighting exercises across all three Cbt Bdes.[189] To achieve this training requirement therefore, the Australian Army could apply the Exportable Training Capability concept developed by the US Army. Through the provision of a training model and a small cadre of instructors and liaison staff, CTC could export stability operations training packages to Cbt Bdes to run internally. The nature of stability operations is generally less resource-intensive for organizations to train in, because of the reduced requirement for ammunition and other

[189] Australian Army, "Combat Training Center Program of Directed Activities 2014-2018," Combat Training Center, September 24, 2014, accessed September 30, 2014, http://legacy/TeamWeb2010/ARMY/1div/1%20DIV%20DCU/CTC/HQCTC/SitePages/Program%20of%20Directed%20Activities.aspx. With limited staff and teams, CTC is already committed to the provision on 'back-to-back' monthly Combat Team Warfighting Exercises, as well as facilitating Mission Rehearsal Exercises for Australia's formed-body deployments. CTC is further committed through its obligation to support Australia's major annual live training exercise, the division-level Exercise HAMEL. No stability or counterinsurgency related training packages are currently scheduled within CTC's program of directed activities out to 2018.

resources heavily consumed in conventional warfighting. This practice would ensure a common curriculum and assessment process is applied to all Cbt Bdes, reduce the burden on Cbt Bdes to maintain ownership of the training package, and allow CTC to focus primarily on the provision of collective, high-intensity warfighting activities.

As highlighted in the previous section, proficiency across a range of missions will only be fully realized when Cbt Bdes have instilled the necessary culture in their organizations that fosters a modular "mindset," comfortable with task-organizing capabilities. As evidenced by the US BCTs; experience, simulation, vignettes, and professional development activities are a very effective means to achieve this. Unfortunately, the Australian Army has not yet fully embraced these opportunities. Simulation capabilities are present in all three of Australia's Cbt Bdes, and do receive widespread use by headquarters and subordinate organizations. The use of vignettes, modular training sessions, and debate forums however, particularly to inculcate a modular culture amongst the "agents" of cultural change in Cbt Bdes (non-commissioned officers, junior and field-grade officers) appear to be lacking.[190] A recommendation for Australia's Cbt Bdes then is to implement activities like these as structured and regular events, with a minimum frequency of quarterly throughout the training year. More

[190] Hompas, email; Shottenkirk, email. The e-mail correspondence provided by principal staff officers in two of Australia's three Cbt Bdes would indicate that professional development activities are present as a brigade-wide initiative amongst junior leaders. Despite the prevalence of modularity as a transformational issue however, the professional development activities undertaken by brigades appear to focus more so on general development topics such as leadership and governance. Discussion of modular impacts is generally constrained to command post exercises and not opened to wider forums and audiences.

importantly, to inculcate a modular culture across the wider Army, the audiences for these events must be broadened in scope. Practical experience on major collective training exercises has confirmed that many enabler organizations to Cbt Bdes would benefit from active and regular participation in modular tactical theory exercises, command post exercises, and simulation activities.[191] The participation of Cbt Bde "enablers" in major Army-level warfighting exercises, which generally only last for two to three weeks per calendar year, is at present insufficient.

Implementation of a modular culture comfortable with rapid reorganization and regrouping must of course be facilitated by a staff well-practiced in the methods and procedures for controlling modular organizations. The Australian Army appears to have identified this crucial requirement of modularity early in the development of its modular structures. Each of the Army's Cbt Bdes conducts Command Post Exercises at a formation level on at least an annual basis, with some formations undertaking these activities more frequently. These activities collectively certify the staff in coordinating brigade-level operations, and have been specifically tailored since the introduction of Plan BEERSHEBA, to employ modular structures which test staff using the end-capabilities that Cbt Bde's will possess.[192]

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[191] 3rd Brigade, "Exercise Hamel 2013 Discussion Papers," 49. This discussion highlights that inculcation of the modular culture, and collective proficiency in modular operations, necessitates conducting this training irrespective of a Cbt Bde's position in the Force Generation Cycle. To the contrary, in order to be effective, this training must be regular and incorporated into every phase.

[192] Shottenkirk, email; Australian Army, "3 Brigade 2014-2015 Formation Synchronisation Matrix." The 3rd brigade conducts two scheduled command post exercises each calendar year to develop staff proficiency in coordinating modular

A related observation from both United States and NATO experience worthy of consideration by the Australian Army is the incorporation of interagency, non-governmental organizations, and coalition partners into major collective training activities for modular brigades. The preceding section has already highlighted the necessity of structuring headquarters elements to incorporate specialists in these areas; effective operations will be impeded however if the necessary familiarity in whole-of-government operations or working as part of a coalition, is not institutionalized through training. The Australian Army's Center for Army Lessons has specifically cited this as an area of deficiency for Cbt Bdes participating in the Army's major collective training exercise, Exercise HAMEL, in 2013.[193] The Army should not limit participation to major collective training activities like this however; observations from more recent experiences have also suggested that the Army seek coalition partner and external agency involvement in Mission Rehearsal Exercises, prior to deployment.[194] Engaging these

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operations; Hompas, email. The 7th Brigade also conducts several command post exercises each year, specifically focused toward testing modular structures. Due to its co-location with Australia's Deployable Joint force Headquarters, the 7th Brigade has the added benefit of participating as a modular Brigade in Australia's higher-level command post exercises.

[193] Australian Army, *Centre for Army Lessons QuickLook Report-Exercise Hamel 2013 Lessons,* 7. This report specifically cites other government agencies, such as the Department of Foreign Affairs and Trade, and intergovernmental organizations, such as the United Nation Humanitarian Commission for Refugees, as critical non-military organizations that should be incorporated into major training activities for Cbt Bdes. To date, however, the Army has rarely sought their involvement for planning or participation.

