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**MODULARITY AND THE CANADIAN ARMY:
DISPERSION, COMMAND, AND BUILDING THE SUM OF ALL PARTS**

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ABSTRACT

For the Canadian Army a smaller force structure has affected the application of Allied theories of “modularity” and a disciplined approach to modular principles will be required to best preserve a stable, combined-arms unit capability while minimizing reconfiguration disruptions prior to expeditionary force employment. The basic core component of a modular structure should be an established, multi-functional, self-sufficient battle group, tailored to achieve tactically decisive effects.

Though technical connectivity for component parts of the force will be essential, it will be the “connected” nature of the unit which will prove paramount. Emphasis must continue to be placed upon how an appropriate mission command climate can build trust, cohesion and unity of purpose, both within a national force and across coalition lines.

To win on the complex and dispersed battlefields of the future, a modular land force for Canada must harness improved technological connectivity while enabling vital human networks built upon essential trust, shared intent, and experience. Through an examination of emergent battlefield concepts and the essential elements of an effective mission command climate, this paper will affirm the need for Canada to concentrate on building a cohesive modular design at two important levels – the Combined Arms Battle Group (BG) as a whole, and the Land Force Formation HQ command structure.

Recommendations

- Place greater emphasis upon commander and staff training at the BG and LF Formation HQ level and create capacity to deliver such opportunities.
- Promote adaptive, decentralized combined-arms leader training at increasingly lower levels.
- Promote widespread understanding and education of Canadian Forces leadership doctrine in the land force and enable cultural change among both supported combat arms and supporting enablers in accepting institutional ownership for greater integration of the combined-arms team.
- Discontinue the lexicon of “modularity,” as it is ill-suited for describing the complexity of building land force capability over time through core tactical proficiency, shared trust relationships, a mission command climate, and strong human networks.

Today's Army must plan more conceptually and adapt quickly to a changing and unpredictable threat and mission set; it must create adaptable doctrine, force structures, and equipment through its institutions and encourage all elements to adapt as necessary to changing mission needs; and it must operate with flexible modular chains of command, often beyond existing doctrine, with variable force structure and situational allies against often ill-defined opponents that tend to evolve rapidly and unpredictably.¹

CHAPTER ONE - INTRODUCTION

Though theories of a “modular” force structure in a transformed United States Army were conceived soon after The First Gulf War of 1991, plans for change gained irreversible momentum and focus in the wake of the September 11th terrorist attacks against the United States in 2001. The impetus to rationalize higher tactical layers of command headquarters, coupled with the desire for increased “deployability, lethality, and jointness” at the brigade level, have been cited as principal objectives in the move towards a more agile and responsive force.² For Canadian defence theorists, the quest for greater levels of interoperability with principal Allies and the ready consideration of new U.S. military transformation concepts prompted an initial Canadian Army articulation of “modularity.”

It is understandable why early interpretations appeared ill-defined, as advocates may have sought to apply a similar construct to the U.S. example, albeit on a much

¹ Huba Wass De Czege, USA Ret'd, “Some Relevant Wisdom,” *Army*, June 2006, 17.

² Andrew Feickert, *U.S. Army's Modular Redesign: Issues for Congress*, Congressional Research Service (CRS) Report for Congress (The Library of Congress, 19 July 2004), 7-13; Often described as “brigade-centric” in nature, the plan called for replacement of three hierarchical overlapping “command echelons above the brigade.” Elements of Army and Corps HQ would merge into a Unit of Employment Y (UEy), while Corps and Divisional HQ structures would form Units of Employment X (UEx). The focus for campaigns and major operations would be the purview of the latter, while the new Brigade Combat Team (BCT), or Maneuver Unit of Action (UA), “as the smallest U.S. Army formation normally assigned an independent operational task... will be the modular building block of any Army combat force,” cited in LCol M.J. English, *Special Report – The U.S. Army Modular Force* (U.S. Army Combined Arms Center, Ft. Leavenworth, Kansas: 2525-17 (CFLO CAC)), 15 May 2004, 3 – 12/17.

smaller scale. Visions of the future operating environment predicted an increasing requirement for smaller, dispersed combat capabilities; an idea readily identifiable for an Army conditioned by over fifteen years experience employing decentralized sections, platoons, companies, and reconnaissance elements in peace support operations. The Canadian Army perceived success in how *ad hoc* groupings deployed and integrated into larger coalitions; often in the form of combined arms sub-units with specialist capabilities.³ With the onset of a managed readiness system for the Land Force, Army staffs have been prone to centrally manage the alignments of individual companies, squadrons, batteries, or specialist platoons/troops.⁴ Finally, recent U.S. Army findings from OPERATION IRAQI FREEDOM (OIF) have reinforced the value of “adaptive leadership” at the sub-unit and below [something long espoused in the Canadian Army].⁵ No doubt, all of these factors have contributed to an assertion that the sub-unit should be considered the basic building block, or “module,” in the Canadian context.⁶

³ An armoured reconnaissance squadron was deployed independently as the initial Canadian contribution to OP KINETIC (Kosovo) in 1999; a mechanized infantry company group, including armoured reconnaissance and engineer troops, was deployed to OP ECLIPSE (Eritrea) in 2001; and a light infantry company group and construction engineer troop were deployed to OP TOUCAN (East Timor) in 2000-2001. Source: all related National Defence and Canadian Forces Backgrounders accessed from http://www.forces.gc.ca/site/Newsroom/view_news_e.asp?id=130.

⁴ This is partly in response to (1) inherent personnel and equipment shortfalls in the current “Hollow Army” and (2) the need for predictability and oversight in the Army Managed Readiness System, as witnessed by the author during the coordination of army collective training requirements with Directorate of Land Force Requirements (DLFR) staff from 2005-2006.

⁵ Leonard Wong, *Developing Adaptive Leaders: The Crucible Experience of Operation Iraqi Freedom* (Carlisle, PA: Strategic Studies Institute Monograph, US Army War College, July 2004), 18.

⁶ The *Oxford English Pocket Dictionary, ninth edition* defines a module as... “each of a set of parts or units that can be used to create a more complex structure.”

Conceptual Underpinnings of Modularity

The concept of modularity has roots in systems theory, computer software design, organizational management theories in business, and ideas on the provision of focused logistics. It has emerged as part of a larger “information age” or “network-centric” warfare lexicon; one that some have argued constitutes a growing “jargon-laden language,” in which “confusion in terminology can lead to confusion in thought.”⁷ Often modularity is synonymously used with other terms, such as “plug and play,” “task-tailorable,” “flexible,” or “adaptive” and one is left with an impression from this mantra that it is the component, independent parts of a system that serve as its strength.⁸ However, the application of theory in one discipline (i.e. business) is not always readily transferable to military affairs. The same holds true when attempting to describe correlations in how the principal services within a military force aim to conduct operations.⁹ When seeking to organize, generate and employ land forces, it is imperative to define not only the basic core component of a modular structure, but also how integral capabilities will be connected for optimum effect.

The application of modular theories to a smaller military force structure has posed some difficulty over how to conceptualize the right mix in functional capability, and to

⁷ Allan English, Richard Gimblett, Howard Coombs, and Carol McCann, KMG Associates, *Beware of putting the cart before the horse: Network Enabled Operations as a Canadian Approach to Transformation* (Toronto: Defence R&D Canada, 2005), 1, 8 and 10.

⁸ Chad Kohalyk, *Fundamentals of Modularity* (LFDTS Research Paper, first version, Directorate of Land Strategic Concepts, August 2006), 4. This paper outlines three principles of modular systems design: (1) *architecture* - or what modules will be part of the system, by function; (2) interfaces – how modules will interact, fit together and communicate; and (3) standards – measuring performance in relation to other modules. Other concepts of “decomposability,” “hidden information,” and lack of “subordination” of sub-systems are described and applied in a military context.

⁹ These components can be classified as conventional air, land, naval, and marine forces (i.e. the USMC), and special operations forces. Either by virtue of their inherent composition, or as tailored to a particular task, varying degrees of joint integration and common understanding may be achieved.

what level. How much will be necessary to achieve a “tactically decisive” effect, and what balance of operational functions must be integrated within a robust, task-tailored, and self-sufficient element to enable mission success?¹⁰ In the military context, there is a risk in over-thinking the structure, or “architecture,” as it is common practice for successive, layers of command to devolve a balance of combined-arms capability to meet the requirements of time, space, mission type, projected combat intensity, and effect. In U.S. concepts, where power projection of military force along strategic and operational lines is a fundamental tenet, the greatest opportunities for effective exploitation of a modular design approach are believed to be between two levels: one, a “stable combined-arms formation” for independent tactical action; and two, an “operational level of employment” where command, control, and sustainment prove complex and “multiservice, multiagency, and coalition activities are coordinated.”¹¹

From an expeditionary perspective, recent history and an assessment of likely future capabilities would suggest that the Canadian Army will remain committed, and confined, to achieving excellence in tactical action. The land component of a task force will normally be built around a “unit or brigade headquarters (and by virtue of task be

¹⁰ Department of National Defence, *Towards Adaptive Dispersed Operations; The Army of Tomorrow: Assessing Concepts and Capabilities for Land Operations Evolution* (Kingston, Ontario: Directorate of Land Strategic Concepts, May 2006), 56-57. Canadian Army doctrine prescribes five operational functions as an essential framework for combat development. They are: Command, Sense, Act, Shield, and Sustain. Department of National Defence, *Purpose Defined: The Force Employment Concept for the Army*, (Ottawa: DND, March 2004), 13.

¹¹ Huba Wass De Czege and Richard Hart Sinnreich, *Conceptual Foundations of a Transformed U.S. Army*, AUSA Institute of Land Warfare Paper No 40 (Arlington, VA, March 2002); available from <http://www.ausa.org/webpub/DeptLW.nsf/byid/KCAT-6EGPQ4>; Internet; accessed 18 Dec 06, 18-19. This seam has been called the “tactical level of employment” where the formation command above the tactical UA is responsible for reconfiguring “modular combat and combat support units” of itself in order to enhance core combined-arms formation effectiveness. The latter should be able to satisfy a broad range of operational tasks without major reconfiguration.

designated a) ‘battle group’ or ‘brigade group’... but without the previous connotation of fixed size and capabilities.”¹² In the 2005 International Policy Statement on Defence, the latter element was realistically modified to the provision of “a brigade headquarters, capable of commanding a multinational formation for a year....”¹³ The current challenge will be to ensure combined-arms, core unit capabilities are respected by those formation command levels responsible for discerning force employment requirements. A disciplined approach to modularity must minimize disruptions due to reconfiguration so as to preserve organizational stability. The commander of an established, multi-functional, self-sufficient battle group should be left to focus on building combined-arms cohesion within, rather than coping with an ever-shifting mosaic of sub-units or specialist elements.

The Primacy of Human and Social Factors

Unprecedented advances in information technology and digitization have challenged traditional military command hierarchies and the social networks that bind them, while enhancing technical connectivity between dispersed elements.¹⁴ In an intellectual environment where theories of system and “platform-based” interactions dominate, there is a tendency to overlook what Dr. Paul T. Mitchell has described as “the

¹² DND, *Purpose Defined: The Force Employment Concept for the Army...*, 11.

¹³ Department of National Defence, *Canada’s International Policy Statement: A Role of Pride and Influence in the World – Defence* (Ottawa: DND, 2005) 31.

¹⁴ Paul T. Mitchell, *Network Centric Warfare: Coalition Operations in the Age of US Military Primacy*, Adelphi Paper 385 (London: Routledge for the Institute of Strategic Affairs, December 2006), 28; Lawrence Freedman, *The Transformation of Strategic Affairs*, Adelphi Paper 379 (London: Routledge for The Institute of Strategic Affairs, March 2006), 20.

human in the loop.”¹⁵ Though technical connectivity of component parts of the force will be an absolute necessity, it will be the “connected” nature of the unit which will prove paramount.

It is essential that commanders and staff remain focused upon ensuring sufficient attention is directed towards human and social dynamics. How best can the Army generate and maintain cohesive units of sufficient size for tactical effect, when the operating environment suggests an increasing emphasis upon decentralized execution of the mission by smaller elements? Based upon its size, the Canadian Army has traditionally placed great importance upon battlefield innovation, cohesion, and core competencies at the lowest levels. In defining “modularity” emphasis must continue to be placed upon how an appropriate command and control climate can build trust and unity of purpose both within a national force and across coalition lines.

The motivation for embarking on an examination of the relationships between modularity, command, and cohesion within the Canadian Army stems from a series of simple concerns. How much risk is acceptable and what are the impacts to combined-arms integration if an army succumbs to the notion that it can be too modular, seeking to reconfigure and task-tailor capabilities with increasingly less restraint? What are the impacts upon force cohesion and command? For a small army with high operational tempo, how can vital, expeditionary, combat synergies be maintained in the face of decentralized force generation and dispersed force employment? Institutionally, how well

¹⁵ Mitchell, *Network Centric Warfare...*, 28 and 65. The “human in the loop” referred to the value of coalition liaison officers in mitigating information gaps and the technological limitations of inter-Allied interoperability. However, the term has wider applicability in reflecting the critical nature of the human as a user of technology.

prepared is the army for commanding more modular forces after a 15 year decline in collective combined arms training at levels above sub-unit?

To win on the complex and dispersed battlefields of the future, a modular land force for Canada must harness improved technological connectivity in order to enhance vital human networks built upon essential trust, shared intent, and experience. Through an examination of emergent battlefield concepts and the essential elements of an effective mission command climate, this paper will affirm the need for the Canadian Army to concentrate on building cohesive modular designs at two important levels – the Combined Arms Battle Group as a whole, and the Land Force Formation Headquarters command structure.

Chapter Two of this paper will briefly examine the emergent battlefield concepts of network-enabled operations, swarming, and adaptive dispersed operations, and how these theories are driving the requirement for a more flexible, capable, and modular land force design. The evolution in Canadian theories of modularity will be framed against these developments.

In Chapter Three an analysis will be presented on contemporary and future challenges in land force command and cohesion. The aim will be to describe the positive and negative impacts upon important human and social networks within a dispersed, modular force; one in which leadership must foster trust, ensure unity of purpose, and profit from shared experience. Given the invariable interactions of deployed Canadian Army combined-arms units within a larger joint, interagency, multinational and public

(JIMP) framework, the nature of modular command networks must be assessed against general aspects of coalition interoperability and service interdependencies.

Finally, building upon the earlier analysis of emergent concepts, command, and cohesion, Chapter Four will apply aspects of the Canadian Army historical and doctrinal record to amplify upon the paper's major conclusions. The aim will be to make a clear assessment as to how modularity should relate to Canadian Army expeditionary force packages, and affirm the requirement for concentrating efforts towards building command capacity, cohesion, and expertise at the levels where it is most important; namely the Combined Arms Battle Group, and Land Force Formation Headquarters.

Though the Canadian Army must be prepared to employ forces across a spectrum of conflict from peace to war, whether domestically or abroad, this examination will concentrate solely upon elements of the land force trained and configured to execute its primary function of combat in the context of international security.¹⁶ This will include counterinsurgency and peace support operations in which the preponderance of tasks may be oriented towards stability vice intense combat action, but what remains important is the balanced need for general and specialist capabilities across the five operational functions. It is assumed these combat groups will operate within a JIMP context in accordance with mission demands. Finally, this study will be confined to modular groupings of conventional land force capabilities and respective chains of command. There may be specific parallels with how land-based, Special Forces operate in a dispersed environment. However, an analysis of training methods, assigned objectives,

¹⁶ Department of National Defence, *Land Operations 2021 Adaptive Dispersed Operations: The Force Employment Concept for Canada's Army of Tomorrow*, Major Andrew B. Godefroy, ed. (CLS Briefing Draft, Kingston, Ontario: Directorate of Land Concepts and Doctrine, 2007), 12.

available resources, command and control arrangements, and the risk criteria for the force employment of Special Forces might warrant different conclusions on modularity.

