UNIVERSITY OF MANITOBA

THE INTEGRATION OF THE CANADIAN FORCES LOGISTICS SYSTEM AND ITS EFFECT ON THE OPERATIONAL CAPABILITIES OF THE CANADIAN MILITARY

by

Joseph George Marc Alan Potvin

A thesis submitted to the Faculty of Graduate Studies in partial fulfillment of the requirements for the degree of **Master of Arts**.

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BY

JOSEPH GEORGE MARC ALAN POTVIN

A Thesis/Practicum submitted to the Faculty of Graduate Studies of the University of Manitoba in partial fulfillment of the requirements for the degree of

MASTER OF ARTS

Thesis Abstract

This thesis is an examination of one of the most controversial periods in the history of Canadian defence policy. In 1968, the three separate services of the Canadian Army, Navy, and Air Force were reorganized into a single unified force. A fundamental aspect of this reorganization was the integration of the Canadian military logistics system. The aim of this thesis is to prove that this integration was a failure and this ultimately contributed to the signficantly reduced operational capabilities of the Canadian Forces in the decades that would follow.

This study examines the basic concepts and fundamental principles of logistics as they apply to the integration of the Canadian military logistics system. Initial discussion focusses on the historic roles of logistics in various campaigns and wars throughout history, highlighting the importance of logistics considerations in contributing to the success or failure of military operations. The study then turns to a theoretical analysis of the relevance logistics and the logistics system in relation to the evolution of Western military strategy. This relevance is then applied to an examination of the Canadian military logistics system and the factors which led to the failure of the integration process. The implications of the failure of this process on the operational capabilities of the Canadian military in the post-Cold War era are the concluding focus of this study.

The failure of the integration of the Canadian military logistics system is attributed to the overriding political and economic priorities in the determination of defence policy. The integration of the Canadian Forces logistics system reflected the subordination of the military purpose of defence to its economic and social purposes in peacetime. The motivation for integration was essentially economic, the objectives were primarily political, and the results were a failure to support the operational needs of the military.

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INTRODUCTION

> *"To meet the ongoing security challenges at home and abroad, Canada will maintain multi-purpose, combat-capable maritime, land and air forces able to provide the Government with the needed flexibility in responding to a highly fluid and unpredictable environment, within fiscal constraints."*[1]
>
> *"To meet our Nation's global responsibilities, our ability to move and sustain combat forces virtually anywhere in the world must be maintained. This requires efficiently integrating the unique logistic capabilities of all our Services. Joint doctrine is the underpinning that makes this happen and optimizes the use of limited resources, enhances interoperability, and fosters cooperation."*[2]

In 1964, the control and administration of Canadian military forces were consolidated into the hands of a single Chief of Staff. Four years later, the three separate services of the Canadian Army, Navy, and Air Force were reorganized into a single unified service, the Canadian Armed Forces (CAF). A fundamental aspect of this reorganization process was the integration of the Canadian military logistics system. This is a study of that integration.

This study will attempt to accomplish two things: to explain why and how the

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[1] ***Defence Planning Guidance 1997,*** National Defence Headquarters Director General Force Development, Ottawa, 29 May 1996, p.1.

[2] John M. Shalikashvili, Chairman of the Joint Chiefs of Staff, ***Doctrine for Logistics Support of Joint Operations JP 4-0,*** (United States Army - Joint Operations Series, 27 January 1995), p.1.

Canadian military intended to integrate its logistics system; and to analyse the immediate and long-term effects this process had on the operational capabilities of the Canadian military. It will argue that the failure of the Canadian military in its attempt to integrate its logistics system ultimately resulted in its significantly limited operational capability in the 1980's and 1990's.

BACKGROUND AND SUMMARY

An examination of Canadian Defence policy during the past three decades requires an understanding not simply of Canadian concepts of collective security and deterrence theory, but of changing Western concepts in strategy, tactics and logistics. The end of the conflict in Korea was followed by a period of profound change in strategic doctrine and significant advancements in military technology. This, combined with the "changing political circumstances" of the period, meant that WWII strategic and logistic concepts were rapidly becoming obsolete.[3] These changes in strategy, which were not only rapid but costly, in turn led to changes in the tactical and logistics concepts required to enable their implementation. The changes in the strategic doctrine of the West had profound effects on how armed forces were employed and how they were mobilized and sustained on the "battlefield". Western military forces grew

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[3] Paul Hellyer, ***The White Paper on Defence*** (Government of Canada, 1964) p.12.

enormous "administrative tails" in an effort to meet the logistical requirements of newer, more rapid and mobile fighting forces, and, more importantly, to cut costs.

The response of the Canadian government along with many other of its allies was the reorganization of its military forces and command infrastructure. For the Canadian government, this proved to be an expensive undertaking both politically and economically. For the Canadian military, this would prove to be a challenging, if not controversial, period in defence policy. Its impact on Canadian military operational capabilities would be felt for decades to follow. Included in the reorganization of the Canadian military was the requirement to design a support system that would permit the military to meet its operational objectives at the lowest overall cost to the Canadian Government. To accomplish this, the decision was made to combine those support services common to the Navy, Air Force and Army; in effect integrating the Canadian Forces logistics systems.

Many military staff officers argued that this integration was a reflection of the overriding economic priorities that drove the formulation and administration of defence policy in Canada. Politically, it was primarily a response to the Glassco Commission's government-wide recommendations for budgetary restraint. Theoretically, the integration of the Canadian military logistics system should have reflected a response to changes in strategic concepts. The desire for an integrated logistics system was a indication of the elevation and evolution of the importance of logistics in modern

warfare. However, in the case of the Canadian military, the integration process of the Canadian Forces logistics system did not necessarily follow any particular theory or doctrine of logistics. This process did not reflect an understanding of the importance of an integrated logistics system, and the impact this system would have on the operational capabilities of the Canadian Forces in the decades that would follow.

The problem with the process began with the Department of National Defence's "implementation plan" for the integration of its logistics system. The Development of Integrated Logistics (***DEVIL***) was a ten year program intended to provide the required manpower and dollar savings for the Department, as well as the logistics support to meet the operational needs of a unified force. This plan was part of a series of "defence programs" which were designed to increase the support to the Canadian military's combat forces which would, in turn, increase their operational effectiveness, not only in peacetime, but, more importantly, during wartime. However, during the decade of reorganization, successive reductions in defence budgets and personnel strengths were not met with any corresponding changes in the defence roles and tasks assigned to the Canadian military. Operational priorities changed little, international commitments remained essentially unchanged, but the resources and support given to the Canadian Forces were significantly decreased.

By the mid-1970's, it was apparent that although substantial financial savings had been accrued through some logistics system integration, the system as a whole was

nowhere near capable of supporting the combat forces of the Canadian military in an operational wartime environment. The Department of National Defence boasted the highest paid soldier in NATO and provided one of the most poorly equipped soldiers in NATO. By the mid-1980's, narrowing the "commitment-capability gap" was the main defence priority for the Canadian government; the most immediate concern was for equipment capabilities.

The Canadian Government had created a unified military force; it had consolidated its command infrastructure; but it had failed to completely integrate its logistics system, the one system that would provide the mobilization and sustainment capabilities its military forces required to carry out their mandate. By 1990, the Canadian military logistics system was administratively overburdened and operationally inefficient. With the exception of its support to relatively small scale peacetime United Nations operations, the Canadian military logistics system was far from the capability of supporting Canada's fighting forces in a wartime scenario either as a NATO ally or as a partner in a multi-national contingent. This factor would ultimately contribute to the decision not to deploy a Canadian Mechanized Brigade in the Gulf War in the winter of 1991. Yet it has been argued that throughout this period the Canadian military continued to fulfil the roles assigned to it in a peacetime environment and, therefore, its operational capabilities remained unaffected by the reorganization process. The chapters that follow will attempt to conclude that the opposite was in fact the case.

THEORETICAL BASIS

The theoretical basis for this analysis will focus on critical examination primarily of the related works of James Huston, Martin Van Creveld, Geoffrey Ashcroft and Henry E. Eccles, as well as contemporary Canadian, United States, and NATO military logistics concepts and doctrine during the period of reorganization. Huston's work is significant in that it represents the first detailed examination of the importance of logistics in World War II U.S. military strategy and, more importantly, NATO strategy and logistics after the War. Van Creveld's work also represents detailed theoretical examination of logistics concepts and principles in the immediate post-World War II strategic environment. Eccles and Ashcroft were chosen because their work reflects most accurately the predominant concepts of strategy, tactics, and logistics at the time of the reorganization process.[4] Logistics, Eccles believed, was "...so important that it should be completely centralized in a single logistics service that provides all logistics support to the other services or branches...".[5]

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[4] Henry E.Eccles, ***Military Concepts and Philosophies***, Rutgers University Press, 1965. Eccles' theories were developed from his extensive study and commentary in the fields of contemporary logistics and strategy in the 1950's and 1960's. During this period, he lectured extensively on logistics at the Naval War College and the U.S. Air Force School of Systems and Logistics. His other writings include *Operational Naval Logistics* and *Logistics in the National Defence.* Eccles' research in the field of logistics is perhaps the most detailed since James Huston's *The Sinews of War*. Geoffrey Ashcroft was an Assistant Secretary in the British Ministry of Defence and a Research Associate at the Institute of Stratgic Studies in 1969. During this period Ashcroft was studying European and NATO logistics co-operation and integration.

[5] Eccles, op cit. p.19.

With the exception of these individuals, contemporary academic work on military logistics concepts and principles is limited to professional army doctrine. Throughout the 1960's, much of the Western academic attention in the field of Strategic Studies focussed on nuclear deterrence and the strategic concept of flexible response. Consequently, academic examination of logistics concepts and principles was, with these few exceptions, scarce and incomplete. The majority of written work on this subject during the period of reorganization can be found in army doctrine and operating procedures. Government studies concerning logistics during this period focussed on the provision of a more economically efficient logistics support system and tended to leave the adaptation/revision of logistics principles and concepts to the military strategists. Although the operational capabilities of the modern army were directly tied to the nation's economy, the true measure of efficiency of the logistics system lay in its ability to mobilize and sustain its military at war.

This is an examination of a process which reflects the relationship between strategy and logistics as it had evolved from the end of WWII. Logistics, by the time of reorganization, involved more than the "long trains" of materiel and personnel used to supply armies during WW II. By the mid-1960's, logistics was an all-encompassing concept ranging from intimate aspects of the nations economic industrial base to the sustainment of tactical forces on the battlefield.[6] What had not changed was the

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[6] Eccles, op cit. pp.80-82

fundamental purpose of military logistics: to ensure that military forces can be mobilized and sustained in conflict while employing tactics in the execution of strategy.

THESIS OUTLINE

Prior to any detailed study of logistics concepts and principles, the analytical boundaries of this thesis must be identified. This study will focus primarily on those concepts and principles of logistics which influenced the process of integration of the Canadian military logistics system.The myriad of studies completed on the integration and unification of the Canadian military in the 1960's usually explain why this process occurred, whether or not its political or economic objectives were met, and the extent to which the political agendas of those in power at the time affected the outcomes. Some studies attempt to demonstrate how the decisions of the Canadian government in 1964 relate to any particular behavioural model of national governments[7]. This study is not an application of any such organizational or behavioural models. The political causes and merits of the unification and integration of the Canadian military will not be

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[7] David Patrick Burke, ***The Politics of the Canadian Armed Forces: The Politics of Defence in the Pearson Administration,*** (PhD Thesis for the Department of Government, Harvard University, Cambridge, Massachusetts, January 1975). Note: David Patrick Burke's analytical orientation follows the conceptual framework of the *Bureaucratic Politics Model.* Burke's assessment of why the Canadian Government decided to unify its military is based as much on the personalities involved in the decision as it is the "outputs of large organizations following standard patterns of behaviour".

considered beyond that which is necessary for a basic understanding of the events that occurred. Examination of the strategic objectives of unification and integration, i.e. the enhanced operational capability of the Canadian Armed Forces, is the basis of this study.

This thesis will be divided into two sections of four chapters with a fifth concluding chapter. The first section is intended to provide an understanding of the evolution of logistics concepts and principles throughout history. This will be presented first, from a historical perspective (Chapter One), and second, from a theoretical perspective (Chapter Two). The second section will examine the evolution of the Canadian military's logistics system up to, and including, the reorganization process in the 1960's (Chapter 3). This section will also include an examination of the rationale behind the decision for and the implementation of an integrated logistics system for the Canadian Military (Chapter 4). The objective is to assess the effects of this integration on the operational capabilities of the Canadian military a decade after the commencement of reorganization. The fifth concluding chapter will examine the contemporary relevance of this process to current operational capabilities of the Canadian military.

The first chapter will serve as an introduction to the concepts and principles of logistics in the study of war. Examination will focus on the evolution and change in importance of the role of logistics, as it relates to strategy. Analysis will be essentially

from a historical perspective.

The second chapter will consist of a theoretical examination of the logistics concepts and principles in the WW II and Cold War strategic environment. The focus will be on the theoretical relevance of logistics principles and the military logistics system in relation to the evolution of western military strategy. Examination of contemporary theories of logistics system integration as they relate to strategy in particular will provide a better understanding of the "bridge" spanning logistics on the battlefield and the logistics of a nation's economy and, more importantly, the significance of this relationship to the operational capabilities of a nation's military.

The third chapter will examine the evolution of the Canadian military's logistics system from before Confederation up to the reorganization process (integration and unification). This chapter will highlight the recurring priorities in Canadian defence policy during the above mentioned period of examination. This is intended to establish an understanding of the political trends and assumptions which have traditionally influenced the formulation of Canadian military defence policies, particularly in the area of logistics.

The fourth chapter will comprise a detailed analysis of the reorganization process, specifically the rationale behind and the attempt at, the integration of the Canadian military's logistics system between 1965 and 1975. This will involve an

examination of the impact the integration process had on the operational capabilities of the Canadian military through an analysis of the various staff management studies carried out by the Department of National Defence during this period. These assessments prove to be most accurate and unique, as they are based on "eye-witness testimony", and are very objective in their conclusions and recommendations for the integration process.

The fifth, and concluding, chapter will present an analysis of the contemporary relevance of the integration process specifically on the current operational capabilities of the Canadian military. In this context, the Canadian Forces logistics system's response to the logistical requirements in the Gulf War and most recently in UN Peacekeeping operations will be examined.

Prior to further examination of these changes, an understanding of the significance of logistics in the conduct of war is necessary. This will be addressed, initially, through an examination of the relationship between logistics and strategy from a historical perspective.

CHAPTER ONE: THE EVOLUTION OF LOGISTICS IN MILITARY HISTORY

The challenge of studying logistics concepts and principles is that it involves addressing an aspect of war which has historically received little academic analysis. Logistics is probably the least *exciting* aspect of war, and consequently it is often misunderstood, neglected, and understudied. This chapter will look at the changes in the roles and importance of logistics as they have corresponded to changes in strategy throughout history. The intention is to provide a better understanding, not only of the relation of logistics to the formulation of strategy, but of the evolution of the importance of logistics in the study of war.

The strategic significance involved in the calculations and decisions that must be made in the name of logistics is frequently ignored by military historians (and the occasional operational commander). Traditionally, not more than a page or two in the romanticized accounts of the *great battles* is devoted to the preparation and sustainment of armies in combat. As Martin Van Creveld writes in his book, *Supplying War*, [logistics calculations] "do not appeal to the imagination", and furthermore, when

logistics factors are considered, "references to them are often crude and in the extreme".[8] Even Clauswitz's "*On War*", often described as `the Bible of military science', discusses the concept of *friction*, but fails to address adequately the importance of sufficient logistics support.[9] Yet, as long as there have been armies, there have been logistics considerations, critical from the preparation and mobilization to the employment and sustainment of those armies in combat. As Michael E. Howard argues, "No campaign can be understood, and no valid conclusions drawn from it, unless its logistical problems are studied as thoroughly as the course of operations." [10] This capacity to supply, transport and maintain armies has spelled the success or failure of many military operations and strategies throughout history. According to Howard, the "operational triumphs" of commanders such as Napoleon and Frederick the Great were not accomplished without a "profound understanding" of logistical planning.[11]

In war, even the most brilliant strategies can be rendered useless if they are not supported by equally imaginative logistics plans. Wars cannot be won without successful strategy. Strategic plans are of no use without the tactical forces to

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[8] Martin Van Creveld, ***Supplying War - Logistics from Wallenstein to Patton,*** Cambridge University Press, New York, 1977, p.2.

[9] Michael E. Howard, ***The Forgotten Dimension of Strategy***, *Foreign Affairs* 51, no.2, January 1973. Howard credits Clausewitz with simplifying the definition of strategy which, in his words, "performed a major service to strategic thinking". However, Howard points out that through this definition, Clausewitz also excluded "a whole range of military activities from consideration".

[10] Michael E. Howard, ***The Causes of Wars*** (Cambridge: Harvard University Press, 1983) p.102.

[11] Ibid., p.102.

implement them. Those forces are always limited by the support available to them. Without sufficient logistics capabilities, the credibility of great strategies, impressive tactics of combat forces, and advanced weapons systems are greatly undermined.

Van Creveld states that strategy is not determined simply by "numerical strengths, doctrine, intelligence, arms and tactics", but, more importantly, by factors "concerning requirements, supplies available and expected, organization and administration, transportation, and arteries of communication".[12] Before strategy and tactics can be implemented, these factors must be completely considered and understood. As Lider states, "the practical application of a strategic concept consists of a group of specific tactical operations that must be preceded by logistical operations".[13] Logistics does not necessarily set the strategy for war, but it sets the parameters which can indicate the "best" strategy to be taken. Lieutenant-Colonel George C. Thorpe defines this relationship in this manner: "Strategy and tactics determine the scheme for the conduct of military operations, logistics provides the means. "[14]

To be successful in battle, all commanders must be aware, at all times, of the capabilities of their logistics organizations to support their strategies or tactics. In either

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[12] Van Creveld, ***Supplying War.***, p.1.

[13] Julian Lider, ***Military Theory: Concept, Structure, Problems*** (New York: St. Martin's Press, 1983) p.206.

[14] George C. Thorpe, ***Pure Logistics - The Science of War Preparation*** (Kansas City, Mo.: Franklin Hudson, 1917) p.9.

case, logistics is paramount in the development and application of strategy and tactics at all levels. In the end, "war becomes a matter of movement and supply carried out concurrently throughout the execution of strategy."[15] When one considers the logistical calculations involved in the execution of strategies and tactics, the actual *battles* themselves might appear "anti-climatic" to their planners. As Lieutenant-Colonel George C. Thorpe states;

> "Strategy is to war what the plot is to the play; Tactics is represented by the role of the players; Logistics furnishes the stage management, accessories, and maintenance. The audience, thrilled by by the action of the play and the art of the performers, overlooks all of the cleverly hidden details of stage management."[16]

To consider further the fundamental question of how logistics is related to strategy, it is necessary not only to distinguish between the two, but to examine their relationship from a historical perspective. To better understand this, clarification of the terms and definitions used in this study is necessary. This, in itself, will prove difficult as there exist countless stipulative definitions of strategy, tactics, and logistics.

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[15] Sir Ronald M. Weeks, ***Organization and Equipment For War***, (Cambridge: Cambridge University Press, 1950) p.3

[16] Thorpe, op.cit., p.9.

DEFINITIONS

Strategy is defined as "the use of military operations for the effect of war", a response to the "political aim" of war.[17] Strategy is further distinguished from tactics with the Clausewitzian concept of the latter being; "the use of armed forces in the engagement", and the former being; "the use of engagements for the object of war".[18] ***Tactics*** is the use of armies on the battlefield, while strategy is the use of tactics as the military solution to achieving specific political objectives. Put simply, ***Logistics*** can be described as "the practical art of moving armies and keeping them supplied"[19]. Logistics concerns the minimalization of all and any factors which limit the implementation of strategy and tactics.

When defining ***logistics***, the most recognized written introduction of the word is attributed to one of Napoleon's staff officers, Antoine Henri Jomini, in 1836, from his *work The Art of War*. In it, Jomini discusses "...the trinity of strategy, grand tactics, and logistics", and defines logistics as "the practical art of moving armies"[20]. Jomini considered the study of logistics to be a "new science"; the key principle which forms

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[17] Lider, op cit. p.205.