[194] Australian Army, *Lessons 4 Army - Army Lessons Network Newsletter* (Puckapunyal, Victoria: Center for Army Lessons, September 2014).

organizations, with whom Cbt Bdes and their subordinate elements can expect to operate on a regular basis whilst deployed around the globe will provide a level of expertise during planning and realism during pre-deployment training that Cbt Bdes cannot replicate, from their own resources.

The final modular lesson in training applicable to Australia's Cbt Bdes, concerns the assignment of specialist expertise to Cbt Bdes to facilitate modular transformation, and the codification of the modular lessons which emerge from the process. One of the most successful initiatives implemented by the US Army throughout its modularization was the employment of MFCC and Modular Force Observation Teams to assist BCTs in undertaking modular transformation. The Australian Army currently lacks any dedicated specialist capability to facilitate this. While the Army has promulgated very clear guidance allocating various responsibilities to different parts of the organization for conducting transformation taskings, there presently exists no organization dedicated exclusively to facilitating modular implementation. As the primary organization responsible for implementing force generation and training, the Australian Army Forces Command's G3, G5, and G7 Branches have been formally tasked with additional responsibilities under Plan BEERSHEBA's modularization initiatives,[195] but these duties are shared among existing staff responsibilities. This degrades the ability of the

[195] Australian Army, "Commander Forces Command Directive 69/14 - FORCOMD Operations Order (OPORD) Training Year 15/16 Version 2," A-9; Australian Army, "Plan BEERSHEBA Implementation Order" (Headquarters Forces Command, June 12, 2014).

organization to provide single points of contact with resident expertise, and risks creating "silos" of information, if communication between individuals or branches is poor.

At the ground level, Cbt Bdes lack the dedicated augmentation that US BCTs were afforded and appear to be implementing modularity initiatives by apportioning staff additional responsibilities.[196] While this may be a necessity incurred by manning limitations within the Army, there is no evidence that the individuals assigned these extra responsibilities have been provided any dedicated or formal training in implementing modularity. The Australian Army could remediate this deficiency by providing formal training, or as a minimum, practical exposure to modular transformation, to these members. One option to achieve this would be to deploy personnel to short-term assignments, lasting several weeks to several months, with US BCTs. Working closely with these organizations would provide members a better appreciation of modular issues. This practice has been employed with success in informing the development of Australia's amphibious concept,[197] but so far has not extended to modular transformation.

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[196] Australian Army, "The 3 Bde." This site details the Headquarters 3rd Brigade manning structure. Under this structure, a Captain within the Brigade staff has been designated a role as the Force Modernisation Planner. While 3rd Brigade has proactively sought to employ this member in a dedicated force modernization role, this has come at the expense of an existing Captain's position within the headquarters, denuding another functional area.

[197] Australian Army, *Lessons 4 Army-Army Lessons Network Newsletter*, 7. In April 2014 alone, six junior officers from the Australian Army were detached to attend the US Marine Corps Expeditionary Warfare School's course on amphibious operations. This knowledge will be reinvested into future assignments and further development of Australia's nascent amphibious capability.

To complement the employment of dedicated staff to facilitate modular transformation, the Australian Army should seek to avoid the mistakes made by the NRF in codifying and disseminating the lessons of their experience. Presently, the Australian Army captures lessons in modularity through several sources. The Forces Command's G7 Branch maintains a sharepoint site listing broad directives and overarching guidance on modularity, yet lacks accessible files or documentation on the observations, lessons, and insights being encountered as the Army progresses toward its modular transformation goal.[198] Similarly, an "Army Lessons Online" website hosted by the subordinate Army Knowledge Group is designed to provide a single repository of training documents, Army experimentation studies and reports, foreign and coalition lessons, as well as a lessons learned database.[199]

The Army Lessons Online site is unwieldy however, and lacks robust documentation. Specifically, Plan BEERSHEBA and modularity-related documentation is limited and stored within obscure filepaths, and many of the post-activity reports and discussion papers generated by Australia's Cbt Bdes, since the implementation of Plan BEERSHEBA, are not available through this site.[200] To improve the dissemination of

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[198] Australian Army, "HQ FORCOMD G7 Branch," Australian Army Sharepoint Site, last modified October 2014, accessed October 6, 2014, http://legacy/TeamWeb2010/ARMY/forcomd/3BDE/SiteAssets/3%20BDE%20HOME.aspx.

[199] Army Knowledge Group, "Army Lessons Online," last modified October 2014, accessed October 6, 2014, http://lwdcis001.sor.defence.gov.au/knic/callesons.nsf/homepage?openform.

[200] From the author's personal experience as a Company Commander in 3rd Brigade in 2012 and 2013, 1st, 3rd and 7th Brigade prepared and submitted multiple Post-Activity Reports to Headquarters Forces Command discussing lessons learned from

modular lessons and experiences, the Australian Army can benefit from greater transparency between organizations. Central repositories of information should be treated as such, and efforts made to maximize the availability of evaluative documents and lessons learned within the restrictions of classification. These sites can also be enhanced through the inclusion of existing modular transformation documentation from the United States and NRF, much of which is available through open source means and was referenced in the preparation of this thesis. To achieve this practice, Headquarters Forces Command should take "ownership" of the process as the Army's proponent for force generation, and should direct a more open and consultative process for transfer of information and lessons within Cbt Bdes, between Cbt Bdes, and amongst the wider Australian Army.