Simply put, modularity allows for the injection of cohesive sub-units with generic or discreet [sic] capabilities that can reinforce a task-tailored force, or replace components thereof, as the tactical situation dictates.¹⁷

CHAPTER TWO – MODULARITY AND EMERGENT BATTLEFIELD CONCEPTS

From a modular perspective, a worthwhile discussion of any combined-arms grouping of land forces must be tied to a spatial understanding of its potential area of operations, or “battlespace.” What capabilities must be assembled, in what quantity and for how long, in order to ensure success for the commander of a deployed battle group assigned an international security mission? The size, sophistication, and dispersion of an opposing force, coupled with the nature of non-combatants involved, will be key determinants in how the friendly force is arrayed to “Sense, Act, and Shield.”¹⁸ An increased multiplicity of tasks and specialists will impact upon span of control, “Command” of the force, and the complexity of interdependencies supported by the network. All will affect how to “Sustain” the force, but not as significantly as the issue of time and how long the force must operate before being redeployed, replaced or reconfigured out of necessity to facilitate mission transition.

Advances in technology are allowing modern ground forces to visualize the battlefield, share information, and apply more discriminatory combat effects in unprecedented ways. While scholars debate whether or not a revolution in military affairs (RMA) is a true byproduct of these changes, well worn phrases such as “network-enabled

¹⁷ DND, *Purpose Defined: The Force Employment Concept for the Army...*, 11-12.

systems,” “sensor management and data fusion,” and “information superiority,” highlight the technical connectivity expected to be crucial for military success.¹⁹ The United States is the clear military leader in translating these concepts into action, under the transformational banner of Network Centric Warfare (NCW).²⁰

In moving towards an analysis of how modular principles apply to the form and interactions of combined-arms land force groupings, it is not necessary to provide a detailed examination of NCW for this paper. However, affirmed throughout the literature is the widely accepted notion that reliance upon increasingly sophisticated networks and other more precise technologies (i.e. intelligence and surveillance sensors, weapons systems) will force military units to reduce their signature on the battlefield and disperse. Mitchell stated of early NCW theories that “networks would permit the generation of combat power from highly dispersed yet agile military units because of their enhanced situational awareness.”²¹ Others suggest that as the battlefield enlarges as a result of improved communications ranges and the ability to deliver more lethal, precise weapons effects from longer ranges, land forces must disperse – either by choice, or for survival respectively.²²

¹⁸ *Ibid.*, 13-14. The five operational functions first cited on page 3 are commonly accepted doctrine and can be found in all sourced, official Land Force references from 2003 to present, whether referring to the Interim Army, or the Army of Tomorrow. They will be capitalized for emphasis where appropriate.

¹⁹ Department of National Defence, *Future Force: Concepts for Future Army Capabilities* (Kingston, Ontario: Directorate of Land Strategic Concepts, 2003), 92 and 119.

²⁰ Mitchell, *Network Centric Warfare...*, 7.

²¹ *Ibid.*, 31.

²² Bruce Berkowitz, *The New Face of War: How war will be fought in the 21st Century* (New York: The Free Press, 2003), 3-4; Douglas A. Macgregor, *Breaking the Phalanx: A New Design for Landpower in the 21st Century* (Westport, CT: Praeger, 1997), 48-50; also reflected the presentation of RMA theory in Chapter One of Elinor C. Sloan, *The Revolution in Military Affairs* (Montreal&Kingston: McGill-Queen's University Press, 2002), 11-13 and 15-16.

This idea of dispersion is fundamental in understanding the paradoxical challenge presented to those responsible for creating cohesion within a unit governed by modular design principles. Commanders must exercise force proficiency in dispersed operations, yet this intrinsic separation must be overcome to provide synergies of effects and unity of effort. This chapter will briefly examine the three emergent concepts of network-enabled operations, swarming, and adaptive dispersed operations while considering the obstacles these theories create for building effective command networks, trust, and force cohesion in a modular force.

Network-Enabled Operations (NEOps)

A review of select documentation from the U.S. Department of Defense (DoD) Office of Force Transformation reveals how concepts of modularity are dominated by a focus upon “platforms, unit structures (or)... tangible pieces of equipment.”²³ Naval influences have governed much of the thought process, with ideas of equipment mass customization and “modules” that can be interchanged as they degrade and require replacement. It is no longer a question of integrating communications and sensor packages, but one of “plugging” components into the network and “creating power through network synergies.”²⁴ Apart from a reference to men and women as the best sensors, the human and social dynamics receive little mention.

²³ United States, Department of Defense, Office of Force Transformation, "US Military Transformation: Decision Rules," *Transformation Trends*, (25 Apr 2005); available from http://www.oft.osd.mil/library/library_files/trends_376_Transformation%20Trends-25%20April%20%202005%20Issue.pdf; Internet; accessed 14 Mar 07, 8.

²⁴ *Ibid.*, 5-8. Mass customization and the shift to networked components vice integrated systems are described as two “design factors (that) have not yet been fully embraced.” The author believes the obstacle to universal acceptance of some of this thinking relates to the difficulty in applying technological concepts to more complex land unit structures in which social and human factors are fundamental in composition.

Two recent studies provide objective and critical assessments of the relative strengths and weaknesses in NCW and the potential implications for Canadian Forces transformation. In one, Mitchell analyzes in detail the conceptual evolution of NCW, the underlying tensions within military networks, and the difficulties that arise when these networks operate in a coalition context.²⁵ A second study, sponsored by Defence R&D Canada (DRDC), serves as a cautionary against the eager embrace of all the underlying concepts of NCW, and concludes that “military professionals (Canadian and others) should draw on Canada’s extensive experience with human-centred networks” to create a unique approach, supported by a judicious use of select technologies.²⁶

In an analysis of how effectively a network will connect military forces, it is important to mark the theoretical transition from a concept dominated by technology to one in which human and social factors gain prominence. Mitchell captured the evolution in thought of Information Age Warfare theorists, David S. Alberts and others, who by 2003 believed that a “Social Domain” should be added to earlier work on how data is sensed, interpreted, and processed within the network.²⁷ This was one further step beyond the importance of the individual human decision-maker in NCW, and at

²⁵ For underlying tensions within military networks, and the difficulty of network operations within a coalition context, see Chapters Two and Four respectively in Mitchell, *Network Centric Warfare*.

²⁶ English, *et al.*, *Beware of putting the cart before the horse...*, 4.

²⁷ Mitchell, *Network Centric Warfare*...32-33. These “domains” are summarized as follows: the Physical, where military manoeuvre and strike will occur; the Information, where information is created and shared; the Cognitive, where sensing, understanding, interpretation, and decision will occur; and the Social, where the interactions between networked forces are judged and mediated. Also described in the original work, David S. Alberts and Richard E. Hayes, *Power to the Edge: Command... Control... in the Information Age* (Washington, DC: DoD CCRP Publication Series, 2004), 113.

considerable odds to more zealous proponents of the RMA who regard technology as a revolutionary panacea.²⁸

In an effort to place more emphasis upon the human dimension, move away from the dominant technological and combat connotations of NCW, and seek a more versatile idea to reflect Canadian experience in operations other than war (OOTW), theorists have developed the concept of Network Enabled Operations (NEOps).²⁹ The DRDC research team of analysts provides one definition as follows:

(NEOps is) the conduct of military operations characterized by common intent, decentralized empowerment and shared information, enabled by appropriate culture, technology, and practices.³⁰

In short, there is a de-emphasis upon the technology and a focus upon how the network will facilitate speed of command and better synchronization of effects, all built upon a foundation of “near real-time” situational awareness shared rapidly throughout the force.³¹ The benefits of NEOps in promoting unity of purpose and an effective sense of connectedness are readily apparent here but will be discussed in a later chapter.

²⁸ Michael Ignatieff, *Virtual War: Kosovo and beyond* (Toronto: Viking, 2000), 173. He alludes to the more extreme views of some early thinkers in the years coincidental with the First Gulf War, who suggested more sophisticated technologies (i.e. computers, sensors, and precision strike weapons) would obviate the requirement for leadership, or the need to deploy “troops on the ground.” Experienced, senior U.S. combat leaders proved skeptical and resistant.

²⁹ English, *et al.*, *Beware of putting the cart before the horse...*, 3; DND, *Towards Adaptive Dispersed Operations...*, 28.

³⁰ Sandy Babcock, “Canadian Network Enabled Operations Initiatives” (Ottawa: NDHQ, Directorate Defence Analysis [n.d. 2004?]: 4, quoted in English, *et al.*, *Beware of putting the cart before the horse...*, 3 and 66. The team felt this was the “best, succinct definition;” though it differed significantly from one given in the CF Strategic Integrated Operating Concept: “a concept aimed at improving the planning and execution of operations through the seamless sharing of data, information and communications technology to link people, processes, and ad hoc networks in order to facilitate effective and timely interaction between sensors, leaders and effects.” Department of National Defence, *CF Strategic Integrated Operating Concept* (Pre-decisional draft for CDS Review, Version 4, n.p. 1 July 2005), 13.

³¹ DND, *Towards Adaptive Dispersed Operations...*, 28.

Finally, in the DRDC team study of how NEOps and associated theories relate to the Canadian Army, the prevalent theme has been one of a “doctrine-based organization that uses technology to increase its capacity to practice manoeuvre warfare.”³² This has a strong historical basis with roots in the idea of a small professional army, reliant upon the skill of commanders at all levels, the innovative use of whatever technology may be introduced, and the primacy of its soldiers. The human remains central in the equation and the more inanimate theories of modular design fail to apply to what is a deeply social network; an army in which capability is more a product of human experience and interaction than a technical interface. Consequently, the utility of modular terminology is diminished.

Swarming and Massing

The principle of mass in land combat has been manifested in many ways, within capabilities of a given time and across cultures. Land forces have gained cohesion through mass, sought direct confrontation with comparable opponents *en masse*, and found utility in choosing to do battle with greater numbers.³³ It has yielded disastrous results in the form of human wave attacks against a defended line or strongpoint, and resounding success when directed at where an opponent has been weakest. Historically, the application of mass in combat has progressed from the execution of simple manoeuvre through to a contemporary understanding in which all means of combat

³² English, *et al.*, *Beware of putting the cart before the horse...*, 62 and 65.

³³ Victor Davis Hanson, *Carnage and Culture: Landmark Battles in the Rise of Western Power* (New York: Doubleday, 2001), 441, 445-446.

power are directed towards points of enemy weakness at the time and place of choice.³⁴

Modern weapons and sensor systems have enhanced the ability to detect the enemy, strike from greater distances and dispersed locations, thus directing mass, or the full range of “integrated effects,” with discrimination.³⁵ The method of engagement, complexity, and relative mass may change, but the intent remains the same; to overwhelm and defeat an adversary through an appropriate concentration of force.

In 2000 Sean J. Edwards, an analyst with the RAND National Defense Research Institute in the United States released a concept monograph on the tactics of “swarming.” In deference to accepted battlefield requirements for dispersion, he sought to examine select battles in the history of warfare in order to establish a benchmark for future doctrinal development. Apart from one naval exception, all examples applied to land warfare.³⁶ In an objective assessment of the relative advantages and disadvantages of swarming, he identified three key requirements for a military force to use swarm tactics effectively: superior situational awareness, the ability to elude one’s adversary, and a standoff engagement capability.³⁷ Notably, all these conditions were satisfied by the

³⁴ Department of National Defence, B-GL-300-002/FP-000 *Land Force Tactical Doctrine* (Ottawa: DND, 1997), 2-6 – 2-7. An understanding of land combat power should include a combination of two aspects: kinetic effects (derived from actions aimed at the physical domain), achieved by manoeuvre, direct and indirect fires, and elements coordinating joint fires (i.e. air, naval); and non-kinetic effects (derived from actions aimed at the moral plane), achieved through supporting enablers (i.e. CIMIC and PsyOps). At the operational level of war, the focus of combat power will be an enemy’s centre of gravity or decisive points. Department of National Defence, B-GL-300-001/FP-000 *Conduct of Land Operations – Operational Level Doctrine for the Canadian Army. Volume* (Ottawa: DND, 1998), 41-44.

³⁵ Godefroy, ed., *Land Operations 2021...*, 33-34.

³⁶ Sean J.A Edwards, *Swarming the Battlefield: Past, Present, and Future* (Santa Monica, CA: RAND National Defence Research Institute, 2000), xi-xiii. For the most part, all examples could be classified as tactical engagements, though one was offered as operational in nature. These case studies spanned from antiquity through to the modern, significantly ending with analysis of the Battle of the Black Sea (Somalia, 1993) as a successful case of swarming against a technologically superior force during peace support operations. This engagement was popularized in Mark Bowden’s book *Black Hawk Down*.

³⁷ *Ibid.*, 67.

victorious swarming force in the guerrilla warfare and peace support tactical examples studied.³⁸ Regardless of how suitable swarming tactics may be for a modern, networked, medium or light weight conventional force; these methods will certainly be employed by weaker insurgent opponents. Thus, an understanding of the construct will be a necessity.

For any force, swarm tactics provide distinct challenges in terms of logistics, command and control, and the synchronization of simultaneous action. Conceptually described in the four distinct stages of “locate, converge, attack, and disperse,” swarming forces shift between positions of dispersed vulnerability and concentrated strength.³⁹ Edwards acknowledged the swarming concept is nothing new. History is replete with examples of how conventional ground forces (some, more recently supported by aviation) have employed related tactics. German and Russian infantry proved highly adept at large-scale infiltrations during World War II, and the Ia Drang Valley battles of 1965 between the North Vietnamese Army and the U.S. First Cavalry Airmobile Division, constitute variations on the same theme.⁴⁰ Finally, Edwards determined swarming forces to be more modular in nature and able to reconfigure more rapidly.⁴¹ One should be cautious in drawing parallels in modularity between swarming forces of single functionality and the highly-adaptive modular forces sought after for the future. The related challenges to

³⁸ *Ibid.*, 54. The two examples: Boer commando success over the British at the Battle of Majuba Hill, 1881; and Somali fighter success over U.S. Special Forces in Mogadishu, 1993.

³⁹ *Ibid.*, 67-69.

⁴⁰ For a thorough analysis of WWII infantry tactics see, John A. English and Bruce I Gudmundsson, *On Infantry*, Revised Edition (Westport, CT: Praeger, 1994). Reference to the Ia Drang Valley battles reviewed in Eric Bergerud, “Find, Fix, and Destroy,” in *Battlegrounds: Geography and the History of Warfare*, Michael Stephenson, ed. (Washington, D.C.: National Geographic Society, 2003), 203-210.

⁴¹ Edwards, *Swarming the Battlefield...*, 84.

command and control, sharing information, and coordinating action will be discussed in the next chapter.

Adaptive Dispersed Operations (ADO)

Early in 2007, the Directorate of Land Concepts and Doctrine, released *Land Operations 2021: Adaptive Dispersed Operations*, the latest capstone document and draft force employment concept for the Canadian “Army of Tomorrow (AoT).” Grounded in the current doctrine of the Interim Army and emphasizing fundamental tenets of cohesion, operational readiness, and the primary function of combat, the work provides a vision of the future battlefield and a synthesis of many emergent concepts.⁴² In methodology, the theory links a series of “functional” and “enabling” concepts; all built on a foundation of manoeuvre warfare theory and effects based thinking.⁴³ The five operational functions provide the development framework and a concise definition of the ADO concept is described here:

Adaptive, networked, and integrated forces alternatively dispersing and aggregating throughout the multi-dimensional battlespace in order to find, fix, and strike full spectrum threats to security and stability.⁴⁴

Adaptive land forces are described as agile, lethal and non-lethal, net-enabled, multi-purpose (medium and light), and full spectrum capable. They operate dispersed “in purpose, space, and time,” and as a result will identify and dominate decisive points

⁴² Godefroy, ed., *Land Operations 2021...*, 12-13.

⁴³ *Ibid.*, 14-15. The functional concepts are: “Agility, Network-Enabled, The AoT Soldier, Integrated Effects, and Sustainment; the enabling concepts are: “Command, The Network, Distributed Autonomous Systems, Human Dimension, JIMP, Joint Fire Support, Fusion and Knowledge Management (KM), Omni-dimensional Shield, Focussed Logistics, Full Spectrum Engagement, and the AoT Battle Group.”

