



# Learning From (Recent) History?

AN Assessment of CF Joint-Level Learning, Innovation, and Adaptation Activities

Neil Chuka  
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The reported results, their interpretation, and any opinions expressed therein remain those of the author and do not necessarily represent, or otherwise reflect any official position of DRDC, DND or the Government of Canada.

DRDC CORA TM 2013-248  
March 2012

**Defence R&D Canada**  
**Centre for Operational Research and Analysis**

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## **Defence R&D Canada – CORA**

Technical Memorandum  
DRDC CORA TM 2013-248  
March 2012

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This work was sponsored by the Canadian Forces Warfare Centre and is related to Applied Research Project 12QR "Influence Activities Capability Assessment."

Defence R&D Canada – Centre for Operational Research and Analysis (CORA)

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## Abstract

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Employing the body of historical literature on military learning, innovation, and effectiveness, this study establishes a comparative framework that identifies four primary requirements for a modern military force to be able to learn from operations, innovate, and better prepare for future warfare. The four major requirements are: 1) a sound policy and military strategic assessment framework; 2) institutional structures and processes to facilitate learning and innovation; 3) an intellectual environment conducive to honest self-reflection and the tolerance of constructive dissent; and, 4) properly trained and educated military and civilian staff to conduct research and analysis. The paper also argues that lessons based on analysis of empirical evidence derived from operations should be the primary driver of doctrine revision and development, concept development, and experimentation. This study then goes on to compare recent DND/CF joint-level activities related to learning and innovation to the framework. The purpose is to identify areas that can be improved, elements that may be currently overlooked, and areas where activities might be rationalized to improve the learning and innovation process. For the most part, only post-transformation (circa 2006) efforts will be considered although reference will be made to some pre-transformation structures and activities. The evidence suggests that while DND and the CF possess a reasonable set of structures and organizations to facilitate learning and innovation, there is in general a lack of focus on analysing the wealth of evidence from recent operations. More specifically, key guiding documents are absent; there are inconsistencies in certain mandates; insufficient command authorities; and, problems with the proper and sufficient staffing of lessons learned cells as resources were directed to other components of force development. All of these issues are partly, but not entirely, attributable to an inappropriate intellectual environment that has discounted the value of empirically based lessons identification and analysis in favour of intellectually incoherent “futures analysis” seeking to postulate conditions that might exist more than 20 years in the future.

## Résumé

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Employant le corps de la littérature historique sur l'apprentissage militaire, l'innovation et l'efficacité, cette étude établit un cadre comparatif qui identifie quatre principales exigences pour une force militaire moderne pour être en mesure d'apprendre de l'exploitation, d'innover et de mieux se préparer pour la guerre du futur. Les quatre exigences principales sont: 1) une politique saine et cadre stratégique d'évaluation militaire; 2) les structures et processus institutionnels pour faciliter l'apprentissage et l'innovation; 3) un environnement intellectuel favorable à l'auto-réflexion honnête et la tolérance de la dissidence constructive, et 4) dûment formés et éduqués personnel militaire et civil pour mener des recherches et des analyses. Le document affirme également que les leçons basées sur l'analyse de données empiriques provenant d'opérations devrait être le principal moteur de la révision doctrine et développement, développement de concept, et l'expérimentation. Cette étude passe ensuite à comparer les dernières MDN / FC conjointe au niveau des activités liées à l'apprentissage et l'innovation pour le cadre. Le but est d'identifier les zones qui peuvent être améliorées, des éléments qui peuvent être actuellement négligés, et les zones où les activités pourraient être rationalisés afin d'améliorer le processus d'apprentissage et d'innovation. Pour la plupart, seulement après la transformation (circa 2006)

des efforts seront considérés comme bien il sera fait référence à certains pré-transformation des structures et activités. Les preuves suggèrent que, bien que le MDN et les FC possèdent un ensemble raisonnable de structures et d'organisations pour faciliter l'apprentissage et l'innovation, il est en général un manque de focalisation sur l'analyse de la richesse des preuves des opérations récentes. Plus précisément, les documents clés sont absents, il ya des incohérences dans certains mandats, les autorités ne maîtrisent pas suffisamment, et des problèmes avec le personnel approprié et suffisant de leçons apprises cellules. Toutes ces questions sont en partie attribuables à un environnement inapproprié intellectuelle qui a réduit la valeur de l'identification des leçons empiriques et des analyses en faveur de l'intellectuel incohérents "analyse l'avenir» qui cherchent à postuler des conditions qui pourraient exister plus de 20 ans dans le futur.

## Executive summary

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### Learning From (Recent) History?: An Assessment of CF Joint-Level Learning, Innovation, and Adaptation Activities

Neil Chuka; DRDC CORA TM 2013-248; Defence R&D Canada – CORA; March 2012.

**Introduction or background:** The aim of this report is to provide a comparative framework against which current and recent activities of the CF Joint force development and Lessons Learned (LL) community can be examined. The purpose is to spark discussion and debate about the LL, concept development, doctrine, and experimentation processes and activities over recent years with an eye towards providing recommendations to improve the learning and innovation process employed by the CF. The framework was developed through consideration of two key questions. First, why must there be a LL process? Second, assuming a LL process is necessary, what are the essential components of such a process? Using external academic literature and internal DND reports, the report argues that four essential elements are required for successful military learning and innovation. These elements are 1) a sound policy and military strategic assessment framework; 2) institutional structures and processes; 3) an intellectual environment conducive to honest self-reflection and the tolerance of constructive dissent; and 4) properly trained military and civilian staff to conduct research and analysis. A secondary but no less important argument is that empirical evidence derived from analysis of operations should be the primary driver of doctrine revision and development, concept development, and experimentation.

**Results:** The evidence suggests that while DND / CF possess a reasonable set of structures and organizations to facilitate learning and innovation, there is in general a lack of focus on identifying and analysing the wealth of evidence from recent operations. More specifically, key guiding documents are absent; there are inconsistencies in certain mandates; insufficient command authorities; and problems with the proper and sufficient staffing of lessons learned cells. All of these issues are partly attributable to an inappropriate intellectual environment that has discounted the value of empirically based lessons identification and analysis in favour of intellectually incoherent “futures analysis” seeking to postulate conditions that might exist more than 20 years in the future.

**Significance:** Learning and innovation for any large organization is difficult. For military forces, the singular organization responsible for the planning and conduct of the most hazardous and risk-filled of human activities, learning and innovation is exponentially more difficult because of the confusion and chaos that is warfare. To a certain degree, it is acceptable that the CF does not fully meet all of the requirements of the framework; it would be extraordinary for any military to match such requirements completely. The CF possesses a workable system of structures and processes; there is a reasonable policy framework, but not a sufficient military strategic assessment; there is a reasonable, if inconsistent, intellectual environment that can be improved based on existing official documentation; and there are reasonably skilled personnel assigned to learning and innovation related activities. In reality, the largest problems are the manner in which existing resources are allocated and, to a lesser degree, the non-analytic tasks which limit their productivity.