Synopsis on Training Lessons

Applying the lessons learned from the United States and NATO, the Australian Army appears to be progressing well toward successfully implementing an effective and sustainable training framework for modular Cbt Bdes. There are areas of refinement however, in which the Army can modify existing practice or implement new practices, with which to better facilitate modular transformation. The Army's Force Generation Cycle is a robust training framework for Cbt Bdes to rotate through, and the FWF TMF represents an effective model to attain collective proficiency. Further consideration of

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trials with modular structures undertaken during Exercises Talisman Sabre 12, Hamel 12 and Hamel 13. The security classifications associated with these documents were permissive enough that their promulgation on the Army Lessons Online site would not compromise any security requirements.

incorporating proficiencies specific to low-intensity and stability tasks, and development of related training as part of the Force Generation Cycle, will ensure that these skills are not discounted in the pursuit of conventional warfighting proficiency. Training should also be conducted through incorporation of a wide range of non-military organizations and specialists, to enhance familiarity in operating as part of a whole-of-government or comprehensive approach.

The Australian Army can benefit from the adoption of exportable training capabilities and implementation of formalized professional development activities, targeted toward inculcating a modular culture amongst Cbt Bdes and their respective enabling organizations. To assist this process, staff assigned responsibilities for managing or implementing modularity should be provided exposure to contemporary examples, in order to build a stronger knowledge base of the complexities of modularity. Finally, the Army will only be able to embrace modularity across the entire organization, if the lessons and experiences learned within each of the Cbt Bdes is made widely available to, and accessible by, the wider organization. Table 5 summarizes these findings.

Table 5. Application of Modular Training Lessons to Australian Army Cbt Bdes

Area	**Lesson—Issue—Observation** (note: these points are summaries of the lessons identified in table 3)	**Australian Progress in Applying Lessons**
What to Train	Proficiency in full spectrum of conflict	Concept being developed—FWF TMF focuses on high-intensity warfighting, but should be expanded to include stability task proficiencies
	Balancing foundation warfighting with specialist skills	Ongoing—Australian Force Generation Cycle prioritises specialist training in Reset phase, but commanders must incorporate additional opportunities
	Training in task-organization and battle-grouping	Ongoing—task-organizing in barracks as well as when deployed is necessary to develop habitual relationships
	Brigade-level ownership of skills trained	Doctrine being developed—Cbt Bdes actively involved in building FWF TMF as well as broader modular operating concepts
How to Train	Training cycle timeframes	**Complete—**Australia's 36-month force generation cycle provides balance to proficiency development
	Offsetting low-intensity and high-intensity conflict training	Not currently conducted—recommend incorporating stability training in reset—readying phases
	Employment of Exportable Training Capabilities	Not currently conducted—recommend CTC export stability training to Cbt Bdes
	Use of simulation and professional development	Conducted to varying degrees—Cbt Bdes should increase frequency of modular education, expand audience
	Collective staff training	Ongoing—Australia has increased frequency of Cbt Bde command post exercises, exercising modular structures
	Interagency and non-governmental integration	Conducted infrequently—Cbt Bdes should increase non-military involvement in collective and pre-deployment training
	Dedicated modularity staff	Conducted to varying degrees—Cbt Bdes should have dedicated MFCC positions with modular expertise from working with coalition partners
	Capture of modular lessons	Conducted to varying degrees—websites capture lessons but much available documentation is not included

Source: Created by author.

Recommendations

Areas for Further Research

The following recommendations are presented for further research, to better inform the Australian implementation of modular brigade structures.

The first research recommendation is an examination of the combat support and combat service support structures organic to Cbt Bdes and not covered by this thesis. Specifically, the transformation of Cbt Bde structures affects not just the subordinate combat arms elements, but also the organic logistics, communications, and intelligence enablers within the Cbt Bde which support them. Future research should shift the focus for examination to these organizations to determine the impacts that modular transformation has on their ability to support the "warfighter." This research could again be qualitative in nature, following a similar methodology as applied in this thesis and examining existing modular organizations.

The second area for future research is in the broader Army structures which support Australia's three Cbt Bdes. While this thesis has focused specifically on the modular lessons of international military organizations which can be applied to the Australian context, future research should consider a qualitative and quantitative study on the specific impacts that Cbt Bde structures have on the major external supporting organizations within the Australian Army, to support the Cbt Bde. Further scoping for this research could be defined and narrowed to focus on one of the four major support organizations linked to Plan BEERSHEBA's Cbt Bde construct: Australia's logistics brigade; aviation brigade; combat support, intelligence, surveillance, targeting, and

reconnaissance brigade; or Australia's Army Reserve division linked to Cbt Bdes as a manning augmentation provider.

The third area for future research lies in a quantitative examination of those aspects of the DOTMLPF framework not covered by this thesis. This research should specifically cover the elements of materiel, personnel, and facilities either in isolation or together. Given the unique pressures associated with budget allocation, capability procurement, and force recruitment and retention, there is limited utility in conducting this research in a similar fashion to the methodology used for this thesis. Put simply, while foreign modular organizations may serve as a basis for comparison of organizational structures and training models, differing budgets, populations, and procurement processes between nations make comparison to the Australian context difficult. For this reason, future research in this field should be limited to an examination of the unique Australian conditions that shape these elements of capability.

Alternate Approaches for Research Conducted

The approach employed for this research was exclusively qualitative in nature. As the research progressed and the nature of existing lessons in modularity became clearer, the primary and secondary research questions were revised several times, however the methodology employed remained constant. The most important lesson learned during the conduct of this research was the value of corroborative evidence and supporting sources to validate an assessment or assertion made. These points notwithstanding, the research could have been further enhanced through the application of several alternative approaches.