⁴⁴ *Ibid.*, 15-16.

within an expanded area of operations (AO).⁴⁵ The first two ideas of dispersion relate to the physical capacity to act, integrating manoeuvre and effects (dispersion in space) in order to satisfy simultaneous activities across the full spectrum of operations (dispersion in purpose). However, the key for a modular force seeking to employ its integral capabilities will be its ability to exercise decentralized decision-making through mission command and net-enabled situational awareness (dispersion in time).

In considering the balance of enabling concepts within ADO, the challenges for the human dimension are clear in relation to how the force masters the complex demands associated with ensuring connection within the social domain. A multitude of actors and effects require integration and systems need to be held together. These internal and external social “interfaces” which bind the combined-arms team will be subject to increased tensions as commanders and staff wrestle with difficulties inherent with dispersion. Despite perceived advantages, proponents of ADO wisely acknowledge the employment of combined-arms land forces will be situational and not ideal “where an adversary can locally mass more combat power than the dispersed force.”⁴⁶ Maximizing one’s chances of discerning threat force intentions and capabilities will remain the principal problem for any commander. Dispersion simply introduces an added dimension to calculations of potential gain versus risk.

Canadian Thought on a Modular Force

The advent of U.S. Army theories of modular transformation did not initially prompt a conceptual shift in thinking for the Canadian Army. The U.S. decision to

⁴⁵ *Ibid.*, 22-23.

“decompose” (modular design theory parlance) from a division-based organization to one of brigade combat teams (BCT), similar to the doctrinal Canadian Brigade Group, coincided ironically with an acceptance of Canada’s shift to a battle group-based force. Army exchange and liaison officers to the U.S. were most interested in potential training opportunities for Canadian Light Armoured Vehicle (LAV) battalions, or brigade staffs.⁴⁷ However, some believed the sub-unit should be considered the “basic, homogenous, unbreakable module to execute specific ranges of tasks within a unit framework,” while the units themselves would serve as “core integrators.”⁴⁸ This thinking proved inconsistent with: one, the accepted Canadian practice of regrouping integral unit capabilities into combined arms teams; and two, the “basic” level at which U.S. theorists prescribed task and purpose. Later analysis sought to apply modular design “rules” and “parameters,” identifying incompatibilities with how social interdependencies and information sharing occur within a military group.⁴⁹ In short, aspects of the theory provided limited value in capturing how capabilities could be integrated at the appropriate level.

In the Canadian Army’s *Land Operations 2021: Adaptive Dispersed Operations*, modularity has been defined as a “set of principles for managing complexity” and the term was dropped as an enabling concept. The “optimized battle group” will be the basic component of the modular force.⁵⁰ Here, the understanding is that a battle group would

⁴⁶ *Ibid.*, 24.

⁴⁷ LCol M.J. English, *Special Report – The U.S. Army Modular Force...*, 16/17.

⁴⁸ Major J.C.A.E Dion, “The E-Forces! The Evolution of Battle-Groupings in the Face of 21st Century Challenges,” *Canadian Army Journal*, (Fall/Winter 2004), 89.

⁴⁹ Kohalyk, *Fundamentals of Modularity...*, 12-15.

deploy with a degree of self-sufficiency and an appropriate mix of multi-functionality among component parts. Flexibility would allow the battle group commander the freedom to act in order to complete the mission. By fulfilling these accepted principles and conducting independent operations, the battle group satisfies applicable requirements to be judged a baseline module. It is not modularity when a well-led, cohesive, experienced force that has trained in combined-arms regrouping demonstrates the capacity to reconfigure for tactical action. A battle group is impacted adversely by modularity when operational force employers or its higher headquarters fail to allocate the specialist assets or additional generic capabilities required to be decisive.

In summary, as our understanding of the battlefield expands in terms of space, time, and complexity, so too will the challenge of defending a more modular force from potential adversaries seeking to exploit vulnerabilities. A brief analysis of the emergent concepts of network-enabled operations, swarming compared to the ability to mass effects, and adaptive dispersed operations has sought to expose those seams and weaknesses. The technological and human networks that connect a land, combined-arms battle grouping both internally and externally will be under increased pressure as the force is dispersed into smaller elements.

Though dispersion can yield advantages in reducing the impact of mass effects, it exposes the force to the risk of precision strike or swarming tactics, potentially against a valued and discrete capability. Essential communications and information technology systems must be robust, responsive, and capable of maintaining effective situational awareness in order to effectively guarantee mutual support of both fires and manoeuvre

⁵⁰ Godefroy, ed., *Land Operations 2021...*, 17. The Interim Army's "affiliated battle group" will be the transitional unit towards this "optimized" or AoT battle group. Briefed to JCSP 33, Canadian Force

over distance. A tension will always exist in how commanders mitigate the risks of deploying smaller, highly-skilled and technologically connected elements into situations where they may prove increasingly vulnerable to the swarming and massing of adversarial effects, in whatever rudimentary form these might appear. Battlefield success will be governed by how well the combined-arms team has practiced and mastered the synchronization of effects and JIMP capabilities in a dispersed, networked operational environment. The analysis must now turn to the essential elements that bind an army grouping into a connected and cohesive force of action; namely, the nature of the command climate, complemented by collective experience and the expertise fostered between functional capabilities.

Wars are fought by men who are fickle and in real conditions that are wholly unpredictable – heat, ice, and rain, in tropical and near arctic conditions, close and far from home. Western armies in Africa, Asia, and the Americas, as soldiers everywhere, were often annihilated – often led by fools and placed in the wrong war at the wrong place at the wrong time.⁵¹

CHAPTER THREE – COMMAND, TRUST, AND BUILDING COHESION

The previous chapter presented a vision of an ever-expanding battlespace where military networks of all types – technological, human, command, and social – will be subject to greater strains and complexities. The effectiveness of each network remains directly dependent upon the qualitative nature of the one listed before it and this order has been stated purposefully. In March 2001 Brig. General Huba Wass de Czege (U.S. Army retired) reaffirmed in a pointed commentary that the quality of the soldier would determine success in warfare while technology, though increasingly important, “will remain what it is today: an enabler.”⁵² The effective use of technology can be equally subject to human ingenuity, or incompetence; the information advantages it affords can be quickly assimilated for action, or squandered unwittingly through misperception. In addition to the timeless battlefield stressors of the physical environment, the human must now exercise command in conjunction with a growing “information domain” characterized by speed, volume, and a multitude of connected systems. Finally, for any military team the effectiveness of command will ultimately determine the strength of any

⁵¹ Hanson, *Carnage and Culture* ..., 444.

⁵² Brig. Gen. Huba Wass de Czege and Maj. Jacob D. Biever, “Soldiers-Not Technology- Are the Key to Continued Superiority,” *Army* (March 2001), 7.

social network – even if that command relationship is merely a weaker “vertical” link to a sub-group within which strong “horizontal cohesion” exists.⁵³

On the dispersed battlefield the overall command climate can be viewed as subject to two principal tensions: one physical and another temporal. The commander of dispersed elements at any level must use all available means at his/her disposal to overcome physical separation in order to cultivate and sustain that fundamental command connection. In a temporal sense, the more immediate command requirement for some semblance of control is in contrast to the length of preparation time required to ensure the dispersed team has built the trust and expertise necessary for confident, decentralized decision making. The commander will need to train the team to be successful for those periods when command connectivity fails, along with the means of control.

Though a brief examination of military cohesion will be necessary, this chapter will concentrate upon the essential ingredients for effective leadership in a decentralized environment; that intangible blend of command, trust and the understanding of intent, otherwise known as mission command. Assuming a modular construct based upon the combined-arms battle group, analysis will be directed towards aspects of four important “connections:” integral command (within a battle group); higher command abilities (from a land formation headquarters); the quality of internal and external connections (to include JIMP); and adaptability (efficiency in reconfiguration). A network enabled operational context will frame these themes, looking at span of control and hierarchies,

⁵³ The USMC also defines horizontal cohesion as “peer bonding,” where aspects such as friendship, trust, respect, teamwork, and technical or tactical proficiency affect the strength of connection. “Vertical cohesion” refers to the “relationship between subordinate and senior, (connecting) peer groups into a cohesive unit, such as a battalion or squadron.” United States, U.S. Marine Corps, *Sustaining the Transformation*, MCRP 6-11D (Quantico, VA: Doctrine Division, 1999), 34-35.

connectivity, and command. Though there will be some parallel conclusions that may apply to the social interface and qualitative connection - or disconnection - between national and deployed theatre commands, this study will remain at the tactical level.⁵⁴

Binding Military Groups

What are the recognizable measures and human forces that bind tactical land force groupings? It is beyond the scope of this paper to analyze the motivations behind why soldiers fight, or the cohesion and effectiveness within the “primary group.”⁵⁵ This may appear contradictory when viewed against the demands of an adaptive dispersed environment where the cohesion of smaller military groupings will be of far greater import. Even so, the essential bonds discussed will focus more towards how, vice why soldiers fight, and what aspects contribute to building synergies amongst the component parts of a larger whole. This is a fundamental part of what the scholar Eliot Cohen has referred to as a “new source of military advantage” into the 21st Century; namely, a “synthesis of technology and organizational competence.”⁵⁶

⁵⁴ In his focus upon command and control, Allan English identified a number of concerns reflecting dysfunctional command relationships between “commanders and troops in theatre and senior headquarters in Canada, especially NDHQ.” Allan D. English, “Contemporary Issues in Command and Control,” *Intelligence, Surveillance and Reconnaissance: Air Symposium 2001*, Canadian Forces College, 2001, 97-102 (Joint Command and Staff Programme 33 Activity Package C/DS 521/COM/LD-1), 1/5.

⁵⁵ In William Darryl Henderson’s authoritative study, *Cohesion: the Human Element in Combat*, he cites the work of other researchers who define “primary group” as based upon the German “concept of *Gemeinschaft*, (or) small, intimate, community relationships.” Henderson’s work provides a valued synthesis of all the preceding key literature that deals with cohesion and soldier performance in battle. William Darryl Henderson, *Cohesion: the Human Element in Combat* (Washington, DC: National Defense University Press, 1985), 161-166.

⁵⁶ Cohen affirmed that military advantage will be “bestowed upon those who integrate technological competence as a fundamental principle in their training doctrine,” though this was clearly meant to encompass the three levels of military conflict: strategic, operational, and tactical. Eliot Cohen, “The Revolution in Strategic Affairs: Implications for Armies,” in *Towards the Brave New World: Canada’s Army in the 21st Century*, eds. Lieutenant-Colonel Bernd Horn and Peter Gizewski, 79-84 (Kingston, Ontario: Directorate of Land Strategic Concepts, 2003), 80.

In simple terms, cohesion is an outcome – achieved in varying measures through any effective combination of institutional or social forces. Described at length in Canadian doctrine as an essential part of the “glue” or “unity” binding the moral and physical components of the army, cohesion is “the most important requirement of a combat force... (and) what most generates combat power.”⁵⁷ The confident demonstration of core expertise, an adherence to commonly accepted doctrine, the structure of a regimental system, and demanding, realistic training, are all considered important organizational contributors in shaping group cohesion. Effective performance, group culture, proximity and frequent interaction over time, and shared experience – often in the face of adversity – reflect the human or social manifestations of those contributors.

However, the key ingredients governing the qualitative interaction of all these elements will be effective leadership - and the command philosophy that drives it. In Canadian Forces leadership doctrine, social cohesion is seen to provide a dual effect, enhancing “performance while also taking up some of the leadership burden of psychologically supporting troops....”⁵⁸ Time and group stability are widely regarded in the literature as important determinants of cohesion, which in turn is viewed as one of five key components in developing team/unit capability. The four others are: task proficiency, teamwork, confidence, and distributed leadership.⁵⁹ This idea of “distributed leadership” is fundamental to understanding the necessary command climate for

⁵⁷ Department of National Defence, B-GL-300-000/FP-000 *Canada's Army* (Ottawa: DND, 1998), 39-40.

⁵⁸ Department of National Defence, *Leadership in the Canadian Forces: Conceptual Foundations* (Ottawa: Canada Communications Group, 2005), 79.

⁵⁹ *Ibid.*, 79.

conducting effective military operations with a dispersed, modular force. The definition is worth citing at length:

Appointed leaders can strengthen the capability for independent problem-solving and actions in their teams and units: by establishing a climate that supports initiative and emergent leadership; by developing potential replacement leaders (to ensure continuity of leadership and command); and, commensurate with subordinates' competence and motivation, by routinely delegating greater authority to them.⁶⁰

Though easily stated, the intensity of combat will quickly test the fabric of “distributed leadership” within a unit (or its component parts) as leaders are lost, groups are isolated in terms of time and space, or competence and motivation become stressed beyond replication in training. Regardless, the evidence from past studies of combat performance has indicated that the role of “battle in creating group cohesion” may have been over-emphasized – there must be a foundation of “pre-existing cohesion and morale’ which will quickly be solidified through an initial combat period.⁶¹ With a larger, more diverse force, commanders will face a harder challenge in building essential relationships based upon trust, particularly when mission tailoring “reduces response time, degrades unit cohesion, and impairs initial combat effectiveness.”⁶²

⁶⁰ *Ibid.*, 80. Similar to the USMC concepts of vertical and horizontal cohesion, the definition also includes the exercise of “good followership (or upward influence)” and emergent/peer leadership “(or lateral influence).”

⁶¹ Conclusions based upon data from Samuel Stouffer’s 1949 study, *The American Soldier*, in David E. Marlowe, *Cohesion, Anticipated Breakdown, and Endurance in Battle: Considerations for Severe and High Intensity Combat*, Department of Military Psychiatry, Walter Reed Army Institute of Research (Washington, DC: n.p.,n.d.), 45. (Hardcopy held in the Information Resource Centre, CFC Toronto).

⁶² Wass De Czege and Sinnreich, *Conceptual Foundations of a Transformed U.S. Army...*, 9.

Command and Trust

LTC Duane Lempke, a United States Army War College student in 1988, embarked upon a study of “command climate,” a military concept that was felt necessary in positively influencing unit commitment, morale, and readiness. Part of the theory involved a process known as “powering down,” which called for a restructure of power relationships and the delegation of “responsibility to the lowest level of capable leadership” along with the requisite accountability. Moreover, the proper execution of this philosophy would produce “the kind of ‘bold, dynamic and risk-taking’ leaders needed for the Airland Battlefield.”⁶³ A core supporting principle was the degree of trust that could be attained vertically “up and down the chain (of command).”⁶⁴ The parallels between how command and trust relate to developing battlefield theories can be seen twenty years on with consideration of what leadership concepts will bring success in meeting the demands of adaptive dispersed operations.

Extensive literature exists explaining the link between human factors and command. Recent Canadian Forces leadership doctrine has drawn heavily from the seminal theories of Canadian researchers Ross Pigeau and Carol McCann, defining command as a “uniquely human activity of creatively expressing will, but one that can be

⁶³ LTC Duane A. Lempke, “Command Climate: The Rise and the Decline of a Military Concept,” (Carlisle, PA: US Army War College Individual Study Project, 1988), 5; the concept of Airland Battle emerged in 1981 and called for the synthesis of land and air operations with optimized strengths and capabilities arrayed to strike throughout the linear battlefield – albeit within the context of a potential U.S.-Soviet conflict, United States, Department of the Army, *Airland Operations: a concept for the evolution of Airland Battle for the strategic Army of the 1990s and beyond*, TRADOC PAM 525-5 (Fort Monroe, VA: TRADOC, 1 August 1991), 1, 8, 12-14; “command climate” is also defined in Department of National Defence, B-GL-300-003/FP-000 *Command* (Ottawa: DND, 1996), 2-13.