[18] Michael Howard and Peter Paret (eds.and transl.), ***On War" Carl Von Clausewitz,*** (Princeton: Princeton University Press, 1989) p.128.

[19] Van Creveld, ***Supplying War***,, p.1.

[20] Antoine Henri Jomini, ***The Art of War,*** (Greenwood Press: Westport, Connecticut, 1971 {from the original 1862 translation}), p. 252.

"one of the most essential parts of the art of war".[21] Over a century later, The *Dictionary of United States Army Terms (1944)*, defined logistics as "the art of planning and carrying out military movement, evacuation and supply".[22]

In the 1960's, Henry Eccles went beyond defining logistics as simply "supplying, transporting, and maintaining armies on the battlefield". He interpreted logistics to be an all-encompassing concept when studying war; its relevance extending beyond the battlefield to the national economy. For James A. Huston, "logistics is the application of time and space factors to war.. it is the economics of war"[23] and "logistics can no more be seperated from strategy and tactics than the fuel can be seperated from a motor vehicle and have it continue to operate".[24] Douglas Bland reiterated this interpretation with his own contemporary definition of logistics which reflects this expansion of the role and importance of logistics;

> "Logistics as a military concept is all-embracing... an intrinsic component of all aspects of command, operations, strategy, and tactics. No part of the end product of the defence policy process is valid unless

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[21] Ibid., p. 253.

[22] James A. Huston, ***The Sinews of War: Army Logistics 1775- 1953***, (Office of Military History, Department of the Army: Washington, D.C., 1966), p.vii.

[23] Ibid.,p.viii.

[24] James A. Huston, ***One For All - NATO Strategy and Logistics Through the Formative Period***, (Newark: University of Delaware Press, Toronto, 1984), p.85.

logistics considerations have been addressed throughout." [25]

Lieutenant-General (Ret'd) James C. Smith echoes this belief that no modern strategist or tactician can credibly relegate logistics to a "lesser place" in military planning. He states;

> "Logistics is today an equal element with the operational elements in planning any military operation. Equipping a contingent, transporting it the crisis area and sustaining it is every bit as important as training the troops and leading them in battle. The analogy of logistics as being the vital link in the military capability chain is more valid today than ever before."[26]

In the Canadian military, logistics is defined as "one of the three basic military arts in modern doctrine" and involves the "provision of resources to support the strategy and tactics of combat forces".[27] Brigadier-General W.C. Leach, former Canadian Forces Director General Supply Systems (DGSS) and Logistics Branch Advisor, views logistics as "that which turns strategy into tactics, translating failure into success and vice-versa".[28]

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[25] Douglas Bland, ***The Administration of Defence Policy in Canada - 1947 to 1985***, (Kingston: Ronald P. Frye & Company, 1987), p. 134.

[26] Interview with James C. Smith, op.cit.

[27] ***Handbook on the Canadian Forces Logistics Branch,*** Department of National Defence, 1993, p.1.

[28] Quote obtained in interview with Brigadier-General W.C. Leach, Director General Supply Services and Canadian Forces Logistics Branch Advisor, (National Defence Headquarters, Dec 6, 1993).

The above definitions of logistics are fundamentally associated with the moving and supplying of armies on the battlefield and are more applicable to an examination of logistics during the two World Wars and the Korean War. In examining the effectiveness of a logistics system as a whole to provide support to operational forces, the definition of logistics must be "expanded" beyond the more "traditional" definitions highlighted thus far. In the context of this study, logistics is defined as; *all military and civilian functions designed to support the operational capabilities of combat forces.*[29] This definition encompasses a broad spectrum of related activities beginning with the defence industrial base and culminating with the logistics support provided to military forces in an operational environment. To define logistics simply as the moving and supplying of armies on the battlefield represents a "narrow interpretation" which excludes the impact of national political and economic priorities on the effectiveness of the logistics system.

An assessment of the effectiveness of the military logistics system must also include an examination of "non-military" factors (such as these political and economic priorities) which contribute to the capabilities of that system. For example, the defence industrial base provides the logistics system with the "means" for its effectiveness through the production of the materiel and equipment required by the logistics system to support military operations. The procurement of these "means" is dependent upon

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[29] Ibid.

national political and economic priorities which often seek to maximize industrial benefits at the expense of qualitative or quantitative levels of operational support. These effects will be examined further in the next chapter through discussion of Eccles' notion of "producer and consumer logistics".

In the context of the integration of the Canadian military logistics system, the failure of this process will reflect the application of the "expanded" definition of logistics. The chapters that follow will highlight the political and economic priorities which played an important role in determining the effectiveness of that system in supporting its operational forces. The application of the "expanded" definition of logistics will be used to permit a more thorough examination of the integration process and the circumstances which led to the failure of this process. This will lead to a better understanding of how this affected the operational capabilities of the Canadian military.

THE LOGISTICS EVOLUTION

The history of logistics can be summarized by periods of development in the supply, transport and maintenance capabilities of armies which coincide with the major developments in strategy and tactics. Hence the most direct approach to a study of the

evolution of logistics would be to conduct a comparative analysis of the strategic and tactical evolutions in warfare with the associated changes that have occurred in the principles of logistics and the techniques with which they are applied on the battlefield in support of those strategies and tactics. For example, the growth in the size of modern armies, and the technological advancements made in firepower and industrialization, were all developments which had profound effects on the conduct of war. These changes not only affected the tactics and strategies practised by armies, but equally affected the logistics requirements necessary to support their implementation. As armies grew in size, their logistics requirements grew exponentially. As armies became more mobile, so too did their logistics organizations. Logistics principles and techniques evolved along side of the strategies and tactics of the day and remained essential elements in the conduct of war.

Wars during the Middle Ages were fought with bows and pikes and by Men at Arms summoned by feudal lords. Feudal armies lived off the "spoils of war", as the revenues of the Crown were usually insufficient to support large standing armies. Regardless of how soldiers were recruited, how they were trained, and even how they fought, they still required "to be paid, cared for, and equipped".[30] The "booty and plunder" a victorious army received from a defeated enemy or town were often the sole resources the soldiers had for their survival. As armies increased in numbers of soldiers

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[30] Geoffrey Parker, ***The Military Revolution: military innovation and the rise of the West - 1500 to 1800***, (Cambridge: Cambridge University Press, 1988), p.61.

and weaponry, so too did their logistics requirements. "Plunder" and "booty" soon proved insufficient as a dependable means of support for these larger armies. These armies could not stay in one place for any length of time as supplies such as wheat to make flour could be exhausted rapidly especially during a siege[31]. As Parker points out, this led to a recognition of the need for more efficient, organized systems of maintenance, procurement, and transportation for armies.

During the 16th and 17th centuries armies began to grow at alarming rates. In 1552, during the reign of the Emperor Charles V, it has been calculated that he was supporting armies totalling over 148,000 men throughout Germany, Italy, France and Spain.[32] These large standing armies created incredible requirements for their transportation, maintenance, and supply. As Parker points out, "providing the Spanish Army of Flanders, which remained constantly mobilized from 1567 to 1706, with the essentials of its support and maintenance was an impressive, if not astonishing feat, even by today's standards".[33] Armies continually had to be accompanied by *camp*

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[31] Van Creveld discusses this issue at length in *Supplying War*. An army of 60,000 men required an enormous amount of flour whether on the march or encamped. Furthermore, an army which stayed in one place for any length of time inevitably would have to suspend its operations and function as "a food-producing machine that milled grain, gathered wood, baked flour and reaped fodder". As Van Creveld states, "Indeed it was possible for an army's military function to be virtually suspended in favour of logistic ones for entire periods. This was especially the case when fodder had to be reaped, and extraordinary precautions to avoid being surprised during such time were necessary." - p.35.

[32] Parker, op cit., p.45.

[33] Ibid., p.75.

followers such as carters, ostlers, servants for the troops, cooks, and medical support.[34] In addition to the soldiers and horses, all of these "support staff" had to be fed, clothed, lodged, and transported.

As armies increased in size, they had to be supported by: "protection money" received from villages; "contributions" such as food, clothing, munitions, lodgings and transport; and, civilian "contractors" who "serviced" armies in areas frequently visited by troops.[35] Constant maintenance of armies was necessary to ensure they were efficient and effective. Occasionally the numbers of "civilian supporters" would equal or surpass the armies they were supporting.[36] Then, as is the case today, "an army marched on its stomach". This alone was an astonishing feat as Engels explains in *Alexander the Great and the Logistics of the Macedonian Army*[37] . For example, to feed an army of 30,000 a pound of meat per man, per day, required the slaughter of over

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[34] Ibid., p.78.

[35] Ibid, pp. 66-67.

[36] Parker gives a more specific example in further text: "When the Spanish Army of Flanders laid siege to Bergen-op-Zoom in 1622, the Calvinist pastors in the beleaguered town virtuously recorded in their diary that `such a long tail on such a small body never was seen:... such a small army with so many carts, baggage horses, nags, lackeys, women, children and a rabble which numbered far more than the army itself'."- p.77.

[37] Donald W. Engels, ***Alexander the Great and the Logistics of the Macedonian Army***, (Berkeley: University of California Press, 1978), p.145. Alexander's Army of 65,000 (including 16,000 followers) required 6,100 cavalry horses, 1,300 baggage animals, and 8,400 pack animals to carry provisions. The grain and forage required for the animals totalled over 216,000 lbs per day. The water required by these animals totaled over 126,000 gal per day. The equivalent amounts for the soldiers and followers was over 32,000 gal of water per day and 20,000 lbs of grain per day. (Appendix 5, Table 3).

1,500 sheep daily.[38] This was further complicated by transportation problems for armies that were constantly on the move. The transportation of a week's supplies of flour meant transporting the ovens to bake it in and the wood to fire the ovens.[39]

The increase in importance of these support requirements consequently affected strategies employed by armies. Wars were often fought until one side's resources were exhausted. Victory often went to the army that fought supply shortages, sickness, accomodation and transport deficiencies better than its opponent. Rather than "win" a battle through strategic and tactical "brute force", commanders recognized the benefits of *logistical attrition* to secure an enemy's defeat. An example of this technique was observed with Edward III's first expedition against the Scots;

> "The intention of the English lords... was to keep the Scots besieged there; for, as they could not well fight them, they hoped to starve them. They knew from their prisoners that they had neither bread, wine, salt, nor other provisions..for they were so weakened by famine that they could scarce move."[40]

Yet, this "strategy" of attrition eventually proved to be ineffective as it became increasingly taxing financially and logistically for both sides. Unfed, cold, and unpaid

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38 Parker, op.cit., p.76.

39 Ibid., p.76.

40 Sir Edward Bruce Hamley (General), ***The Operations of War: Explained and Illustrated,*** (London: William Blackwood and Sons, 1878), p.9.

troops often resorted to mutiny or desertion.[41]

When considering military strategy throughout history, one undoubtedly will study the strategies of Napoleon. Not surprisingly, as Van Creveld points out, military historians have failed to credit "the one field of Napoleonic warfare that is still believed to have been fundamentally different from anything that went previously... the logistics one".[42] Napoleon established "a properly organized military requisitionin service" which was possibly the first ever of its kind.[43] Napoleon's Russian campaign provides an excellant example of the evolution of the importance of logistics in warfare. Napoleon's logistics plan in his German and Northern Italian campaigns were effective because they were employed in prosperous, resource "abundant" regions and were coupled with "short, sharp strategies". In each campaign, each country along Napoleon's route of march provided his military with the vast logistics resources which could be organized and stockpiled in "supply depots";

> "Officers were charged with locating food stockpiles, often even before war had broken out. The basic calculation was that a given area could support an army roughly equal in size to its own population for about two weeks without serious strain. Napoleon's agents would advance with his armies, secure food stuffs and establish forward depots whenever

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[41] Martin Van Creveld, ***Technology and War - From 2000 B.C. to the Present***, The Free Press, MacMillan Publishers, 1989, p.116. - According to Van Creveld, supply requisition was a routine and complicated undertaking; "So bad was the problem of desertion that the troops could not be permitted to forage on their own, but had to do so *en bloc and under guard*".

[42] Van Creveld, ***Supplying War***, p.2.

[43] Van Creveld, ***Technology and War - From 2000 B.C. to the Present***, p.116.

> needed. This meant the army could "travel light"...therefore fast...key to Napoleon's victories."[44]

The planning that went into Napoleon's attempt to conquer Russia included the establishment of "supply depots" to store food and other supplies, close to the Russian border. To transport these supplies to the bases and to the soldiers, he ordered the production of thousands of light one-horse carts.[45] He considered the logistics requirements of his armies much in advance of the actual offensive. Consideration for the logistics requirements of his armies allowed Napoleon to conduct his rapid strategic advancement into Russia. Yet, by the time his "Grande Armee" reached Moscow, its soldiers were starving, freezing and exhausted. Napoleon was forced to retreat and Russian forces continued to attack his retreating army back into Prussia. Napoleon had been well prepared logistically for the invasion, but had not considered the logistics requirements to feed and supply an army in an equally rapid (and unexpected) retreat: "No strategy or tactics could overcome the fact that the troops were hungry, freezing and lacked fighting equipment.[46] Nonetheless, Napoleon was more aware of the

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[44] Al Nofi, ***The Napoleonic Revolution in Logistics*** in Strategy and Tactics, p.34., cited in ***The Logistics Branch Handbook***, Department of National Defence, (Supply and Services, 1983) pp. 3-4.

[45] Hunter, LCol T.M., CD, ***Napoleon in Victory and Defeat,*** Queen's Printer and Controller of Stationary, Ottawa, 1964, p.196., cited in "Logistics Branch Handbook", op cit., pp. 3-5. According to Hunter, Napoleon was properly prepared logistically for the Russian campaign but it was his strategy that failed him; "The key to Napoleon's strategy... was to draw the Russian armies to the defence and achieve a quick decision. The Russians realized this strategy... and continuously retreated... leaving nothing with which Napoleon could feed his men and animals." Napoleon's strategy failed for the same reasons it had been so successful; his adherence to, and neglect of, important logistics considerations.

[46] "Handbook on the Canadian Forces Logistics Branch", Department of National Defence, Supply and Services, 1993, pp. 3-7.

logistics requirements of his armies than many of his contemporaries, and he established a precedent for detailed logistics provisionment in the formulation and execution of strategy.

It was not until the industrial revolution that the logistics problems experienced by Napoleon and others who followed were resolved and simultaneously became more complex. Although industrialization allowed armies to be transported further from their support bases and supplied for longer periods, it also increased the effects of "friction" on strategic plans. As strategic plans became more grandiose, so too did the logistical requirements to implement them.

However, the true significance of these developments was not fully observed until they were learned as valuable lessons in the First and Second World Wars. Nowhere has the evolution of logistics and its effects on strategy been more apparent and more decisive than during these periods. In both wars, the Allied logistics requirements were astronomical. This factor had a definite effect on the strategies that were adopted. For example, Montgomery's rapid advances along the North African coast were constantly "put on hold" while he waited for re-supply.[47] It is arguable that these logistics considerations may have prevented the execution of a better, or certainly a different, strategy than the one Montgomery adopted. In the D-Day operation, the

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[47] Weeks, op cit., p. 93.

desired strategy could not be carried out until the necessary resources, men, equipment, aircraft, and ships were in place. Every change in strategy, resulted in changes in the allocation of these resources and *vice versa*. For example, Churchill was preoccupied with the shortage of the necessary number of landing craft required for the operation as this delayed the actual D-Day date.[48] Concerning the war in the Pacific, MacArthur experienced critical logistics problems as well;

> "The great problem of warfare in the Pacific is to move forces into contact and maintain them...victory is dependent upon the solution of the logistics problem."[49]

Many of the major strategic decisions of the Second World war were based as much on logistics capabilities as on the combat fighting capabilities of the Allied forces. Montgomery's Eighth Army and other Allied mobile formations in North Africa were significantly limited by delays associated with the Allied logistics system. North Africa was without any local resources. As such, field supply depots and maintenance centres were the only source of logistics support. Reliance on rear area support based in coastal shipping ports forced both Allied and Axis powers to focus a majority of their strategic efforts on control of harbours and "mastery in the Mediterranean".[50] The battle to

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[48] Sir Winston S. Churchill, ***Closing the Ring***, (Boston: The Houghton Mifflin Company, 1951), p.514. Concerning this, Churchill remarked; "How is it that the plans of two great empires like Britain and the United States should be so much hamstrung and limited by a hundred or two of these particular vessels will never be understood by history."

[49] Huston, ***Sinews of War - "Army Logistics 1775-1953"***, pp.435-436..

[50] Lt H.B Kala, ***"North African Campaign 1940-1943"***, (Natraj Publishers, Dehra Dun, India, 1978), p. 112.

maintain supply lines of water, food, ammunition and, especially, fuel preoccupied commanders at all levels. On more than one occasion, the Allied advance to Tripoli was halted due to fuel shortages. Similar logistics problems served to dictate Montgomery's attack plan in the Battle of Buerat Line. Heavy gales at Benghazi port ten days before the attack was to begin resulted in a reduced supply intake by 60%, forcing Montgomery to modify his plan. He was left to attack with only three divisions instead of four on Buerat.[51]

As for the Axis forces, Rommel was plagued by inherent weaknesses in his own logistics system. The Italians were in complete control of the shipping and ports, which severely limited Rommel's influence on the supply system.[52] Rommel's supply lines were stretched to the limit, and "his handling of the battle was greatly influenced by availability of fuel".[53] As Kala states;

> "The study of the North Africa campaign cannot be completely understood without considering the administrative factors and resources available to the rival sides. The number of formations involved in the battle can be misleading, for, in the case of the Germans, these were often severely depleted, non-motorised and without sufficient supplies particularly fuel." [54]

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51 Kala, op cit., p. 76.

52 Ibid., p. 114.

53 Ibid., p. 118.

54 Ibid., p. 119.

Logistics deficiencies not only prolonged the campaign in North Africa, but also greatly affected the strategies employed by both sides. Furthermore, the Allies were severely restricted strategically because of numerous enemies on numerous fronts. Limited logistics capabilities (primarily in the form of supply ships and transport ships) forced Allied Commanders to concentrate the implementation of strategy on one enemy at a time. Control of Atlantic and Pacific shipping lanes over the Germans, and Italians and, Japanese respectively placed heavy demands on Allied logistics resources. The war in the Pacific meant a diversion of troops, supplies and cargo ships from their destinations in Europe. Strategically, there was no reason why there should not have been simultaneous all-out efforts on all fronts. However, logistics resources were spread so thin that this became a key factor limiting strategy.

The importance of logistics capabilities in the Second World War clearly penetrated all aspects of planning both military and civilian. Deployment strategy was governed by levels of industrial mobilization, deployment strengths, and subsequently military logistics capabilities. Industrial mobilization represented the civilian producer's input into the logistics system. It consisted of the build-up of an arsenal of men, supplies and materiel to equip the divisions and squadrons which were responsible to implement future strategic military plans.[55] Industrial mobilization became a primary factor in determining deployment logistics capabilities, and consequently overall

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[55] Huston, *"The Sinews of War"*, p. 424.

deployment strategy. From the military aspect of a nation's economy to the support of the fighting troops on the battlefield, logistics capabilities were key factors in the planning process. Shortly (5 years) after the end of the Second World War, strategies, tactics and logistics changed again, this time quite dramatically.

LOGISTICS AND THE COLD WAR

The Korean War and the threat of Communist expansion in Europe created new requirements for military logistics support. As Huston states, "the experience of two world wars and Korea demonstrated the basic necessity of international cooperation in matters of supply in coalition warfare"[56]. Logistics requirements to support U.S. troops 5,000 miles from national support stocks, were key determinants in how the U.S. was going to fight the war[57]. The American approach to fighting the "spread of Communism" was to throw money and materiel resources to those countries deemed most threatened or vulnerable to this expansionism. Huston summarizes the Cold War as a "logistics situation" by 1950;

> "So far as the United States was concerned, the Cold War was essentially a contest of logistics. It had entailed, for the United States, military

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[56] James A. Huston, ***"One For All - NATO Strategy and Logistics through the Formative Period, (1949-1969)"***, (Newark: University of Delaware Press, 1984), p.289.

[57] James A. Huston, ***"Guns, Butter, Powder and Rice - U.S. Army Logistics in the Korean War"***, (Selinsgrove: Susquehanna University Press, 1989), p.36.