First, the research may have been enriched through the inclusion of a quantitative modeling analysis of modular organizational structures, using simulations to test Australian Cbt Bde structures against a range of missions and threat types, to better clarify the appropriate balance of combat power required within Cbt Bdes. These results could then be compared against simulation modeling conducted for US BCTs. This approach was not employed for two reasons. Primarily, the simulations and computer models examined by US Training and Doctrine Command's Task Force Modularity had already considered in detail a number of scenarios used to inform the US modular transformation, with results broadly summarized and sanitized for public availability. Second, employment of this approach to analyze Australian Cbt Bde structures across the spectrum of operations would have necessitated description of specific mission parameters, proposed threat constructs and tactics, techniques and procedures employed by Australian forces, which would have necessitated the imposition of classification restrictions, and thus limited the audience to which this thesis could be made available.

Another alternate approach for the conduct of this research would have been to expand the scope of organizations against which to compare Australia's Cbt Bdes and to use isolated case studies to draw common themes in modularity. This approach could have included specific case studies of the modular organizations already examined in this thesis, as well as from similar military organizations such as the United Kingdom and Canada. Each case study would be limited to examination of a single operation or mission conducted by a brigade-sized modular organization, with commonality of lessons learned analyzed for applicability to Australia. This approach was not selected however as the result of a conscious decision by the author to focus in detail on enduring themes

emerging from two discrete organizations, rather than a broad examination of multiple organizations in potentially isolated instances.

Recommendations for Australian Army Action

This study does not seek to propose a definitive design structure for the Australian Army's Cbt Bdes, or complete redesign of the force generation framework being applied to implement and train these formations. The main recommendation from this study is for the Australian Army's leadership and commanders to critically evaluate the lessons identified in chapters 3 and 4 of this thesis, and to consider in detail those options highlighted in chapter 5, which provide proposals for Australia to improve on current transformation efforts. These proposals are intentionally generic, so as to offer a broad description of options to enhance modular transformation, without prescribing a technique or method that is limited in its application or inconsiderate of contextual limitations.

Summary and Conclusions

This study has conducted a comparative analysis of two modular military organizations, to draw lessons and themes in transformation that can inform and shape transformation in the Australian Army. Through qualitative analysis, the experiences of both US BCTs and the NRF in implementing modular structures provide a variety of lessons across the DOTMLPF capability framework. The capability elements of organization and training specifically, represent areas in which military leaders and commanders have the greatest ability to shape and influence.

In applying prior practical experience of modular transformation to the Australian Army, it is evident that many of the lessons encountered by these organizations are already being applied within the Australian Army to varying degrees. Australia's Cbt Bdes are well structured to meet the broad requirements of anticipated future mission sets, however, there are benefits that could come from additional consideration and exploration of the necessary command and control structures required to direct the operations of task-organized and dispersed subordinate elements. Training systems and frameworks to facilitate the generation of modular warfighting capabilities are progressing well, but can be further enhanced through minor adjustment to training activities, training objectives, and participating audiences.

BIBLIOGRAPHY

Primary Sources

Doctrine

Australian Government, Department of Defence. *Adaptive Campaigning - Army's Future Land Operating Concept* (*AC-FLOC*). Canberra: Australian Army, 2009.

———. *Defence White Paper 2013*. Canberra: Department of Defence, 2013. Accessed March 19, 2014. http://www.defence.gov.au/whitepaper2013/docs/WP_2013_web.pdf.

———. *Defending Australia in the Asia Pacific Century: Force 2030 : Defence White Paper 2009*. Canberra: Department of Defence, 2009.

———. *Land Warfare Doctrine 1 - The Fundamentals of Land Warfare*. Canberra: Australian Army, 2008.

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

Documents

1st Brigade. "HQ 1 Bde TASKORD 157/13 - HQ FORCOMD Foundation Warfighting Training Management Framework (FWF TMF) Progression Map Working Groups." Australian Army, August 6, 2013.

3rd Brigade. "Exercise Hamel 2013 Discussion Papers." Australian Army, 2013.

173d Airborne Bde. "173d Airborne Bde After Action Review." January 22, 2004. Operation Iraqi Freedom Study Group, Combat Studies Institute - COST. Combined Arms Research Library (CARL) Archive.

Australian Army. "3 Brigade 2014-2015 Formation Synchronisation Matrix." Headquarters 3rd Brigade, September 30, 2014. Accessed September 30, 2014. http://legacy/TeamWeb2010/ARMY/forcomd/3BDE/SitePages/Synch%20Matrix.aspx.

———. "Combat Training Center Program of Directed Activities 2014-2018." Combat Training Center, September 24, 2014. Accessed September 30, 2014. http://legacy/TeamWeb2010/ARMY/1div/1%20DIV%20DCU/CTC/HQCTC/SitePages/Program%20of%20Directed%20Activities.aspx.

———. “Commander Forces Command Directive 69/14 - FORCOMD Operations Order (OPORD) Training Year 15/16 Version 2.” Headquarters Forces Command, July 16, 2014.

———. “Interim 3 CER Command and Training Directive 2014.” 3rd Combat Engineer Regiment, February 18, 2014.

———. “The Army Training Continuum.” Headquarters Land Command, July 16, 2014.

Australian Government. Department of Defence. *Future Joint Operating Concept 2030*. Canberra ACT: Department of Defence, March 2011.

Department of the Army. *2003 Army Transformation Roadmap*. Department of the Army, 2003. Accessed March 12, 2014. http://www.oft.osd.mil/library/library_files/document_201_army_transformation.pdf.

———. *2004 Army Transformation Roadmap*. Department of the Army, 2004. Accessed March 12, 2004. http://www.army.mil/references/2004 TransformationRoadmap/4%20ATR%202004Sum.pdf.