⁶⁴ *Ibid.*, 8.

expressed only through the structures and processes of control.”⁶⁵ A philosophy of “mission command” has served as the cornerstone for the Canadian Army since formally ascribed as command doctrine in 1996. Trust, unity of effort, and decentralized authority are three fundamentals of mission command, however the shared understanding of a superior commander’s intent remains the central guiding principle.⁶⁶ This doctrine is understood and followed by Canada’s principal allied partners, and has been incorporated into Canadian Forces doctrine writ large. Mission command is defined as relying upon “a clear understanding of the commander’s intent to coordinate the actions of subordinate commanders and which thereby allows them maximum freedom of action in how they accomplish missions.”⁶⁷

However, ease in definition has not always translated well into practice when subject to the effects of process, reciprocal perceptions of leadership ability and competence, or the quality of interaction between leaders and led; with improvements in the latter tied to shared experience. In a frank analysis of the land formation command exercised by British Forces in Iraq during Operation TELIC in 2003, a Directorate of Development and Doctrine (U.K. Army) report criticized performance as “sub-optimal,” essentially due to failures in formal communication processes. Orders were found to be “too long, confusing, and hard to understand... inconsistent with the spirit and principles

⁶⁵ Ross Pigeau and Carol McCann from *Generalship and the Art of the Admiral*, quoted in DND, *Leadership in the Canadian Forces: Conceptual Foundations...*, 7.

⁶⁶ DND, B-GL-300-003/FP-000 *Command...*, 3-6; See also DND, *Purpose Defined...*, 9-10.

⁶⁷ Except where a direct quotation may infer a different meaning, this study will use the terms “commander” and “leader” in accordance with the doctrinal distinction that command authority is exercised downward, while leadership is multi-directional. DND, *Leadership in the Canadian Forces: Conceptual Foundations...* xi, 9 and 131; A similar definition of mission command from U.K. *ADP Command* is cited

of mission command.”⁶⁸ Not only were timely and concise orders an issue, but increasingly larger headquarters fell victim to the tendency to “plan too much” or experienced difficulty in translating campaign plans into tactical action.⁶⁹

In a 2005 critique of U.S. Army adaptability for counterinsurgency operations in Iraq, Brigadier Nigel Aylwin-Foster partly attributed ineffectiveness to an inability to practice mission command, despite its espousal. A number of key weaknesses were mentioned: reluctance “to deviate from precise instructions... staunch loyalty upward and conformity to one’s superior... and staff driven (planning) focused on process rather than end effect.”⁷⁰ The unintended consequence of this climate was more highly centralized decision making, despite the availability and use of information systems designed to facilitate the opposite. However, this system did work often when employed in support of a commander with a knack for retaining detail and managing complexity. Precision is difficult in any critique of a mission command climate in which commanders encourage “lower level initiative and adaptability,” yet it still fails to occur.⁷¹ Is it insufficient to dwell purely on process when a host of other qualifiers warrant consideration? Levels of shared experience, familiarity, and collective competence within the command and staff team will determine how well a large, tactical combined-arms formation will respond to battlespace challenges.

in United Kingdom, British Army, *The Command of British Land Forces in Iraq, March to May 2003*. Prepared by Storr, LCol JP (Pewsey, Wilts: Directorate General of Development and Doctrine, n.d.), 13.

⁶⁸ U.K., British Army, *The Command of British Forces in Iraq...*, 13.

⁶⁹ *Ibid.*, 5-6.

⁷⁰ Notably, micro-management through a lengthy rhythm of “daily briefings and updates” was felt to be a root cause of a problem with practicing mission command. Brigadier Nigel Aylwin-Foster, “Changing the Army for Counterinsurgency Operations,” *Military Review* (November-December, 2005), 6-7.

Aylwin-Foster noted in the same 2005 article that even the highly desirable adoption of a “can-do” approach to operations was observed to have inadvertently contributed to “damaging optimism” on the part of subordinates; junior commanders who may have felt discouraged from “reporting unwelcome news up the chain of command.”⁷² Also, a further critique of an “inappropriate can-do” ethos had been leveled in a 2002 report on post-Cold War command and control in the Canadian Forces. In it, Brigadier General Joe Sharpe and Dr. Allan English suggested there was an unhealthy correlation between “asking for assistance and a perceived ‘admission of inability’” as a basis for subordinate reluctance in imparting bad news.⁷³ These examples serve as testament to the inevitable pitfalls of perception inherent with command dynamics and human interaction. One might interpret “can-do” optimism negatively based upon a commander’s perception of subordinate leadership competence. Yet, in response to centralized control, the subordinate may simply be deflecting attention in order to execute the operation within the means assigned, or through lateral coordination, even in the face of initial setbacks. It may have nothing to do with fear of failure, accompanied by a requisite damage to image, or unswervingly loyal behaviour. Again, has the commander created an appropriate climate where honest interaction can occur, mistakes can be tolerated and reciprocal trust relationships formed?⁷⁴

⁷¹ *Ibid.*, 7.

⁷² *Ibid.*, 7

⁷³ BGen (retired) G.E Sharpe and Allan D. English, *Principles for Change in the Post-Cold War Command and Control of the Canadian Forces*, Published for the Canadian Forces Leadership Institute (Winnipeg, MB: CFTMPC, 2002), 58.

⁷⁴ Both the Foster article and Sharpe/English study indicate a pervasive “zero-defects” culture may be a problem at various levels within the U.S. Army, leading to a lack of leadership confidence and micro-management. *Ibid.*, 60; and Foster, “Changing the Army for Counterinsurgency Operations”..., 12.

In Canadian Forces leadership doctrine, trust has been defined as:

The willingness to accept the decisions or influence of another person based on a belief in that person's reliability. Any several characteristics may be important to establishing reliability, including technical competence, loyalty, integrity, courage and similar qualities.⁷⁵

The importance of trust is multi-dimensional. While analysis has focused upon "vertical" reciprocal trust relationships between leaders and subordinates, peer or "horizontal" trust remains a key part of the "human dimension of military effectiveness."⁷⁶ A further layer of complication is added when both directional relationships must extend over coalition or multi-agency lines and "shared beliefs, cultural understandings," and trusts prove more diverse.⁷⁷

Military command is exercised at many levels, in many ways, and must be adaptive to different conditions. In the 2002 Sharpe and English work on CF command and control, they presented Pigeau and McCann's theories on dimensions of command. Competency, authority, and responsibility were identified as three independent dimensions of command capability that a leader must seek to balance for optimal effect. A sub-component taxonomy exists within each dimension to assist in determining the capacity of a leader to perform effectively and manage complexity.⁷⁸ Though all are important, it is the combination of intrinsic responsibility, personal authority, and

⁷⁵ DND, *Leadership in the Canadian Forces: Conceptual Foundations...*, 133.

⁷⁶ *Ibid.*, 73.

⁷⁷ Simon Reay Atkinson, and James Moffat, *The Agile Organization: From Informal Networks to Complex Effects and Agility* (Washington, DC: CCRP Publication Series, 2005), 16-17.

⁷⁸ Four broad competencies were identified as necessary for command: physical, intellectual, emotional, and interpersonal. Command authority was seen in two parts; legal, derived from assigned external sources; and personal, earned through personal credibility. Similarly, command responsibility divided into external and internal facets: the first extrinsic; and the second, intrinsic. Sharpe and English, *Principles for Change in the Post-Cold War Command and Control of the CF...*, 73-75.

interpersonal competency, which will prove crucial for forging trust relationships and an effective mission command climate. Intrinsic responsibility is viewed as the most fundamental and a function of individual self-generated obligation or “the amount of ownership taken and commitment expressed.” Personal authority is “given informally to an individual by peers and subordinates... earned over time through reputation, experience, strength of character and personal example.”⁷⁹ The strong bonds of shared trust required for mission command are defined where these two concepts intersect, and by the level of interpersonal competency a commander may demonstrate.⁸⁰

Ultimately, it is the timely and properly articulated intent of commanders, complemented by their ability to “build and maintain trust through... decisions, actions, and interactions,” which will determine force effectiveness.⁸¹ Intent has been defined in two ways: explicit and implicit. The first directs actions in foreseen circumstances, while the second serves as a guide in unforeseen circumstances.⁸² Mutual understanding of implicit intent must be fostered over time, as with trust. Leadership determines the climate within which unity of purpose, trust, and cohesion will combine to achieve effect and the leader’s perceptions are central in defining the reciprocal nature of any trust relationship.

⁷⁹ *Ibid.*, 74.

⁸⁰ *Ibid.*, 73. Interpersonal competency is considered “essential for interacting effectively with one’s subordinates, peers, superiors, the media and other government organizations.”

⁸¹ DND, *Leadership in the Canadian Forces: Conceptual Foundations ...*, 73.

⁸² Department of National Defence, *Capability Development Record – Command version 1.0: Enabling Command for the Contemporary Operational Environment*, Prepared under contract by Paul de Grandpre, Walter Holmes and James Holsworth. (Draft with n.p., Director General Land Capability Development, 20 June 2006), 10.

This examination of mission command has been directed at the human or personal interactions that are such strong determinants of success, particularly at the tactical level. It is the leader who determines the degree to which a subordinate may be ready for an increase in delegated responsibility, balanced against the requisite level of supervision.⁸³ For a multi-functional combined-arms unit or formation composed of distinct capabilities from different locations, a commander will remain that much more challenged to discern subordinate leader and group competencies prior to force reconfiguration and dispersal.

Leadership in a Dispersed Environment: Decentralized Empowerment

Though the dispersal of land forces has been an enduring trademark in warfare, several factors can be seen as responsible for redefining the need for dispersion in ground combat. The increasing requirement for discriminatory effects, the popular risk aversion to military casualties within modern democratic nations, and the demands of asymmetric warfare, have all prompted theorists to rethink old concepts with changed rationale. However, the most significant impetus has been technological change. A look at the pressures imposed by dispersion upon command systems and leadership must be considered within a network-enabled context.

Any examination of how the network will influence the human act of command should first be accompanied by an explanation of the function of control, and how it is linked to command. Older doctrinal explanations appear inadequate.⁸⁴ For consistency

⁸³ Major J.W. Hammond, "First Things First: Improving Canadian Military Leadership," *Canadian Defence Quarterly* (Summer 1998), 10.

⁸⁴ In B-GL-300-003/FP-000 *Command*, control is defined as "merely one aspect of command." The NATO definition is provided, but deemed insufficient in that control should include "feedback from the bottom-up" with respect to action taken and not viewed solely in a "top-down direction." NATO defines

with an earlier reference to dimensions of command, the “human-centred theories” of Pigeau and McCann will be applied. Control is defined as “those structures and processes devised by command to enable it and to manage risk.”⁸⁵ Based on human factors, emphasis was placed upon making a distinction within the well worn combination of the two, thus command and control (C2) in the military sense is defined as “the establishment of common intent to achieve coordinated action.”⁸⁶ Common intent encompasses both the explicit and implicit, and the relative balance between the two will determine whether an organization should be regarded as centralized (more explicit) vice decentralized (more implicit) in governing its activities.⁸⁷

Too often analysis fails to specify limits to decentralization and account for the differing command requirements at the tactical through strategic levels. In assessing the impact of network enabled effects observations on span of control (structural), connectivity (procedural), and command (human) will remain focused at the modular “seam” between the combined-arms battle group and its parent land force formation headquarters. Some general conclusions will remain useful, particularly given an officially articulated intent to network “future command systems (that) enable mission command down to the individual soldier.”⁸⁸

control as “the process through which the commander, assisted by his staff, organizes, directs, and coordinates the activities of the forces allocated to him.” DND, B-GL-300-003/FP-000 *Command...*, 1-8 and 1-9.

⁸⁵ Structures are “attempts to bound the problem space and give context within which creative command can express itself,” while processes are “sets of regulated procedures that allow control structures to perform work.” Sharpe and English, *Principles for Change in the Post-Cold War Command and Control of the CF...*, 77.

⁸⁶ *Ibid.*, 79.

⁸⁷ *Ibid.*, 80.

⁸⁸ DND, *Capability Development Record – Command version 1.0...*, 11.

Span of control: a flattening hierarchy?

Some of the more ardent proponents of information warfare proclaim that the days of the “fighting network” have truly arrived. They suggest that this new military organization is composed of “interconnected but autonomous cells” that are “linked together by secure, networked communications systems.”⁸⁹ Possessing greater lethality, the cells are hardened from attack by virtue of a flatter hierarchy, self-sufficiency and decentralized decision making. However, it is somewhat spurious to claim technology will necessitate that a conventional military joint task force will have cause to make hierarchical adjustments more synonymous with a networked structure of terrorist cells.⁹⁰ Still, advocates believe traditional, centralized hierarchies are no longer efficient in an information age where all in a network are empowered to critically think and act on common information. Vertical “stovepipes” have become even more of an encumbrance, whether in a direct command relationship or within a headquarters staff.⁹¹ Finally, the decentralized system of command necessary for any military force seeking to adopt a “swarming” doctrine was judged to be incompatible with a hierarchical command

⁸⁹ Berkowitz, *The New Face of War...*, 16-17.

⁹⁰ Lawrence Freedman suggests “such claims should be treated with care” as assigned methods of combat require very different operating approaches. The terrorist cell goes to great lengths to evade opposing security elements, while the conventional military force is an overt agent of national power. Freedman, *The Transformation of Strategic Affairs...*, 88.

⁹¹ Lieutenant-Colonel Bernd Horn and Regan G. Reshke, “Defying Definition: The Future Battlespace,” in *Towards the Brave New World: Canada’s Army in the 21st Century*, eds. Lieutenant-Colonel Bernd Horn and Peter Gizewski (Kingston, Ontario: Directorate of Land Strategic Concepts, 2003), 96; see also Alberts and Hayes, *Power to the Edge...*, 215-216; an analysis of the current J structure for U.S. operational level military staffs was highly critical of the hierarchical “decreased span of control” and “lack of empowerment at the lower levels.” The study advocated a more horizontal or circular model to enable more collaborative and adaptive planning, in Major Eric M. Mellinger, “Cutting the Stovepipes: An Improved Staff Model for the Modern Unified Commander,” (Quantico, VA: USMC Command and Staff College Master of Military Studies Student Research Paper, 2001), 19-20.

structure; the “extremely flat organization would place too much demand on the overall commander.”⁹²

Canadian Army command doctrine refers to a “span of command” in describing the number of subordinate organizations directly linked to a commander and what constitutes an “optimal span.” Despite the potential detriments of narrower spans of command and control, or the technological benefits that may come with a widened structure, command effectiveness is determined by the intensity and number of “active points.”⁹³ This optimal number is assessed at between four or five. Brig. Gen (retired) Wass de Czege surmised in a 2001 commentary on information technology and future battle command that “broader spans of control and flatter organizations” may be suitable for higher formation level headquarters (i.e. division) where a commander possesses a sizeable staff. However, he believed the demands and intensity of close combat at lower echelon units, “and the continued importance of face to face leadership, will leave the span of command similar to today’s.”⁹⁴ This conclusion emphasizes the idea that the concepts of command and control are separable and heavily influenced by the human factor. How the human handles the “heavy moral and cognitive burdens” of command will not be comparable to his/her ability to process information obtained from an expanded network of control.⁹⁵

⁹² Edwards, *Swarming the Battlefield...*, 73.

⁹³ DND, B-GL-300-003/FP-000 *Command...*, 4-7 and 4-8.

⁹⁴ Brig. Gen. Huba Wass de Czege and Maj. Jacob D. Biever, “Future Battle Command: Where Information Technology, Doctrine and Organization Meet,” *Army* (August 2001), 12.

⁹⁵ Wass de Czege and Biever, “Soldiers-Not Technology- Are the Key to Continued Superiority”..., 10.

In any decentralized unit or organization that increases span of command with the addition of more diverse capabilities, “lateral, or horizontal” trust relationships will be ever more important. One argument would suggest the group should be stronger as a whole in a more lateral configuration where failure in one vertical trust relationship might not have as negative an impact as in a more hierarchical structure. On the other hand, a structure with fewer vertical relationships might enable the commander and subordinate leaders to establish stronger bonds given a narrower span of command. Similar logic can be applied to a commander and headquarters staff construct. Even with acknowledgement of a qualitative dimension to these vertical interactions, neither view sufficiently explains how each structure is affected by the balance of shared explicit or implicit understanding of command intent.