> operations without the direct combat of war; that was logistics. American policy had committed itself to programs of foreign aid, that is logistics support, as the best means of preventing a third world war."[58]

From a doctrinal perspective, the Cold War and the "nuclear era" brought about a military strategy which was based on the assumption that the next major war would be a devastating, short-lived conflict resulting in an enormous loss of human and materiel resources. The tactical doctrine of nuclear warfare had armies more widely dispersed on the battlefield, making logistics support in warfare more complicated, resource consuming, and increasingly hazardous. The Cold War and the nuclear age brought a technological revolution in warfare which many considered to have rendered most principles of the traditional art of war obselete. In this environment many logistics practices were considered somewhat irrelevant.

By the late 1950's and early 1960's, military strategies reflected the belief that any subsequent major war would be a short, devastating thermo-nuclear exchange. The strategy of Massive Retaliation assumed that the next war would be over before any large scale mobilization of resources could occur. By the mid-1960's, the strategies of limited nuclear war and *flexible response* were based on the assumption that the escalation process from conventional to nuclear war could be *controlled.* The desire to control this process increased the requirement for flexibility, sustainability, survivability

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[58] Ibid., p.36.

and responsiveness in the military logistics system in order to accomodate these more complex strategies and tactics.

With controlled escalation came a new requirement for more specialized, efficient, and responsive logistics capabilities that could allow armies to be deployed rapidly anywhere in the world on short notice. Once again, logistics techniques, concepts, and principles would have to be "upgraded" to support these new strategies.

CONCLUSION

In this chapter, discussion has focussed on the basic theoretical relationship between logistics, strategy and tactics, as well as on the historical changes in the nature of logistics. Historically, the strategic dimension of war has dominated military planning. However, logistics is inherent in proper military planning; in that for a strategy to be successful, logistics capabilities must be key considerations in its formulation. The fighting forces, which execute strategy through tactical operations, perform the most critical role, but without sufficient logistics support, those operations ultimately fail to meet their aim. This factoring of logistics requirements and considerations injects "flexibility" into the formulation of strategy. In turn, logistics

flexibility depends on logistics system responsiveness, efficiency, effectiveness, and on the availability of the necessary equipment and trained personnel.

Chapter One also highlighted some of the changes in the development and importance of logistics capabilities. As strategies changed and evolved, so too did the logistics capabilities required for their implementation. Throughout these changes, the capability of the state to provide the required logistics resources has determined the utility of these new concepts and to an extent, the success of strategies. The availability of adequate logistics support, whether represented by the exploitation of the land and its people during the 17th Century, or the economic commitment and industrial potential of the United States during the Cold War, remained a constant factor in the determination and implementation of new strategy throughout. The most obvious change has been the degree of expansion in the sphere of influence of logistics capabilities from the military aspect of the nation's economy to the economic aspect of strategy. For logistics, increased flexibility has provided increased efficiency and compatibility, not just for logistics plans, but for the entire logistics system as a whole from the civilian producer to the military consumer. These concepts and principles will be examined more extensively in the next chapter.

CHAPTER TWO: CONTEMPORARY LOGISTICS THEORY AND PRINCIPLES

The major changes in strategic concepts and tactical doctrines in the 1960's had a dramatic impact on the logistics techniques and principles associated with them. The strategy of flexible response and balanced forces, adopted in the 1960's, relied on strategic flexibility to deal with varying levels of conflict, from conventional to nuclear. The attainment of this flexibility is reflected in the state's willingness and ability to provide the required military capabilities, including, most importantly, a logistics system which could support that military.[59] The focus of this chapter will be on the changes in logistics principles and concepts and the impact these changes had on the structure and operation of the military logistics system in the late 1950's and early 1960's.

Eccles defined strategy as the "comprehensive direction of power" and tactics as "its immediate application".[60] He argued that logistics "permeates the entire military establishment" from the civilian policymaker to the commander on the battlefield. He prefers a detailed examination of logistics, not merely as the concept of the supply,

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[59] Eccles, op cit., p. 65.

[60] Ibid., p. 46.

maintenance, and transport of armies on the battlefield, but rather as a coherent system. This system is bridged with the economy of the state through the relationship between the `civilian producer' and the `military consumer'. The civilian producer represents the national industrial production and mobilization capability. The military consumer represents the user of this capability at all levels of operations.

PRODUCERS AND CONSUMERS IN THE LOGISTICS SYSTEM

Eccles described logistics as the bridge between the economy of the nation and the strategy of a nation's military.[61] Producer logistics starts in the nation's economy in the defence industrial base with the *civilian producer*, and ends with the application of logistics support to operations by the *military consumer*. Both civilian and military participants make up the military logistics system. Within the military logistics system, there often exists a difference of priorities between the military consumer and the civilian producer. The military consumer's "needs" are not always met or supported by the civilian producers in the defence industry. Especially during peacetime, the political

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[61] Eccles, op cit., pp. 72-74. Producer logistics starts as an entirely civilian concept beginning in the nation's economy. It is the economic, business and industrial action and production of the materiel and human resources required to support the military. Consumer logistics converts the actions carried out in producer logistics into a system of military logistics support units. These units are organized to support various levels of combat operations.

and economic priorities of the government focus on the maximum distribution of industrial benefits at the expense of the operational requirements of the military logistics system. Ultimately, in a democracy, the civilian producer will have final say over whether or not the military consumer's statement of requirements is legitimate or affordable. More often than not, the military consumer is forced to accept a reduction or restriction in his statement of requirements. In times of war, military considerations may prevail over economic concerns. However, in peace time, there may be limited public support for substantial military expenditures unless those expenditures serve a particular political purpose.

At the producer end of the logistics system these factors have an indirect impact on operational effectiveness. For example, during the procurement phase, one program may be implemented at the expense of another program of less political importance or utility. The military consumer is then forced to accept equipment designs which do not always meet specific operational requirements. Many military commanders are left with the impression that procurement decisions are based more on political and economic compromises rather than tactical or strategic necessity. This impacts not only on the effectiveness of the logistics system, but on the ability of the military to carry out its operational tasks. Critical decisions concerning procurement programs may reflect a desire on the part of the government to foster national or regional industrial growth.

The civilian producer in conjunction with the civilian policy-maker are

responsible for ensuring that the national strategies or commitments chosen for the military are met with a willingness to provide the logistics personnel and materiel resources identified by the military as necessary. The civilian executive must be made aware of the consequences of its actions on the military consumer and *vice-versa*. What may prove to be beneficial economically, may not be beneficial militarilly. It is equally as important that the civilian producer understands the importance of operational effectivness as it is for the military consumer to understand the civilian concepts of economics, business management, and financial control.[62] Maintaining this balance will ensure or at least increase the probability that economic savings can be made along with improved logistics capabilities.

Fundamental to achieving this balance is a military strategy which not only meets national objectives (particularly related to domestic socio-economic issues and commitments to collective security), but it must also be structured to allow the nation's logistics system to support it in its implementation and sustainment. Without an effective logistics system, national military strategies will fail in an operational theatre. Strategic level logistics considerations will limit when, where, and how operational forces will deploy to a theatre of war. Operational theatre logistics considerations may limit the buildup, movement, size, and speed of combat forces. The military logistics system is reponsible to manage logistics concerns in both environments.

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[62] Eccles, op cit., p. 78.

THE MILITARY LOGISTICS SYSTEM

The primary function of the military logistics system is the planning, movement and sustainment of combat forces in the execution of a military strategy and operations. The functional areas represent a blend of civilian and military interaction which include ***supply systems***, ***maintenance systems***, ***transportation systems***, ***general engineering systems***, and ***health services***. These areas carry out the ***logistics process*** which is represented by four elements: ***acquisition***, ***distribution***, ***sustainment***, and ***disposition***."[63] At the strategic level, the logistics system, through these functional areas, ensures the necessary logistics resources are procured, allocated, and distributed to the operational commanders to generate combat forces, sustain their operations and achieve "maximum combat effectiveness"[64].

The effectiveness of the logistics system rests on the shoulders of the military and civilian commanders. When operational commanders experience difficulties in formulating and implementing strategy and tactics, their counterparts in the logistics system are responsible to eliminate or minimize these complications, obstacles, or delays in the operational plans. If these complications are significant enough, without

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[63] ***Defence Planning Guidance 1997***, National Defence Headquarters Director General Force Development, Ottawa, 29 May 1996, Chapter 1, p.2.

[64] Ibid., p.4.

the effective support of the logistics system, the strategy can fail "internally" even before it is put into `action'.[65]

The `effectiveness' of a military strategy is difficult to measure quantitatively and qualitatively as there are a number of `abstract factors' which affect the success or failure of operations. One can measure numbers, weapon strengths, and equipment and apply formulated strategies and tactics against an adversary in an attempt to secure its defeat. However, logistics `effectiveness' is obtained through the establishment of a logistics system that is capable of responding to the operational forces with the necessary support at the moment required for the necessary duration. This is a fundamental general principle of logistics and is a determining factor in the effectiveness of the logistics system.

PRINCIPLES OF LOGISTICS

The logistics system allows a nation's military to attain the objectives of its strategy, not simply through the application of logistics techniques, but through the adherence of the logistics system to established logistics principles.[66] Logistics

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[65] Edward N. Luttwak, ***Strategy: The Logic of War and Peace***, (Cambridge: Harvard University Press, 1987) p.14.

[66] Eccles, op.cit., p.71.

techniques refer to the application of direct logistics support to operational military forces and those techniques are restricted by the level of technological advancement of those forces. Logistics principles represent the guiding factors in the formulation of logistics techniques and are based as much on political will and national economic capabilities as they are a product of operational necessity. Eccles distinguished logistics principles from logistics techniques - the former "having a relativly high degree of endurance", while the latter "may change very rapidly with advances in technology".[67] Logistics techniques have changed as often as military technology changed; logistics principles have not changed significantly. However, the priorities placed on certain logistics principles have changed as national strategies have changed.

The logistics system prepares for war through the adherence to the logistics principles of ***responsiveness***, ***simplicity***, ***flexibility***, ***economy***, ***attainability***, ***sustainability,*** and ***survivability*** when planning and conducting operations. These principles are defined as follows:

A. Responsiveness. A key principle is getting the right support in the right place at the right time;

B. Simplicity. The avoidance of complexity which allows for a more effective and efficient planning and provision of logistics support. Much of this is accomplished through standardization of support priorities and procedures;

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[67] Ibid., p. 71.

C. Flexibility. The ability to adapt logistics support structures and procedures to constantly changing situations, missions, concepts of operations, and support requirements. Without flexibility, logistics plans and operations will not achieve the desired responsiveness or economy. Flexibility for the logistics system implies inherent system redundancies, centralized control, integration of capabilities, and the ability to anticipate system requirements;

D. Economy. The most economic means of providing the support required without limiting application of the principles of flexibility, responsiveness, and survivability;

E. Attainability. The ability to provide the minimum logistics support required to commence operations. This is also known as logistics ***readiness***;

F. Sustainability. The measure of the ability to maintain logistics support to all forces conducting operations for the duration of those operations; and

G. Survivability. Logistics organizations must be able to prevail in the face of potential destruction as they are more often the "high value" targets. Survivability may require that logistics installations are decentralized and dispersed at the expense of economy.[68]

These principles apply equally to the strategic, tactical and logistics system commanders during the mobilization, deployment, employment, sustainment and redeployment phases of operations. Ultimately, adherence to these principles will provide the best assurance of the logistics system's ability to support the operational capabilities of the combat forces. It is this operational capability that ensures the state's ability to meet its

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[68] ***"Doctrine for Logistics Support of Joint Operations"*** JP 4-0, United States Army, 27 January 1995, Chapter 2, pp.1-3.

defence commitments.

Communication, command, and control in the logistics system and the application of the above principles in the logistics planning and implementation process should ensure this operational capability. The logistics techniques employed in a particular scenario may prove effective and efficient, but they are by no means the sole indicator of the capabilities of a nation's logistics system. As stated earlier in this chapter, the principle of flexibility is the determining factor in the effectiveness of the logistics system. This flexibility allows the logistics system to adapt to its structures and procedures to constantly changing requirements, situations, missions and changes in operational command and control. Logistics flexibility is achieved through integration of these structures and procedures as well as their command and control elements. This integration must also adhere to the princple of *simplicity* which is provided for through the standardization and prioritzation of logistics procedures. If the logistics system's procedures are complicated and unique, in the sense of how the functions (supply, maintenance and transport) are executed, the ability of the system to respond to and sustain an operation will be limited. Simplicity is achieved through uniformity of planning and execution of logistics procedures at both ends of the logistics system.

In addition to this, the logistics system must be at a predetermined `state of readiness' to respond with the appropriate logistics technique on a moment's notice. This *readiness* reflects the logistics principles of *responsiveness* and *attainability.*

Underlying this readiness is the state of training and serviceability of those resources and the location of those resources. Once a logistics system is determined to be logistically `ready' it must then be proven capable of maintaining that level of support to the operational forces for the predicted duration of a potential conflict. This is known as `its sustainment capability' and refelcts the logistics principle of *sustainability*. This capability is dependant upon economic and industrial capabilities as well as the political will of the state. Logistics sytem sustainment capability is also a key factor in the establishment of a nation's deterrent credibility, be it conventional or nuclear.

Credible logistics capabilities are as critical to conventional deterrence as are credible operational combat capabilities. Furthermore, logistics capabilities go beyond operational combat capabilities as they are required long after the `fighting' has ceased. The same support from the logistics system that positioned those combat forces `in theatre' is required for the `redeployment' and `clean-up' phases of the operation. This implies the requirement for the *survivability* of the logistics system, particularly in the context of a foreign theatre of operations where the military consumer is `cut-off' from his civilian producer. Support from national logistics system elements becomes an expensive and time consuming endeavour as this survivability requires dispersion and decentralization. The principle of flexibility also requires the logistics system to have duplication of certain functions to provide the redundancy which will ensure the system's survivability.

The one principle of logistics which must be adhered to which also limits the application of the above principles is that of *economy*. The national economy provides for the logistics system and the resources it employs. Consequently the logistics system must always function with economy of effort, economy of resources, and economy of financial cost. If economies of effort and resources are not maintained, limited human and materiel resources will not be available to ensure the operational sustainability or survivability of the logistics system. If these economies are not observed, then failure to maintain economies of financial cost will logically follow. In a time of war, economy of financial cost is perhaps the logistics principle observed least. However, during a prolonged period of peace, the principles the logistics sytem are often forced to adhere to are those of economic flexibility, financial sustainability, monetary attainability, and fiscal survivability. Depending on the demands on peacetime forces, the economic aspects can override immediate and future military strategic concerns much to the detrement of military operational capabilities. These economic aspects are reflected in the state's recognition of the importance of the logistics system, the state's willingness to provide the financial support to ensure that such a system is in place, and the command, control and maintenance of that system by its civilian and military staff. This *economic situation* reflects what Eccles described as the "duality in the nature of logistics", between "business efficiency and combat effectiveness"[69] in the nation's military logistics system. The system is structured at the producer end to function as a large

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[69] Eccles, op cit., p. 76.

corporation maximizing productivity and minimizing costs. At the consumer end, the logistics system is structured to maximize its application of logistics principles for support to the operational forces and minimize the impact of limitations imposed by human and materiel shortages and budgetary restraints. In a time of peace this relationship can result in conflicting and competing priorities between the logistics system's civilian managers and its military commanders. Proposed solutions to this situation include centralization of command and control, standardization, and integration of common logistics functions.

LOGISTICS SYSTEM INTEGRATION

The military logistics system has to be structured in a way that fosters the desired combination of economic efficiency for the civilian producer and operational support effectiveness for the military consumer. In the 1950s and 1960s NATO military logistics systems, in particular, were a "national responsibility" and consequently they were designed around national specialization in a particular field.[70] Countries had developed their own methods of operational support. The implications of this were reflected in Liddell Hart's observation,

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[70] Huston, ***One For All***,p.288.

> "The weakest spot of any force is its administrative area.... This weakness has increased with technical progress....That complexity, and weakness, would be vastly multiplied in any force composed of national contingents intent to maintain their "national character" - each requiring different rations to feed its men; different calibres of ammunition to feed its weapons, different spare parts and tools; and each functioning on a different staff-system."[71]

Command and control of NATO's logistics capabilities was best achieved with the development of an Alliance military logistics system where all the national coalition logistics systems are operationally compatible and standardized in function procedures. One method of attaining this compatibility and functionality was to consolidate the command and control of the system.

In the early 1960's, new concerns for consolidation, centralization and integration of NATO logistics system command and control became the subject of much debate in Europe. In 1960, after a series of visits to NATO Allied Forces Central Europe Headquarters (HQ AFCENT), the Assembly of the Western European Union's Committee on Defense Questions and Armaments reported on the Alliance's logistics problems and recommended (in part) the following:

> "Recognizing that the defence in modern war requires a fully integrated and flexible logistics system adapted solely to the dictates of geography and military capabilities, where national frontiers have no part;

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[71] B.H. Liddell Hart, ***Deterrent or Defense***, (New York, 1960), p.242., as cited in Huston, *One For All*, p.290.

Recommends to the Council

1. That as a matter of urgency allied commanders be given adequate control in peace and full control in war over all logistic resources earmarked for forces assigned to their command;

2. That the logistics system of the allied forces be integrated beginning with common depots for new equipment standard to all forces...and expanding as modern equipment is introduced, while the existing national systems correspondingly contract as older, non-standard equipment is withdrawn;

3. (i) That military stockpiles, which must provide equally for the requirements of nuclear or more limited war, be brought up to the planning levels for the first 90 days, the cost being shared equitably among the countries of the alliance;

   (ii) That adequate stocks of food and medical supplies be provided for the civilian population;...."[72]

Some critics of centralization and consolidation of the Alliance logistics system argued that stockpiling 90 days of supplies and equipment would be too costly. Others argued that NATO was too `immature' to negotiate successfully even an integrated Alliance supply organization. It was possible for individual member states to enter into bilateral and mutilateral "cooperative logistics arrangements" (as the United States did with Germany) but the thought of extending these agreements to all Alliance nations was considered by some as "fanciful and ill-advised".[73] It has also been suggested that the "restlessness" many European Alliance members felt over United States dominance of NATO translated into anxiety over not having command and control over the support

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[72] ***"State of European Security: Logistics in Allied Forces Central Europe,"*** Assembly of Western European Union, Doc.180, 25 October 1960, p.3., as cited in Huston, *One For All*, p.292.

[73] Huston, ***One For All,*** pp.293-294

provided to their own forces.[74] As NATO was experiencing a cold reception for the notion of international integrated logistics, member countries like Canada were seperately considering the idea of integrating their own national logistics systems.

Although the integration of national logistics resources was not as ambitious an undertaking as that of the NATO proposal, the idea was not without its critics, particularly from within the military. At the national level, many military commanders were suspicious that underlying this movement towards integration of the military logistics system was the desire for greater overall civilian control of the system. Consolidation and centralization of all components of the logistics system was believed by many military commanders to be beyond justification and certainly implementation. Military professionals argued that consolidation of the military logistics system removed the decision making capabilities from the hands of those individuals most "qualified and capable" of carrying them out. An increase in command and control of the logistics system by civilians (whose understanding of military logistics theory and principles was considered somewhat limited), might in fact decrease the overall efficiency and effectiveness of the system as a whole. The military merit of a particular policy might go unrecognized by civilians who would be more inclined to be concerned with eliminating costly duplication and less likely to be concerned with the tactical and strategic implications of their decisions. The desired flexibility, responsiveness, and

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[74] Ibid., p.296.

sustainability of the military commander is rapidly decreased as the necessary information and subsequent action gets caught in the "bureaucratic mill" of an organization forced to prioritize the requirements of the land, air and naval forces.[75] On August 13, 1962 in the U.S. House of Representatives, the Committee on Armed Services published the Report of the Special Subcommittee on Defence Agencies, which concluded that: "the rapid development of centralized command and logistics in military organizations serves only to move decisions higher and concentrate them into the hands of a few people, ...ultimately all decisions, large and small, will be crowding in at the top awaiting resolution".[76] A logistics organization with centralized command and control spends a considerable amount of its time assembling and deciphering all the information with which it is bombarded. A decentralized logistics system allows the commander the flexibility and speed required to make decisions which are required that would not be possible under a centralized and integrated structure.