Concept development and futures analysis have absorbed a disproportionate amount of resources over the past few years. The value of such activities should be reassessed with a clear eye, keeping in mind that concept and futures work do not in themselves constitute learning and innovation. The reassessment might perhaps begin with the understanding that not all seemingly new issues require a concept and that perhaps what might at times be required is a rational explanation of what the military can do and what (if any) new doctrine and capabilities might be required to accomplish this. The reassessment must also consider whether a concept hierarchy is useful for the CF. Organizations tend to want to populate charts and hierarchies if they are drafted; with regard to concepts, the CF might not need such a hierarchy. In essence, concept development should take place when necessary and should address a specific gap in political, strategic, operational, or tactical effectiveness. A serious and objective analysis of any perceived problem should take place before significant resources are dedicated to concept development on any particular subject.

**Future plans:** Future conflict is sure to be as messy and difficult to comprehend as it has always been in the past. Enemies and adversaries will continue to adapt in an effort to frustrate Canadian and allied efforts to achieve goals. There is nothing new in this, and as has been the case in the past, there are no simple solutions to better preparing the CF for the challenges that will be encountered on future operations. However, reassessment of DND and CF efforts in light of the analysis offered in this paper will hopefully help improve efforts aimed at making the CF a smart, efficient, adaptable and continuously effective military force. This is the first in a series of papers related to strategic-level learning, innovation, and adaptation. The next paper in the series will provide a framework around which strategic-level LL research and analysis projects can be structured.

## Sommaire

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### **Learning From (Recent) History?: An Assessment of CF Joint-Level Learning, Innovation, and Adaptation Activities**

**Neil Chuka; DRDC CORA TM 2013-248; R & D pour la défense Canada – CORA; Mars 2012.**

**Introduction ou contexte:** Le but de ce rapport est de fournir un cadre comparatif contre lequel les activités actuelles et récentes de l'élaboration conjointe des FC vigueur et de la communauté LL peuvent être examinés. Le but est de susciter la discussion et le débat sur les LL, développement de concept, la doctrine et les processus d'expérimentation et d'activités ces dernières années avec un oeil vers la formulation de recommandations pour améliorer le processus d'apprentissage et d'innovation employés par les FC. Le cadre a été élaboré grâce à l'examen de deux questions clés. D'abord, pourquoi faut-il y avoir un processus de LL? Deuxièmement, en supposant un processus LL est nécessaire, quelles sont les composantes essentielles d'un tel processus? Utiliser externes littérature académique et les rapports internes du MDN, le rapport fait valoir que quatre éléments essentiels sont nécessaires à l'apprentissage militaire réussie et l'innovation. Ces éléments sont 1) une politique saine et cadre stratégique d'évaluation militaire; 2) les structures et processus institutionnels, 3) un environnement intellectuel favorable à l'auto-réflexion honnête et la tolérance de la critique constructive, et 4) dûment formés du personnel civil et militaire pour mener recherche et d'analyse. Un argument secondaire mais non moins important est que les preuves empiriques tirées de l'analyse des opérations devrait être le principal moteur de la révision doctrine et développement, développement de concept, et l'expérimentation.

**Résultats:** Les preuves suggèrent que, bien que le MDN / FC possèdent un ensemble raisonnable de structures et d'organisations pour faciliter l'apprentissage et l'innovation, il est en général un manque de focalisation sur l'identification et l'analyse de la richesse des preuves des opérations récentes. Plus précisément, les documents clés sont absents; existe des incohérences dans certains mandats, les autorités ne maîtrisent pas suffisamment, et des problèmes avec le personnel approprié et suffisant de leçons apprises cellules. Toutes ces questions sont en partie attribuables à un environnement inapproprié intellectuelle qui a réduit la valeur de l'identification des leçons empiriques et des analyses en faveur de l'intellectuel incohérents "analyse l'avenir » qui cherchent à postuler des conditions qui pourraient exister plus de 20 ans dans le futur.

**Importance:** L'apprentissage et l'innovation pour toute grande organisation est difficile. Pour les forces militaires, l'organisation singulière responsable de la planification et la conduite des plus dangereux et le risque remplie d'activités humaines, l'apprentissage et l'innovation est exponentiellement plus difficile en raison de la confusion et le chaos qui est la guerre. Dans une certaine mesure, il est acceptable que les FC ne répond pas pleinement à toutes les exigences du cadre, ce serait extraordinaire pour tout militaire pour correspondre à ces exigences tout à fait. Le FC possède un système efficace de structures et de processus, il ya un cadre politique raisonnable, mais pas une trilogie évaluation suffisante, il ya un délai raisonnable, si incohérentes, l'environnement intellectuel qui peut être amélioré fondé sur des documents officiels existants, et il est raisonnablement qualifiée personnel affecté aux activités d'apprentissage et d'innovation. En réalité, les plus gros problèmes sont la manière

**Perspectives:** conflits de l'avenir est sûr d'être aussi confus et difficile à comprendre car il a toujours été dans le passé. Les ennemis et les adversaires continueront à s'adapter dans un effort pour contrecarrer les efforts canadiens et alliés pour atteindre les objectifs. Il n'y a rien de nouveau dans cela, et comme cela a été le cas dans le passé, il n'y a pas de solutions simples afin de mieux préparer les FC à relever les défis qui seront rencontrés sur les opérations futures. Cependant, la réévaluation des efforts MDN et des FC à la lumière de l'analyse proposés dans ce papier, nous l'espérons contribuer à améliorer les efforts visant à rendre le FC une intelligente, efficace, adaptable et en permanence la force militaire efficace. Ceci est le premier d'une série de documents liés à l'apprentissage de niveau stratégique, l'innovation et d'adaptation. Le document suivant de la série offrira un cadre autour duquel niveau stratégique LL projets de recherche et d'analyse peuvent être structurés.

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## **Acknowledgements**

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This work has greatly benefited from comments and advice on earlier draft versions provided by Dr. Peter Archambault, Dr. Don Neill, Dr. Brad Gladman, and Dr. Philippe Lagassé. The responsibility for the arguments and conclusions rest solely with the author.

# 1 Introduction

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This report, the first in a series related to strategic-level learning, innovation, and adaptation, presents a framework to inform the CF Lessons Learned (LL) process and indeed the entire “conceive” pillar of CF joint-level force development (FD). It also presents a preliminary assessment of some of the activities related to the process of innovation and adaptation. As a strategic planning activity, FD is part of a continuum of strategic level planning tasks that ultimately allow DND/CF to execute the mandate set by government. This is, as Hew Strachan has put it, “...the link between the policy of [government] and the operational designs of its armed forces. In the ideal model of civil-military relations, the democratic head of state sets out his or her policy, and armed forces coordinate the means to enable its achievement.”<sup>1</sup> The report adopts the stance that the “LL process” is only one portion of the “learning, innovation, and adaptation” process. Since FD activities are fundamental to designing the forces required to meet the mandate of government, and since, as it will be shown, learning from operations is instrumental to improving the effectiveness of the armed forces in future conflict, the LL process, and specifically the strategic-level LL process, is inextricable from broader FD and other strategic-level planning activities.