Some have suggested the translation of intent into action will be “more rapid and less vulnerable to friction” with fewer consecutive command echelons.⁹⁶ Yet, a narrower hierarchical structure with strong cohesion and a high degree of shared implicit intent should be able to operate in a wider, dispersed array governed by decentralized authorities without necessarily flattening the span of command. A United States Army War College Network Centric Warfare case study of Operation Iraqi Freedom (OIF) combat operations found that the provision of “near-real-time information” alone enabled decision-makers “to rapidly understand the situation and make timely decisions for their level of responsibility.” The study added this may not equate to “flattening the hierarchy”, rather:

The perspectives and functions of commanders and staffs at each level of war are different, each is relevant and important, and they are not

⁹⁶ Wass De Czege and Sinnreich, *Conceptual Foundations of a Transformed U.S. Army...*, 30.

diminished by an increase in situational awareness. Indeed, they may be increased.⁹⁷

This reaffirms the notion that it is the human in command who will determine the relative effectiveness of the structures and hierarchies in support. As Wass de Czege had foretold, “a hierarchical command system will remain essential, but it must not be overly centralized.”⁹⁸ Clearly, decentralized empowerment to a dispersed force will benefit from the greater situational awareness technology has provided, but what matters will be the trust-based relationships within the command and staff team.

In consideration of the tactical level “connections” defined earlier, theorists believe there may be a requirement to increase the “leader-to-led” ratios at sub-unit and below, but increases in span of command would be unlikely at unit and brigade group.⁹⁹ However, the staff capabilities required at those levels will need to be more robust and capable of handling the quantity and complexity of information. Recent Canadian Army force employment concept experiments in Adaptive Dispersed Operations examined the degree to which an “optimized battle group” might be dispersed on the battlefield. Given assigned capabilities, some observers voiced concern that the number of subordinate

⁹⁷ United States, Department of Defense, Office of Force Transformation, *U.S. V Corps and 3rd Infantry Division (Mechanized) during Operation Iraqi Freedom Combat Operations (Mar-Apr 2003)*, Volume III: NCW Insights, Network Centric Warfare Case Study (U.S. Army War College, Carlisle, PA, 28 Feb 2005), 21; available <http://www.of.t.osd.mil/initiatives/ncw/studies.cfm>; Internet; accessed 14 Mar 07.

⁹⁸ He added that the framework will need to be governed by “mission-type orders command supported by an integrated network of cooperating staffs.” Wass de Czege and Biever, “Future Battle Command: Where Information Technology, Doctrine and Organization Meet” . . . , 12; from a strategic affairs perspective Lawrence Freedman observed that few hierarchies can cope if totally flat – priorities need to be set, resources allocated, and situations developed. Freedman, *The Transformation of Strategic Affairs* . . . , 89.

⁹⁹ Wass de Czege and Biever, “Soldiers-Not Technology- Are the Key to Continued Superiority” . . . , 11.

elements reporting to the battle group headquarters was in excess of accepted norms.¹⁰⁰

The validity of these concerns could be questioned when one considers the likelihood that subordinate layers of combined-arms groupings will be aggregated as the situation dictates, and not employed autonomously. The battle group, as an agent of tactical action, will retain a limited yet manageable number of “lead” sub-units prepared to apply combined-arms fire and manoeuvre in response to “pull” from intelligence, surveillance, and reconnaissance (ISR). Once mission reconfigurations, supported and supporting relationships, and task duration are assigned, the weight of effort within the controlling structure can be determined. Traditional approaches of envisioning the battle “two levels down” and understanding the requirements “two levels up” have always prepared a battle group headquarters to preside over decentralized operations.¹⁰¹ What will become important with respect to adaptability will be the increasing requirement for a capable “all-arms platoon group.”¹⁰² Facilitated by a common operating picture, more junior leaders will be called upon to integrate a “full set of capabilities” and achieve competence within assigned limits of time and space. Familiarity and frequent training over time must build the necessary tactical proficiency, integration and leader confidence as the foundation for an increased devolution of authorities within the battle group.

¹⁰⁰ The limits of leader effectiveness were presented as in the range of 5-7 subordinate elements vice the eleven assigned capabilities. Department of National Defence, *Proceedings of Adaptive Dispersed Operations: The Force Employment Concept for Canada’s Army of Tomorrow during Army Experiment 9A, 23 November-1 December 2006* (Kingston, Ontario: Director Land Concepts and Doctrine, n.d. - received electronic version 11 April 2007), 23.

¹⁰¹ Wass de Czege and Biever, “Future Battle Command: Where Information Technology, Doctrine and Organization Meet” ..., 12.

¹⁰² DND, *Proceedings of Adaptive Dispersed Operations (Army Experiment 9A, 2006)*..., 21.

Finally, the battle group will be impacted by the changing nature of the brigade group headquarters above, and the quality of that connection will be affected by span of control issues within the formation staff itself. A propensity for staff to become subsumed by information demands and process, vice analysis, was described earlier as part of a detrimental command climate. Increases in the staff size of higher headquarters have been an enduring problem. The operational need for a myriad of additional specialists or liaison cells (i.e. coalition and other government department integration, legal and policy advisors, information operations, etc...) has grown in response to the demands of simultaneous full spectrum operations. Critics have stated this “self-imposed complexity” has not been “a consequence of digitization.”¹⁰³ Though this may be true where headquarters are expanding staff functionality without necessarily fielding improved information systems, the burgeoning demands of new technology are indeed reshaping commander and staff relationships, and how the higher headquarters interacts with the units assigned. Some proponents for change believe the entire “J” staff organizational structure has evolved into an overly vertical and “stovepiped” system that neither responds to an operational commander’s needs nor collaborates effectively.¹⁰⁴ Where higher headquarters have become hampered by vertically deep functional branches and large, unwieldy spans of control, alternative approaches should be investigated. However, it is important not to misinterpret lessons and readily accept structural reform as a necessity due to poor collaborative practices, or self-induced failure to empower staff at all levels. Some degree of vertical hierarchy will enable the commander to fully develop

¹⁰³ U.K., British Army, *The Command of British Land Forces in Iraq, March to May 2003*..., 8-9.

trust relationships with functional principals who in turn must be responsible for promoting an integrated command and staff team. Cohesion and proficiency in the use of advanced information systems will take time.

Connectivity: an enabler for “connectedness?”

In his landmark book *Virtual War*, Canadian scholar Michael Ignatieff explored the interplay of morality, control, and new technology in modern warfare. He introduced the idea of the “virtual commander,” beholden to both the connectivity of video teleconferencing (VTC) and the relative accuracy of “virtual data” used to drive critical decisions on strategic targeting.¹⁰⁵ The essential elements of command, control, communications, and computers (C4) used to bind a military force could themselves be affected decisively by a variety of precision means, delivered from longer ranges and greater stand-off. Now paradoxically, commanders at multiple levels find themselves enabled by technology but increasingly detached from both the battle area and their soldiers. The degree of “connectedness” achieved is subject to technical limitations, information mismanagement, and the vulnerability of those connections to enemy and weather effects.

The United States military clearly enjoys a significant technological advantage on the battlefield and some analysts believe that network enabled operations successfully achieved initial validation during the major combat actions of Operation Iraqi Freedom. In a summary of findings for the U.S. Army War College Center for Strategic

¹⁰⁴ Mellinger, “Cutting the Stovepipes: An Improved Staff Model for the Modern Unified Commander,” ..., 61.

¹⁰⁵ Michael Ignatieff, *Virtual War* ..., 102-103.

Leadership, professor Dennis Murphy commented that though land operations and command ability in V Corps and 3rd Infantry Division (U.S.) were enabled by networked information technology, the “‘fog and friction’ of war was not eliminated.”¹⁰⁶ Despite some dramatic improvements in the rapid and accurate flow of information, a cross section of after action reports and case studies on network centric warfare lessons revealed both strengths and weaknesses with the U.S. Army operational experiences of 2003.

Though the network was considered immature and partially fielded, tactical success was derived from much improved situational awareness and information sharing, otherwise known as the common operating picture (COP).¹⁰⁷ Often associated more with information systems, imagery, and technical interfaces, one serving officer described it as much more: “COP is really a common understanding of the battlefield in both space and time...people who have known each other for a while have an intuitive knowledge of the actions and reactions the other person might have in certain circumstances.”¹⁰⁸ For command and staff teams who were trained and well exercised upon these systems, commanders were able to make better decisions with greater rapidity and confidence, while simultaneously engaged in conducting the battle from tactical command posts rather than a main headquarters. Staffs were able to direct more time towards analysis

¹⁰⁶ Professor Dennis Murphy, “Network Enabled Operations in Operation Iraqi Freedom: Initial Impressions,” *CSL Issue Paper, Vol 06-05*, (U.S. Army War College, March 2005); available from http://www.oft.osd.mil/initiatives/ncw/docs/csl_issue_paper_0605.pdf; Internet; accessed 14 Mar 07, 2.

¹⁰⁷ United States, Department of Defense, Office of Force Transformation, *U.S. V Corps and 3rd Infantry Division (Mechanized) During Operation Iraqi Freedom Combat Operations (Mar-Apr 2003), Volume III: NCW Insights*, Network Centric Warfare Case Study (U.S. Army War College, Carlisle, PA, 28 Feb 2005); available at <http://www.oft.osd.mil/initiatives/ncw/studies.cfm>; Internet; accessed 14 Mar 07, 9.

¹⁰⁸ Rob Thornton, “Paragraph V in a Network Centric Environment and its Impact on Operations,” *Infantry*. Vol. 94 Issue 5 (September/October, 2005), 17.

vice assembling data. This ultimately facilitated a decision-making shift from staff-centred planning to commander-centred execution. Finally, the full benefits from a common operating picture were only realized when complemented by extended voice communications and an ability to immediately convey “unity of command and effort.”¹⁰⁹

Still, network enabled systems and processes were not without shortcomings. Poorer than expected fidelity on the enemy situation, stovepiped operating systems by function, along with inadequate bandwidth, all curtailed overall effectiveness. The latter was a particularly acute problem that was deemed to require “command attention for prioritization and distribution.”¹¹⁰ Allies differed in their assessments as to whether or not positioning systems truly contributed to an avoidance of fratricide, and when considering connectivity in the context of integration within a battle group or to higher headquarters, there was a dearth of information technology below brigade.¹¹¹ Finally, the standardization and compatibility of differing systems proved problematic, not only within the joint force but also across coalition lines.

Notwithstanding critiques, it is hard to argue with results on the battlefield and network enabled capabilities were employed decisively in combat by commanders during OIF. Greater degrees of dispersion, increased situational awareness, and effective

¹⁰⁹ United States, DoD, OFT, *U.S. V Corps and 3ID (Mech) during OIF Combat Operations (Mar-Apr 2003), Volume III: NCW Insights...*, 14-15; Murphy, “Network Enabled Operations in Operation Iraqi Freedom: Initial Impressions”..., 2-3.

¹¹⁰ Capt Rob Thornton, in particular, stressed the need for command direction on bandwidth allocation, “to ensure the user who needs it, has it when it is needed.” As a limited resource he firmly believed the allocation needed stipulation in formal orders, similar to priorities for engineer efforts or supporting fires. Thornton, “Paragraph V in a Network Centric Environment...” 19.

¹¹¹ United States, DoD, OFT, *U.S. V Corps and 3ID (Mech) during OIF Combat Operations (Mar-Apr 2003), Volume I: Operations...*, 4; an observation validated from British experience during Op TELIC. U.K., British Army, *The Command of British Land Forces in Iraq, March to May 2003...*, 15-16.

synchronization of efforts in time and purpose allowed forces to stay connected in ways not yet experienced in battle. However, balanced post operational assessments were guarded in their optimism, realizing the situational nature of initial combat operations in 2003. The U.S.-led coalition fought an Iraqi military that was outmatched conventionally in all respects and lacked any means to conduct a network attack that may have hindered coalition connectivity.¹¹² Thus, a more complex environment and capable opponent may prove much more effective in stressing the robust composition of any information network.

Commanders need to prepare and train for contingencies when the connectivity “backbone” fails and legacy processes must be utilized. Assessments found that the network could not replace the critical command functions of assigning responsibilities and authorities, coordination, proper preparation and rehearsal, or leadership.¹¹³ Thus, while the enabling value of the network was proven, the pivotal role of the human was clearly asserted in a number of OIF after action reports.

Command and control (C2) in NEOps: the human dimension.

The idea of network effectiveness and the qualitative link between command and the human dimension was introduced in the beginning of this chapter. The command interactions within military information and human networks are subject to an interesting dichotomy. While technological enhancements can certainly enable the function of control (nested within a concept of command), it is the primacy of a command and trust relationship that dictates how well that control is exercised; the degree of effectiveness in

¹¹² United States, DoD, OFT, *U.S. V Corps and 3ID (Mech) during OIF Combat Operations (Mar-Apr 2003), Volume I: Operations...*, 3.

creating “common intent and coordinating action” is subject to individual and collective human limits. What constitutes a manageable span of control for commanders and staff at unit level and above? To what extent has a force been able to develop quality trust relationships over time, honing network proficiencies in connectivity and building cohesion? Though the leader remains instrumental in establishing these structural and procedural parameters, human abilities govern how well information is perceived, understood, and acted upon. Command and control systems and information networks have brought both functional challenges and advantages to test command competence and the devolution of authorities.

Two of the most commonly cited new challenges to effective command and control involve information overload and the potential for superior commanders to practice greater micromanagement. The requirement to quickly discriminate what is essential from multiple sources has complicated the task of control. Not only may different levels fail to gain a uniform interpretation of available data, but staffs may encounter difficulty filtering the flow of information to a commander at a “manageable rate.”¹¹⁴ The problem is only amplified in a dispersed environment where more inputs must be processed, and at lower tactical levels of command where staffs are likely leaner.¹¹⁵ However, as disclosed in OIF after action studies, these drawbacks can be

¹¹³ *Ibid*, 4-5.

¹¹⁴ English, *et al.*, *Beware of putting the cart before the horse...*, 64, 68-69; Lawrence Freedman also discusses the inherent problems “of sorting information” and “distinguishing the important from the trivial,” Freedman, *The Transformation of Strategic Affairs...*, 17.

¹¹⁵ A Director Land Concepts and Doctrine (DLCD) seminar wargame and follow on synthetic experiment with the Adaptive Dispersed Operations concept both highlighted the difficulties encountered by battle group HQ staffs in dealing with large volumes of information and the simultaneity of kinetic and non-kinetic actions. DND, *Proceedings of Adaptive Dispersed Operations (Army Experiment 9A, 2006)...*

mitigated through increased training on information systems to prevent skill degradation.¹¹⁶

Mitigation of the second major challenge, the potential empowerment of micromanagers, should prove more difficult, as this is within the capacity of a given commander to change. It is ironic that the far greater levels of situational awareness created by the information network may prompt a commander to attempt the control of lower tactical level events with increasing regularity. Unfortunately, by doing so he/she may either undermine a previous command relationship built on trust, or prevent the formation of a new one. This constitutes a clear failure in both mission command philosophy and the idea of qualitative connections between formation and unit, or within the unit itself. Some concern has been voiced over the possibility of “forward meddling” from the strategic/operational to tactical levels; the bigger worry involves “field commanders meddling with their immediate subordinates.”¹¹⁷ However, the documented U.S. experience from OIF combat operations in 2003 did not indicate this to be problem, either due to the effective use of “mission orders,” or constraints upon the imposition of “a highly centralized C2 structure.”¹¹⁸ This tension will undoubtedly remain should commanders seek to retain central control of key enablers instead of anticipating requirements and devolving assets to lower levels when necessary.

8 and 16; Department of National Defence, *Proceedings of the Army of Tomorrow Seminar Wargame 28 August – 1 September 2006* (Kingston, Ontario: Director Land Concepts and Doctrine, n.d.), 14.

¹¹⁶ United States, DoD, OFT, *U.S. V Corps and 3ID (Mech) during OIF Combat Operations (Mar-Apr 2003), Volume III: NCW Insights...*, 20; Murphy, “Network Enabled Operations in Operation Iraqi Freedom: Initial Impressions”..., 3.

¹¹⁷ DND, *Proceedings of Adaptive Dispersed Operations (Army Experiment 9A, 2006)...*, 21-22.