Furthermore, reliance on one large centralized and integrated system may decrease the system's survivability through the mechanical or administrative failure of the entire system as opposed to only one support service for the operational forces. A centralized integrated logistics system is a large strategic target susceptible to paralyzing conventional or nuclear attack.[77] Its survivability is limited without

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[75] Samuel L.A. Marshall, ***The Real Reserve Mess***, *"New Republic"*, Vol.146, No.5 (Jan.29, 1962), p. 14.

[76] Eccles, op cit., p. 183.

sufficient system "back-ups". Eccles pointed out that duplication in the logistics system, such as the supply function, might be deliberate as a means of providing the necessary redundancy in the system.[78] In this way, if one service loses its capabilities, then another service's duplicated system acts as the back-up in the organization. Regardless, for the civilian policy-maker, this intentional redundancy in the logistics system is not politically or economically viable.

For the civilian policymaker, an integrated logistics system represented the only option for a country whose objectives centre on financial restraint and its role in maintaining a peaceful international environment and rather than its ability to fight a war. The civilian producers felt that the military logistics system must be managed as a business is managed so as to ensure maximum economic efficiency of the military. Ultimately, civilian control over the military logistics system would ensure "political control of military operations and economic control over operations of the defence system."[79] A key assumption was that the integration and centralization of the logistics system would automatically eliminate or at least reduce manpower and materiel waste. Advocates of an integrated logistics system believed that "... such consolidation will reduce or eliminate differences in strategic concepts and do away with duplication and

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77 Ibid., p.162.

78 Ibid., p.162.

79 Ibid., p.157.

overlap, both in procurement and in the distribution of operational supplies."[80] However, Eccles warned that this consolidation of the military logistics system should not be motivated strictly out of the desire to achieve financial savings, but rather it should reflect,

> "... an assessment of the system's `responsiveness' to the needs of the consumer, ...the `combat unit needs' must be understood or this consolidation fails in its objective."[81]

Regardless, what was most evident to both sides in the debate was the fact that advances in communications technology, data processing, and air/ground transportation in the 1950's and early 1960's had made centralization of many logistics activities more practicable.

In the 1960's, many elected officials in the West who were responsible for defence policy recognized their obligation for the maintenance of all facets of defence, including logistics capabilities. However, they were also responsible to constituents who often opposed costly defence organizations at the expense of international aid and domestic social planning. Support from constituents for defence expenditures was usually limited to programs which created jobs or bolstered the economy in their own region. During a period of detente or prolonged peace, that `military purpose' changes

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[80] Ibid., p. 183.

[81] Ibid., p.161.

to one of economic and social stimulation [82].

CONCLUSION

In the 1960's the strategy of flexible response and the technology of faster, more mobile conventional military forces placed new importance and relevance on established logistics principles. Application of these principles ensure the operational capabilities of a nation's military. This application is primarily dependent upon the state's willingness and ability to provide the required military logistics capabilities primarily through a logistics system which could support national strategies.

The military logistics system is represented by the civilian producer and the military consumer . Each group has its own ideas of how the logistics system should be structured and controlled. Each group also prioritizes logistics principles differently according to their own objectives. In the 1960's centralization and integration of the military logistics system was considered the best method to ensure its overall economic and operational effectiveness. Military commanders opposed it on the grounds it would limit the system's responsiveness, sustainability and survivability. Advocates of centralization and integration argued that it would place control properly into the hands

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[82] Eccles, op cit., p.188.

of the civilian while eliminating unecessary and costly duplicated structures. They also argued that integration would not limit the system's ability to support the operational forces but rather it would "streamline" support channels and communications networks. Ultimately, centralization and integration of the military logistics system would save money, a priority for any defense department not expected to fight a war in the near future.

For countries like Canada, the 1950's and 1960's brought the economic and social "purposes" of defence to the political forefront. The Canadian military logistics system had evolved into an enormous organization, a transcending blend of civilian and military political and economic activity. Financial and administrative accountability began to dominate the agenda of politicians who could no longer justify the necessary defence expenditures required to achieve the military parity of its NATO partners. The requirement to support and sustain operational forces was overshadowed by the desire for greater administrative and economic efficiency as well as increased social responsibility. The chapters that follow will discuss the circumstances which led to this consolidation and the reasons behind its failure to meet the assigned objectives. The next chapter will examine the evolution of the Canadian military logistics system and the events which led to the decision for its integration in the 1960's.

CHAPTER THREE: THE CANADIAN MILITARY LOGISTICS SYSTEM

Evidence of the relevance of military logistics capabilities in Canada dates back to the 1700's and the Militia.[83] In the 1700's, Militia were organized in Lower Canada, Upper Canada, Nova Scotia and New Brunswick. The British adopted the traditional French Militia system as a way of maintaining loyalties and augmenting regular British Colonial soldiers. The British Army recognized the need for a means to store their equipment and established the first stores depots in 1778.[84] At this time, the Canadian militia was comprised mostly of local farmers whose main responsibility as colonists was to provide the food for the colony to which they belonged. This meant that the militiaman/farmer could not be "called out" for long periods of time, especially during the harvest season.[85] It was not until 50 years later, that a volunteer force of

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[83] ***"The Handbook of the Canadian Forces Logistics Branch"***, Department of National Defence, op cit., pp. 3-9. As Col C.P. Stacey has documented in ***Introduction to the Study of Military History***, {(Queen's Printer, Ottawa 1960), pp. 3-4}, *"...the militia did much work apart from combat duty. A great deal of transport work was involved in maintaining the western posts and the Indian trade as well as supporting military operations. This was done by militia boatmen".*

[84] Ibid., pp. 3-11.

[85] Ibid., p.4. Interestingly enough, it was for this reason that Major-General Wolfe's surprise attack on the fortress of Quebec during the Fall harvest of 1759 was a `success'. Both Wolfe's and the Marquis de Montcalm's forces were on the verge of starvation. Wolfe realized that the winter freeze of the St. Lawrence river would make re-supply impossible, forcing a command decision over whether to launch a surprise attack or withdraw. Similar food shortages for Montcalm's forces placed the French in an equally desperate predicament. The decision was made by a French Militia Commander to release most of the militiamen in the Plains of Abraham area to allow them to harvest their crops. Wolfe chose to attack

5,000 men known as the "Active Militia" was employed in `part-time service' for the Government of the Province of Canada.[86] These were, by today's terminology, all combat forces. There were as of yet no combat service support, or administrative and logistics forces in existence.

In 1868, one year after Confederation, the Federal Militia Bill was passed which authorized the increase in the strength of the "Active Militia" to 40,000 combat arms "volunteers". This Bill also provided for a "military train, and medical staff, as well as commissariat, hospital and ambulance corps...when required".[87] However, with the departure of British Imperial forces in Autumn of 1871 from the new Dominion, the Canadian Militia had no military administrative or logistics organizations to support itself.[88] This, however, was not as critical a situation for Canada and its military, who by this time, could foresee no serious threats to Canadian sovereignty.

From the war of 1812 to Confederation, the only real threat to Canadian security

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through the Plains of Abraham, unaware of its weakened defences, and defeated the French. Consideration of the logistics shortfalls was probably the single most important factor in a battle which shaped the course of history in Canada. Supply shortages on both sides forced commanders to take actions which directly led to the defeat of one and the victory of the other.

[86] Logistics Handbook, op cit., pp. 3-13.

[87] Colonel C.P. Stacey, ***The Military Problems of Canada***, (The Ryerson Press, Toronto, 1940), p. 18.

[88] Ibid., p. 24.

had been the United States.[89] The change in relations with the United States solved many of the problems of domestic defence for Canadians as they could now depend on aid from both the British and the United States. The United States not only had the military strength by the turn of the Century, it was also developing the industrial infrastructure required to support large armies. Canada had none of these but now had access to that strength. The defence of Canada's Atlantic and Pacific shores became the primary concern for the Canadian Government and was an important concern for the British and the United States governments. As long as the latter governments felt that the protection of Canadian geographic security was protection of their own security, Canada could be assured of this comfort. Canadians could rely on the protection offered by the British and American Navies from the threat of European and Asian attack.[90]

Nevertheless, the Canadian Government recognized the requirement to contribute more and more to its own defence and the defence of the Continent. In 1883, the MacDonald government passed a new Militia Act which authorized the establishment of a seven hundred and fifty man "Permanent Force" and the creation of twelve military districts across the country. Each district was provided with a Canadian Stores Department "officer" known as the District Storekeeper who was responsible for

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89 Stacey, op.cit., pp. 1-3. In his introductory chapter the author discusses Canada's geostrategic significance and its relationship with the United States and Britain. He states that changes in the relationship with the United States from potential enemy to potential friend in the latter part of the 19th Century was fundamental to considerations of Canada's strategic position in the world today.

90 Ibid., p. 8.

all the administrative and logistics requirements of the local militia.[91] Yet, this individual was not responsible for supporting these forces once deployed. A civilian contractor usually provided administrative and logistics support in the field.[92]

By 1890 the Canadian government was spending on average $1,000,000 annually on the Militia. The requirement for uniformed military administrative and logistics personnel capable of supporting the combat arms in a large scale mobilization was finally recognized by the Minister of Militia.[93] In 1896, the total expenditures on the Militia reached $6 million. Political opposition gave way three years later and the government of the Dominion of Canada authorized the creation of four companies of Army Service Corps.[94] By 1906, the Canadian military had its administrative and logistics services completely "militarized". Increases in the size of the Canadian Militia and the development of an industrial infrastructure permitted the completion of the logistical, administrative and medical support services required for a "self-sufficient army". From this point on to the First World War, the Canadian Parliament would authorize a steady increase in defence expenditures.

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91 Logistics Handbook, op cit., pp. 3-17.

92 As Warren observes in ***Wait for the Wagon*** {(McClelland and Stewart Ltd., Toronto 1961), p. 35}, [cited in the Logistics Handbook, op cit., pp. 3-18] "The lack of military logistic services not only prevented the militia from perhaps `taking to the field', but it prevented the militia from even holding successful training camps because the services provided by the civilian contractors were terrible. For example, this quote from the ***Military Gazette***: *"camp rations were crude in the extreme... Many a good fellow put in one year at camp, never to do it again , because he `could not stand the grub'."*

93 Ibid., pp. 65-67.

94 Logistics Handbook, op cit., pp. 3-20.

A century after the United States military attacked Canadian soil, the Canadian military logistics system was an established operational organization. The Canadian Army Service Corps' efforts in World War One firmly established its role as the provisionment and transport arm of the Canadian military. Similarly, during this period the Canadian Ordnance Corps' established itself as the maintenance arm of the Canadian military. Yet, within a few years after the end of the First World War, the fervent interest in defence, which was felt during the war, was waning publically and in Parliament. A period of low priority in defence policy reflected the relative unimportance of defence issues in the eyes of Canadians. Many Canadians felt (with just cause) that there was no "threat" and even if there was, the U.S. and the British would, once again, protect them. Furthermore, it was believed that disputes in Europe would be handled by the League of Nations.[95] The "fire-proof house" atmosphere quickly led to recommendations for greater economies and efficiency in defence.[96]

The result was to change the organizational command structure of the Militia by replacing the office of the Commanding General with the Chief of Staff (the senior military officer) under the direct command of the Minister of the Militia.[97] In 1922 the Militia budget was $11 million, and Parliament passed the National Defence Act

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[95] Stacey, op cit., pp. 85-86.

[96] James Eayrs, ***Canadian Defence Policies Since 1867***, Extract from the House of Commons Special Committee on *Matters Relating to Defence,* (Supplement 1964-65), pp. 7-8.

[97] Stacey, op cit., p. 67.

(NDA), which had the effect of centralizing the control of all the Dominion's defence forces in the hands of one department. This new Department of National Defence (DND) replaced the Department of the Militia and Defence and the Department of the Naval Services.[98] DND consisted of the Minister of National Defence (MND), the Deputy Minister, and the professional heads of the three services, the Chiefs of the General, Naval and Air Staffs. In addition to this, four "Associate Members", the Adjutant General, the Quartermaster General, the Master-General of the Ordnance, and the Judge Advocate General, were created for this new DND.

Between the two world wars, the Canadian government did not employ its military in operations outside of the civil defence role. The Canadian military did not have a favourable public image in the 1920's and early 1930's.[99] This coupled with the "profound distrust" in collective security and the short-lived League of Nations left a deteriorating, neglected defence establishment under Bennett and then Mackenzie King.[100] The total defence expenditure by the Canadian Government was increased to $12 million from 1934 to 1938, but by the outbreak of the Second World War, the Canadian military was still far from what it required in the form of men, equipment and

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[98] Eayrs, op cit., p. 9.

[99] Ibid., p. 9. During the Depression years, the Canadian military was used to operate "work camps" for unemployed men. These were run like army "boot camps" and the labourers were treated like recruit soldiers. The men were fed in military fashion and slept in "tent cities". They were employed but the Department of National Defence received much criticism from the public and the media who felt the men were being treated more like prisoners of war than Canadian citizens.

[100] Ibid., pp. 9-10.

logistics capabilities.[101]

The three armed services of the Canadian military were organized differently and had fundamentally different roles during World War Two. The same was true for the three "Corps" which made up the logistics system. The Navy, Army and the Air Force had begun operating independent logistics systems to support their respective operational needs. Each logistics system was tailored to meet the unique environmental requirements of each of the three services. In other words, each logistics system was designed to be directly responsive to the operational and technical needs of its respective service. This infrastructure created significant differences in the interdependencies of supply, maintenance and transportation functions of the Navy, Air Force, and the Army.[102] These roles and functions would not change significantly after the end of the Second World War.

The Department of National Defence was exposed to much change and restructuring in the years that followed WWII. One of the biggest lessons learned from the war, at least for Canada, was the impact of failing to maintain adequate mobilization capabilities.[103] If Canada was going to play a part in the post-war "new world order" it

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101 Eayrs, op cit., p. 11.

102 ***"Evaluation of the Canadian Forces Logistics System"***, Report on Evaluation Project E-19, (Evaluation Branch, Department of National Defence, Ottawa, 31 March, 1978), p. 2.

103 Hellyer, op cit., p. 7.

would have to increase the availability of men and equipment and re-evaluate its defence policy and commitments to collective security. Rapid advancements in military science and technology in the 1950's, along with the changing global strategic situation, accelerated the need for a reassessment of Canadian military objectives. It was believed that Canada had an important role to play internationally and the price for that influence was increased commitments to collective security. This implied the maintenance of substantial armed forces.[104]

The Cold War furthered Canada's desire to participate in the maintenance of international peace and security. Canada had accepted the geographical realities of its proximity to the United States and the unavoidable necessity to contribute to the defence of the continent and the protection of the nuclear deterrent. This "necessity" was fuelled with the U.S. advocacy of the strategy of Massive Retaliation in the early 1950's. The strategy was intended to compensate for the suspected NATO conventional deficiencies compared with the Soviet conventional forces of the day. The Canadian Government was the first to reject all-out reliance on the United States' enormous retaliatory nuclear arsenal to deter Soviet conventional aggression in Western Europe. Then Canadian Secretary of State for External Affairs, Lester Pearson, felt that the NATO response to a Soviet attack should be in proportion to that aggression and not the

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[104] Peyton V. Lyon, ***Defence Policies Related to Foreign Policy,*** (Extract from the House of Commons Special Committee on *Matters Relating to Defence*, Supplement 1964-65), pp. 25-33 (quote from p. 33). In this 1964 address to the Special Committee, Lyon concluded, "Canada's military establishment can best help to make major war less likely by buying influence in those centres where the vital decisions affecting peace and war are made".

"certain death of a hundred or more million innocents".[105]

The changing nuclear strategies of the United States were the cause of some anxiety and political uncertainty for Canadian politicians of the day, particularly in the Diefenbaker Cabinet. By the late 1950's, the United States Government recognized the need for change away from the finality of the strategy of Massive Retaliation. The new American concepts of "limited tactical nuclear warfare" and "battlefield interdiction" were endorsed by the Canadian Government in 1958 with the adoption of the "strike-reconnaissance" role for the fighters of the R.C.A.F. stationed in Western Europe. In 1959 the Avro Arrow Program was cancelled and Canada agreed to participate in the production and operation of the Bomarc B missile which implied the deployment of nuclear weapons on Canadian soil. Strong Liberal criticism of Diefenbaker's defence policies brought Canadian roles and contributions to NATO and NORAD into doubt.[106] To add to this, by 1960, Canada was having difficulty in meeting its continental and European defence commitments. The Royal Canadian Air Force was equipped with outdated aircraft. The Canadian Army Brigade in Europe lacked the necessary equipment such as the tactical nuclear weapons systems adopted by its NATO allies. The large conventional forces required for NATO's Western European mobilization plans were beyond Canadian capabilities. Canada had the aircraft to transport its troops overseas but it had nowhere near the required amount or type of aircraft to move the

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105 Eayrs, op cit., p.15.

106 Burke, op cit., p. 36.

necessary equipment. The Army, too, was not without its own equipment problems. Canadian Army involvement in conventional conflict in Europe would see them up against highly mobile, mechanized Soviet forces. In addition, NATO's "forward strategy" placed Canadian forces further forward in West Germany extending both communications and supply lines. The Army lacked the mechanized equipment to bring it in line with NATO "force goals" and the required mobility in the European theatre. Attainment of such mobilization capability was, for Canada, a very costly endeavour. The equipment that was held by the military at the time was obsolete and increasingly more expensive to maintain. NATO's forward strategy isolated the Canadian Brigade in Europe from the British support system. At the same time, the British were also experiencing their own problems (mostly financial) with maintaining their committment to provide logistics support up to NATO standards.[107] The majority of logistics support to Canadian forces stationed in Germany at Soest and Baden-Baden had to come directly from Canada.

Furthermore, political opponents argued that maintenance of such a force did not serve any political or economic purpose for a nation which had adopted the self-proclaimed role of "Middle Power". Canadian foreign and defence policies were following two paths for the maintenance of peace: one was through contributions to deterrence, and, the other was through participation/mediation in the disarmament

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[107] Extract of comments made by Committee Member, D. Groos, to the House of Commons Special Committee on Matters Relating to Defence Minutes of Proceedings, (Ottawa, October 17, 1963) p. 494.

process. This relationship between defence and foreign policies was, for a Middle Power like Canada, a function of economics and "strategic flexibility". Canadian Secretary of State for External Affairs, Paul Martin, summarized the situation as follows:

> "In the nuclear age, the foreign and defence policies are inseparable since both have the same objective - the preservation of peace. With the Cold War of permanent major military confrontation, co-ordination of foreign and defence policy is imperative. The traditional concepts of victor and vanquished have been overtaken by technological advances in the art of war. The concept of Mutual Assured Destruction has transformed the principle purpose of a nation's military from one of winning wars to one of deterring them, and containing those conventional ones through a strategy of flexible response."[108]

Canada structured its military in line with the concept of "functionalism", to provide operationally tasked troops or "forces-in-being" as specialized forces for specific missions. The Canadian Government believed that those forces should be organized into a flexible, "multi-role" military with the "strategic mobility... to permit participation in collective security and peacekeeping and to be ready for crises should they arise."[109] What this meant in military terms was that large battle formations were no longer manned and equipped to the levels required during wartime. Only the Canadian brigade group in Germany was to be maintained at its "wartime

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[108] Extract from the address of the R.Hon Paul Martin to the House of Commons Special Committee on Matters Relating to Defence Minutes of Proceedings, (Ottawa, Thursday, July 25 1963), p. 232.

[109] ***House of Commons Debates***, The Hon. Paul Hellyer, (Ottawa, February 21, 1966), p. 1562.

establishment".