The framework detailed below was originally developed through consideration of two questions. First, why must there be a LL process? Second, assuming a LL process is necessary, what are the essential components of such a process? Using external academic literature and internal DND reports, the report argues that four essential elements are required for successful military learning and innovation. These elements are 1) a sound policy and military strategic assessment framework; 2) institutional structures and processes; 3) an intellectual environment conducive to honest self-reflection and the tolerance of constructive dissent; and 4) properly trained military and civilian staff to conduct research and analysis. An overarching consideration derived from the literature is that empirical evidence derived from analysis of operations should be the primary driver of doctrine revision and development, concept development, and experimentation.

The purpose of the report is to spark discussion and debate about the LL, concept development, doctrine, and experimentation processes and activities over recent years with an eye towards providing recommendations for improving the joint force development process. The issues raised are fundamental to how the CF conducts operations now and plans for the future. In the course of the discussion it becomes clear that the discussion is equally applicable to all aspects of strategic planning.

The evidence presented below suggests that while DND and the CF possess a reasonable set of structures and organizations to facilitate learning and innovation, there is in general a lack of focus on identifying and analysing the wealth of evidence from recent operations. More specifically, key documents are absent; there are inconsistencies in certain mandates; insufficient command authorities; and problems with the proper and sufficient staffing of lessons learned cells. All of these issues are partly attributable to an inappropriate intellectual environment that has discounted the value of empirically based lessons identification and analysis in favour of intellectually incoherent “futures analysis” seeking to postulate conditions that might exist more

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<sup>1</sup> Hew Strachan, “The lost meaning of strategy,” *Survival*, Vol.47, no.3, October 2005. p.52.

that 20 years in the future. Moreover, the problems with Lessons Learned (LL) staffing and mandates and insufficient command authorities are partly attributable to the incomplete status of transformation efforts initiated by General Hillier. With regards to LL, the somewhat confused LL mandate for the Canadian Forces Warfare Centre (CFWC) and the duplication of effort represented by the existence of LL cells in both the environmental services and operational commands exacerbates the problem of having too few trained LL staff attempting to perform too many tasks. This is symptomatic of a continued lack of faith in the philosophy of a command-centric focus that was the primary driver of original transformation efforts. Such a focus would see a much clearer definition of responsibilities, with the force employers, not the force generators, playing the leading role in operational lesson identification and analysis efforts rather than the current situation that sees the CFWC LL branch, the commands, and the services all pursuing operational level LL activities. Thus, rather than having those with the responsibility and accountability for operations driving the LL process and therefore the identification of capability deficiencies (the rectification of which are then the responsibility of the force generators) there is a confused, multi-pronged LL effort that results in a difficult, and to-date largely unsuccessful effort to reconcile an unnecessarily large number of critical topic lists (CTL) by the joint-force coordinator, the CFWC LL branch. These issues are fundamental to how the CF conducts operations now and creates plans for the future. Indeed, it is clear that the discussion is equally applicable to all aspects of strategic planning, not only joint force development.

The report does not review the learning and innovation processes currently possessed by allied or other military forces. While there might be some value to looking at these, much work would be required to identify what are unique national processes and structures and which can be construed as transferable to the specific set of constraints and restraints facing the CF. Ultimately, even if this were to be done, it would be difficult to determine how successful a system is, given that there is no ready baseline by which to measure success. The decision was therefore made to turn to the academic and professional literature on the subject as a more objective means of determining a legitimate comparative framework.

It should be noted that this paper is not comprehensive. It is based on two reports produced for the Canadian Forces Warfare Centre (CFWC) between January and April 2011.<sup>2</sup> Time constraints have forced a very circumscribed approach to developing the framework and imposed constraints on the extent of the comparative analysis that can be reasonably conducted. The author is keenly aware that much supporting detail could be added and that the issues raised herein deserve treatment in greater depth. For example, the author largely agrees with Williamson Murray and Allan Millett's thinking that, in general, innovation by armed forces takes place during times of peace while during wartime what most often occurs is adaptation to the realities of the strategic situation and the battlefield.<sup>3</sup> However, given that the current era has been described as one of

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<sup>2</sup> Neil Chuka, *Re-Examining the CF Joint Level Lessons Identification and Analysis (Lessons Learned) Process. Part One: Learning and Innovation Framework*, DRDC CORA LR 2011-17, Ottawa: DRDC CORA, 25 February 2011; Neil Chuka, *Re-Examining the CF Joint Level Lessons Identification and Analysis (Lessons Learned) Process. Part Two: Applying the Learning and Innovation Framework*, DRDC CORA LR 2011-046, Ottawa: DRDC CORA, 21 April 2011.

<sup>3</sup> See Allan Millett and Williamson Murray, "Introduction: Military Effectiveness Twenty Years After," in Millett and Murray, *Military Effectiveness: Volume 1: The First World War* (New Edition). New York: Cambridge University Press, 2010 (1988), p.xvii.

“persistent conflict” and “extended conflict”<sup>4</sup> there is a significant degree of ambiguity over which activities by DND / CF constitute innovation and which adaptation. This poses some interesting questions to be investigated but which are well beyond the scope and time available for this present work. For example, Murray and Millett in a large number of their publications on the subject (which will be introduced in due course below) have consistently noted that engagement in conflict has often (or should have) acted as a focusing agent on militaries and their supporting bureaucracies. An interesting investigation in this regard might assess the various force development and other strategic planning activities conducted by DND / CF over the past decade or so to draw conclusions about whether the war in Afghanistan (and, indeed, in other locations such as Libya) has had a focusing effect. To wit: has the Canadian defence establishment acted in a manner consistent with a military organization at war, one at peace, or some amalgam of both? Such questions lead to others that should drive any strategic lessons identification and analysis program. For example, if DND / CF acted as an organization at war, did it mobilize? What were the major problems and successes? What sort of plan, if any, guided mobilization? If DND / CF are found to have largely maintained peacetime routines, why? Has the conflict in Afghanistan not been sufficient to place the department on a war footing? The answers to such questions are significant because, given that there are certain differing issues that affect peacetime innovation and wartime adaptation, they may indicate certain improvements that can be made to the strategic planning (including force development) process. The answers might better prepare us for recognizing in the future when the department should move to a wartime footing. Of course, an entire study could be devoted to just drawing out the important questions that might be asked. These here are simply provided as food for thought.

The discussion in this paper also ignores the professional development and education components of military learning and innovation. This is done not because these are of no consequence to the discussion—in fact they are vital to a complete evaluation of the entire CF learning and innovation process. However, such a study would take time and resources far beyond what is available to the author at this point in time. This report contains some minor editorial revisions and a small amount of additional detail not included in the original reports it is based upon.