———. *Army Comprehensive Guide to Modularity, Vol 1*. Headquarters US Army Training and Doctrine Command (TRADOC), October 8, 2004. Accessed March 12, 2014. http://www.forscom.army.mil/weather/Army_Tranformation/Mod_OO_v._1.0.pdf.

———. *White Paper. Concepts for the Objective Force*. Department of the Army, 2001. Accessed March 12, 2014. http://www.army.mil/features/WhitePaper/ObjectiveForceWhitePaper.pdf.

Department of Prime Minister and Cabinet. *Strong and Secure: A Strategy for Australia’s National Security*. Canberra ACT: Department of Prime Minister and Cabinet, 2013. Accessed March 19, 2014. http://www.ieee.es/Galerias/fichero/OtrasPublicaciones/Internacional/ResenaIEEE_EstrategiaNacionalSeguridadAustralia_feb2013.pdf.

Hawke, Allan, and Ric Smith. *Australian Defence Force Posture Review*. Australian Government, Department of Defence, March 30, 2012. Accessed March 19, 2014. http://www.defence.gov.au/uAT/oscdf/adf-posture-review/docs/final/Report.pdf.

Headquarters Forces Command. “Combat Brigade Standard Operating Procedures.” Australian Army, October 25, 2013. Accessed September 4, 2014. http://lwdc.sor.defence.gov.au/alo/MCB%20Standing%20Orders%20Dashboard.swf.

Joint Chiefs of Staff. Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms* Washington, DC: Department of Defense,

November 8, 2010. Accessed 6 August 2014. http://www.dtic.mil/doctrine/new_pubs/jp1_02.pdf.

Land Warfare Development Centre. *Army Objective Force 2030 Primer*. Canberra ACT: Defence Publishing Services, 2011. http://www.army.gov.au/Our-future/~/medi/Files/Our%20future/Publications/Army%20AOF%202030.ashx.

Lindley-French, Julian, Paul Cornish, and Andrew Rathmell. "Operationalizing the Comprehensive Approach." Paper, Allied Rapid Reaction Corps (ARRC), Commanders Initiative Group (CIG), 2010. Accessed March 11, 2014. http://us.coffey.com/Uploads/Documents/Operationalising-the-Comprehensive-Approach_20120713100831.pdf.

North Atlantic Treaty Organization (NATO). "Conducting and Resourcing Combined Training Events and Exercises." Joint Allied Lessons Learned Centre, NATO, November 6, 2012. Accessed May 28, 2014. https://nllp.jallc.nato.int.

———. "Lessons Learned Action Plan: Exercise/Operation Noble Light 08." Land Component Command Madrid, December 2008. Accessed May 28, 2014. https://nllp.jallc.nato.int.

Office of the Chief of Staff. *Army Posture Statement Fiscal Year 2001*. Washington, DC: Office of the Chief of Staff, 1999.

Operation Iraqi Freedom Study Group. "3 BCT 3 ID History in Operation Iraqi Freedom-Notes." 2003. Operation Iraqi Freedom Study Group. Combined Arms Research Library (CARL) Archive.

U.S. Army Training and Doctrine Command (TRADOC). "Evolving Roles and Responsibilities of the Modular Division Staff." Center for Army Lessons Learned, January 9, 2009.

E-mails

Golder, Major Kenneth. Email message to author, October 9, 2014.

Hompas, Major Simon. Email message to author, September 8, 2014.

Shottenkirk, Major Grant. Email message to author, September 8, 2014.

Interviews

Connor, Mr. Interview with CPT Kinsey, OIC TAC CP, 2BCT, 3ID. May 15, 2003. Operation Iraqi Freedom Study Group. Combined Arms Research Library (CARL) Archive.

Connors, Dr Pete. Interview with COL Stephen Lanza, Cmdr, 5 BCT, 1 CAV DIV. November 2, 2005. Operation Iraqi Freedom Study Group, Combat Studies Institute - COST. Combined Arms Research Library (CARL) Archive.

Corey, Major. Interview with CPT Somers, Cmdr B Co, 103 MI Bn, 2 BCT, 3ID. May 19, 2003. Operation Iraqi Freedom Study Group. Combined Arms Research Library (CARL) Archive.

Durante, Art. Interview with COL Daniel Allyn, Cmdr, 3 BCT, 3ID. November 5, 2003. Operation Iraqi Freedom Study Group. Combined Arms Research Library (CARL) Archive.

Fontenot, COL (Ret) Greg. Interview with COL William Grimsley, Cmdr, 1 BCT, 3ID. November 19, 2003. Operation Iraqi Freedom Study Group. Combined Arms Research Library (CARL) Archive.Presentations.

Kirkman, LTC Edric. Interview with COL David Perkins, Cmdr 2BCT 3ID. May 19, 2003. Operation Iraqi Freedom Study Group. Combined Arms Research Library (CARL) Archive.

Knowlton, LTC. Interview with COL Daniel Allyn, Cmdr, 3 BCT, 3ID. May 12, 2003. Operation Iraqi Freedom Study Group. Combined Arms Research Library (CARL) Archive.

Manning, LTC. Interview with COL William Grimsley, Cmdr, 1 BCT, 3ID. June 25, 2003. Operation Iraqi Freedom Study Group. Combined Arms Research Library (CARL) Archive.

NATO Response Force 15 (NRF-15). “Exercise STEADFAST JUNCTURE 10-After Action Review.” May 16, 2010. Accessed May 28, 2014. https://nllp.jallc.nato.int/cmnt/lfp/Documents/LCCMadrid/djse1/EXERCISES/STEADFASTJUNCTURE10/SFJT10EX/SFJE10AAR ALL.ppt.