This restructuring was not, however, accompanied by a similar restructuring of the organizations tasked to support those forces. In fact, during the 1950's, the logistics sytems of the three services grew in size and complexity from their World War Two organizations as advances in military technologies increased the requirements for more effective and advanced support capabilities. The results were a large, overburdened logistics system by the end of the 1950's. The requirements of the logistics system were bordering on the unnattainable and the actual capabilities of the system were seen as "insignificant in absolute terms and flagrantly uneconomical in comparative terms".[110] It was considered operationally inefficient as well. For example, each service of the military was operating similar logistics systems but each of those systems was independent of the other in the following ways:

a. "the Air Force operated out of large, static facilities while the other services operated as self-contained, mobile fighting units;

b. the Army was organized on a regional basis, the Air Force was organized on a functional basis and the Navy was organized on a combined regional and functional basis; and

c. as a general principle of maintenance, the Navy effected repair by repair, whereas the other services effected repair by

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[110] J.S. Cowan, ***See No Evil: A study of the Chaos in Canadian Defence Policy***, (Annex Publishing Company, Toronto, 1963), pp. 9-31.

replacement."[111]

This independence of operational support dramatically limited the flexibility so necessary to accomodate the new strategy being adopted by the Canadian military. The combined operational capability of a multi-role force required a logistics system that was less rigid and more capable of responding to the needs of the seperate services simultaneously. Although objectives and functions were different from Air Force to Navy to Army, these organizations performed many of the same logistics and administrative services from their respective training schools to the separate Headquarters organizations they had established. The bottom line in 1960 was that all of this "duplication" was expensive both in taxpayer dollars and personnel.

To summarize the political situation for the Canadian military by 1960: the Canadian government was getting the most "bang for its buck" out of United Nations Peacekeeping Operations; the American government was losing confidence in the Canadian Air Defence program; and the Canadian public was seriously questioning the political and economic utility of the aquisition of nuclear weapons by the Canadian military.[112] Added to this were the soaring personnel costs, growing equipment shortages, and funding difficulties,

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[111] ***"The Changing Context of Defence Management"***, Management Review Group, (Ottawa, Department of National Defence, 1972), p. 3.

[112] Burke, op cit., pp. 42-46.

> "There was a crisis looming in re-equipping the forces. Costs were escalating dramatically; the Canadian record in design and procurement had been less than impeccable; personnel and administrative costs were dramatically reducing the budget allotment devoted to equipment. It was confidently predicted that without significant budget increases there would be no money for capital equipment aquisition by 1969."[113]

THE GLASSCO COMMISSION AND DEFENCE REVIEW

In 1961, the Royal Commission on Government Organization headed by J. Grant Glassco was appointed to examine the Canadian Government's administrative and management services with the objective of eliminating duplication and recommending more efficient management practices. For the Department of National Defence, the Glassco Commission reported that the Canadian operational defence arrangements at the time "did not envisage independent military action by a Canadian Defence force", and were characterized by "a number of separate missions with little direct relationship to one another".[114] The Glassco Commission concluded that the headquarters organization of the Department of National Defence exercised very limited control over the actual operations of the Canadian Forces once those forces were committed. Its function was more one of administrative support rather than that of an operational command. This was reflected in the size of the Department's "administrative tail" which

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[113] Government of Canada, Task Force on Review of Unification of the Canadian Forces, (Final Report, 15 March 1980), p. 27.

[114] Management Review Group, op cit., p. 4.

provided the Commission with "strong reasons for seeking a greater integration of those functions common to the three Services".[115] In conjunction with this, the Commission criticized the lack of civilian control over administrative and management functions especially in the development and procurement programs.[116] Consequently, the Commission recommended a single command structure and "... the integration of the Armed Forces of Canada under a single Chief of Defence Staff and a single defence staff, ...the first step towards a single unified defence force for Canada."[117] The bottom line was to cut costs in all functions, especially in the areas of administration and logistics. The Commission's findings and recommendations would ultimately lead to unprecedented savings in resources and manpower.

Concurrent with the Glassco Commission's report was an internal study by the Directorate of Combat Development which focussed on the one aspect of Canadian Defence policy not within the mandate of the Glassco Commission: operational readiness. The third draft of The Canadian Army Combat Development Study, The Canadian Army 1966-1970 Tactical and Logistic Concept, addressed the theoretical and practical issues of operational readiness as well as the significance of the application of logistics principles required to provide this capability. Authors of this draft recognized that the Canadian military logistics system had to be developed to reflect the "ever-

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115 Ibid., p. 4.

116 Desmond Morton, ***Canada and War***, (Butterworth & Co., Canada, 1981), p. 3.

117 Management Review Group, op cit., p. 8.

present nuclear threat".[118] This implied that a nuclear deployment posture be adopted by combat service support organizations within the logistics system which were now, themselves, subject to mass destruction. The study focussed on the application of logistics principles particularly the survivability, sustainability, and responsiveness of the logistics system in this environment. The study concluded that the Canadian Forces logistics system was in dire need of revision in order to accomodate the dispersion and fast pace of the tactical nuclear battlefield[119]. Future battles were predicted to be intense and highly mobile, requiring a greater and accelerated flow of logistics support. The logistics system designed to be employed in previous wars consisted of a constant stream of supplies and reinforcements coming forward, but was now considered too static, slow-moving, and unsafe. Traditionally, logistics support depended on "breaks" in the fighting, utilized by both sides for repairs and resupply. The study argued that these breaks would occur less and less in a battle characterized by frequent moves and continual lack of proper rest.[120] This would severely exhaust both personnel and equipment resources. It was concluded that a more adaptable logistics system was required to replace the then current system of cyclic replenishment and reinforcement. The suspected nuclear and conventional penetrability of the perceived "enemy" at the time required that logistics support organizations be located further from the forward

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118 ***"The Canadian Army 1966-1970 Tactical and Logistics Concept"***, Canadian Army Combat Development Study, (Directorate of Combat Development, Department of National Defence, Ottawa, 8 August, 1961), p. 110.

119 ***Canadian Army Combat Development Study***, op cit., p. 110.

120 Ibid., p. 111.

edge of the battle area (FEBA) and dispersed in composite groups. This implied a flexible, responsive, highly mobile, and controlled logistics organization:

> "....this [logistics] organization must be capable of moving requirements forward quickly, and, of halting or diverting logistic convoys proceeding to or from unit localities. A good, flexible communications network is indispensible. The logistic organization must be austere; duplication in function must be avoided. It cannot be static; all logistics units must be mobile. To meet these requirements, we need one strong, simple organization containing all the personnel and ...equipment to administer, supply and maintain the [fighting troops] in the field."[121]

In addition to this, the study recommended that tactical commanders at all levels be relieved of as much routine logistics details as possible. Unfortunately the above recommendations, although in line with the later push towards integration, were overshadowed by the Glassco Commission's criticisms of Canadian Defence management practices and the recommendations for economic efficiency.

In partial response to the Glassco Commission's findings and recognition of the responsibilities associated with participation in collective security, the House of Commons appointed a Special Committe on Defence in June of 1963. The Committee was appointed to "consider matters relating to defence and to report from time to time its observations and opinions thereon."[122] In his June 27, 1963 opening remarks to the

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[121] ***Canadian Army Combat Development Study***, op cit., p. 113.

[122] ***House of Commons Special Committee on Matters Relating to Defence: Interim Report***, (Government of Canada, Queen's Printer, December 20, 1963), p. 5.

Committee, Minister of National Defence, Paul Hellyer, stated,

> "It is the policy of the Government to undertake a thorough review of our defence policy and commitments in order to determine the best and most effective contribution we can make to the collective defence of the free world and to the maintenance of peace in the years ahead... to consider not only the best tasks and contributions which Canada can make in future years but also how they can be most efficiently organized. The recommendations of the Glassco Commission are being studied and will be considered in the context of future policy. Consequently, all major procurement programs which are considered to tend to limit future policy or interfere with the exercise of future options are being carefully reviewed."[123]

Hellyer's decision to put procurement programs `on hold' was both economically and strategically motivated.[124] Hellyer had already inherited former Minister of Defence, G.R. Pearkes' Bomarc Missile program which was proving to be rapidly diminishing in its usefulness for the defence of North America and increasing in operating and maintenance costs.

The main problems facing Hellyer were; the multiple requests for new

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[123] Extract from the address of Paul Hellyer to the ***House of Commons Special Committee on Matters Relating to Defence, Minutes of Proceedings,*** (Government of Canada, Thursday, June 27 1963), p. 20.

[124] For example: The decision to suspend the general purpose frigate program was based on economic considerations. The program was running high expenses and the Government was anxious to put a cap on it in light of a possible change of requirements pending the defence review. The purchase of additional CF 104 fighter aircraft for Canada's strike reconnaissance role in Europe was suspended because the French Government would not allow N.A.T.O. forces to stockpile nuclear weapons in that country. Canada had stationed some squadrons in France as part of the N.A.T.O. `forward strategy'. Without their main armament readily available to Canadian fighters based in France the squadrons were too vulnerable for attack and the strategy was undermined.

equipment from the three operational services, the military's high operations and maintenance costs[125], and its difficulty in meeting Canada's NATO commitments. The Navy was lobbying for a new anti-submarine fleet for defence against Soviet nuclear armed submarines as well as new logistics support ships to extend the fleet's operational boundaries and carry troops and supplies overseas. The Air Force was concerned about ballistic missile and bomber defence, anti-submarine capability, and the lack of an available air transport capability to airlift Canadian troops overseas. The Army was demanding an improved mechanized armoured capability and was deficient in the logistics and administration resources required to support a fully manned mechanized brigade in Europe:

> "Canadian NATO forces were expected to be able to move quickly and have a degree of protection afforded by an armoured personnel carrier. Consequently, this new desired mobility caused problems for field logistics support. Army logistics support was considered too rigid. With the threat of tactical nuclear warfare, current army evacuation capabilities were vastly inadequate. In short, a new logistics organization was required to support the army."[126]

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[125] From 1952 to 1967 Operations and Maintenence and Personnel costs as a percentage of the overall defence budget increased steadily from 43% in 1952-53, 75% by 1959-60, to 80% by 1963-63. The proportion of the defence budget allocated to equipment procurement during this period decreased from 38% in 1952-53 to a low of 15% of overall defence budget in 1965-66. (This materiel was compiled from the following sources: ***The House of Commons Interim report of the Special Committee on Matters Relating to Defence***, December 20, 1963, p.12. Table 31; ***The Department of National Defence Explanatory Materiel Relating to 1961-1962 Estimates,*** May 1961, p.49.; and ***The Financial Post***, September 10, 1966, p.4.

[126] Extract from the address of Lt Gen G. Walsh, Chief of the General Staff, to the ***House of Commons Special Committee on Matters Relating to Defence***, (Government of Canada, Ottawa July 11, 1963), pp. 133-140.

To add to the equipment problems, the defence budget was *decreasing* {it had remained the same (approximately $1.6 billion) during the 1950's and 1960's, however, its proportion of the GNP had actually declined}.[127] Since 1956, the military's personnel and operating costs had increased to 80% of the overall defence budget, leaving only 20% for the purchase of new equipment which was rapidly increasing in cost.[128] To add to this, it was a well known fact that the Canadian Armed Forces soldier was among the highest paid in the world. As figure 1 shows, the proportion of the defence dollar spent on personnel/operations was increasing while that spent on new equipment was steadily decreasing:

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[127] ***Explanatory Material Relating to 1961-1962 Estimates***, (Department of National Defence, Ottawa May, 1961), p. 47.

[128] Extract from the address of General Charles Foulkes (Ret'd) to the ***House of Commons Special Committee on Matters Relating to Defence, Minutes of Proceedings***, (Government of Canada, Ottawa, October 22, 1963), p. 500. Foulkes cited the following figures to further substantiate his claim: Over a period of ten years from 1950 to 1960, the equipment required by each service to fulfill its assigned role, increased in cost as much as ten times. For example: the F86 Sabre cost $1/4 million whereas its replacement, the F104 Starfighter cost $2 million; the North Star transport aircraft cost $1 million, whereas the Yukon transport aircraft cost $10million; and, an Escort in 1950 cost $8 million and a Frigate in 1960 cost $40 million.

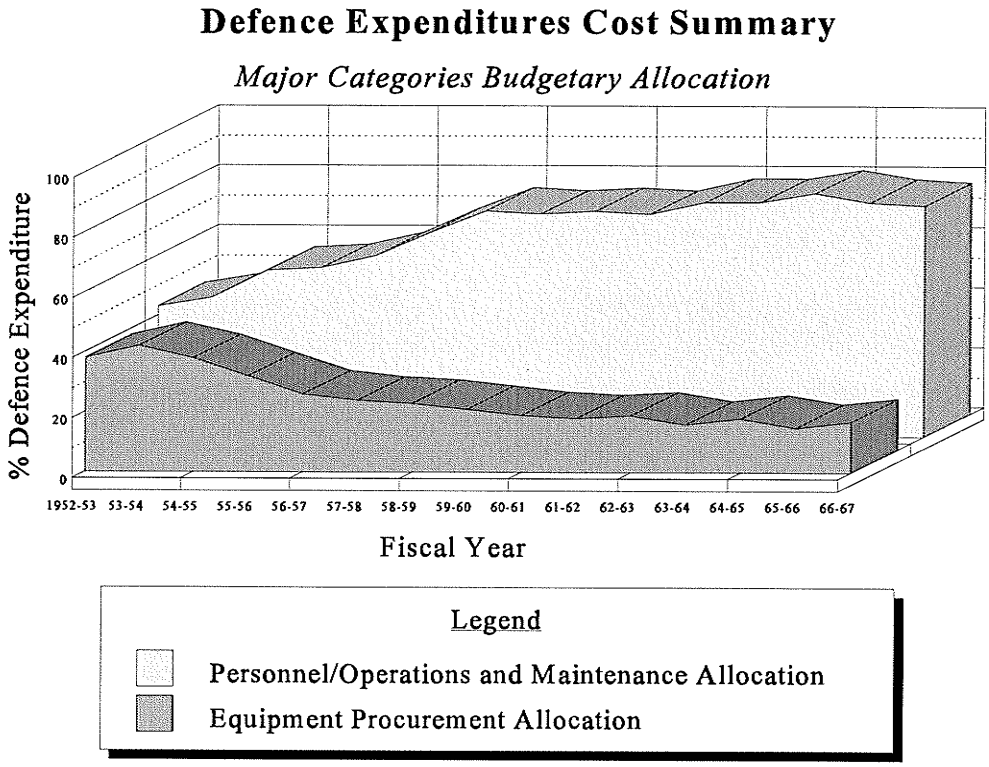

Figure 1

The Canadian NATO commitment to European defence was a particular challenge both politically and economically for Hellyer and his Department. Three "options" had been proposed by Hellyer: the first being "to stockpile the equipment in advance areas and then fly the men in"; the second was "to acquire sufficient airlift to carry both men and equipment"; and, the third option "to change the commitment".[129] Stockpiling supplies and equipment in Europe, as had been suggested by NATO, was not feasible for many allies including Canada:

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[129] Hellyer, ***Special Committee on Matters Relating to Defence***, op cit., p. 70.

> "The main problem was the insufficient shipping resources of the NATO countries at the time. No firm arrangements for shipping or suitable facilities for stockpiling could be made. As such, Canada could not accept any definite commitment to reinforce Europe."[130]

Acquisition of the necessary airlift to carry both men and equipment was too costly, especially for the transportation of the larger armoured vehicles. The most feasible option appeared to be to change or modify the nature of Canada's NATO commitment in Western Europe. Hellyer was searching for a way to negotiate a non-nuclear role for the Canadian military without appearing to be backing out of his defence commitments. However, it was felt that the Canadian military had no obligation to continue with commitments made by the previous government which many considered to be responsible for the current problems facing the military.[131] What was needed was a military commitment that was more in line with national economic capabilities and would also encourage self-sufficiency in meeting its defence requirements.

Greater control and flexibility for the Canadian Government with regard to the extent and nature of its contributions to collective defence was the underlying objective. The nature and scope of Canadian defence commitments ranged from the provision of peacekeeping forces for the UN to the provision of its forces to the NATO alliance as part of the overall alliance strategic policy. To change any or all of these commitments unilaterally would have had devastating effects on Canadian credibility. Former

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130 Foulkes, op cit., p. 498.

131 Foulkes, op cit., p. 249.

Canadian Forces Chief of the General Staff, Lieutenant-General Guy Simonds, argued that this should be a gradual "evolutionary process" where current roles are phased out as the strategic situation changes, and equipment procurement programs reflect the flexibility of requirements inherent in the changing strategic environment.[132] Many believed that Canada would be better off committing its military to "a much smaller segment of the larger role with the most up-to-date equipment available... relying completely on our allies for help in respect of the other segments of that role".[133] That "smaller role" could take the form of early conventional intervention in a conflict to diffuse the escalation process. This would require a highly mobile force that was flexible and self-sufficient, especially in logistics support. This flexibility was the key ingredient in the Alliance's new strategy and implied a force that was integrated, lightly equipped and thus capable of a quick response. However, such a fast moving force could not rely on the static logistics support capabilities of its allies so it would have to be self-sufficient, not just for support requirements, but for all aspects of operations.[134]

To determine the nature of this role for Canada required an assessment of the current strategic trends and the influence these factors would have in the decade to

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[132] Extract from the address of Lt-Gen Guy Simonds to the ***House of Commons Special Commitee on Matters Relating to Defence***, (Government of Canada, Ottawa, October 17, 1963), p. 481.

[133] Extract from statement by Committee Member R. Hahn to the ***House of Commons Special Committee on Matters Relating to Defence***, (Government of Canada, Ottawa, October 8, 1963), p. 330.

[134] Groos, op cit., p. 445.

follow. The rapidly changing strategic and technological environment forced a considerable amount of "crystal balling" on the part of defence planners to avoid the adoption of a defence policy that would lose its military and political value before it was fully implemented. For Canada, its 1951 contributions to collective defence had become strategically outdated, tactically insignificant, logistically impossible, and incredibly costly by the mid-1960's[135].

The future of Canadian defence considerations in Europe and in North America was changing. In Europe, West Germany was developing as a "dominant economic and military European partner of the Alliance ...capable of defending its own borders". Consequently, the cost to Canada for maintaining its European Brigade was considered to be "far out of line with the military value of its contribution".[136] Western Europeans were more willing and capable to assume the responsibility for their own defence. Added to this were the problems associated with storing U.S. controlled nuclear weapons on foreign bases, which "render[ed] the present nuclear strike role unsuitable and precarious for Canada".[137] In North America, some military strategists felt the

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[135] The most controversial contributions to collective defence the Canadian government had made during the 1950's included the Bomarc Missile and the adoption of the strike recconaissance role for Canadian fighters stationed in Europe. By 1960, the Bomarc Missile had proven to be incredibly costly program as well as strategically and tactically insignificant against the ICBM (which had replaced the bomber as the delivery system). The strike reconnaissance role was also made tactically and strategically insignificant because of the ICBM. Furthermore the warheads required for this role were owned and controlled by the U. S. and many countries objected to the idea of the U.S. stockpiling nuclear weapons on foreign soil.

[136] Foulkes, op cit., p. 501.

[137] Ibid., p.504.

replacement of the bomber with the Inter-Continental Ballistic Missile (I.C.B.M.) as the main delivery system for nuclear weapons had further implications for Canadian contributions to collective security:

> "There is no useful contribution Canada could make in the forseeable future against ballistic missile defence because the current Canadian capabilities and any desired capability would be too expensive and outdated by the time it was ready. We will have to rely on the deterrent and retaliatory effect of the U.S. strategic force. So with the passing of the bomber, the Canadian contribution to the defence of North America will be greatly diminished and the importance of Canadian airspace and territory in the defence of North America will be seriously reduced."[138]

Future defence considerations for Canada focussed on a long-term defence policy objective of providing a flexible, highly mobile military, designed to deter and prevent a major war in Europe. One way of accomplishing this would require a scaling down of Canadian defence roles to include the provision of a mobile ready reserve for rapid deployment on NATO operations as required and a specialized anti-submarine detection/surveillance capability. These tasks could eventually eliminate the requirement to maintain forces in Europe, strengthen Canadian control over its own territorial sovereignty, and provide considerable financial savings:

> "The concentration and simplification of Canadian defence aims and contributions would allow for a greater integration of the services and a streamlining of the staffs, schools, training establishments and

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[138] Foulkes, op cit., p. 502.

> administration with a considerable reduction in manpower and expenditures. This trend should lead to the eventual complete integration of the services into one service with one chief, one staff, one administration and integrated flexible tasked forces to carry out the agree contributions."[139]

Of course this was all easier said than done. The mere mention of the potential withdrawal of Canadian troops from Europe threatened to undermine Canada's political influence internationally, not to mention the cohesiveness of the "North American Pillar" of the NATO Alliance. Integration of the services was also a difficult issue as many of the senior military staff who would have to implement the policy would be effectively administrating themselves into early retirement. This was a policy that would have to be imposed on the services without question or objection.