The structure of the paper is quite simple with Section 2 presenting the framework and Section 3 the analysis of recent activities.

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<sup>4</sup> One example of the use of these terms is Russell Glenn, *Glory Restored? The Implications of the 2008-2009 Gaza War in Times of Extended Conflict*. Norfolk VA: US Joint Forces Command Joint Irregular Warfare Center, August 2010.

## 2 The Learning and Innovation Framework

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### 2.1 The Military Imperative to Learn and Innovate

The justification for a robust learning and innovation process does not stem from government or military command directives. Although these are important in terms of driving process and providing resources, they are secondary to the epistemological basis for studying the outcome of operations and should not be considered the justification for establishing a credible process. Military forces that study their activities, those of allies, and those of foes, both in peacetime and during war, tend to be more effective and improve the odds of success in battle. Those that don't may fail outright or might still achieve success but generally at greater cost in blood and treasure. However, the study of past and contemporary campaigns is no guarantee of success. Failure to approach analysis with the proper questions; doing so with too stringent a doctrinal outlook; or an inability to look beyond a national socio-political and military milieu, among other hazards, can render any attempt to learn from history meaningless.

This point has been made by others numerous times in publications external and internal to the Department. Internally, Gladman and Roi have illustrated the point through a case study from the interwar period.<sup>5</sup> Both the Germans and the French studied the experiences of the First World War in an attempt to be better prepared for the next war. The Germans succeeded at the tactical and operational levels of war, developing doctrine that led to stunning victories between 1939 and 1942. However, both military and civilian political leaders failed to consider the strategic lessons of the war with any honesty or rigour remotely related to that used for the tactical and operational levels, leading to a defeat far worse in 1945 than that suffered in 1918-1919. Conversely, "France had a better strategic understanding of the demands placed on states because of modern industrial warfare. But this strategic insight was not matched in the tactical and operational spheres." The result was the development of doctrine and mindsets poorly suited to counter the German invasion in 1940. The lesson for the CF today is that while a LL process is necessary to be effective at the operational and tactical levels, "strategic failure can spring from an absence of an effective system for drawing out the lessons of recent operations and testing them under realistic conditions." The latter is ultimately far more important than the former. Indeed, the German strategic failures noted above can be traced to the failure to properly understand the strategic reasons for, and strategic implications of their victory over France in 1870-1871.<sup>6</sup> As Murray and Millett have written, "political and strategic mistakes live forever."<sup>7</sup>

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<sup>5</sup> Unless otherwise noted, all further material in this paragraph is drawn from Dr. Brad Gladman & Dr. Michael Roi, *Look to the Future, Understand the Past: The Limitations of Alternative Futures Methodologies*, ORD Technical Report TR 2005/10. Ottawa: DND ORD, February 2005. n.p., paragraphs 30-32. See also Williamson Murray, "thoughts on Military history and the Profession of Arms," in Williamson Murray and Richard Sinnreich, eds., *The Past as Prologue: The Importance of History to the Military Profession*. NY: Cambridge University Press, 2006, pp. 79-80.

<sup>6</sup> Williamson Murray, *Military Adaptation in War*. Alexandria VA: Institute for Defence Analysis, June 2009. p.2-22.

<sup>7</sup> Ibid, p.1-34.

Given that the CF is once again a force with significant combat experience,<sup>8</sup> it must also be said that this experience does not obviate the requirement to study past operations. Relatively few military leaders have been able to place their experiences of war within a wider context at the time or very soon after those personal experiences. Those who have managed this feat have tended to possess either a depth of experience difficult to match in the modern era (such as Wellington, for example) or significant experience of combat *and* a deep appreciation of history.<sup>9</sup> Otherwise, as it is for most, temporal and physical distance is required to be able to place experience in proper context, develop deeper analysis, and draw out the important lessons. Part of this is related to the problems associated with recollection of events by participants, particularly when the events are as traumatic as those during war.<sup>10</sup> The risk otherwise is the development of beliefs that future operations will be akin to what might be the only wartime experience of a person's career. On this point, Prussian Lieutenant General Gerhard von Scharnhorst noted: "[n]othing is more dangerous... than using personal experience without regard for that experience which military history teaches us."<sup>11</sup> The point is that knowledge of history will help military personnel place recent personal experiences and other events in the international security environment in proper context. The strength of such a combination constitutes a potent force for strengthening the intellectual component of CF fighting power.<sup>12</sup>

It is also useful to understand that civilians without military or campaign experience can contribute to the learning and innovation process. In accounting for the value of history to his own professional capabilities, retired US Marine Corps Lieutenant General Paul Van Riper wrote that he had to learn "not to downplay the ability of those without active military service or actual combat experience to write meaningfully of battle."<sup>13</sup> This comment can be safely extended to the use of properly trained civilians in the learning and innovation process. Nevertheless, the influence of civilians on the process must be balanced with the necessity to have a close cooperative relationship between military and civilian staff to analyze operational and strategic

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<sup>8</sup> A recent article in the *National Post* noted that almost 40,000 CF personnel have served in Afghanistan from 2001 to the present (February 2012). See Lee Berthiaume, "End of Afghan mission leaves vets grappling with their return to Canada," *National Post*, 27 February 2012. <http://news.nationalpost.com/2012/02/27/end-of-afghan-mission-leaves-vets-grappling-with-their-return-to-canada/> Accessed 27 February 2012.

<sup>9</sup> British LGen John Kiszely, citing Keegan, notes that Wellington had, by 1815, command experience in some sixteen battles and eight sieges, without consideration of his experiences as a subordinate, but that this was eclipsed by the experiences of the likes of Napoleon, Alexander the Great, and Hannibal. Kiszely cites Rommel as an example of the latter, noting that by the time he was in command of the Afrika Korps, Rommel had combat experience at several levels of command in two world wars. BGen John Kiszely, "The Relevance of History to the Military Profession: a British View," in Murray & Sinnreich, p. 29.

<sup>10</sup> Williamson (2009), pp.1-11 to 1-16.

<sup>11</sup> As quoted in Kiszely, in Murray & Sinnreich, p.28. Scharnhorst was one of the few able to reflect on his experiences soon after the events to draw larger, more important conclusions. Having suffered several defeats at the hands of Napoleon's armies, including the disastrous battle of Jena in 1806, Scharnhorst largely drove and set the conditions for the reform of the entire Prussian military system. Scharnhorst's reforms in themselves help illustrate the essentials required for successful military reform. One of the easier accounts to digest is Peter Paret's *The Cognitive Challenge of War: Prussia 1806*. (Princeton: Princeton University Press, 2009).

<sup>12</sup> At its most basic level, fighting power consists of physical, moral, and intellectual components. See B-GL-300-001/FP-001 *Land Operations*. Ottawa: DND, January 2008. p.4-1.