Sommer, Henrik. “Re-Find Allied Joint Doctrine.” 2014. Accessed May 28, 2014. https://nllp.jallc.nato.int/Shared Documents/Lessons Learned Working Group WS Lisbon 8-9 April 2014/08 April 2014/02 Re-find Allied Joint Doctrine.pptx.

Tohn, LTC David. Interview with COL David Perkins, Cmdr, and Staff, 2BCT 3ID. May 18, 2003. Operation Iraqi Freedom Study Group. Combined Arms Research Library (CARL) Archive.

Reports

Australian Army. *Centre for Army Lessons QuickLook Report-Exercise Hamel 2013 Lessons*. Army Knowledge Group, Puckapunyal: Center for Army Lessons, October 30, 2013.

———. *Lessons 4 Army-Army Lessons Network Newsletter*. Puckapunyal, Victoria: Center for Army Lessons, September 2014.

Center for Army Lessons Learned. CALL Newsletter 10-48, *Army Transformation: Division, Corps, and Theater Army*. Fort Leavenworth, KS: Center for Army Lessons Learned, August 2010.

———. CALL Newsletter, *BCT Building 101, Tactics, Techniques, and Procedures*. Fort Leavenworth, KS: Center for Army Lessons Learned, March 2008.

———. *Modular Force Newsletter*. Fort Leavenworth, KS: Center for Army Lessons Learned, May 2005.

———. *Modular Force Newsletter*. Fort Leavenworth, KS: Center for Army Lessons Learned, June 2005.

Department of the Army. *Army Transformation: Report to the Congress of the United States*. Washington, DC, February 7, 2007.

Directorate of Future and Capabilities Development. *Future Engineer Force Operations and Organizational Concepts*. Fort Leonard Wood, MO: United States Army Corps of Engineers, 2010.

Force Development. *Brigade Engineer Battalion Concept Brief*. Fort Leonard Wood, MO, February 10, 2011.

North Atlantic Treaty Organization (NATO). *Exercise Steadfast Joist 09: First Impression Report*. Madrid, Spain: Component Command Land Headquarters Madrid, 2009.

———. *Joint Headquarters Coordination-As Observed in the NRF Exercise LOYAL JEWEL 2009*. Monsanto, Portugal: Joint Analysis and Lessons Learned Centre, NATO. Accessed May 28, 2014. https://nllp.jallc.nato.int/IKS/Sharing%20Private/Joint_Headquarters_Coordination_(As_Observed_in_the_NRF_Exercise_LOYAL_JEWEL_2009).pdf.

———. *NRF Command & Control and Reachback-As Observed at Exercises STEADFAST JACKPOT and STEADFAST JAGUAR 2006*. Monsanto, Portugal: Joint Analysis and Lessons Learned Centre, NATO, September 8, 2006. Accessed May 28, 2014. https://nllp.jallc.nato.int/IKS/Sharing Private/NRF Command, Control and Reachback Exercises - STEADFAST JACKPOT and STEADFAST JAGUAR 06 (Sep06).pdf.

Tystad, Valerie, Center for Army Lessons Learned. CALL Newsletter 8-36, *3ID Transformation*: *Tactics, Techniques, and Procedures*. Fort Leavenworth, KS: Center for Army Lessons Learned, September 2008.

Web Pages

Army Knowledge Group. “Army Lessons Online.” Last modified October 2014. Accessed October 6, 2014. http://lwdcis001.sor.defence.gov.au/knic/callesons.nsf/homepage?openform.

Australian Army. “HQ FORCOMD G7 Branch.” Australian Army Sharepoint Site. Last modified October 2014. Accessed October 6, 2014. http://legacy/TeamWeb2010/ARMY/forcomd/3BDE/SiteAssets/3%20BDE%20HOME.aspx.

———. “Plan BEERSHEBA.” Australian Army Webpage. Last modified 2014. Accessed March 23, 2014. http://www.army.gov.au/Our-future/Projects/Plan-BEERSHEBA.

———. “The 3 Bde.” Australian Army Sharepoint Site. Last modified September 2014. Accessed September 4, 2014. http://legacy/TeamWeb2010/ARMY/forcomd/3BDE/SiteAssets/3%20BDE%20HOME.aspx.

Headquarters, Allied Rapid Reaction Corps. “Question and Answer.” Last modified 2014. Accessed March 12, 2014. http://www.arrc.nato.int/alliedrapidreactioncorps/page24121044.aspx.

———. “NATO Response Force (NRF).” Last modified 2014. Accessed March 12, 2014. http://www.arrc.nato.int/alliedrapidreactioncorps/nato-response-force.aspx.

NATO Public Information Office. “Prague Capabilities Commitment (PCC).” Last modified 2014. Accessed March 31, 2014. http://www.nato.int/cps/en/SID-5C207E17-740D327E/natolive/topics_50087.htm.

North Atlantic Treaty Organization. “Joint Force Training Center.” Accessed August 26, 2014. http://www.jftc.nato.int/about-contracting/organization/history.

———. “NATO Lessons Learned Portal.” Last modified 2014. Accessed August 26, 2014. https://nllp.jallc.nato.int/Pages/default.aspx.

———. “The NATO Response Force.” Last modified 2014. Accessed March 12, 2014. http://www.nato.int/cps/en/SID-E0D6CFD8-E96FAF53/natolive/topics_49755.htm.

Secondary Sources

Books

Cordesman, Anthony H. *The Iraq War: Strategy, Tactics, and Military Lessons*. Washington, DC: CSIS Press, 2003.

Creswell, John W. *Qualitative Inquiry and Research Design: Choosing among Five Approaches*. 3rd ed. Los Angeles, CA: SAGE Publications, 2013.