The first step would have to be the integration of the administrative and logistics systems. Integration of the command structure and the support services (such as the supply functions) would be required first in order to implement the integration of the operational services. Centralization of the command structure and unification of support functions were considered necessary in an environment where, it was argued, the ability to respond to varying levels of conflict dictated greater cooperation, standardization and integration among the three services of the military. This process of reorganization was initiated by the Minister of National Defence, Paul Hellyer, in March of 1964 with the release of the White Paper on Defence. This document

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[139] Ibid., p. 507.

reflected the findings and recommendations of the Glassco Commission and its objective was to provide the future direction for Canadian defence commitments at home and in Europe.

Hellyer's "implementation plan" for forces-wide reorganization was formally constituted in two Bills introduced in Parliament between 1964 and 1968. Together these Bills were designed to accomplish the following objectives:

a. "...economies in administration through the elimination of duplication of effort;"

b. "...greater potential for mobility and flexibility;" and

c. "...a diversion of funds made available through savings effected by unification to the acquisition of of much-needed capital equipment for the forces;"[140]

In 1964, Bill C-90, a proposal to reorganize the three services of the Canadian Armed Forces, was passed in Parliament. The result was the creation of seven functional commands: Maritime Command, Mobile Command, Training Command, Air Defence Command, Air Transport Command, and later, Communications Command. As part of this reorganization, the Canadian Forces Base system was created and approval was

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[140] ***"Submission to the Task on Review of Unification of the Canadian Armed Forces"***, The Canadian Forces Logistics Association,(Halifax, Nova Scotia, 5 December, 1979), p. 2.

given for the integration of the separate logistics systems of the three services.[141]

Combined with this was the move towards greater civilian control over military affairs. This Bill created a "storm of opposition" in the military and many senior military staff officers who opposed the plan were forced into "early retirement".[142] Immediately, senior military officials argued that civilian managers who had little or no military experience often failed to recognize the magnitude of the logistics resources required to support the operational units and subsequently based their decisions on economic priorities.[143] They argued that civilian control also compromised the professionalism of the officer corps, as "loyalty to the government" often meant issues of defence policy, strategy and capabilities could not be challenged without threat of "early retirement".[144] Occasionally, the "professionalism" of some senior officers led to voluntary resignations and the appointment of officers more "loyal" to the current Minister's agenda. This "guaranteed the conformity" of the remaining senior military staff and perpetuated the absence of critical input in the commitments and the

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[141] Morton, op cit., p. 7.

[142] During the summer months of 1966, much opposition was expressed in the media not just over what exactly was meant by Unification and Integration but also over the impact this was having on the Department of National Defence. An article published in the ***Toronto Daily Star***, (Wednesday July 20, 1966) read, in part,: *"There have been too many forced (or requested) early retirements of admirals and generals, and too many charges of disintegrating morale, for Mr. Hellyer to maintain, as he did in a long statement during the February debate on defence department estimates, that all is going well. Nor in that statement did he clearly define what he means by unification".*

[143] Management Review Group, op cit., p. 9.

[144] R.B. Byers, ***Canadian Security and Defence: the Legacy and the Challenges,*** (Adelphi Papers 214, Winter 1986), p. 45.

availability of defence resources.

The second part of Hellyer's plan for restructuring the military, Bill C-243, was passed on April 25, 1967 as the Canadian Forces Reorganization Act. This was an administrative manouevre involving the creation of a "single service" with a common personnel administrative policy and uniform. Hellyer, viewed the move as "the end objective of a logical and evolutionary progression."[145] Most in the Department of National Defence were in favour of the economic efficiency and flexibility that Integration and Unification were supposed to provide the military. Few, however, agreed with the requirement for the complete unity of the services under one common uniform, as this would only impact negatively on the morale and combat efficiency of the fighting forces. The result of Hellyer's zeal to implement Integration and Unification was "a series of upheavals... subsequent reorganizations... and a continual decline in resources".[146] This decline in resources would eventually impact on the ability of the logistics system to support the operational component of the Canadian military for decades to follow.

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145 ***House of Commons Debates***, 27th Parliament, Vol X, p.10827.

146 Task Force on Review of Unification, op cit, p. 2.

CONCLUSION

This chapter has examined the historical evolution of the Canadian military logistics system and that system's response to the changing strategies and technologies in the 1950's and 1960's. By 1960, the Canadian military was supported by a logistics system that was considered oversized and far too costly when compared to operational requirements. The entire "administrative tail" of the Department of National Defence was in need of restructuring. The requirement for a more "flexible military response", and a national priority for greater economic efficiency and administrative control in government departments, led to the reorganization of the Canadian military in 1965. Inherent in this strategic "flexibility" was the requirement to develop an equally "flexible" logistics system which could maximize the operational and economic efficiency of the Canadian military. The goal was to develop a system under one centralized command, designed to eliminate duplication and overlap of effort specifically within the logistics and administrative support functions. The Government concluded that the best way to achieve this was to integrate the Canadian Armed Forces under a single Chief of Defence Staff and a single defence staff. This "staff group" would be essentially civilian and was designed to provide the coordination and administration of common services while remaining removed from inter-Service rivalries.[147]

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[147] Management Review Group, op cit., p. 8.

Integration of the existing separate logistics systems was based primarily on a requirement to reduce manpower requirements and expenditures while maintaining the necessary support capabilities to the operational component. This was perhaps the most important aspect of integration as it would ultimately determine the extent of the CF's logistics system to support the strategies the Canadian Government was determining for its military for years to come. The next chapter will discuss this impact through a detailed analysis of the reorganization process itself. Specifically, it will examine the efforts to integrate the Canadian Forces Logistics system, the studies undertaken to assess the progess of integration, and the impact this had on operational capabilities in the late 1960's and early 1970's.

CHAPTER FOUR: THE REORGANIZATION OF THE CANADIAN FORCES

> *"In that the Canadian Forces are highly equipment oriented, the readiness of operational formations is heavily dependent on the responsiveness of the logistics systems which support them. ... The original DEVIL concept postulated the requirement for the simultaneous integrated development of these systems. To the extent that they are evolving separately, it is possible that interrelationships and inter-dependencies are not being optimally addressed."*[148]

This chapter will focus on Canadian defence policy in the late 1960's with Integration and Unification and the program designed in the early 1970's to create an integrated logistics system, the D.E.V.I.L. (Development of Integrated Logistics) program. The aim is to identify the main concerns with regard to the Canadian military logistics system, examine the objectives of the D.E.V.I.L. program, and assess the impact of this integration process on the operational readiness of the Canadian Forces during this period. The relationship between Canadian foreign policy, Canadian Forces commitments, and the operational capabilities will be examined.

As previously discussed, by the mid-1960's Canadian defence policy had been characterized by reductions in manpower, limitations and freezes in procurement of equipment, and concerns over Canada's ability to meet NATO commitments in Europe.

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[148] J.A. Dextraze, (Chief of the Defence Staff), "Directive Letter" commissioning Report on Evaluation Project E-19 (National Defence Headquarters, Ottawa, 27 January 1977), pp. 1-2.

By the end of the 1970's many Canadian military officials were very concerned with regards to the capability of the Canadian Forces to mobilize and sustain forces conducive to its commitments. The Canadian Forces logistics system was repeatedly being pushed to its capable limits.

Canadian defence commitments were continually being met with inadequate defence resources. In times of war, the allocation of defence resources is guided by military-strategic objectives coupled with national commitments. In peace that allocation, which determines a military's operational capabilities, in the case of Canada, became a product of "defence as economics" rather than "defence as strategy".[149] This began with the decision to reorganize the Canadian military in the early 1960's and, more importantly, the attempt to integrate its logistics system.

LOGISTICS SYSTEM INTEGRATION IN CANADA

As discussed in the previous chapter, the objectives of reorganization were to significantly reduce operating costs in order to provide the required funds for the procurement of much needed equipment. This in turn would allow the Canadian

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[149] Byers, op cit., p. 31.

military to meet its national and international defence commitments. Many of these operating costs were attributed to the Canadian military's expanding logistics system. Elimination of the duplication of logistics and administrative functions between the three services would free-up the necessary funds and provide a more efficient support system; all of which was seen as a way of increasing operational effectiveness;

> "Reorganization would allow for modernization of the management processes by introducing computerized systems in logistics, pay and finance, and training which otherwise would not have been available because of insufficient funds. Operational effectiveness would be increased within a limited defence budget."[150]

Consequently, in 1964, the Director General of Supply was tasked with the consolidation and integration of the different supply systems operating among the three services of the Canadian military. In August 1966, the Treasury Board approved, in principle, the concept of an integrated supply system for the Canadian Armed Forces:

> "...for a single standardized system of supply to replace the several supply systems in the Canadian Forces. The goals to be attained are increased effectiveness and economy of operation through standardization of procedures and optimum use of data processing equipment."[151]

Details regarding the associated improvements to the operational readiness of the

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150 Task Force on Review of Unification, op cit., p. 7.

151 ***"Staff Report F: An Integrated Logistics System"***, Report to the Management Review Group by its Logistics Task Group, (National Defence Headquarters, Ottawa, July 1972), p. 6.

Canadian Armed Forces were not included in the Department's submission to the Treasury Board. This initiative ballooned into a detailed undertaking known as the DEVIL program.

The DEVIL program was initiated to design and develop an integrated logistics system for the Canadian Forces throughout the 1970's and into the 1980's. This program dealt initially with the integration of supply systems and supply personnel, but was intended to be expanded to eventually include finance, transport, and maintenance systems and personnel. The main objective was to unify all logistics trades and environments while continuing to meet the support requirements of the operational forces.

The integrated logistics system was to be supported by a fully integrated Automated Data Processing (ADP) network. Under the DEVIL program, an integrated logistics system required an integrated data handling system to manage all the information that the various logistics sub-systems, up until integration, had managed independently. Electronic data processing would permit accurate system control and manipulation which was considered more financially responsible and more capable of supporting the *sharp end of the sword* or the operational forces. The intention was to provide a logistics system and logistics personnel capable of performing numerous support functions in any environment.

Improvements in the management and operation of the logistics system were not only considered necessary, but fundamental to the future of Canadian defence commitments. Although the logistics system was only a partial contributor to overall military operational effectiveness, its impact on the operational capability of the military was direct and immediate.

THE PROBLEM WITH DEVIL

By 1970, the integration process was beginning to show progress in the area of financial efficiency but was falling short of its requirements to meet the needs of the operational forces. From 1966 to 1972, only the separate supply systems had approached integration objectives. The separate stock management systems of the three Services had been standardized along with a single catalogue of materiel for Forces-wide use.[152] In line with DEVIL objectives, supply depot operations had been consolidated from 14 to 4 during that period. However, the desired centralized automated inventory capability still did not exist by 1972.

The integrated system was expected to be tested in 1973 and complete implementation was scheduled for 1974. However, this was for the supply functions

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[152] Staff Report F: An Integrated Logistics System, op cit., p. 7.

only and did not include the complete integration of the remaining functions of the logistics system. There were no firm dates set out for the implementation of maintenance or transport systems. Consequently, this led to a more serious problem - the supply systems were being integrated separately from the other logistics sub-systems:

> "The advantage of this approach was that the group was able to concentrate initially on the one element offering the greatest apparent indentifiable saving and get the project under way."[153]

The disadvantage with this approach was that the interdependent nature of the logistics sub-systems was ignored and complete integration would be difficult, if not impossible:

> "...the full benefit of the supply system cannot be realized until similar, complementary work is completed in the maintenance system and the interdependency of maintenance, supply and operational units more fully appreciated."[154]

Aside from the relative success of the integration of separate supply systems, the remaining separate logistics sub-systems such as transportation and maintenance could not be completely integrated. The improvements made to the supply system were not met with similar advances in the transport and maintenance systems. Consequently, the effect was to isolate the Canadian Forces Supply System from the other functions of the

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[153] Staff Report F: An Integrated Logistics System, op cit., p. 15.

[154] Ibid., p. 16.

logistics system, which, for all intents and purposes, dismantled the system's integrated capability. Without this capability, the flexibility and responsiveness of the logistics system in meeting the needs of the operational forces was depleted. Even with the logistics system's ability to respond to 90% of all operational support requirements (a figure that was never achieved), this was of little use in operational terms if the remaining 10% resulted in a delay or cancellation of an operational mission.[155] For example, the supply system's performance in areas of provisioning and reprovisioning directly depended on the information received from the maintenance system.[156] The "response time" of both systems was dependent upon the flow of information from operational units and between the sub-systems themselves. As such, the improved "efficiency and response time" of the automated supply system was limited by slower information input capability of the maintenance and transport systems, which had not developed at a similar pace or in the same direction as supply. The impact of this deficiency on the operational units ranged from aircraft being grounded, ships being delayed, and vehicles or tanks being unserviceable because the supply system could not provide the parts or the maintenance and transport systems could not provide concurrent service support when the supply system was ready.[157] The extent to which this undermined the entire integration process is illustrated in the following statement from

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155 Staff Report F: An Integrated Logistics System, op cit., p. 21.

156 According to the ***Logistics Task Group's Report***, in 1972, approximately 50% of supplies in the Canadian Armed Forces were used directly by the operational units. The remaining 50% of supplies were used or installed by the maintenance units.

157 Staff Report F: An Integrated Logistics System, op cit., p. 26.

the Logistics Task Group's report to the Department of National Defence's Management Review Group:

> "The maintenance system is a major contributor towards the attainment of Canadian Armed Forces objectives. Lack of adequate maintenance information will create a bottleneck that will restrain the full improvement needed now in the logistics system. Full recognition of the imbalance this deficiency will have in restraining the attainment of improved operational capability cannot be over-emphasized."[158]

In addition to these internal system problems, there were often conflicting priorities between the operational "users" and the logistics "providers". Attainment of Canadian Forces operational objectives was dependent upon "operational readiness" and the "performance of operational units at the *sharp end*". Each operational unit, be it Air Force, Navy or Army, based assessments of its readiness on qualitative and quantitative criteria in order to permit proper planning, training and execution. These units relied, in turn, on the logistics system, specifically its supply, maintenance, and transport sub-components for support in meeting their objectives. Each role or mission assigned to an operational element has a series of tasks assigned to the operational units which make up that element. Within any one task, there is a requirement for people, materiel, equipment, rations, clothing, petrol, oil, ammunition, weapons, vehicles and so on. For any particular role, the more resources committed to it, the greater the likelihood that it will be fulfilled. However, the cost associated with those resources may be unrealistic

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[158] Staff Report F: An Integrated Logistics System, op cit., p. 17.

when compared to the political or economic importance of that role. At some point, the cost effectiveness of the role is optimized with the resources committed to it. Unfortunately, the agenda of the operational units and the logistics sub-systems often conflicted over present and future desired capabilities. This conflict translated into competition for limited funds and resources.

A key problem with the DEVIL program was that the necessary quantitative and qualitative criteria to determine factors such as the responsiveness, sustainability, attainability, and flexibility of the logistics system were not in place, nor was an effort made to establish them. Without these criteria for the operational units, determination of the proper objectives for an integrated logistics system would be futile. In 1972, the Logistics Task Group's report to the DND Management Review Group stated that the primary requirements of any logistics system are that it should be designed to meet the needs of the operational units by:

a. "providing the right thing at the right time in accordance with the stated requirements of the user;

b. providing management information;

c. assisting in defining operational objectives of its sub-systems and their relationship to the operational capability of the Command and unit;

d. showing probable effect on operational capability of changes in the level of resources devoted to maintenance, supply and operational units; and

e. showing the total resources required for sub-systems to attain a specific

level of operational readiness."[159]

This was the extent of the direction available to logistics system planners at the time. Without clearly defined measurable criteria for an integrated logistics system to ensure operational readiness, it was impossible to assess and evaluate accurately the response performance required of each sub-system to meet the stated operational needs of the military. Put simply, the DEVIL program represented an attempt to integrate all logistics functions without a clear indication as to the operational needs of the military:

> "It is against this background that DEVIL has been evaluated and wanting in many respects. The most serious being the inability to determine the needs that the system must satisfy in terms of improving the effectiveness of the `sharp end'".[160] "The lack of quantitative standards data has led to arbitrary choices which could be costly in terms of time and money. ...the decision to proceed with the design of the DEVIL system in the first instance, without FIRST fully determining the needs of the `sharp end' was, in our judgement, fundamentally inappropriate."[161]

The bottom line was that each element of the logistics system had no measurable objectives to work towards other than financial savings. Complete integration was impossible when there was no direction as to what the "end product" should look like. Without a clear indication of what the desired capabilities of the logistics system were,

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159 Staff Report F: An Integrated Logistics System, op cit., p. 38.

160 Ibid., p. 45.

161 Ibid., p. 14.

there was no way of evaluating if the actual capabilities of the logistics system met the requirements of the operational forces.[162] The end result was a *gap* between desired and actual capabilities of the operational units. This gap began with the Government's defence commitments and the roles the operational units were assigned to meet these commitments. The gap was created where the Government failed to provide the necessary resources and funding to the logistics system to allow for the effective and efficient support of the operational units.

In March of 1978, a second report, the Evaluation of the Canadian Forces Logistics System (otherwise known as Evaluation Project E-19), was completed by the Evaluation Branch of the Department of National Defence. The Report concentrated on the maintenance, supply and transport sub-systems of the Canadian military logistics system because, as stated in the Report, "the operational readiness responsiveness ...rests largely on the capability and interaction of these major sub-systems".[163] Again the aim was to assess "how effectively the logistics system supports the operational readiness needs of the Canadian Forces" and the conclusions were the same.[164] The study focussed on an assessment of the interdependencies of operational readiness requirements to the logistics system's responsiveness, sustainability capabilities and cost effectiveness.

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[162] Staff report F: An Integrated Logistics System, op cit., p. 33.

[163] Report on Evaluation Project E-19, op cit., p. 2.

[164] Report on Evaluation Project E-19, op cit., p. 2.

In examining operational readiness requirements the study concluded that, although these requirements were inferred from the Chief of Defence Staff's Operational Guidance and Operational Directives to Commanders, there were no *meaningful* statements that could be used "as a basis for establishing responsiveness criteria and responsiveness capability for the logistics system".[165] This lack of guidance was most obvious in such DND documents as DP 100, the "Canadian Forces General Defence Plan". The statements in this document which provided the *clearest direction* on logistics system response levels were as follows:

> Article 1405, paragraph 2.
>
> "f. logistics resources shall be made available to the extent that they are needed, suitable, and available. Commanders at all levels of both operational and supporting units shall ensure that support planning is undertaken on a cooperative basis to attain the most realistic and practical results within entitlements consistent with economy and good management of materiel assets.
>
> "g. the onus for identifying needs and establishing entitlements rests with the operational commands while the supporting supply agency has the responsibility for meeting entitlements and providing materiel to the satisfaction of the operational commander."[166]

This amounted to nothing more than an acknowledgement of a requirement for

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[165] Ibid., p. 6.

[166] Report on Evaluation Project E-19, op cit., p. 6.

determining levels of logistics support and a generalized assignment of responsibility. Consequently, the means in place to measure logistics system efficiency and effectiveness were not considered adequate by operational commanders.[167] The operational commanders based their readiness capabilities mostly on the criteria related to a specific weapons system and the tactics employed. The logistics commanders were required to consider numerous factors beyond those requirements identified by their operational command counterparts.[168] Logistics system support to the operational forces was limited to the interpretations and, to some extent, to the priorities of the logistics commanders. The report concluded that, without an agreed upon understanding of the level of support between the logistics commanders and operational commanders, there was no way of determining if the support being provided was appropriate or sufficient to ensure operational readiness.

In addition, the study identified that the logistics system's responsiveness capability "relies heavily on facilities and capabilities which have been provided progressively over many years".[169] As such, each sub-system of the logistics system is inextricably linked to the other sub-systems. The study concluded that as a consequence, any change or modification to the logistics system will typically involve more than one

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[167] Ibid., p. 6.

[168] Ibid., p. 7. The logistics commanders had to consider factors such as the operating concept, equipment characteristics, maintenance requirements, availability of replacements, and financial constraints.