<sup>13</sup> Paul K. Van Riper, "The Relevance of History to the Military Profession: an American Marine's View," in Murray & Sinnreich, p.42.

lessons from operations.<sup>14</sup> It must also be said that any civilians employed as part of the process must have broad and deep knowledge of military history coupled with a very strong grasp of current military operations and strategic realities. The use of civilian analysts unfamiliar with military affairs for such work is likely to produce faulty results. Finally, while the observation and analysis of tactical level activities rightly remains primarily a military task, the collation of tactical lessons learned can be used to glean valuable insight to inform higher level planning and decision making.<sup>15</sup> All this to say that the methodical, objective analysis of operations provides the strongest foundation for training, professional development, force development, and medium and long-term planning because it is the only basis for empirical evidence available.<sup>16</sup>

## 2.2 Essential Elements of the Learning and Innovation Process

The critical elements required for a robust learning and innovation process have been distilled from a variety of internal DND documents and external academic publications, all in some way discussing the larger topic of how military forces conduct operations, learn and innovate. Much of the historical literature on the subject of military learning and innovation draws on lessons from the late First World War and interwar (1917-1941) period. This period has proved especially fruitful for studying how militaries learn, innovate, and adapt for two reasons. First, despite assertions of a ‘Revolution in Military Affairs’ in the 1990s and proclamations of generational change in warfare in the 2000s, the interwar period actually constituted the last major shift in military thinking, that related to limiting exposure to ever-increasing firepower while simultaneously enabling friendly manoeuvre.<sup>17</sup> All developments since that period have been *evolutionary*, not *revolutionary* in character, and are related to the application of new technology and other tools rather than representing a fundamental shift in the nature of warfare.<sup>18</sup> The second

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<sup>14</sup> Brad Gladman, *The Requirements for a Canada Command Integrated Operating Concept*, DRDC CORA TR 2006-39. Ottawa: DRDC CORA, January 2007, p.49.

<sup>15</sup> Gladman & Roi (2005), para.66. While it is acknowledged that the presence of civilian Government of Canada employees is an increasing occurrence in certain types of operations, this paper will only deal with defence-specific activities. Thus, while there may be scope in the future to have tactical-level civilian lessons learned, this paper supports the notion that tactical level lessons identification and analysis are almost exclusively military specific and of a time-sensitive nature that is an unsuitable task for most civilians.

<sup>16</sup> Gladman, p.54. See also Michael Howard, “Military History and the History of War,” in Murray & Sinnreich, p.13. Further readings on the merit of this approach include Allan Millett and Williamson Murray’s edited three volume series entitled *Military Effectiveness* (Cambridge University Press, 2010) and *Military Innovation in the Interwar Period* (Cambridge, 1996); Harold Winton and David Mets, *The Challenge of Change: Military Institutions and New Realities, 1918-1941* (University of Nebraska Press, 2000); and Eliot Cohen and John Gooch, *Military Misfortunes: The Anatomy of Failure in War* (NY: Free Press, 1990). These are but an introduction; the literature on the subject now covers many eras and provides a valuable foundation for anyone who might be engaged in the analysis of operations for the purposes of learning to better prepare for future conflict.

<sup>17</sup> Stephen Biddle, *Military Power: Explaining Victory and Defeat in Modern Battle*. Princeton: Princeton University Press, 2006. p.190. Paddy Griffith makes a similar argument in his *Battle Tactics of the Western Front: The British Army’s Art of Attack 1916-1918* (London: Yale University Press 1994) although he may be overstating his case to some degree in arguing that the British Army was the originator of many of the tactics that helped restore manoeuvre to the battlefield.

<sup>18</sup> Williamson Murray, “Innovation: Past and Future,” in Williamson Murray and Allan Millett, eds., *Military Innovation in the Interwar Period*. NY: Cambridge University Press, 1996. p.306.

reason the 1917-1941 period has proved so useful is because “military innovation in the interwar period proceeded within an international geopolitical environment of great uncertainty and strategic ambiguity” which included severe financial constraints.<sup>19</sup> While the specifics of the political uncertainty, strategic ambiguity, and financial constraints in the interwar period differ from those of today, the overarching themes are similar across time periods. However, there are limits to this analogy. The interwar period was characterized by fairly certain geographic and threat limitations. Planning only needed to consider peer military forces, and the low operational tempo created a breathing space for strategic planning and force development that is a luxury not enjoyed today.<sup>20</sup> This is not to say that there wasn’t a significant amount of ambiguity or that there was an absence of security and defence crises that affected strategic planning for the major powers. It is simply to say that enough strategic similarities exist for the lessons of the era to remain relevant.

The first essential element required for successful learning and innovation is the thorough and recurring consideration of the security environment. An understanding of this environment can only be derived within the policy umbrella created by a national foreign policy, national security strategy, and national defence policy. The second element is institutional processes that provide some structure and authority to the effort to learn and innovate. The third element is an organizational intellectual climate that demands brutal honesty; recognizes that identifying failures or less than stellar performances does not constitute shame unless the opportunity to learn from mistakes is ignored; and that encourages constructive dissent. The fourth element required is staff composed of both military and civilian specialists that have extensive experience and a deep understanding both of recent and current operations, and of military history.

### **2.2.1 Strategic Policy and Military Strategic Assessment Frameworks**

The first component of this initial essential element for military learning and innovation is the requirement for clear foreign policy, national security strategy, and defence policy statements. A sound policy and military strategic assessment framework is essential for all defence related activities.<sup>21</sup> In order to understand what the military might do, under what conditions, against what type of adversaries, and to what purpose, it is necessary to have clear policy direction and a recurring assessment of the strategic, security, and military conditions extant or likely to be present that would affect how the CF might operate. From this requirement it is likely that a

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<sup>19</sup> Allan Millett, “Patterns of Military Innovation in the Interwar Period,” in Murray & Millett (1996), p.333. See also Harold Winton “Introduction: On Military Change,” in Harold Winton and David Mets, eds., *The Challenge of Change: Military Institutions and New Realities, 1918-1941*. Lincoln NB: Nebraska University Press, 2000. pp. xi, xiii.

<sup>20</sup> My appreciation is extended to Dr. Peter Archambault for these points. Indeed, one analysis of recent allied operations describes the current era rather accurately as one of “extended conflict” and “persistent conflict.” See Dr. Russell Glenn, *Glory Restored? The Implications of the 2008-2009 Gaza War in Times of Extended Conflict*, Norfolk VA: US Joint Forces Command Joint Irregular Warfare Centre, 25 August 2010. Incidentally, many of Dr. Glenn’s publications, including this particular one, are ideal examples of in-depth analysis of operations argued as necessary by this report.