Rather than succumb to pressures towards more centralized control, command during the combat phase of OIF exploited two notable functional advantages facilitated by greater shared situational awareness: one, a willingness to collaborate and demonstrate lower level initiative; and two, increased tolerance for calculated risk.¹¹⁹ Both are trademarks of a more adaptive force that is governed by higher levels of trust, shared vertically and laterally within the chain of command. As a result post-operational recommendations in the U.S. Army NCW Case Studies from OIF proposed both a shift in terminology from network centric to “net-enabled, commander-centric warfare,” and adjustments to the tenets of NCW in order to better reflect human factors.¹²⁰

Yet, for all the advantages a robust information network might provide for tolerating greater risk, as with apprehensions over command interference vice support to subordinate freedom of action, interpretations of acceptable risk will continue to pose acute dilemmas for leadership in a dispersed environment. Though rendering decisions on matters of manoeuvre, supporting enablers, and sustainment are one important aspect, it is the exercise of command itself around the “modular seam” described earlier that remains critical. “Leader example”, and “shared discomfort and danger” are fundamental to vertical cohesion in USMC doctrine, and an important aspect of “leading people” and

¹¹⁸ These constraints were reported as bandwidth and “the vast number of small units involved in execution.” United States, DoD, OFT, *U.S. V Corps and 3ID (Mech) during OIF Combat Operations (Mar-Apr 2003), Volume I: Operations...*, 59-60.

¹¹⁹ In 2005 the Aylwin-Foster observations on the effectiveness of U.S. Army counterinsurgency efforts during the Iraqi conflict stand in contrast to the notion that centralized control may not have been a problem. However, mission requirements, objectives, and benchmarks for success had changed markedly from the earlier combat phase.

¹²⁰ United States, DoD, OFT, *U.S. V Corps and 3ID (Mech) during OIF Combat Operations (Mar-Apr 2003), Volume I: Operations...*, 59-61. Recommendations sought to change the NCW “value chain” to include the principles of “audacity,” “initiative,” and “individual and shared sensemaking.” The latter was described as a better way to express the cognitive requirement for the functions of understanding and decision-making, rather than simply shared situational awareness.

“mission success” within Canadian leadership doctrine.¹²¹ The ability to share risk has been pinned directly to the amount of respect soldiers will afford their leaders. It is debatable as to how much a sub-unit commander may ever become truly detached, even given expedient reconfiguration and dispersal.¹²² However, the potential for impact at the battle group level is much greater should the qualitative nature of integral command “connections” suffer at the hands of a commander who elects to coordinate added complexities from a position of relative security. This would be exercised through an information network (via VTC, for example) rather than by accepting the greater risk of trying to remain more physically connected within a dispersed battlespace. Equally, the commander can choose to empower subordinates, or micromanage. It appears two timeless human problems - detachment in command, and a propensity for more centralized control – may have merely changed their faces once again.

This chapter has sought to emphasize the critical elements of human interaction in command and the key role for leadership in binding military groups into a cohesive force, connected across multiple networks. To enable a unit or formation to adhere to the principles of mission command, commanders at all levels must create an environment where subordinates have the skill sets and adaptability to execute delegated responsibilities with confidence and innovative thinking. Mission success will depend upon the degree of reciprocal trust that exists vertically between leaders and led, and ever more importantly in a dispersed environment, laterally between functionally different yet supporting capabilities. The relative balance between understood explicit and implicit

¹²¹ USMC, *Sustaining the Transformation*, MCRP 6-11D...), 38; DND, *Leadership in the Canadian Forces: Conceptual Foundations...*, 48 and 73.

intent will determine the degree of centralization within the combined-arms team, and limits should be clearly prescribed. The quality of human interaction and the degree of shared trust within a unit or command team will remain the key determinant of combined-arms effectiveness.

The quality of combined-arms battle group internal and external command connections will clearly be affected by network enabled effects. Though an increased battle group headquarters staff will be necessary to cope with information technology demands, the requirement for a traditional hierarchy and physical leadership will remain. A flattened span of control is not a certain result within the modular force, either at the battle group level or the higher tactical land formation headquarters. A high degree of shared implicit intent and common situational awareness among networked and dispersed elements will allow for an increased devolution of authorities. The all-arms platoon group will be deployed more often and tactical proficiency, integration, and junior leader confidence must be built through frequent training and familiarity between affiliated arms.

Commanders at multiple levels find themselves enabled by technology but increasingly detached from both the battle area and their soldiers. Improved situational awareness will allow the command and staff team to provide more rapid analysis, decision-making, and the synchronization of multiple effects - providing all elements can forge a common understanding of the battlefield in both space and time. In order to establish an effective degree of “connectedness,” technical networks will need to be fielded simultaneously to the lowest levels of dispersal while commanders empower those subordinates to operate within a mutual understanding of command intent. Most

importantly, combat success in a dispersed, decentralized environment will be determined by the ability of the commander to rigorously prepare the force to operate in an increasingly complex and networked information domain while preserving a cohesive human network and mission command climate. Leaders at all levels must remain focused upon what they must influence and leave subordinate commanders and staff to execute assigned missions with freedom of action. How well have the Canadian Army and its leadership been prepared to succeed on the dispersed, decentralized battlefield and what should be the future focus for any modular force design? This will be the focus of the next chapter.

It is through its soldiers that the Army manifests those qualities of decency, tolerance, compassion, innovation, genius, will-power, fighting spirit, and humanism that has marked Canada's reputation in the world. The Army's priority of effort then, must be that of developing in officers and soldiers those personal qualities, intellectual skills and professional attributes required to function effectively in the future security environment.¹²³

CHAPTER FOUR – MODULARITY AND THE CANADIAN ARMY

It is a historical constant in western democracies that an army's quality and capacity to fulfill articulated national defence obligations will ebb and flow in response to societal change and the degree of support received from civilian political masters, the larger defence establishment, and the national populace as a whole. The Canadian Army's fortunes have fluctuated between post-wartime accolades and inevitable intervals of perceived peacetime decline.¹²⁴ To what extent any one period might be considered more of a nadir than another will remain a matter of historical debate. The Canadian Army is now over ten years beyond what military historian David Bercuson once described as a general "state of crisis," abruptly and visibly exposed following select incidents of misconduct in Somalia and the eventual disbandment of the Canadian Airborne Regiment.¹²⁵ While others asserted damningly that failings in professionalism

¹²³ Lieutenant-General (Retd) Romeo Dallaire and Major Robert Near, "Securing the Army's Future: enhancing the conflict resolution capability of the Canadian Army for the 21st Century," in *Contemporary Issues in Officership: A Canadian Perspective*, ed. Lieutenant-Colonel Bernd Horn, 239-267 (Toronto: Canadian Institute of Strategic Studies, 2000), 264.

¹²⁴ The forging of Canada's "Shock Army of the British Empire" in WWI and the emergence of "the Best Little Army in the World" following WWII have been regarded as highpoints in Canadian Army professionalism and capability. While the military was subject to more rapid decline during the Interwar period, it would not be amiss to suggest the Korean War and commitments to NATO European collective defence prolonged the need for a truly capable "warfighting" service; gleaned from John English, *Lament for an Army: The Decline of Canadian Military Professionalism*. (Toronto: Irwin Publishing, 1998).

¹²⁵ During a 1993 deployment to Somalia, two soldiers of the Canadian Airborne Regiment Battle Group murdered a Somalia teenager who had been detained. This initiated a protracted period of scandal and investigation within the Canadian Army, negatively impacting public perception of the Canadian

and leadership quality were comparatively worse than at any time prior, Bercuson chose to acknowledge the dedication of a “solid majority” of professional soldiers “increasingly marginalized,” yet persevering through turbulent times.¹²⁶

The Canadian Army’s readiness to meet the demands of a dispersed, decentralized battlefield is both a product of history, and maturing doctrine through the 1990s.

Doctrinal publications on Command, Operations, Tactics, and a capstone manual entitled *Canada’s Army* had all been released by 1998. While historians commented upon decline, the Army was already taking charge of its future. By 2001-2002, robust training doctrine had been published, as had an Army strategy, *Advancing with Purpose*, which provided both a contemporary assessment of strengths and weaknesses, while prescribing a vision for the future. Since then a defined force employment concept, Canadian Forces leadership doctrine, and a host of publications capturing experimentation and concept work on a future force have been added.¹²⁷ Though some assert Canada is an importer of concepts and doctrine, the record would indicate a different reality; Canadian thought has incorporated Allied concepts, but also been critical, independent, and leading edge.

Forces and discrediting the highest levels of command. See David Bercuson, *Significant Incident: Canada’s Army, the Airborne, and the Murder in Somalia* (Toronto: McClelland and Stewart, Inc., 1996); for more information see reports from the Commission of Inquiry into the Deployment of Canadian Forces to Somalia, *Dishonoured Legacy: the Lessons of the Somalia Affair*, Executive Summary (Ottawa: Public Works and Government Services Canada, 1997).

¹²⁶ Bercuson attributed marginalization to “a country, government, and defence structure” that had forgotten the value of “military virtues” and the requirement for armies to “fight wars.” Bercuson, *Significant Incident...*, vii; conversely, John English used troubles in Somalia to proclaim that the army had “lost its way,” honour, and suffered from institutional and field leadership deficiencies. Serving officers and soldiers entrusted with navigating the army through a decade of dramatically increased operational tempo and equal resource constraints might take issue with such a broad indictment. English, *Lament for an Army...*, xi-xii.

¹²⁷ The publication of key doctrinal references has not been confined to the Army. Since 2000 important CF Manuals (i.e. various Operations, the Laws of Armed Conflict) have been released also.

This is not to understate the influence of allied intellectual developments, particularly from within the American-British-Canadian-Australian (ABCA) program. The commitment to battlefield dominance, resources, and clear technological advantages of the U.S. military will continue to demand attention. Incorporating U.S. thoughts on tactical battle command, enabled technology, and information networks will often be a byproduct of observing lessons from *first* practice. Importantly, this paper has devoted considerable analysis to Canadian theories on leadership, command, cohesion, the human dimension, and emergent battlefield concepts, in addition to further critiques of network centric warfare.

How best should one apply the principal themes and conclusions from earlier chapters to the Canadian Army of today and tomorrow? In light of the importance placed upon human abilities and interactions, does it still make sense to apply systems jargon, like “modularity?” Chapter Two introduced the fundamental stressors of battlefield dispersion, information network demands, and the need for adaptive reconfigurations. Chapter Three focused on the dynamics that bind a military force, how to achieve quality in command and decentralized decision-making, and the pressures of dispersion upon leadership, cohesion, and reciprocal trust. Having asserted a clear doctrinal understanding of mission command and an appreciation of human factors earlier in the paper, Chapter Four will shift focus towards some identifiable challenges the Canadian Army will face in generating cohesive battle groups and JIMP-capable formation headquarters for expeditionary employment. Three principal issues requiring ongoing attention are: the creation of expertise through training, practice, and operational opportunity; pan-Army unity of purpose; and organizational combined-arms stability. However, two areas of

primary tension warrant further discussion. First, how well has the Canadian Army operated in a decentralized manner in the past; and second, what have been the historical and doctrinal precedents behind land force regrouping, reconfiguration, and ad hoc structures?

Decentralization and Reconfiguration

It is one thing to espouse concepts of decentralized decision-making in doctrine, but quite another to put them into practice. Training proficiency, morale, and a shared sense of mission purpose at all levels provide situational capacity, whereas a more innate determinant of success would be cultural inclination, established upon a foundation of experience. For the latter, the historical record from the Korean War to present would indicate that a small, professional, volunteer army such as Canada's has proven highly effective in operating in a dispersed, decentralized manner under well-trained small unit and junior leadership. This has been evident when faced with the conduct and preparation for high intensity combat or, apart from a few notable exceptions, when called upon to respond to the complexities of stability operations.¹²⁸

Recent counterinsurgency operations in Afghanistan have demanded an intensity of combined-arms combat not experienced by Canadian soldiers since Korea. Current conflicts have been characterized as the "wars of company and platoon commanders."¹²⁹

¹²⁸ Incidents of field misconduct in Somalia and Bakovici, Bosnia, would indicate that effective leadership was sometimes woefully absent when decentralized. Major Robert Near, "Divining the Message: An Analysis of the MND and Somalia Commission Reports," in *Contemporary Issues in Officership: A Canadian Perspective*, ed. Lieutenant-Colonel Bernd Horn, 65-91 (Toronto: Canadian Institute of Strategic Studies, 2000), 66-67.

¹²⁹ This adage has also been used extensively to describe recent Coalition experience in Iraq. Department of National Defence, *A Report on the validation of the transformed Canadian Forces command*

A selective appreciation of Canadian Army historical success with decentralized leadership will consider four areas; the Korean experience, aspects of the airborne ethos, stability operations in the Former Yugoslavia (FRY), and the 4 CMBG combined-arms legacy. The focus is not meant to be exclusionary; the historical importance of decentralized leadership can be explained also in the context of specific capabilities, unique operations, or operations in complex terrain.¹³⁰ Observations are merely designed to illustrate how command approaches have permeated the training and culture of the wider Army, and if not, why they should.

In Robert O'Neill's analysis of Allied leadership in the Korean War, he identified how the "operational code and style of leadership" of the Commonwealth infantry differed from U.S. counterparts during "a war fought largely by patrols and raiding parties in the last two years." Command and control was deemed more flexible, and initiative delegated to company and platoon commanders in response to operational demands. Further, personal relations were seen as "less formal and more functional," with standing determined more through performance "on patrol" vice rank.¹³¹

Similar concepts of battlefield self-reliance at the lowest levels extended to airborne soldiering. The relevance of the paratrooper warfighting ethos to Canada clearly predates Korea and has carried on with today's light forces. Notably, it is the functional

structure, Prepared by Lieutenant-General R.R. Crabbe (ret'd), Vice Admiral L.G. Mason (ret'd), and Lieutenant-General F.R. Sutherland (ret'd), (electronic copy with n.p., 31 January 2007), n.p.

¹³⁰ Armoured reconnaissance, dispersed anti-tank assets would be some capability examples. The requirement to designate alternate leadership as part of an airmobile, amphibious, or airborne "bump" plan, or Canadian success in fighting in urban terrain all necessitate the practice of decentralized command.

¹³¹ Robert O'Neill, "U.S. and Allied Leadership and Command in the Korean and Vietnam Wars," in *Leadership & Command: The Anglo-American Military Experience since 1861*, edited by G.D. Sheffield, 179-194 (London: Brassey's, 2002), 189-190.

substance of airborne leadership and trust that merit consideration. Airborne units have traditionally collected some of the most tactically proficient, combat-oriented soldiers from all ranks and branches of the army, but the simple realities in airborne operations have necessitated a requirement to ensure mission intent is understood at the lowest level. Junior leaders must be prepared to replace superiors, often two up, should problems occur with the parachute drop, or injuries be sustained on descent or in combat. Finally, junior NCOs in the Canadian airborne have been entrusted with the greatest responsibility; namely, the lives of all those dispatched from the aircraft. That this should be accepted so comfortably as “an ‘Airborne’ thing” led Bercuson to remark, “this element of trust exceeds that found in any other military unit.”¹³² Of course, decentralized empowerment has made eminent sense for all units preparing for combat, not just the airborne. It was inevitable that the concept should be readily accepted in a small army with a predilection for combined-arms, sub-unit action.

In assessing the value of the Canadian operational peacekeeping efforts John English has made the argument that though “junior NCOs in charge of isolated posts may have faced greater challenges,” on balance the experience in stability operations proved detrimental to the Army’s ability to maintain warfighting focus. Even the idea of “aggressive peace enforcement” in Bosnia was downplayed and seen as fundamentally different.¹³³ Yet, networks of section and platoon houses, company or squadron cantonments separated by extended (and often tenuous) supply lines, isolated radio rebroadcast (RRB) sites, and rotating quick reaction force tasks were all superimposed upon an unpredictable, ethnic conflict zone in the FRY. While collective battle group

¹³² Bercuson, *Significant Incident...*, 184.

warfighting competencies may have suffered, sections through to sub-units were still required to serve dispersed under very difficult conditions and fulfill combat training objectives before being considered ready to deploy. In many respects junior leaders demonstrated adaptability and initiative, gleaned valuable skills in how to successfully engage the local population. What may have been lost at higher echelons was clearly not at the decentralized levels where it was instrumental for mission success.