Donnelly, William M. *Transforming an Army at War: Designing the Modular Force, 1991-2005*. Washington, DC: Center of Military History, United States Army, 2007.

Fontenot, Gregory, E. J. Degen, David Tohn, United States, Army, Operation Iraqi Freedom Study Group, and Combat Studies Institute. *On Point: The United States Army in Operation Iraqi Freedom*. Fort Leavenworth, KS: Combat Studies Institute Press, 2004.

McGrath, John J. *The Brigade: A History; Its Organization and Employment in the US Army*. Fort Leavenworth, KS: Combat Studies Institute Press, 2004.

Wright, Donald P. *The United States Army in Operation Iraqi Freedom, May 2003-January 2005: On Point II: Transition to the New Campaign*. Fort Leavenworth, KS: Combat Studies Institute Press, 2008.

Conference Papers

McGrath, John J., ed. "An Army at War: Change in the Midst of Conflict." In *The Proceedings of the Combat Studies Institute 2005 Military History Symposium*. Fort Leavenworth, KS: Combat Studies Institute Press, 2005. Accessed March 11, 2014. http://usacac.army.mil/cac2/cgsc/carl/download/csipubs/AnArmy AtWar_ChangeInTheMidstOfConflict.pdf.

Taylor, G. Scott. "Beyond the Battlefield: Institutional Army Transformation Following Victory in Iraq." Letort papers, no. 55. Strategic Studies Institute, U.S. Army War College, Carlisle, PA, 2012.

Watson, Brian G. "Reshaping the Expeditionary Army to Win Decisively: The Case for Greater Stabilization Capacity in the Modular Force." Monograph, Strategic Studies Institute, U.S. Army War College, Carlisle, PA, 2005.

Journals

Barry, Charles. "Building Future Transatlantic Interoperability Around a Robust NATO Response Force." *Transatlantic Current*, no. 7 (October 2012). Accessed May 7, 2014. http://www.dtic.mil/dtic/tr/fulltext/u2/a577050.pdf.

Bickell, Craig. "Plan Beersheba: The Combined Arms Imperative Behind the Reorganisation of the Army." *Australian Army Journal* X, no. 4 (Summer 2013): 36-52.

Casey, Allison. “Knife, Can Opener or Screwdriver? Training Australia’s Land Force to Be the Swiss Army Knife of the Future.” *Australian Army Journal* IX, no. 3 (Summer 2012): 75-88.

Joyce, Mark. “NATO’s Return to Politics.” *The RUSI Journal* 150, no. 3 (June 2005): 10-14.

McGinnis, Michael L. “A Deployable Joint Headquarters for the NATO Response Force.” *Joint Forces Quarterly* no. 38 (2005). Accessed March 28, 2014. http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA530847.

Morrison, David. “The Army as an Instrument of National Power.” *Australian Defence Force Journal*, no. 190 (2013): 11-19.

Owen, William F. “The Universal Infantry.” *Australian Army Journal* VII, no. 3 (Summer 2010): 143-149.

Smith, Chris, Tony Duus, and Simeon Ward. “Contemporary Warfare, the Utility of Infantry, and Implications for the Project Land 400 Combined Arms Fighting System.” *Australian Army Journal* VII, no. 2 (Winter 2010): 15-32.

Reports

Bialos, Jeffrey P., and Stuart L. Koehl. “The NATO Response Force: Facilitating Coalition Warfare through Technology Transfer and Information Sharing.” Report, Center for Technology and National Security Policy, National Defense University, Fort Lesley J. McNair, Washington DC, 2005. Accessed March 12, 2014. http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA450219.

Feickert, Andrew. *US Army’s Modular Redesign: Issues for Congress. CRS Report for Congress*. Washington, DC: Congressional Research Service, May 2006. Accessed March 16, 2014. http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA436231.

———. *US Army’s Modular Redesign: Issues for Congress. CRS Report for Congress*. Washington, DC: Congressional Research Service, January 2007. Accessed March 16, 2014. http://www-conf.slac.stanford.edu/cryo2006/proc/present/HODGSON.PDF.

Johnson, Stuart E, John E. Peters, Karin E. Kitchens, and Aaron Martin. *A Review of the Army’s Modular Force Structure*. Santa Monica, CA: RAND, 2011.

Kanis, G. J., and M. R. van Ettinger. *Operational Assessment of a NATO Response Force*. NATO Command and Control Centre of Excellence, 2010. Accessed March 12, 2014. http://natolibguides.info/nrf.

Kugler, Richard L. "Case Study in Army Transformation: Creating Modular Forces." National Defense University, Center for Technology and National Security Policy, Washington, DC, 2008. Accessed March 11, 2014. http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA480011.

———. "The NATO Response Force 2002-2006: Innovation by the Atlantic Alliance." Case Study, National Defense University, Center for Technology and National Security Policy, Fort Lesley J. McNair, Washington DC, 2007. Accessed March 28, 2014. http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA463071.

McGinnis, Mike, and Rick Lynch. "Operation Stavanger: Standing up a Deployable Joint Headquarters for the NATO Response Force." Technical Report, Operations Research Center of Excellence, West Point, NY, 2004. Accessed March 28, 2014. http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA424168.

Pendleton, John H., Gwendolyn Jaffe, Margaret Morgan, Kelly Baumgartner, Hillary Benedict, Herbert Bowsher, Kurt Burgeson, Grace Coleman, Stephen Faherty, Barbara Gannon, David Hubbell, Jim Melton, Steve Rabinowitz, Steven Pruitt, Terry Richardson, Kathryn Smith, Karen Thornton, and J. A. Walker, *Force Structure: The Army Needs a Results-Oriented Plan to Equip and Staff Modular Forces and a Thorough Assessment of Their Capabilities.* Washington, DC: Government Accountability Office, November 2008. Accessed June 5, 2014. http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA489966.