<sup>21</sup> The policy and strategy issues in this section have been discussed by others in recent years. See Brad Gladman and Peter Archambault, *An Effects-Based Approach to Operations in the Domestic and Continental Operating Environment: A Case for Pragmatism*, DRDC CORA TM 2008-033. Ottawa: DRDC CORA, March 2009; Don Neill, *Considerations for Structuring and Populating a Strategic Critical Technology List for DND/CF*, DRDC CORA LR 2010-112, Ottawa: DRDC CORA, August 2010.

number of distinct but inter-related processes resulting in the creation of a series of documents are required. First would be a foreign policy statement setting out what strategic goals a state may have, the means by which these goals will be pursued, and the basic principles that will be followed. Specific to security and defence, this first document would spawn a national security strategy and a defence policy. The national security strategy is meant to identify and discuss “core national security interests [and] a framework for addressing threats.”<sup>22</sup> While the security policy would address all of the threats facing a state and the entirety of the national apparatus meant to counter those threats, defence policy would specifically account for the defence establishment’s role in the security of the state. The defence policy statement should set out what threats could be countered by the military and the means by which the military would be expected to accomplish that task.

Policy can be simply defined as “the stated intent of government.”<sup>23</sup> Such a definition leaves open the possibility that statements of policy can take many informal or formal configurations but for the most part formal written statements of intent are the most useful for the provision of direction to national armed forces. As one historian has written, “national assessments of the international arena have a crucial influence on whether military organizations innovate successfully. [...] The broad innovations either undertaken or neglected by military institutions often depend on the political guidance and strategic framework within which those institutions operate – especially in the case of Western democracies.”<sup>24</sup> Within the defence establishment, these policy documents should provide the foundation for a military strategic assessment. Although the assessment could take a number of forms, in general it would set out the basic international and regional political and strategic power relationships involving both state and non-state actors. The security environment assessment would then draw out the security-related implications of the strategic power relationships discussed in the strategic assessment. Finally, the assessment should discuss the military implications of the conclusions with specific focus first on Canada, and then her allies.

Without such guiding material, the assessment of the operating environment created by a military strategic assessment is conducted without a national strategic context, leaving military planners bereft of a deep and sure understanding of what long-term national goals the military might be contributing to. This is no minor point. As Russell Weigley has written: “in a democracy only the responsible representatives of the people could determine the purposes of a war, and such determination [is] involved in the way the war [is] to be fought. Differing choices of military means could alter the scope and the nature and intent of a war, and therefore the ultimate choice even of military means must reside with the civilians.”<sup>25</sup> Thus military planners can try to conceive of what a future operational environment might look like and what they believe is necessary for success in that environment; but an understanding of what the military might do, why, and what the relationship to national security might be will be without a rigorous, logical epistemological foundation if there is no official foreign policy and national security strategy guidance promulgated by government.

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<sup>22</sup> Government of Canada, *Securing an Open Society: Canada’s National Security Policy*. Ottawa: Privy Council Office, April 2004. p.iii.

<sup>23</sup> Donald Neill, *China’s Evolving Nuclear Posture: Part 1 - Background and Benchmark*. Draft DRDC CORA technical memorandum, May 2011. Ottawa: DRDC CORA, p.2.

<sup>24</sup> Murray, “Innovation: Past and Future,” p.305.

<sup>25</sup> Russell Weigley, *Towards an American Army: Military Thought from Washington to Marshall*. NY: Columbia University Press, 1962. p.169.

Just as important is the fact that historical evidence suggests that militaries tend to be more accepting of peacetime innovation “only if it was tied to clear strategic challenges, organizational enhancement, and operational clarity.”<sup>26</sup> During times of war adaptation to the actual conditions being faced by a state and its military forces becomes crucial, both to minimize loss of lives and treasure on the battlefield but more significantly at the political and strategic level to ensure that the political goals of a military endeavour are still attainable. However, strategic adaptation, something one author has described as “the easiest [need] to recognize but the most difficult to accomplish” because “strategic change at the highest levels requires the confronting of a number of unpalatable realities. That very act itself may force statesmen and military leaders to challenge their most basic assumptions.”<sup>27</sup> Thus, the policy and assessment frameworks become even more critical during times of war because “strategic adaptation requires both an understanding of where the observer stands as well as a sense of the nature or the opponents or the opponents.”<sup>28</sup> None of these things are really possible without rigorous military strategic assessment and rational policy frameworks and it will matter not how competent a military force is at adapting to conditions on the battlefield if a leaders of a state are unable to reassess their intentions based on the reality of contemporary circumstance. History has shown that “mistakes in operations and tactics can be corrected but political and strategic mistakes live forever.”<sup>29</sup> Simply put, “it is the strategic and political framework of war that matters, and without the guiding framework of strategic judgement, all the tactical and operational expertise may well count for naught.”<sup>30</sup>

However, even a defence policy update cannot be initiated by a defence department without political direction, not to mention foreign and security policy, both of which are beyond the purview of DND. This means that any learning and innovation process can conduct operational and strategic analysis based on ongoing and recently concluded operations but absent clear political direction in the form of foreign and security policy, can only rely on extrapolation of historical trends as a guide to the future. With regard to the military strategic assessment framework, one partial solution to the problem could be using certain products developed by allied governments and militaries. Even better would be acting on opportunities to contribute to the development of such documents. Any conclusions drawn from such allied documents would have to be carefully checked to assure Canadian relevance. However, regarding the policy documents considered necessary, there can be no substitutes and certainly nothing borrowed from allies.<sup>31</sup>

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<sup>26</sup> Williamson Murray and Allan Millett, “Introduction: Military Assessment Twenty Years After,” in Murray & Millett, *Military Effectiveness*, Vol.1. pp.xvi, xvii.

<sup>27</sup> Williamson Murray, *Military Adaptation in War*. Alexandria VA: Institute for Defence Analysis, June 2009. p.8-17.

<sup>28</sup> Ibid, p.8-22.

<sup>29</sup> Murray and Millett, “Introduction,” in *Military Effectiveness*, Vol.1, p.xviii.

<sup>30</sup> Ibid, p.xix.

<sup>31</sup> A coherent and focused national security architecture responsive to a national security advisor is one way of assuring a coordinated cross-departmental approach to the production of security, foreign, and defence policy documents. Canada currently lacks such architecture. Although well beyond the scope of this paper, further investigation into this would be useful. My thanks to Drs. Archambault, Neill, and Gladman who all pointed to this issue.

The second requirement for successful military learning and innovation is “to determine a generally accurate picture of the nature of future war.”<sup>32</sup> There is general agreement across the literature on the subject because such an assessment “provides the context in which force development will occur. It broadly illuminates potential challenges or threats that may arise, and provides background for determining required capabilities to maintain or enhance operational effectiveness.”<sup>33</sup> In fact, such a determination is a requirement for almost all strategic level planning activities. As Williamson Murray and Mark Grimsley have written: “Understanding this [international] environment of struggle is essential to the formulation of any sensible strategic policy.”<sup>34</sup> This is easy to say but very difficult to achieve. Strategy formulation, of which the policy and military strategic assessment are critical components, is a derivative process but one which is “a constant adaptation to shifting conditions and circumstances in a world where chance, uncertainty, and ambiguity dominate. Moreover, it is a world in which the actions, intentions, and purposes of other participants remain shadowy and indistinct, taxing the wisdom and intuition of the canniest policymaker.”<sup>35</sup> Thus, the derivative and iterative process must be conducted with incomplete and at times inaccurate information, ensuring that the process is incredibly difficult, fraught with the peril of multiple misleading possibilities, and impossible to get completely right. It is inevitable that wrong assumptions and choices will be made. It is not surprising that one of the major conclusions made by Millett and Murray in their seminal trilogy on military effectiveness was that political leaders and senior military officers have found it extraordinarily difficult to accurately assess strategic issues.<sup>36</sup> It is the ability to adapt to reality that marks a successful organization.