Regardless of the criticisms levied concerning the relative size and value of Canada's NATO Brigade commitment from 1951-1993, the maintenance of expertise in mechanized, combined-arms warfare would have a lasting impact. Despite fluctuations in capability, basing, manning levels and government support, 4 Brigade was described "as the Army's operational centerpiece (driving and influencing) all matters of army developments in doctrine, training, organization, and equipment."¹³⁴ With the ability to fight multiple combat teams and provide additional supporting enablers, 4 Canadian Mechanized Brigade Group (CMBG) could be considered a "modular" force for its time. Combat teams could be aggregated into battle groups or decentralized for independent tasks of specific scope and duration (i.e. part of a guard, delay or screen). In a tactical formation group with exposure to an array of higher assets, and the ability to build expertise amongst its own component parts, decentralization of command was practiced, forces trained with unity of purpose, and the strains of reconfiguration lessened. It was a

¹³³ English, *Lament for an Army...*, 52, 60-61.

¹³⁴ Sean M. Maloney, *War without Battles: Canada's NATO Brigade in Germany 1951-1993* (Toronto: McGraw-Hill Ryerson Ltd., 1997), 494.

level of proficiency the Army now seeks to reclaim after years of lost capability and “serious skill fade in some areas.”¹³⁵

In the end what is meant when commanders and staff assert the need to adhere to a modular approach? Is the emphasis to be placed upon the level responsible for demonstrating a mastery of how best to mix and match capabilities; and is that formation, unit, sub-unit or all? Does it refer to the lowest “building block” and is that an all arms entity or a homogenous capability which can then be combined? Is the modular force planned deliberately, trained to rearrange itself internally at short notice, or optimized in a high readiness posture? As suggested in Chapter One, should the answer be affirmative “to all of the above” the term is too ambiguous to be of use.

In basic terms, modularity is the act of reconfiguration, or regrouping. For all the talk of “architectures, interfaces, and standards (to) promote encapsulation and minimize interdependency,” it would be better to state clearly what level of command will be responsible for the reconfiguration of capabilities for land force tactical effect, at what point and under what conditions.¹³⁶ To extrapolate from Canadian land force tactical doctrine, does that particular command team fully comprehend the risks in forming ad hoc organizations that “need time to mature and develop procedures, working relationships and the ability to communicate at the level of shared implicit intent?” The doctrine further cautions that regrouping “costs time and effort, and loss of tempo” and “should be minimized.”¹³⁷ Unfortunately, after years of strain attempting to match a

¹³⁵ Specifically, collective training opportunities were described as inadequate for the maintenance of “formation-level combat capability.” Department of National Defence, *Advancing With Purpose: The Army Strategy* (Ottawa: DND, 2002), 6.

¹³⁶ Godefroy, ed., *Land Operations 2021...*, 17.

resource-constrained army against increased operational demands the term “ad hoc” has become negatively synonymous with hasty planning and crisis management. Yet, reconfiguration has long been an accepted, flexible option, as practiced capably by those either seeking to tailor tasks for existing groupings, or well-rehearsed in how to adjust their force quickly in a fluid tactical environment. Simply, adding “modular” in parentheses immediately next to “task-tailored” adds little clarification to parameters and method.¹³⁸

A common theme in this examination has been the quality of vertical connection within the combined arms grouping and the need for commanders to think “two down.” Canadian Army training doctrine clearly affirms the requirement for a “commander two levels higher in the chain of command” to confirm training performance relative to written battle task standards.¹³⁹ Similarly, as noted in Chapter Three, visualizing “two down” involves setting the conditions for success, ensuring provision and coordination of required all arms resources at the right time and right location – understanding “two down” and assigning “one down.” Even for the much larger U.S. Army, theorists such as Major-General Robert Scales Jr.(retired) believe “all of the essential ingredients of fighting power... must be delegated to the lowest level of command (most likely the company) consistent with the ability to fight autonomously for the duration of the tactical

¹³⁷ DND, B-GL-300-003/FP-000 *Command...*, 4-8. The *Oxford English Pocket Dictionary, ninth edition* defines ad hoc as something “created or done for a particular purpose only.”

¹³⁸ The full context was stated as follows: “...the centralization of capabilities...created the environment where the Army now deploys TF using a task-tailored (modular) approach. This task-tailored approach maximizes the employment of the Army’s limited resources with its operational commitments.” Lieutenant-General J.H.P.M Caron, *Managing the Army’s Readiness* (National Defence Headquarters, Ottawa: 3350-1 (CLS)), 25 November 2005, E-1/20.

¹³⁹ Department of National Defence, B-GL-300-008/FP-001 *Training Canada’s Army* (Ottawa: DND, 2001), 9-10 and 73.

battle.”¹⁴⁰ The Canadian Army has understood and practiced this requirement, albeit within fiscal and capability restraints that often allowed collective combined-arms combat skills to be generated to sub-unit level within a higher context only. Battle Group command teams would train in simulation and deploy for field mission rehearsal exercises when assigned stability operations. Since 1992 only with few exceptions has a unit or battle group exercised combat capability within a formation context over a protracted field deployment.¹⁴¹

Capability is built from the bottom up, and in a climate of finite resources, the primary focus upon preserving all-arms combat team capabilities at sub-unit and below has been the correct one. However, it is time to reinvigorate command capacity, knowledge and expertise in how to employ packages of assigned multiple capabilities at higher levels. Situational reconfigurations require practice, and internal connections need to be forged through training. Canadian doctrine fully embraces “the establishment of cohesion” through collective training, echoing many of the Chapter Three themes of this paper in six principal factors in successful training development; these are leadership, stability, experience, depth, team building, and mission command.¹⁴² The critical level for first attention will remain with the combined-arms battle group.

¹⁴⁰ Fighting power was described as the “ability to see, sense, move, shoot, and communicate...” Major-General Robert Scales Jr., “Checkmate with Operational Maneuver: Warfare in the American Age,” in *Towards the Brave New World: Canada’s Army in the 21st Century*, eds. Lieutenant-Colonel Bernd Horn and Peter Gizewski, 113-120 (Kingston, Ontario: Directorate of Land Strategic Concepts, 2003), 119.

¹⁴¹ 1 CMBG was able to achieve this with Exercises PRAIRIE and TOTAL RAM from 1997-1999, and with a limited focus on layers of brigade reconnaissance and command and control nodes during Ex STALWART RAM in 2000. Author’s observation while employed on brigade staff from 1999-2001.

¹⁴² DND, B-GL-300-008/FP-001 *Training Canada’s Army...*, 67-68.

The Canadian Optimized Battle Group

In 2001 Brigadier-General (retired) Ernest B. Beno believed the “real centre of gravity” for the Canadian Army was not the Combat Team as some might suggest, but “it is the Battle Groups that we commit to operations... that are the building blocks for the Canadian Army of today...”¹⁴³ The case has already been made that the true mirror of a U.S. Army “modular” force design for the Canadian Army would be one based upon a combined-arms battle group capable of achieving overmatch across the operational functions. Brigade Groups would provide additional capabilities within means, but with the centralization of some equipment fleets and specific enablers, along with the growing need to synchronize joint and interagency assets, the responsibility for initial organizational reconfiguration will likely remain with the Land Staff. It is through the Land Staff that Canadian Expeditionary Force Command (CEFCOM) will seek advice and confirm the mission capability mix and land force employment requirements. The implementation of the Army Managed Readiness Plan (MRP) in 2005, within an overarching Managed Readiness System (MRS), has provided the process by which the Land Staff generates and sustains Task Forces (original lexicon) for expeditionary operations.¹⁴⁴

There are no new revelations here. In recent years, the Army leadership has openly referred to a “legacy of neglect” and general operational decline in deployable

¹⁴³ Brigadier-General (retired) Ernest B Beno, “The General as a Trainer,” in *Generalship and the Art of the Admiral: Perspectives of Canadian Senior Military Leadership*, eds. Bernd Horn and Stephen J. Harris, 521-552 (St. Catherines, Ontario: Vanwell Publishing Ltd, 2001), 533.

¹⁴⁴ Lieutenant-General J.H.P.M Caron, *Managing the Army’s Readiness...*, 2/10.

land force capability.¹⁴⁵ Despite adoption of Task Force terminology, the Battle Group served as the mainstay for expeditionary deployment throughout this period. What suffered were collective training competencies at higher levels. In all the primary resource material, from training doctrine in 2001 to Army of Tomorrow (AoT) Battle Group experiments in 2007 the consensual understanding is that the Army will train for war in battle groups, governed by an extensive selection of battle task standards, and ideally within “consistent brigade group-level field training exercises.”¹⁴⁶

The current Army leadership has defined a vision for the future battle group that is based upon a homogenous structure, composed of robust balanced sub-units. The concept of this Optimized or Affiliated Battle Group was identified in Chapter Two. A five to ten year transition plan and structure has been articulated, and initial experimentation findings published. A considerably larger study would be necessary to fully examine the host of issues associated with moving toward a permanently, affiliated and co-located battle group; either in assessing whether or not the structure is appropriate for potential force employment, or to expand upon any number of force generation challenges. This paper has sought to avoid discussion of structures in order to focus upon the human dimension and how to create the command capacities required for fostering internal cohesion and effective external connections. Concerns over the instability associated with modular principles of reconfiguration, in addition to speculation over how quickly “social and task cohesion” might develop, have already been broached.¹⁴⁷

¹⁴⁵ Directorate Land Force Development (DLFD), *Army Capability Development*, presented to JCSP 33 Army Term III, Canadian Forces College, 23 April 2007.

¹⁴⁶ DND, *Advancing With Purpose: The Army Strategy...*, 24.

¹⁴⁷ DND, *Proceedings of the Army of Tomorrow Seminar Wargame, August/September 2006...*, 10.

Further modeling will be required, as will the capture of battle group combat lessons from successive rotations in Afghanistan that commenced in 2006.

The Directorate of Land Force Development (DLFD) has identified investment priorities and proposed enhancements to the battle group headquarters in order to increase command capacity. A more robust command and control capability should be designed to facilitate the integration of expanding enablers (i.e. information operations and liaison cell augmentations). In terms of U.S. Army leader development, a RAND Institute study has identified the need for greater expertise and a “broader understanding of joint and combined arms capabilities” for commanders as low as battalion level. Further, in assessing the implications for leader development the time to practice a myriad of disparate skills would be limited. Yet achievement will be pinned to “repeated” experience while in command which in turn “permits ‘recognitional’ or intuitively based decision making” – valued when time is short.¹⁴⁸ Apart from ongoing efforts to discipline the reconfiguration process, two challenges to creating battle group command capacity will be likely, within the context of managed readiness and the “optimized battle group plan.” One is related to the creation of operational leadership opportunities, while a second refers to a more responsible and less parochial command culture, necessary to achieve unity of purpose.

Future plans advocate a transition from twelve battle group headquarters of varied capabilities to nine homogenous battle groups built around medium-weight, Light

¹⁴⁸ Henry A. Leonard, J. Michael Polich, Jeffrey D. Peterson, Ronald E. Sortor, S. Craig Moore, *Something Old, Something New: Army Leader Development in a Dynamic Environment*, Prepared for the U.S. Army (Santa Monica, CA: Rand Arroyo Center, 2006); available from <http://www.rand.org/>; Internet; accessed 16 April 07, 34 and 51.

Armoured Vehicle (LAV)-based infantry.¹⁴⁹ Currently in the Canadian Army, the two principal functional manoeuvre pillars within the operational function “Act” are either infantry or armoured in composition. To the overall detriment of the Army, a move to define battle group leadership opportunities purely along infantry lines may gradually restrict the numbers of armoured leaders who might acquire the requisite experience for higher command beyond squadron level. This concern was already voiced in 2006 concept wargames.¹⁵⁰ A solution would be to move towards balanced teams with commanders, deputy commanders, and key staff from different functional experience providing complementary leadership. However, the net impacts to army career succession will require careful consideration.

Also, the decision to establish homogenous battle groups will be distinct from select Allies, as both the U.S. Army, and Australian “hardened, networked” Army plan to retain varied capabilities at what could be considered a baseline modular design. For an army similar in size to Canada’s, the Australians plan to transition to a more flexible configuration of nine battle group headquarters.¹⁵¹ The retention of mixed headquarters capabilities within the Canadian Army warrants further investigation, given potential mission alignments of functional expertise and a willingness to retain a wider regimental tradition of operational experience.

¹⁴⁹ Current battle group headquarters capabilities are as follows; six LAV-based infantry, three light infantry, two armoured reconnaissance, and one armoured. DLF, *Army Capability Development* presentation..., 23 April 2007.

¹⁵⁰ DND, *Proceedings of the Army of Tomorrow Seminar Wargame, August/September 2006...*, 9.

¹⁵¹ Australia, Australian Army, “The Hardened and Networked Army: Organisational Change,” http://www.defence.gov.au/army/HNA/organisation_62769.htm; Internet; accessed 2 April 2007. Nine forecast battle group headquarters capabilities are as follows; two mechanized infantry, three light infantry, one armoured (tank), two armoured cavalry, and one armoured reconnaissance (aviation).

Finally, within the managed readiness programme, resources follow tasks. At inception in 2005, the MRP was described as an “adaptable and responsive system” and it has experienced a number of adjustments in less than two years.¹⁵² Though it is designed to sustain two simultaneous battle group lines of operational deployment, should only one deployment mission be maintained battle groups will be subject to an ever greater interval between operational missions. The challenge will remain to provide every effort in support of tough, realistic collective training for non-deploying battle group command teams in order to build combined-arms tactical capacity, expertise, and cohesion. This will be necessary to ensure individuals will be effective at higher command levels.

The first challenge related to whether or not the conditions would be created within the MRP for leaders to maximize their opportunities to accrue experience while in command, and thus reinforce their personal authority. The second challenge relates to the other dimensions of command described by Pigeau and McCann, and introduced in Chapter Three. Successfully responding to that challenge will be dependent upon a leader’s demonstrated level of interpersonal competency and their acceptance of intrinsic responsibility. The transition to Affiliated Battle Groups will initially involve similar combined-arms interactions as in the past – namely, formal affiliations between supported and supporting arms. At the five year mark these formal affiliations are projected to transition into “organic” affiliations, and CLS guidance has stipulated that all service corps within the Army should be “empowered to shape solutions.”¹⁵³ Whereas,

¹⁵² Lieutenant-General J.H.P.M Caron, *Managing the Army’s Readiness...*, 2/10; as contrasted with a 2 March 2007 handout version of the plan distributed to JCSP 33, CFC Toronto on 23 April 2007.

¹⁵³ DLFD, *Army Capability Development* presentation...., 23 April 2007.

previous relationships may have been bounded by parameters of time or mission, this transition to a more permanent capability-based configuration will heighten the obligation of infantry battle group leadership to formulate a truly effective and accepting command climate. At the same time, support arm leaders must take equal ownership for cultivating the combined-arms team, even at the expense of current command responsibilities or structures. Despite the articulation of “One Army, One Team, One Vision” this will entail a considerable shift in pan-Army culture if the *Purpose Defined* is to be a unified one. The parent Land Force Formation Headquarters will have a clear mandate to cultivate those trust relationships.

The Land Force Formation Headquarters

In an interesting twist from the battle group experience with a decline in collective training, the Canadian Land Force Formation Headquarters has suffered more from a lack of means than method. Whereas battle groups, particularly with all enabling affiliations, have been sorely tried to deploy cohesively on training exercises for consistent exposure to necessary field friction, brigade commanders and staffs have always benefited from alternate training methods. The officially prescribed command post exercise (CPX), and more commonly with the onset of simulation technology, computer assisted exercise (CAX), have been regarded as highly effective instruments for testing formation command and control.¹⁵⁴ Ironically, despite a challenging individual education regime for creating army staff officers and the opportunity to hone skills and procedures during constructive simulation collective training at formation level, the gap

¹⁵⁴ DND, B-GL-300-008/FP-001 *Training Canada's Army...*, 69-70 and 75-76.

has widened between the stated aspirations for formation headquarters command capability and the capacity by which it is delivered.