[169] Report on Evaluation Project E-19, op cit., p. 8.

sub-system. In its examination of the responsiveness of the supply system, the study was critical of its limitations "with respect to the support of field operations and, by extension, to emergency and wartime demands".[170] The consolidation of supply depots had resulted in increased supply system efficiency, but also increased the time required to transport materiel from depot to base. Furthermore, the study found that, although the integrated supply system had met many of the administrative efficiency objectives of integration through automation, it was this automation which directly undermined the operational efficiency of the combat forces:

> "Army units repeatedly expressed the view that the peacetime orientation of the Canadian Forces Supply System {CFSS} is seriously impairing the CF's ability to train for and, if necessary, execute wartime roles and commitments. The CFSS is a static, highly centralized , automated system which is immobile, non-secure and vulnerable. It has no capability to extend automation to remote training and combat areas and therefore deployed elements must revert to manual methods for supply replenishment and control."
>
> "It appears that the transaction volume and system complexity are already straining the system. ...Yet it must be expected that during an emergency or war situation base and depot supply activities will be required on a continuous basis, and that the total transaction volume will increase many-fold."
>
> "The concerns expressed regarding the lack of capability of the CFSS to respond to emergency or war conditions are reinforced by the demonstrated inability of the system to particiapte fully in operational exercises. For example, the CFSS cannot be exercised realistically in a Wintex scenario because its ADP elements do not have a gaming capability"[171]

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170 Ibid., p. 9.

171 Report on Evaluation Project E-19, op cit., p. 10.

The decision to concentrate on the development of the Canadian Forces Supply System had the effect of abandoning the integrated logistic system concept as a whole. The supply system could not respond accurately or promptly in the identification, location and delivery of an item of equipment to an operational field unit based on the NATO readiness standard of 30 or even 90 days. The problem was again attributable to the automated supply concept. The automated technology adopted by the supply system was developed in the 1960's and was close to being obsolete by the time the entire system was on-line 10 years later. The automated system was using a machine-oriented language with alpha-numeric codes which required translation into readible information and resulted in additional problems:

> "Consequently, error rates are consistently high, and false or rejected transactions can add days or weeks to the system response time. The result is high frustration and low efficiency at the man/machine interface"[172]

The study was equally critical of the maintenance system's level of responsiveness to operational requirements. This system had not integrated or standardized with automated procedures to the extent the supply system had. In fact, for all intents and purposes, the three separate maintenance systems had retained most of their pre-integration environmental orientation and had changed their operational procedures very little. Furthermore, many of the problems experienced by the combat

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[172] Report on Evaluation Project E-19, op cit., p. 18.

forces with the supply system were also being experienced by the maintenance system. The delayed response time of the overtaxed automated supply system meant that many of the spare parts required by the maintenance system sat on shelves waiting to be used in repairs of equipment or weapons systems. Additional problems associated with the maintenance system resulted from factors outside of the logistics system such as recurring financial restraints, repeated equipment life extensions, and inadequate availability of spare parts. This was especially the case for major operational equipment such as transport aircraft. Resource shortages only exacerbated this problem. For example, the military purchased the Boeing and Buffalo aircraft in small numbers in the 1970's. These aircraft were routinely overhauled due to heavy usage. During these periods of overhaul or modification, no replacement aircraft were available, thus severely reducing operational transport capability. Furthermore, the maintenance criteria for support to the operational forces was limited and these criteria were based solely on peacetime establishments. Wartime or emergency operations would require additional maintenance resources already identified as limited.

With respect to the transportation system, responsiveness to operational requirements was dependent upon the degree and quality of control over transport resources and the location of the theatre of operations. Peacetime transportation responsiveness was considered at par with supply and maintenance peacetime responsiveness levels (which, it was just suggested, were inadequate themselves). However, transportation requirements in wartime had dramatic implications for levels

of operational responsiveness:

> "Under wartime or emergency conditions, depending on the scenario, it is expected that military air and sea transportation resources will be severely strained by the need to deploy and redeploy forces and equipments between various Canadian, European and Middle East and perhaps other, theatres of operations. Under these circumstances, the logistics system will have to rely heavily on commercial carriers to provide both the normal and the added transportation capability required to sustain redeployed forces".[173]

Reliance upon civilian transportation capabilities during emergency or wartime operations was considered risky and further limited operational capabilities. The report concluded that, from a supply perspective, system control is decreased when materiel is transported by civilain agencies, especially across international boundaries: "Control is lessened by the inability of the logistics system to track materiel once it is placed into the civilian transportation system."[174]

Further evidence of this was detailed in a report submitted by Force Mobile Command (FMC) to the Task Force on Review of Unification of the Canadian Forces in October 1979. Again, the aim of the report was to provide an assessment of the logistics system's effectiveness in supporting the operational component. The focus was on the abilities of the combat service support units to respond to the needs of the combat

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[173] Report on Evaluation Project E-19, op cit., p. 12.

[174] Report on Evaluation Project E-19, op cit., p. 14.

forces. The report claimed that integration played a key role in the "degradation of operational support effectiveness" and that the "existing support system caters to none of the requirements" of the land force.[175]

The report was critical of many of the aspects of integration which had contributed to this "degradation". The first was abandonment of the corps concept for the separate logistics functions and the adoption of a branch structure. Designed to create a stronger identity among the related logistics functions, this branch structure distanced the combat service support soldier from his "intimate relationship" with the combat soldier on the battlefield.[176] The reductions in manpower levels also had a dramatic impact on the numbers of logistics personnel available to provide direct support to the combat units. Those who were "available" were also tasked with full-time responsibilities on undermanned static military bases. This was known as "double-hatting" and had the effect of further diluting the wartime capabilities of the logistics organizations responsible for supporting the operational units. This critical shortage of manpower also limited those units' capabilities to conduct their own realistic collective training in a combat environment.

Another aspect of integration, "centralization", was also the subject of much

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[175] ***Mobile Command Brief to Unification Review Task Force: "Support to the Operational Component"***, op cit., p. 1.

[176] Ibid., p. 2.

criticism. As has been discussed, centralization and automation of the logistics system introduced substantial savings in manpower and financial resources. However, the "real cost" of these advancements was their impact on operational capabilities. In 1971, the Department of National Defence's Defence in the Seventies identified a nuclear war between the United States and the Soviet Union as the "only major military threat" to Canadian security. The principle of survivability became the focus for a centralized automated logistics system. Without sufficient redundancies geographically dispersed, the logistics system was considered too vulnerable in the event that this "threat" became a reality. To add to this problem was the impact centralization had on the command and control relationship between the operational component and the supporting forces.

Prior to integration, the land force commander had control over his operational support elements. Centralization effectively removed that responsibility from the land force commander forcing him to have to literally wait in line for his operational support needs. Centralization also eliminated the authority the Army had to assess its priorities and make decisions on resource allocation.[177] The Army could not `function' in the absence of an "Army Headquarters" to control areas such as force development and equipment procurement. Army commanders had limited input in programs, such as equipment procurement - which they felt should be based on operational necessity rather than financial and political utility.

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[177] Report to the Unification Review Task Force: Support to the Operational Component, op cit., p. 5.

The integrated logistics system reflected the "defence as economics" approach and was primarily designed to provide peace-time logistics support from stationary military bases. In the event of a war, the support provided to the fighting forces in a theatre of operations was limited to what the logistics units could bring with them. There were no means of linking the logistics unit in the field with the national resources available through the automated system.[178]

In its conclusion, the report recommended "fundamental change" as the only "option" that should be considered. Many suggestions focussed on a return of the land environment of the logistics system to a more `regimental' approach in its operation. The report recommended that the "Army" elements of the logistics system should be "divorced from rigid base structures and procedures". This included the establishment of a separate Army Chief of Staff to "direct or influence" everything from logistics training to personel management for the Army.[179] In short, the logistics system had to be re-designed to reflect the operational uniqueness of the land forces.

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[178] Report to the Unification Review Task Force: Support to the Operational Component, op cit., p. 3.

[179] Ibid., p. 4.

THE ECONOMY PRINCIPLE

As stated in the previous chapter, one of the main objectives of the integration of the logistics system was to achieve greater cost effectiveness. Chapter two highlighted the principle of economy and its relationship to the other principles of logistics. Recall that the responsiveness, sustainability, attainability, flexibility, and even survivability of the logistics system are all directly related to economy of effort, resources and, in peacetime, especially financial costs. The logistics system after integration was considerably more cost effective than the system it had replaced:

> "Although accurate figures are difficult to obtain because of the general contraction in the Canadian Forces since unification, there is little doubt that the current integrated logistics system has produced very substantial savings through significant reductions in personnel, inventories and storage facilities. "[180]

The economic savings which resulted from logistics system integration had a direct impact on the operational capabilities of the Canadian Forces. The personnel resources required to run the logistics system were reduced and the materiel resources required by the system were centralized, which extended the time required to provide support to the operational forces, which, in turn, decreased the system's flexibility. Economy of effort actually decreased as a result of the inter-system inoperabilities experienced between

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[180] Ibid., p. 15.

supply, maintenance, transport elements. The overall responsiveness of the logistics system was reduced as a result.

From a military perspective, the reorganization process focussed on three areas of contingency planning: operational force augmentation, equipment acquisition and logistics integration. The latter received the least amount of consideration, especially with the land and air elements. Furthermore, the considerations for operational force augmentation and new equipment acquisitions were also curtailed through purchasing compromises, deferments, and manpower force reductions in the 1970's. The failure of the plan to integrate the logistics system was not limited to the problems presented thus far. Political agendas played an important role in the difficulties experienced with the logistics system integration and the resulting decline in operational capability of the Canadian Forces during this period.

THE POLITICS OF INTEGRATION

Growing anti-war, anti-American attitudes, and *Trudeaumania* in 1968, changed many Canadian views on military spending from indifference to disfavour in the 1970's. Canadians were no longer as interested in military matters, nor was the

Trudeau leadership. In April 1969, Trudeau called for a re-ordering of defence policies. Canadian foreign policy, and consequently Canadian defence policy were subject to review:

> "Canada's domestic and foreign policies were directed to the common goal of creating a new international society based on a greater sharing of resources. Trudeau had long believed that hunger was a greater threat to world peace than the arms race, so Canada would contribute bread, butter and technology to the hungry instead of bullets."[181]

The Defence White Paper, Defence in the Seventies, which was released in August, 1971, represented a change in direction of defence roles for the Canadian military [182]; it also reflected Trudeau's overriding international economic priorities. International developments, particularly the "loosening of the bipolar international system", and national developments in the area of sovereignty and "the extension of Canada's territorial sea" led to a re-examination of Canadian defence activities in the 1970's[183]. Canadian involvement in defence alliances and peacekeeping appeared last on the list of defence priorities. Defence in the Seventies concluded that the major threat to Canadian security was a nuclear confrontation between the United States and the Soviet Union placing Canada geographically in the middle. The strategic threat was clear, the

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[181] Gerald Porter, ***In Retreat: the Canadian Forces in the Trudeau Years,*** (Deneau and Greenberg Publishers Ltd., 1979), p. 3.

[182] ***"Defence in the Seventies"***, White Paper on Defence, (Ottawa, Information Canada, 1971).

[183] Ibid., p.1.

objectives of Canadian defence policy remained consistent with this threat, but the priorities of the military had changed.

A more efficient, general purpose military, capable of answering to a variety of tasks, domestic and international, was the new emphasis. Politically, Canada would still meet its NATO and NORAD requirements and police its territorial boundaries within existing defence resources. However, the defence budget was to be "curtailed" during this period through "manpower cutbacks" and "constraints on equipment acquisition".[184] This set the stage for reductions in troop commitments to NATO forces in Europe, reductions in the manpower of the Regular and Reserve forces, and a freeze on the Defence budget.

By the beginning of the 1970's, Hellyer's desire for the reorganization of the Canadian Forces had not gone completely according to plan. He had managed to stay within his objective budgets, but at the expense of an attrition rate of 10,781 military personnel in only four years.[185] Furthermore, Hellyer's reforms had produced sufficient capital only for the procurement of the already out-dated CF-5 fighter. Hellyer's successor under Trudeau, was Leo Cadieux. Immediately, Canada's NATO commitment in Europe of 10,000 personnel was to be cut to 5,000. Reductions in manpower were not limited to Europe as numbers of troops on Canadian soil were

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184 Defence in the Seventies, op.cit., p.41.

185 Morton, op cit., p. 9.

reduced from 96,000 to 82,000 by 1972. The defence budget was frozen at $1.8 billion for the next three years and Cadieux announced that the role of the Canadian military was going to change to be more "passive, and less warlike".[186]

These reductions in manpower and resources had significant effects on operational planning, readiness and logistics system support capabilities. Department of National Defence expenditures had technically `increased' since the defence budgets of Pearson. As figure 1 depicts in proportion to the total share of the federal budget, the

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[186] Porter, op cit., p. 7.

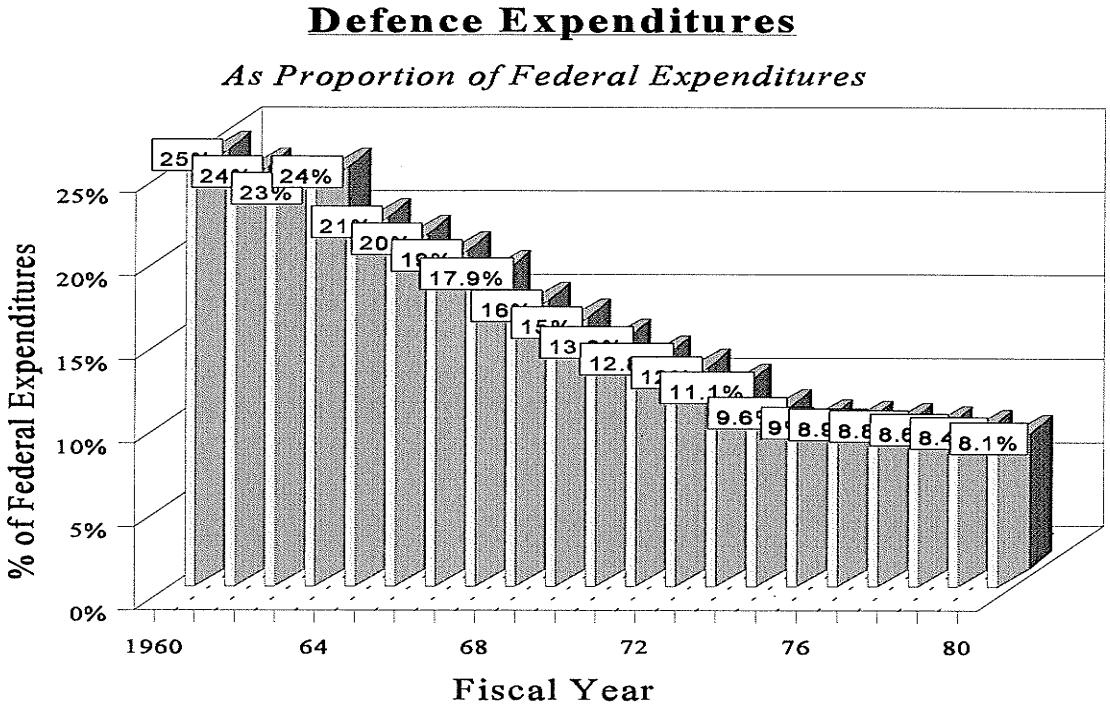

Figure 1

funds devoted to defence decreased.[187] However, personnel and equipment resources were directly affected by funding formulas which failed to take sufficiently into account for inflation.[188]. In 1972, the proportion of the defence budget devoted to capital expenditures reached its lowest level at less than 8% of the overall budget approaching what Middlemiss referred to as a "funding crisis".[189] The increase in military and civilian pay levels during this period coupled with rising operating costs eliminated the

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[187] Task Force on the Unification of the Canadian Forces, op cit., p. 21. Statistical data retrieved from Public Accounts (Canada), 1950-1986; Department of Finance, *The Fiscal Plan 1986*, cited in R.B. Byers, "Canadian Security and Defence: the Legacy and the Challenges", Adelphi Papers 214, International Institute for Strategic Studies, 1986, Tanle 3, p.86.

[188] Ibid., p. 23.

[189] Danforth Middlemiss, ***Canadian Defence Funding: Heading Towards a Crisis?***, (Canadian Defence Quarterly, Vol 21, No. 2, October 1991), p.15.

availability of any additional funds for capital expenditures which would have been realized through manpower reductions.[190] The result was,

> "...a steady five year decline in both the physical state and the morale of the armed forces. More and more of the shrunken defence budget was taken up with operations and maintenance at the expense of capital expenditures."[191]

For the logistics system, this translated into decreasing support capabilities, which contributed to the widening of the *commitment-capability gap* through the 1970's and 1980's. Still, many argued that Unification and Integration, "enabled the support system to more efficiently weather the lean times of frozen budgets and manpower reductions" and that "economies have been made and a better third-line support infrastructure had been developed".[192] By 1975 the Canadian Forces was structured to meet, at best, peace-time deployment levels. Had there been a requirement to deploy for war, the Canadian Forces would have failed both operationally and logistically. Concerning the prospect of Canadian Forces participation in a war in Europe, retired Canadian Forces Lieutenant-General James C. Smith stated;

> "Had 4 CMBG been engaged in a major conflict in Northern Germany, it

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[190] Defence Review Annuals - ***Defence 1971***, (Government of Canada, Department of National Defence, 1972), p.6.

[191] John G. Halstead, ***"Looking afresh at Canada's Defence"***, from The World Today, (Vol. 44, No. 4, April 1988), p. 1.

[192] ***"Mobile Command Brief to Unification Review Task Force - Support to the Operational Component"***, Deputy Chief of Staff Combat Development, (Department of National Defence, Ottawa, 1975), p. 9.

never could have been sustained. Re-enforcement troops could not have been provided in time and there was no third-line logistics capability. We were lucky that we were not called in this period."[193]

CONCLUSION

The aim of this chapter has been to examine the integration process of the Canadian Forces logistics system in the late 1960's and early-to-mid 1970's. The question asked was whether or not the failure of this process resulted in the decreased support to the operational forces of the Canadian military. In other words, why did the failure of the integration process in turn fail to solve the problem of Canadian Forces' logistics?

First of all, to reiterate, the "problem" of Canadian forces' logistics was that the logisitcs support provided to the Canadian military, prior to integration, was economically inefficient and operationally ineffective. The supply, transport, and maintenance systems of the three services were operating independently of each other and this limited the responsiveness, flexibility and attainability (or readiness) of the

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[193] Interview with Lieutenant-General James C.Smith (retired) former Canadian Forces Director General Supply and Logistics Branch Commandant, National Defence Headquarters Ottawa, February 1994.

logistics system as a whole in providing logistics to the operational component of the Canadian military. Each system had developed its own standard operating procedures and had established different criteria for the provision of their respective logistics functions. Furthermore, this independence of operation created considerable duplication of effort, particularly in the areas of infrastrucutre and personnel. Consequently, the operations and maintenance costs associated with the day-to-day operation of the logistics system were such that the funds necessary for the procurement of much needed equipment and materiel did not exist. The Canadian military logistics system was experiencing the "snowballing" of the materiel and manpower resources it required to manage itself.

The solution to the problem of Canadian Forces' logistics was to integrate the logistics provided independently by the three services. Integration would provide a more responsive and attainable logistics capability. It would eliminate the independence of function and result in greater operational efficiency through standardization of operating procedures for the provision of logistics support. This "streamlining" effect of integration would also result in a reduction of the operations and maintenance costs of the logistics system through the elimination of redundant functions and personnel. The financial savings associated with integration could then be applied directly to improvements to operational capabilities through the purchase of new equipment and materiel. However, the integration was not a success, and thus the "problem" of Canadian Forces' logistics persisted.

The integration of the Canadian Forces logistics system was a failure for numerous reasons. A key problem with integration was that there were no specific qualitative and quantitative criteria established to determine what the capabilities of an integrated logistics system should be with respect to the provision of support to the operational component. In addition, the separate logistics systems attempted to integrate independently of each other (neglecting the interdependency of their functions) at the expense of the much needed standardization of support. Furthermore, the economic benefits of integration were more tangible and immediate when compared to the desired improvements to operational capabilities. Considerable attention was given to the financial objectives of integration which were, to a certain extent, achievable in this context. Yet, these "successes" did not translate into improvements to operational capabilities as most of the funds made available were re-allocated to absorb the impact of continued reductions in defence budgets. By the "end" of integration, the Canadian Forces' logistics system continued to be overwhelmed by its day-to-day requirements and this restricted its capability to respond to emergencies or wartime conditions.