The complexity of the task means that the policy and military strategic assessment framework requires a number of topics be examined. They must include a strategic assessment that illustrates major global political and other trends, a future security assessment that provides a cautious extrapolation of longer-term (5-10 years) deductions based on the conclusions of the strategic assessment, and a military assessment that discusses the military implications of the analyses in the first two subjects.<sup>37</sup> Therefore, the assessment, while traditionally structured, should not exclude factors such as geography, non-state actors, demographics, the natural environment, pandemic disease, or other issues. These variables will of course figure in the assessments when and where necessary. For example, the issue of demographics might be of concern to all three assessments but in different ways, and would need to be addressed in the context of the purpose of the specific document. Similarly, there is little purpose in a general discussion on the potential for pandemic disease unless it takes place within the specific context of a military implication for

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<sup>32</sup> Winton & Mets, p.xi.

<sup>33</sup> Gladman, p.15. See also Williamson Murray, “Innovation: Past and Future,” in Murray and Millett (1996), p.305.

<sup>34</sup> Williamson Murray and Mark Grimsley, “On Strategy,” in Williamson Murray, MacGregor Knox, and Alvin Bernstein, eds., *The Making of Strategy: Rulers, States, and War*, NY: Cambridge University Press, 1994. p.5.

<sup>35</sup> The notion that it is a derivative process is from Murray and Millett, “Introduction” in Millett and Murray (1988/2010), Vol. 1, p.xxi. The quotation is from Murray and Grimsley, “Introduction: On Strategy,” in Murray, Knox, Bernstein, p.1.

<sup>36</sup> Murray and Millett *ibid* p.xvii.

<sup>37</sup> Gladman, pp.15-16. Although beyond the scope of this paper, Drs. Gladman, Archambault, and Neill, colleagues who reviewed earlier versions of this paper, all agreed that a comprehensive national security architecture guided by a national security advisor with prescriptive mandate would bring great clarity and focus to the strategy formulation process.

Canada or in regard to potential effects on a geo-political power relationship likely to impact Canada's vital national interests. The three assessment documents set out the likely conditions to be faced by the CF on operations and establish the basis for the defence establishment to reconcile the issues and implications with Canada's international intent.

The completion of the military strategic assessment is not a simple task and the difficulty in initiating and maintaining such a process should not be underestimated. Such work requires time, skilled military and civilian analysts, institutional patience, and several key documents, namely a foreign policy and national security strategy, which are outside the purview of DND.<sup>38</sup> Clearly, the production and approval of such a large body of work will consume a great deal of time and demand the identification and employment of skilled analysts that can be legitimately considered specialists in the numerous political, social, geographic, military, and technical subjects that comprise a comprehensive assessment. In all likelihood, at least some of the material will require classification because of the sensitive nature of some subjects. The key consideration here is empirical evidence. The stronger the evidence employed in the production of the documents the more useful they will be. There can be no escaping the facts, first, that the value of any analysis has a direct correlation to the strength of the evidence it is based upon, and second, that humans cannot predict the future. In fact, most attempts to predict the future, particularly in regard to political and military affairs, have met with abject failure. Assessment documents must also be considered 'living' in the sense that they will require regular updates to incorporate revisions and new evidence. At the very least a complete re-write is likely necessary on at least a bi-annual basis. As a consequence of time, human, and resource constraints, and the requirement for constant monitoring and updating, institutional patience (meaning, for all intents and purposes, patience on the part of leadership) is of the utmost importance. Such a set of documents is fundamental to all military planning, learning, and force development activities. It is therefore essential that leaders resist short term demands that might undermine the process required to produce useful material. Put another way, successful force development requires "a rationalistic link between force structure and security requirements; strategic and technological trends; and a compromise between what is desirable and attainable (given the limited resources)."<sup>39</sup>

In practice, the documents are all inter-related and none can properly stand alone. For example, a defence policy will of course take into account current military capabilities while possibly articulating government intent to acquire or develop new capabilities. Similarly, there is a historical basis for a state's foreign policy and there is unlikely to be a fundamental shift in principles even if, for example, a major geo-political shift occurs, such as the fall of the Soviet Union. Thus, while military activities may be conducted without a full set of documents the philosophic basis for those activities will lack a rigorously-derived foundation if the entire set of policy and assessment documents is incomplete or out of date. Combined, a regularly updated policy framework and military strategic assessment provide a detailed and sound foundation for force employment, force generation, and force development, including such things as strategic planning and learning and innovation.

It is impossible to discuss the policy and military strategic assessments necessary for proper learning, innovation and adaptation without addressing the contemporary popularity of long-term

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<sup>38</sup> Gladman, p.15.

<sup>39</sup> Meir Finkel, *On Flexibility: Recovery from Technological and Doctrinal Surprise on the Battlefield*. Stanford CA: Stanford University Press, 2011. p.22.

future trend analysis in Western strategic military planning, specifically the FD component of strategic planning.

## 2.2.2 Institutional Processes and Structures

The second necessary element is institutional processes and structures that provide bureaucratic authority to the effort to learn and innovate. Along with command direction and support, no formal learning and innovation process can be effective without structured organization. This is not to say that informal processes are not also required.<sup>40</sup> In fact, they are essential and the mix of the necessary formal and informal inputs are one of the reasons that the process of military learning and innovation has been described as untidy.<sup>41</sup> That being said, “Some central authority, with sufficient institutional control, must be able to knock heads together, overcome frictions, and establish effective cooperation and common doctrine and purpose.”<sup>42</sup> The central authority is critical to overcoming parochial interests and jealousies that inevitably arise in any large organization. The purpose of the institutional structures and processes are to facilitate the identification of problems and contribute to solving problems with military effectiveness at the tactical, operational, military strategic, and political levels.

There is no single learning and innovation process or structure readily transferable from one national military to the next because whatever is proposed will be subject to particular national constraints and restraints. What might work for a military as large as that possessed by the United States, for example, might not be appropriate for a military the size of Canada, Britain, or Australia. Nor is it simply possible to emulate a structure employed by an international treaty organization such as NATO, or a cooperative organization such as the ABCA Armies Group. Why is this? Because the structure of commands, the system of governance, the structure of the defence ministry, national legislation, and a whole host of other considerations affect how a lessons learned organization might need to be structured to be useful for a military. However, consideration of what actually needs to be accomplished by a learning and innovation structure can help illustrate what is necessary.