The desire to reverse the decline has long been evident since the 1992 demise of both 4 CMBG formation command expertise and the cessation of “fly over” formation headquarters tasks in support of NATO Command Field Exercises (CFX).¹⁵⁵ The contribution of an high readiness, land formation headquarters capability has remained an articulated defence task commitment to the United Nations Stand-by Arrangements System (UNSAS) in successive iterations of Army strategic direction.¹⁵⁶ On occasion in the past ten years, formation headquarters have been exercised effectively in the field, or successfully deployed to Bosnia and Afghanistan. The *CF Strategic Integrated Operating Concept* of 2005 identified an ongoing vision and commitment to multi-national leadership aspirations, in which a Canadian land component headquarters might serve in a geographical or component command capacity under the provisions of “functional lead nation” status.¹⁵⁷ The Army MRP continues to identify the requirement for a surge high readiness Brigade HQ capability, and 2006 drafts of a Land Force Collective Training Management Framework (CTMF) have outlined an approach for linking the requisite field training to a high readiness battle group pre-deployment confirmation exercise at the Canadian Manoeuvre Training Centre (CMTC) within the context of higher formation

¹⁵⁵ Maloney, *War without Battles...*, 461.

¹⁵⁶ A priority 3 for Army Operations, Defence Task (DT) 2-7-132 outlines the provision of forces to UNSAS as part of high readiness contingency operations in defence of Canadian interests and to contribute to international peace and security. See the Defence Task Matrix of Chapter 3 in the annual Army Strategic Operations and Resource Direction (SORD). Department of National Defence, *Army Strategic Operations and Resource Direction 2007 Draft 2*, n.p. (electronic version modified 15 January 2007), 3-1-5/22 to 7/22.

¹⁵⁷ DND, *CF Strategic Integrated Operating Concept...*, 22-23.

level command and control.¹⁵⁸ Finally, similar to battle group initiatives, there has been renewed emphasis placed upon creating functional and command support priorities for reinvestment into the brigade headquarters.¹⁵⁹

Chapter Three outlined the mission command, and network-enabled challenges a formation headquarters can expect to face, particularly when a command and staff team has been pressed to establish cohesion before being operationally employed. In the Canadian context, greater unity of purpose will evolve with the shift to a more centralized approach in the design and delivery of formation level training. The more significant obstacles to creating command capacity will remain with building a stable structure, establishing proficiency with connectivity systems, and integrating the growing multitude of staff specialists and JIMP enablers. Canadian Brigade headquarters staffs have been equally subject to Army-wide tasking pressures in recent years, often being left to train with manning gaps when select billets were encouraged to deploy into national command headquarters elements through the 1990s. While this was good practice for enhancing an individual's peace support operational experience, manning shortfalls ultimately affected the capacity of the headquarters to train at home. It has only been with the 2006 deployment of a Canadian-led, multinational brigade group headquarters to command NATO forces in southern Afghanistan that the national command headquarters structure

¹⁵⁸ Department of National Defence, *Land Force Collective Training Management Framework* (Land Force Doctrine and Training System (LFDTS) draft version 2.3, n.p. 22 January 2006), 20-21/24; Current Army training doctrine identifies six phases of collective training: Analysis, Design, Development, Conduct, Confirmation, and Validation. Confirmation is event based and usually linked to an operational readiness declaration. For brigades, training will be confirmed by Commander LFDTS. DND, B-GL-300-008/FP-001 *Training Canada's Army...*, 63.

¹⁵⁹ DLFD, *Army Capability Development* presentation...., 23 April 2007; also, a thorough and complete formation headquarters functional analysis was conducted in 2006 and formed the basis for the Directorate of Army Doctrine sponsored Capability Development Record on Command, cited earlier.

and purpose has evolved into a more robust entity in command of specialist functions and tactical elements.¹⁶⁰ During peace support operations in the FRY a tour in a national command headquarters element was not capable of replicating the tempo, staff integration, or skill sets expected of a brigade headquarters training for operations.

While the increasing complexity of operations has forced the composition of the formation headquarters to grow, the level of coordination required to synchronize the correct mix of JIMP actors has become equally complicated. The provision of joint, multinational or multi-agency staff partners at the correct time and place for work up training and mission rehearsals has often proved problematic, with the requisite impact to team building prior to an operation. For those specialists that do not arrive, replication may be necessary and event-specific, ad hoc arrangements put in place, particularly if Canadian support must cover for yet to be sourced multinational positions. This was experienced in the latest HQ 1 CMBG preparatory training for its multinational leadership of Regional Command South in Kandahar, Afghanistan and as part of exercise design efforts for the new annual Exercise UNIFIED FORCE series of high readiness formation training events.¹⁶¹ Even when the actual headquarters is eventually formed, the command challenge remains to build a team and integrate a myriad of perceptions,

¹⁶⁰ Directorate of Land Force Requirements (DLFR) presentation to JCSP 33 Army Term III, Canadian Forces College, 23 April 2007.

¹⁶¹ Based upon author's experience coordinating the Land Force Formation Headquarters training file at LFDTS in 2005-2006. The complexity of formation, or "level 7," training exercise design and the interplay between the training audience and controlling elements (exercise, higher, lower, and flanking) is graphically depicted in DND, *Land Force Collective Training Management Framework...*, 22/24.

understandings, national or agency agendas, and diverse operating procedures into effective, collaborative working relationships.¹⁶²

Many of the cited works for this paper have elaborated upon the interoperability challenges faced in network-enabled, coalition operations where clear technical asymmetries and procedural differences hamper unity of effort and team building. Shared temporary aims within “modular coalitions” and the mitigating requirement for necessary “modular liaison capabilities” to functionally bind a digitized force illustrate the problems formation headquarters can expect to experience in the future.¹⁶³ For the Canadian Army, the capacity challenges remain less with establishing command intent and more with quickly incorporating common purpose amongst doctrinally similar partners. It will be achieving training proficiencies on evolving secure control systems and shared common operating picture, with a mixed JIMP team, that will prove the greatest test. The formal release of after action lessons from the 2006 HQ 1 CMBG experience, and the design of preparatory training for the next Canadian-led formation headquarters commitment to Afghanistan in 2008 will more fully define the challenges ahead.

This chapter confirmed what much of the Army leadership has known for years. The Canadian Army has created a firm doctrinal foundation for tactical success on an increasingly dispersed battlefield in which combined-arms groupings will emerge at lower levels than seen previously. This foundation has been built upon a solid historical

¹⁶² DND, *Capability Development Record – Command version 1.0...*, 21;

¹⁶³ Boas Shamir and Eyal Ben-Ari, “Challenges of military leadership in changing armies,” *Journal of Political and Military Sociology*, Vol. 28, No. 1 (Summer 2000), 52; Adam Grissom, Nora Behsahel, John Gordon IV, Terrence Kelly, and Michael Spirtas, *U.S. Army Transformation and the Future of Coalition Warfighting*, Restricted Draft prepared for the U.S. Army, Rand Arroyo Center, January 2004; 114; available from <http://www.rand.org/>; Internet; accessed 26 March 07.

record of decentralized empowerment and decision-making in both training and operations. At the same time, reconfiguration and regrouping has been less deliberately conceived, practiced, or sustained at the battle group level and above in response to the resource constraints and operational tempo of the 1990s. These realities, coupled with Canadian emphasis upon the human dimension, have diminished the utility of modular terminology as an organizational construct; exposing its imprecision.

It is correct to consider the sub-unit as an important focal point for the force generation of high readiness capability, particularly in a mission command climate where responsibilities have been confidently devolved to that level. However, to do so will require practiced proficiencies and experience on the part of commanders and staff at the Battle Group and Land Force Formation Headquarters level. After a long decline in collective training competencies at both the unit and formation level within the Canadian Army, aims and methods have been prescribed for how best to reassert capability. Combined arms stability, unity of purpose, and the ability to properly exploit training and operational opportunities to build command capacity will continue to be adversely affected by technical and structural obstacles; all governed by the increasingly complex requirement to build an integrated team from a multiplicity of JIMP agents within both the Canadian battle group and formation headquarters.

Recommendations

Throughout this paper specific recommendations have been identified with the analysis provided on aspects of battlefield dispersion, command, modularity and building cohesion. In the application of these to Canada, some aspects could be elaborated upon in much greater detail as part of a separate and more rigorous examination (i.e. coalition

dynamics or interoperability and JIMP integration issues within the Land Force Formation Headquarters). However, four broad proposals for the Canadian Army are offered in keeping with the themes presented. In some cases, there will be additional and related supporting outcomes:

- Place greater emphasis upon commander and staff training at the BG and LF Formation HQ level and create capacity to deliver such opportunities.
- Promote adaptive, decentralized combined-arms leader training at increasingly lower levels.
- Promote widespread understanding and education of Canadian Forces leadership doctrine in the land force and enable cultural change among both supported combat arms and supporting enablers in accepting institutional ownership for greater integration of the combined-arms team.
- Discontinue the lexicon of “modularity,” as it is ill-suited for describing the complexity of building land force capability over time through core tactical proficiency, shared trust relationships, a mission command climate, and strong human networks.

...a main challenge facing military leaders is how to integrate units and forces under conditions of loosely-coupled structures, diverse cultures, temporary membership, and technologies that increase the distance between leaders and unit members.¹⁶⁴

CHAPTER FIVE – CONCLUSION

Brig. General Huba Wass de Czege (U.S.Army retired) once asserted in response to the overabundance in technologically-driven jargon that war was once again “recognizable... as a complicated and deadly struggle of human groups within an increasingly complex global environment.”¹⁶⁵ This study of the interplay between dispersion, command, and cohesion, arose from concern over the disruptive impacts, lack of precision, and perceived inapplicability of modular terminology in reflecting the human dimension. Recent reconfigurations of sub-units across traditional brigade force generation boundaries, coupled with growing complications from the centralized synchronization of specialist elements, also spurred investigation.

The paper has argued that precision in the use of modular designations is important as a means of reflecting the size or level of the combined arms team intended – should the term be used at all. To deliver tactically decisive effects in an international security context the Canadian Army must focus upon battle group combat power and the land force formation headquarters capability to manage complexity through command of a task-tailored, joint, multinational, and multi-agency force. In the end, the term modularity might be consistent with RMA jargon, but it is ill-suited for describing the complexity of critical human and social networks within a military force, and should be discontinued. Also, the study has sought to stay away from matters of structure, as any

¹⁶⁴ Shamir and Ben-Ari, “Challenges of military leadership in changing armies...,” 44.

¹⁶⁵ Wass De Czege, “Some Relevant Wisdom...,” 18.

discussions of tactical entities and the reconfiguration or mission tailoring of capabilities often descends into how much, to do what, and potentially at the expense of something else. It is not so much the capabilities themselves, but what is done with them and how they are qualitatively connected through command that is most important.

The first chapter outlined the current challenge in ensuring combined-arms, core unit capabilities are respected by those formation command levels responsible for discerning force employment requirements. A disciplined approach to modularity must minimize disruptions due to reconfiguration so as to preserve organizational stability. The commander of an established, multi-functional, self-sufficient battle group should be left to focus on building combined-arms cohesion within, rather than coping with an ever-shifting mosaic of sub-units or specialist elements. Though technical connectivity of component parts of the force will be essential, it will be the “connected” nature of the unit which will prove paramount. In defining “modularity” emphasis must continue to be placed upon how an appropriate command and control climate can build trust and unity of purpose both within a national force and across coalition lines.

The correct modular land force for Canada must harness improved technological connectivity in order to enhance vital human networks built upon essential trust, shared intent, and experience. Through an examination of emergent battlefield concepts and the essential elements of an effective mission command climate, this paper affirmed the need for the Canadian Army to concentrate on building cohesive modular designs at two important levels – the Combined Arms Battle Group as a whole, and the Land Force Formation HQ command structure.

Chapter Two provided an analysis of the emergent concepts of network-enabled operations, swarming compared to the ability to mass effects, and adaptive dispersed operations. The technological and human networks that connect a land, combined-arms battle grouping both internally and externally will be under increased pressure as the force is dispersed into smaller elements. Though dispersion can yield advantages in reducing the impact of mass effects, it exposes the force to the risk of precision strike or swarming tactics, potentially against a valued and discrete capability. A tension will always exist in how commanders mitigate the risks of deploying smaller, highly-skilled and technologically connected elements into situations where they may prove increasingly vulnerable to the swarming and massing of adversarial effects, in whatever rudimentary form these might appear. Battlefield success will be governed by how well the combined-arms team has practiced and mastered the synchronization of effects and JIMP capabilities in a dispersed, networked operational environment.

Chapter Three placed emphasis upon the critical elements of human interaction in command and the key role for leadership in binding military groups into a cohesive force, connected across multiple networks. To enable a unit or formation to adhere to the principles of mission command, commanders at all levels must create an environment where subordinates have the skill sets and adaptability to execute delegated responsibilities with confidence and innovative thinking. Mission success will depend upon the degree of reciprocal trust that exists vertically between leaders and led, and even more importantly in a dispersed environment, laterally between functionally different yet supporting capabilities. The relative balance between understood explicit and implicit intent will determine the degree of centralization within the combined-arms team, and

limits should be clearly prescribed. The quality of human interaction and the degree of shared trust within a unit or command team will remain the key determinant of combined-arms effectiveness.

Though an increased battle group headquarters staff will be necessary to cope with information technology demands, the requirement for a traditional hierarchy and physical leadership will remain. A flattened span of control is not a certain result, either at the battle group level or the higher tactical land formation headquarters. A high degree of shared implicit intent and common situational awareness among networked and dispersed elements will allow for increased all-arms devolution of authorities to lower levels. Tactical proficiency, integration, and junior leader confidence must be built through frequent training and familiarity between affiliated arms.

Commanders at multiple levels find themselves enabled by technology but increasingly detached from both the battle area and their soldiers. Improved situational awareness will allow the command and staff team to provide more rapid analysis, decision-making, and the synchronization of multiple effects providing all elements can forge a common understanding of the battlefield in both space and time. In order to establish an effective degree of “connectedness” technical networks will need to be fielded simultaneously to the lowest levels of dispersal while commanders empower those subordinates with the devolution of necessary authorities. Most importantly, combat success in a dispersed, decentralized environment will be determined by the ability of the commander to rigorously prepare the force to operate in an increasingly complex and networked information domain while preserving a cohesive human network and mission command climate. Leaders at all levels must remain focused upon what they

must influence and leave empowered subordinate commanders and staff to execute assigned missions with freedom of action.

Finally, in application of the paper's general conclusions and major themes, Chapter Four asserted that the Canadian Army has created a firm doctrinal foundation for tactical success on an increasingly dispersed battlefield in which combined-arms groupings will emerge at lower levels than seen previously. This foundation has been built upon a solid historical record of decentralized empowerment and decision-making in both training and operations. At the same time, reconfiguration and regrouping has been less deliberately conceived, practiced, or sustained at the battle group level and above in response to the resource constraints and operational tempo of the 1990s. These realities, coupled with Canadian emphasis upon the human dimension, have diminished the utility of modular terminology as an organizational construct; exposing its imprecision.

After a long decline in collective training competencies at both the unit and formation level within the Canadian Army, aims and methods have been prescribed for how best to reassert capability. Combined arms stability, unity of purpose, and the ability to properly exploit training and operational opportunities to build command capacity will continue to be adversely affected by technical and structural obstacles; all governed by the increasingly complex requirement to build an integrated team from a multiplicity of JIMP agents within both the Canadian battle group and formation headquarters.

The Canadian Army is well on its way to reclaiming a reputation for tactically decisive coalition formation leadership in the complex operating environment and continues to field highly capable battle groups for expeditionary employment in

international peace and security. The challenge will not be one of vision, but of establishing the capacity to sustain command expertise within a progressive, managed readiness system heavily dependent upon centralized synchronization and resource pressures.

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