Peterson, Friis, and Hans Binnendijk. "The Comprehensive Approach Initiative: Future Options for NATO." *Defense Horizons* 58 (September 2007).

Pickup, Sharon L., Laura Durland, Vincent Balloon, Renee S. Brown, Natasha Ewing, Kevin Handley, John W. Lee, I. I. McAllister, J. Lonnie, and Tamika Weerasingha. *Military Training: Actions Needed to More Fully Develop the Army's Strategy for Training Modular Brigades and Address Implementation Challenges*. Washington, DC: Governmental Accountability Office, August 2007. Accessed March 16, 2014. http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA470611.

RAND Arroyo Center. *An Army Transforming While At War-Annual Report 2004*. Santa Monica, CA: RAND Corporation, 2004.

———. *Developing Effective Training Strategies for the Unit of Action*. Annual Report. An Army Transforming While at War. Santa Monica, CA: RAND Corporation, 2004.

Theses

Camarena, Mark J. "In Search of a New Type of Army: Nation Building and Occupation." Monograph, School of Advanced Military Studies, Fort Leavenworth, KS, 2004.

Cook, Katherine M. "Transforming the Force and Logistics Transformation." Strategic Research Project, US Army War College, Carlisle Barracks, PA, 2006. Accessed March 16, 2014. http://oai.dtic.mil/oai/oai?verb=getRecord&metadata Prefix=html&identifier=ADA449090.

Daly, Edward M. "NATO Logistics Reform: Central to NATO Response Force (NRF) Success." Strategic Research Project, US Army War College, Carlisle, PA, 2008. Accessed March 28, 2014. http://oai.dtic.mil/oai/oai?verb=getRecord&metadata Prefix=html&identifier=ADA480122.

Del Favero, Franco. "The European Union Battle Groups: Operational and Strategic Implications for NATO." Master's thesis, US Army Command and General Staff College, Fort Leavenworth, KS, 2009. Accessed March 28, 2014. http://oai.dtic. mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA501754.

Escobar, Samuel A. "Engineer Company Force Structure Force Modularization in Support of Decisive Action. Does the Corps of Engineers Need to Re-Structure Engineer Construction Companies Again in Order to Support Decisive Actions?" Master's thesis, US Army Command and General Staff College, Fort Leavenworth, KS, 2012. Accessed March 22, 2014. http://oai.dtic.mil/oai/ oai?verb=getRecord&metadataPrefix=html&identifier=ADA569339.

Eungard, Brad J. "Improving the Agility of the NATO Response Force (NRF)." Master's thesis, Joint Forces Staff College, Norfolk, VA, 2010. Accessed March 28, 2014. http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=AD A530256.

Howell, M. Ryan. "A Critique of the US Army Force Redesign of Cavalry Formations within the Brigade Combat Teams." Master's thesis, US Marine Corps Command and Staff College, Quantico, VA, 2009. Accessed March 16, 2014. http://oai.dtic. mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA513692.

Ingram, Jeffrey D. "Where Is the Heavy-Light Organization in the Army's Future Force?" Monograph, School of Advanced Military Studies, Fort Leavenworth, KS, 2005. Accessed March 16, 2014. http://oai.dtic.mil/oai/ oai?verb=getRecord&metadataPrefix=html&identifier=ADA435937.

Niemi, Jeffrey S. “Army Transformation: Optimizing Command and Control for the 21st Century.” Monograph, School of Advanced Military Studies, Fort Leavenworth, KS, 2010. Accessed March 16, 2014. http://oai.dtic.mil/oai/oai?verb=get Record&metadataPrefix=html&identifier=ADA546260.

Schoenemann, Mark R. “Army Engineers in a Joint and Multinational Environment.” Monograph, School of Advanced Military Studies, Fort Leavenworth, KS, 2008. Accessed March 16, 2014. http://oai.dtic.mil/oai/oai?verb=getRecord& metadataPrefix=html&identifier=ADA485471.

Web Pages

Australian Broadcasting Corporation. “Defence Announces Major Army Restructure.” ABC News (Australian Broadcasting Corporation). Accessed March 23, 2014. http://www.abc.net.au/news/2011-12-12/defence-announces-major-army-restructure/3726630.

Bell, Robert. “Sisyphus and the NRF.” *NATO Review*. Last modified 2006. Accessed March 12, 2014. http://www.nato.int/docu/review/2006/NATO-Transformation/ Sisyphus_NRF/EN/index.htm.

Cordesman, Anthony, H. “Rethinking NATO’s Force Transformation.” *NATO Review*. Last modified 2005. Accessed March 12, 2014. http://www.nato.int/docu/review/ 2005/NATO-Transformation/NATO-force-transformation/EN/index.htm.

Dictionary.com. “Modular.” Last modified 2014. Accessed April 11, 2014. http://dictionary.reference.com/browse/modular.

Goure, Daniel, and Kenneth A Steadman. “Medium Armor and the Transformation of the U.S. Military.” The U.S. Army Professional Writing Collection. Accessed March 3, 2014. http://www.army.mil/professionalWriting/volumes/volume2/ november_2004/11_04_1_pf.html.

Palmer, Diego, R. “From AMF to NRF.” *NATO Review*. Last modified September 2009. Accessed March 12, 2014. http://www.nato.int/docu/review/2009/0902/ 090204/EN/index.htm.

———. “Two Decades of NATO Operations: Taking Stock, Looking Ahead.” *NATO Review*. Last modified 2012. Accessed March 12, 2014. http://www.nato.int/docu/ review/2012/Chicago/Stock-Looking-Ahead/EN/index.htm.