The integration of the Canadian Forces logistics system reflected the subordination of the military purpose of defence to the economic and social purposes of defence in peacetime. The motivation for integration was essentially economic, the objectives were primarily political, and the results were a failure to support the operational needs of the military. The duplication and overlap of the 1950's and 1960's was, in many areas, reduced or eliminated. The changes made to the Canadian military

logistics system proved beneficial in areas such as financial and administrative control and efficiency; however, these same benefits resulted in a system that was no longer capable of providing the support to Canada's operational forces.

Had integration been a success, would it have solved the "problem" of Canadian Forces' logistics? Considering the above conclusions, it is entirely possible the required standardization and responsiveness of the logistics system would have been achieved. Yet, even if integration had been a success, the management and control of the logistics system remained very much in the hands of those more concerned with financial efficiency than operational effectiveness.

The next chapter will examine the contemporary relevance of the impact of integration in the decades that followed, particularly with regard to Canadian Forces logistics support to United Nations and NATO operations in the changing security environment of the new world order.

CHAPTER FIVE: Contemporary Relevance of Logistics

System Integration in the 1980s and 1990s

> *"The new economic measures will mean immediate reductions in the daily operations of the Canadian Forces, and a reduction in the procurement of spares and supplies. The Government fully recognizes that reductions in training, procurement of supplies and spares will have significant immediate as well as long-term implications on the Department of National Defence and the operational readiness of the Canadian Forces. Ultimately, however, Canadian security depends as much on a sound economic base as it does on the maintenance of adequate armed forces."*[195]

The integration of the Canadian military logistics system had more far-reaching implications for Canadian Forces operational readiness following its implementation, particularly in the post-Cold War era. As Minister of National Defence, Marcel Masse stated in Defence Policy 1992,

> "The new NATO strategy, unveiled at the Rome summit in November 1991, starts from the premise that the threat of a simultaneous full-scale attack on all of the Alliance's fronts has effectively vanished. ... The new NATO strategic concept is based on a significantly diminished forward presence and a minimal nuclear capability. It puts a premium on the maintenance of sufficient, flexible and highly mobile standing forces throughout the Alliance; available, well-

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[195] Canadian Forces General Joint Message from the Deputy minister of National Defence and the Chief of Defence Staff on the Government's economic statement of 2 December, 1992 to all Canadian Forces Personnel.

> trained, suitably equipped and sufficiently large military reserves; and the means to ensure a timely flow of supplies and reinforcements across the Atlantic in a crisis."[196]

Although the idea of maintaining "sufficent, flexible and highly mobile standing forces" is nothing new in Canadian defence strategy, the political and economic environment in which this idea must survive is certainly something deserving of more attention than has it has received in the past. Today, the absence of a direct threat from the former Soviet Union has provided Western politicians with strong arguments for cuts in defence budgets, especially when domestic socio-economic issues such as employment are the objects of voter attention. Reductions in defence budgets continue to impact on the planning and implementation of military strategy and policy. Continued budgetary restraints coupled with new, multiple international and domestic commitments for the Canadian Forces require a logistics system capable of meeting these needs while surviving itself in this austere environment. What follows is an examination of the contemporary relevance of the integration process of the 1970s through an analysis of the Canadian Forces logistics system's ability to support the operational component in this post-Cold War environment.

Recall from Chapter 4 that the integration of the Canadian Forces logistics system in the early 1970's did not result in the increased responsiveness, flexibility, and

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[196] Marcel Masse, Minister of National Defence, ***Canadian Defence Policy 1992***, Government of Canada, April 1992, pg. 8.

sustainability required to support the Canadian military in fulfilling its operational commitments. Aside from the financial savings which resulted from the elimination of unnecessary services, the desired integrated capability of the logistics system to support the operational component of the Canadian Forces was never attained. In addition to the fact that much of the equipment that was to be purchased with the savings from integration was never acquired, the logistics system was never fully integrated. Furthermore, there was a lack of understanding and direction with respect to the requirements of the operational elements and the logistics system managers. The sub-systems of the logistics system which managed to integrate, did so without any end-state objective for providing support to the operational forces.

The logistics principles identified previously in chapter two as fundamental were not adhered to, or, at best, not completely understood by senior civilian or military staffs in the Department of National Defence. One of the most important of these principles - flexibility - could not be developed without a definitive end-state or measurable standard of performance. The logisticians on the *front lines* were never provided with the necessary guidelines for supporting the operational forces in varying levels of conflict. This, coupled with the continual lack of an adequate personnel and equipment re-supply capability[197], restricted the sustainability of the logistics system. As was stated, the effectiveness of such a system is measured by its ability to respond to the

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[197] This "re-supply capability" is also known to military logisticians as *third-line capability.* Third-line logistics support involves both national civilian and military logistics support resources and develops from the producer end of the logistics system.

needs of the operational component for a specified duration. Without that flexibility, responsiveness, and sustainability, the Canadian military logistics system became a reactive organization supporting an increasingly pro-active operational component.

One could argue that the Canadian Government continued to meet its domestic and international commitments after integration, albeit at a decreased state of readiness and with a limited sustainment capability. Furthermore, it can be said that the atmosphere of detente in the 1970's contributed to the acceptance (at least domestically) of reductions in Canadian contributions to collective defence. The Canadian government maintained a military strategy which was never intended to be implemented by the government acting unilaterally. For a country that never intended to fight a war without the collective support of its NATO Allies, there was no longer justification for maintaining a costly and redundant military logistics system. The nature of collective security implied that the military shortfalls of one of the coalition states would be compensated for by another state's contribution. For the Canadian military, many of the inadequacies of its logistics system, which would become more apparent in a war-time scenario, would be met by the logistics capabilities of its most likely partners, Britain and the United States. As long as the logistics system served its peacetime role, the requirement to provide a wartime contingency support capability was, for the most part, overlooked by each new Minister of National Defence, whose political priorities focussed on the reduction a costly defence department infrastructure (supposedly for the maximization of capital for the purchase of much needed equipment). The true

significance of this has been the inability of the logistics system to support the operational forces. This has never been more apparent than with the Canadian participation in the Gulf War and the most recent UN peacekeeping operations.

THE POST-INTEGRATION LOGISTICS SYSTEM

In the past 10 years, the Canadian Government has committed its military to more collective security and peacekeeping operations than any other period in its history. The war in the Gulf and the recent UN operations in the Former Republic of Yugoslavia reflect the changes in the nature of the logistics requirements associated with modern warfare. The high intensity, large-scale mobilization plan for the European theatre which the West prepared for during the Cold War is no longer the focus of strategic planners and logisticians. The size of operations have decreased; from multiple Armies on numerous fronts to *national contingents* usually of Brigade or Division size fighting along a single front. Yet, the logistics requirements associated with these relatively small scale operations have increased disproportionally. These smaller, more widely dispersed general purpose forces have forced increased pressure on logistics systems to mobilize and sustain technologically advanced forces more rapidly and efficiently than ever before. Each new theatre of operations brings with it new and unique logistics considerations that often restrict strategic planning and the

implementation of strategy. Military logisticians are often forced to "re-invent the wheel" when planning the support requirements for new operations. Certainly the logistics principle of flexibility is maximized, but only so much can be accomplished in the time alloted particularly with the increasingly limited personnel and equipment available.

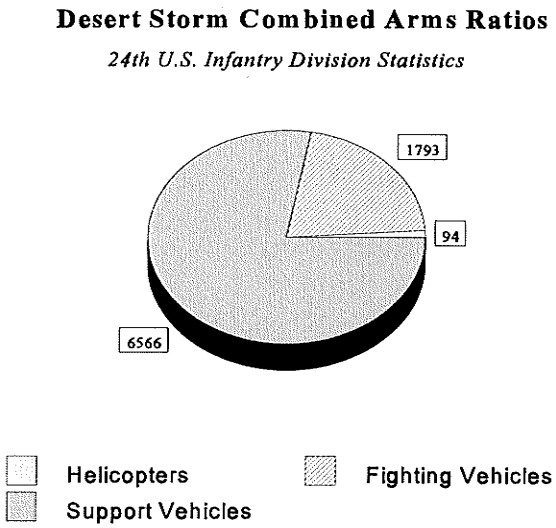

Figure 1

The highly advanced nature of modern warfare requires an unsurpassed number of logistics personnel to support the individual combat soldier in a theatre of conflict. For example, in the Gulf War the logistics buildup was essential; for every infantry soldier in the theatre of operations, there were an estimated 18 logistics personnel supporting him.[198] Equipment such as cargo trucks, tractor trailers, and heavy lift aircraft and ships, far exceeded the numbers of combat fighting vehicles and fighter aircraft credited with winning the war (as figure 1 depicts).[199] The majority of logistics support was provided through the US

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[198] Major-General Barry R. McCaffery, Commander 24th Infantry Division (Mechanized) quoted from ***Desert Shield and Desert Storm Operations Overview***, United States Senate Armed Services Committee, Washington D.C., May 9, 1991. It should be noted that this figure is an approximation as it does not differentiate between those logistics personnel who were actually `in theatre' and those operating from continental and American third and fourth line logistics organizations. Also of note is the fact that those logistics personnel required an almost equal number of first line staff to support their administrative and logistics requirements in order to allow them to do their jobs.

[199] Ibid., Slide #8. For example, the 24th Infantry Division (Mechanized) consisted of 25,000

(continued...)

military logistics system. Even with this overwhelming U.S. contribution[200]; for a relatively medium-intensity operation there were "serious shortages of certain kinds of transportation-related equipment".[201] This was a particular problem for the Canadian contribution in the Gulf War.

The Canadian Government never deployed combat land forces in the Gulf War. This would have been the first real test of the Canadian Forces logistics system's ability to support the operational component of the Canadian military in a wartime scenario. Aside from minor, nonetheless effective, Canadian medical, naval and air force contingents in the Gulf War, the 4th Canadian Mechanized Brigade Group was never deployed. Although there were underlying political reasons against deploying Canadian troops as belligerents on foreign soil, the staff checks done at the Department level concluded that "the current logistics system could not mobilize and sustain a brigade-size organization in the required deployment time and for the projected duration of the operation".[202] The Canadian reliance on its NATO partners, specifically the US, to offset its operational force and logistics system deficiencies was not considered a priority for

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(...continued)
soldiers in 34 Battalions and required 6566 support and transport vehicles for 94 attack helicopters and 1793 tracked vehicles.

[200] It is conceivable that this massive US military contribution represented an intentional strategic overkill to ensure a military and subsequent political victory for President Bush.

[201] Lieutenant-General William G. Pagonis, ***Moving Mountains - Lessons in Leadership and Logstics from the Gulf War***, (Harvard Business School Press, Boston, Massachusetts, 1992)p.203.

[202] Quote obtained in interview with Brigadier-General W.C. Leach, op.cit.

US planners. The Canadian Department of National Defence had requested the support of the US logistics system, in particular its air transport capability (as Canadian military transport capabilities did not include the ability to move a brigade's worth of equipment, which ironically had just returned from Europe), to assist in the deployment of the Canadian brigade personnel and equipment if there had been the requirement.[203] The US military was preoccupied with its own deployment plans and most of its heavy lift air and sea transport capabilities were already tasked for this operation. The Canadian military was offered those resources that might be available after the initial US deployment.[204] Had the Canadian Government decided to deploy the Canadian military brigade to the Gulf, in a role it had been training for over 20 years, the Canadian military logistics system was in no position to moblize and sustain it.

With respect to logistics support to collective security, Canada is still actively involved in European security through NATO, the OSCE, and arms control. NATO's increasing focus on crisis management and peacekeeping activities has moved its sphere of interest closer to the UN, particularly in the area of logistics support for multinational peacekeeping missions. With respect to support of UN peacekeeping operations (an essentially peactime scenario with limited mobilization and sustainment responsibilities), the Canadian Forces logistics system has managed to perform its functions, albeit at a deceasing rate. In the past 10 years, the UN has launched as many

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203 Leach, op.cit.

204 Ibid.

new missions as it has in the previous 40 years. In many cases, "many were hastily planned and launched with a faulty appreciation of the logistics requirements of a mission, insufficient logistics resources allocated, and a faulty force deployment sequence"[205]. This is evident as recently as the UN mission in Cambodia, where the UN deployed 12 infantry battalions into the mission area some time before they began to establish a logistics support system. For the Canadian military logistics system, this has presented challenges far beyond its capabilities:

> "The rapid expansion and intensification of UN peacekeeping operations quickly surpassed the limited support capability of the UN logistics system (it has also put a severe strain on our own logistics assets). This has resulted in the worsening of chronic logistics deficiencies that have afflicted all UN peacekeeping missions over the past 40 years."[206]

The UN lacks the standard logistics doctrine, policies, and procedures required to support each new mission. Combined with this change in the scale of operations has been a change in the role of the forces deployed on these operations. The traditional static role, carried out by lightly armed and equipped forces, has evolved into the more intensive, mobile, and heavily-equipped operation. The current direction of Canadian defence policy towards support to UN peacekeeping operations implies increased consideration and commitment of land forces for operations abroad as is, and has been,

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205 Ibid., p.6.

206 Ibid., p.6.

the case in the Former Republic of Yugoslavia, Haiti, Somalia, and Rwanda. Today, mobilization and sustainment capabilities of personnel and equipment for these operations are a priority concern for Canada's military. As former Canadian Forces Chief of Defence Staff, General (ret'd) John De Chastelain stated, "We could not sustain the current missions [UN operations] past 1993... additional resources would be required"[207]. Those in the House of Commons who offer Canadian soldiers to these operations have failed to recognize the implications of these commitments on the Canadian Forces logistics system and its personnel.

Specifically, the number of combat and logistics system personnel available to be tasked in direct or indirect support to these operations has been dramatically reduced in the past three years[208] yet the requirements for these personnel on UN operations has only increased. In 1993, the number of Canadian Forces personnel deployed on UN operations peaked at 4775. This number represents the most Canadian Forces personnel committed on UN operations in the past twenty years.[209] Still, this only represents those combat and logistics personnel directly tasked to these missions and does not reflect the logistics organizations required to support these personnel.

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[207] David Pugliese, ***Canadian Military Seeks Peacekeeping Funds***, Defense News, November 16-22, 1992, p.6.(Chief of Defence Staff address to Canadian Institute of Strategic Studies, Ottawa, November 5, 1992).

[208] The 1994/1995 Force Reduction Program estimates for Canadian Forces Logistics personnel included early retirement packages for half of the total of over 1400 Logistics tradespeople/officers in the Canadian Forces.

[209] Extract from presentation on the ***Logistics Implications of Peacekeeping Operations***, given by Lieutenant-Colonel A.W. Price, NDHQ J4 Log Plans, in Ottawa, February 6, 1996, pg.5.

AN END-STATE FOR AN INTEGRATED LOGISTICS SYSTEM?

Two decades after integration the Canadian military continues to be the target for reductions in manpower and limitations in procurement of materiel and equipment. At the same time it remains obligated to meet NATO and UN operational requirements. By the late 1980s, the reduction of the "committment-capability gap" had finally been established as the central priority of the Canadian Government and the Department of National Defence;

> "...the Government has decided to consolidate some commitments to make more efficient use of available resources, while improving the effectiveness with which the remaining commitments are carried out. Defence spending will be increased sufficiently to help the Canadian Forces respond to the challenge of the 1990s and beyond." [210]

Efforts to reduce this gap focussed mainly on the increases in planned defence expenditures directed at the procurement of new operational equipment and not on

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[210] Government of Canada, ***Defence 1987***, (Ottawa, 1987) p.6. Also, in the foreword from this document, Perrin Beatty, Minister of National Defence, stated; "It is a strong policy that will revitalize our defence capabilities into the 21st century. The plan to modernize our Forces will ensure that Canadians play a responsible role in the defence of Canada, and contribute in a meaningful way to to the alliance of democratic nations.", p.iv.

improvements to the mobilization and sustainment capabilities of the logistics system[211]. Concern for the purchase of new equipment quickly became a non-issue as defence spending was not increased as proposed during this period. In fact, planned funding levels for National Defence were reduced by: $2.7 billion in 1989; $700 million in 1990; $2.5 billion in 1991; $2.4 billion in 1992; $4.8 billion in 1993; and $7 billion over five years starting in 1994[212]. Additional cuts in 1995 and now in 1996 totalling over $1 billion are all designed to eliminate that defence infrastructure "which is clearly in excess of any probable defence need"[213]. In response to questions concerning the impact of these cuts in defence spending on the Canadian Forces logistics system, the former Colonel Commandant of the Logistics Branch replied;

> "In the absence of definitive foreign and defence policy we cannot formulate the logistics support capability that will enable us to support general purpose military capabilities even those of very limited size and duration. More than ever we may have to assume joint action with our allies and/or UN partners."[214]

Although the expenditure reductions during this period were well intentioned and

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[211] Had the funds actually been made available for the procurement of new equipment these improvements could have been achieved partially through the purchase of new transport cargo aircraft and ships.

[212] The Honourable David Collenette, Minister of National Defence and Veterans Affairs, ***National Defence - Budget Impact***, (Ottawa, February 1994), pp.1-3.

[213] Ibid., p.2.

[214] Interview with Lieutenant-General(Retired) James C.Smith, Colonel Commandant Canadian Forces Logistics Branch, former ADM Materiel and Director General Supply Services, February 9 1994.

necessary, the Department of National Defence failed to address the issue of the limited responsiveness and sustainment (third line) capabilities of its logistics system.

Since integration, these repeated defence budget cuts have had a dramatic effect on the operational capabilities of the Canadian military. As former Minister of National Defence, Perrin Beatty has stated,

> "While the responsibilities to which our forces where committed were by no means unreasonably heavy for a country of Canada's strategic position and economic strength, the means provided to carry them out have been grossly inadequate for the tasks assigned to them."[215]

This has been true, particularly, for the land forces, which have received the majority of the most recent operational commitments, and to which defence budget cuts have been most debilitating. This juxtaposition of decreasing operational efficiency (primarily through equipment shortages and obselescence) with increasing international commitments has contributed only further to the expansion of the commitment-capability gap. This gap reflects not only signficant discrepancies between operational equipment capabilities and commitments, but more importantly reflects the continued inability of the Canadian military logistics system to mobilize and sustain the forces responsible for the implementation of those commitments.

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[215] Perrin Beatty, Minister of National Defence, in ***Canadian Defence Quarterly***, Volume 17, No.1, Summer 1987, page 10.

If we examine the state of the Canadian Forces logistics system today we will discover a more effective and efficient organization than the three separate systems it *replaced* more than two decades ago. There is still room for reorganization and restructuring of infrastructure (particularly in the regional supply depots) and this is ongoing. However, the fundamental requirement for a third-line sustainment capability has not been adequately addressed for the Canadian Forces logistics system. Without this capability, the flexible support required by the operational components of the Canadian Forces will not be available for any level of conflict.

If the Canadian Government wishes to continue to boast about its international reputation in peacekeeping and the accomplishments of its military perhaps an examination of its logistics system is necessary. The *leaner and meaner* army of today requires a logistics system capable of short notice mobilization and sustainment in a variety of scenarios for unknown durations. A truly integrated Canadian Forces logistics system given the appropriate equipment and a defined objective will provide this capability. As it stands, the current Canadian Forces logistics system remains the object of criticism and consequently the target of further funding cuts. However, this might be the last thing its needs. As Van Creveld writes,

> "If the logistics system... is not to be hopelessly fragile and liable to catastrophic breakdown; if it is to function under changing circumstances and be capable of switching from one objective to the next; if, in short, it is to be capable of coping with the uncertainty that is the result of enemy action and, as such, inherent in war --- in that case a certain amount of redundancy, slack, and waste must not

only be tolerated but be built in."[216]

Perhaps this is an unrealistic objective in today's environment, but the sentiment expressed is one that, at a minimum, should be understood when considering the nature of the military logistics system.

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[216] Martin Van Creveld, ***Technology and War*** (New York: Free Press, 1989), pp.316-317 as quoted in Pagonis, op.cit., pp.210-211.

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