The first consideration is that an effective learning and innovation process must serve two different timelines. These timelines have similar but not identical analytic requirements. As Gladman has argued, “The first of these [timelines] is the near-term and involves time-sensitive lessons that require rapid analysis and immediate integration into force structure or operational practice.”<sup>43</sup> Included in this category would be almost everything at the tactical level and much operational level, particularly at the onset and early stages of a mission. “The second time horizon,” Gladman continues, “is longer-term and does not have the same urgency. This horizon involves a detailed study of operational experience and lessons learned...”<sup>44</sup> This second

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<sup>40</sup> Winton, “Introduction” in Winton & Mets, pp.xiv, xv.

<sup>41</sup> Watts & Murray in Murray & Millet, *Military Innovation*, p.415.

<sup>42</sup> J. Paul Harris, “Obstacles to Innovation and Readiness: the British Army’s Experience 1918-1939,” in Murray & Sinnreich, p.213.

<sup>43</sup> Gladman, p.48.

<sup>44</sup> Ibid. Gladman’s argument is supported by other’s who have argued that the majority of deeper thinking regarding the best methods to tackle the problems of future conflict takes place during times of peace when time is available for deeper reflection. See, for example, Brian McAllister Linn, *The Echo of Battle: The Army’s Way of War* (Cambridge MA: Harvard University Press, 2007).

timeframe would likely include all strategic-level, and a good deal of the operational-level analysis, and employ, amongst other evidence, a collation of tactical-level analysis to draw out conclusions, and likely (indeed, hopefully) engender more than a few difficult questions and additional problems, to produce generalizations that would be used to inform the conduct of everything from future training to strategic level planning and decision making.

The two timeframes inform how to view the learning and innovation process which in many ways is similar to that described for the traditional lessons learned cycle. Both Gladman and the official CF LL doctrine describe the same basic steps: 1. prepare a collection plan; 2. gather data; 3. analyse the data; 4. disseminate analysis; 5. correct the deficiencies.<sup>45</sup> While the process is identical for each timeframe, the type of work that must be done is slightly different. The urgency of the shorter timeframe will force greater reliance upon subject matter experts who can make intuitive recommendations based largely on experience, in the context of current operations. With only some exception, the shorter timeframe analysis will largely be conducted by military personnel. The identification and analysis of longer-term and broader lessons requires not only military-specific subject matter expertise, but analysts with a substantive knowledge of military and strategic issues. Primarily, these would be military and civilian personnel who have backgrounds in military history and strategic studies.<sup>46</sup>

With this basic understanding of what the lessons learned organization needs to accomplish, an organization to facilitate the work can be considered. At the very least, lessons learned organizations need deployable and static teams that are integrated closely with doctrine cells and the training system. Ideally, there would also be close linkages with experimentation and concept development cells, if they exist.<sup>47</sup> Indeed, this is one of the reasons this paper has adopted a “learning and innovation” vice “lessons learned” stance because it can then consider doctrine, experimentation, concept development, and the traditional military notion of ‘lessons learned.’ It is also a starting point for reconsideration of terminology—traditional lessons learned might be better described as ‘lessons identification and analysis.’ Reconsideration of the process in this way has several benefits, not the least of which is binding more closely the doctrine, concept development, and experimentation programs with operational activities and the consequent better alignment with current CDS direction for the CF to maintain and operational focus to all activities.<sup>48</sup> Other structures required by the CF to qualify as a ‘learning organization’ —e.g., professional military journals and other discussion fora, a viable professional education system, and linkages with academia and other potential sources of knowledge—are beyond the scope of this paper. The idea that doctrine, experimentation, and concept development, along with the traditional notion of lessons learned, constitute a holistic LL process, however, begs further discussion.

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<sup>45</sup> Gladman, p.51; DND, *Canadian Forces Joint Doctrine Note 04/08, The Lessons Learned (LL) Process*. Ottawa: DND, August 2008. pp.3, 4, A1.

<sup>46</sup> Gladman, pp.48-51. Admittedly, this is a slight extrapolation of Dr. Gladman’s arguments but seems to be within the bounds of his overall discussion of time horizons and the type of work required.

<sup>47</sup> Michael Roi, *Proposal for an Integrated Concept Development, Experimentation and Doctrine Unit*, DRDC CORA TM 2006-12. Ottawa: DRDC CORA, p.28.

<sup>48</sup> CFWC, *CO CFWC Operations Directive 2011-1*, 14 February 2011. p.2/11, para. 4b.

Doctrine is meant to be a summation of what is considered best practices and beliefs used to produce a flexible template for training and action.<sup>49</sup> As two naval historians have put it: “The development of doctrine is the natural imperative of any military trying to rise above the level of being merely an armed mob. It is an essential means by which militaries compensate for the negatives of warfare by building a certain measure of automatic behaviour into the organization.”<sup>50</sup> In other words, “doctrine as a rule describes how a military force *intends* to fight, and is primarily derived from its theory for conducting operations and its capabilities, which are in turn a function of its structure, manpower and equipment.”<sup>51</sup>

Military concept development is meant to propose solutions to specific military problems. In essence, concept development should address an identifiable gap in military capabilities that currently exists or seems likely to occur in the future. Whether or not the capability gap must be bridged is a determination of what the military is likely to be asked to do by the political authority, the enemy that is likely to be confronted, and the drop in effectiveness likely to result should the capability not be developed or retained. Harold Winton has identified three criteria that must be satisfied to help field effective forces in future conflicts. First, he argues that it is necessary to “determine a generally accurate picture of the nature of future war.” Second, “the operational concepts that will most likely bring victory in this anticipated environment” must be developed. Finally “these operational concepts then have to be translated into a doctrine that will provide sufficient guidance for the force to use in its war preparations.”<sup>52</sup> Gauging the importance of a capability gap therefore depends on the policy and assessment framework being complete. Furthermore, it is clear that doctrine and concept development must be closely linked not only with each other but also with a realistic assessment and cogent policy framework.

Experimentation can be used to test, among other things, concepts, technology, and methods of operation. The traditional lessons learned process would normally help collect, collate, analyze, and distribute conclusions based on analysis of operations. Taken together, it is clear why it is necessary to adopt a more sophisticated and comprehensive view of ‘lessons learned’ than that typically discussed. Analysis of operations should be the primary driver of doctrine, concept development, and experimentation. All should be able to demonstrate direct linkages to real, and discrete, operational problems.<sup>53</sup> In times of war this should be obvious but even in peacetime this should be the case as there have been few periods where Canada and her allies were individually or collectively not involved in multiple deployments involving a variety of campaign themes. Analysis of operations should be the primary but not sole driver of the process. Other issues, including alterations of policy, can have implications for the process but any driver must have at its core direct connections to improving military effectiveness. For example, the considered adaptation of new technologies for military purposes may create a doctrinal gap requiring concept

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<sup>49</sup> Neil Chuka, *Confusion and Disagreement: The Information Operations Doctrine of the United States, The United Kingdom, Australia, Canada, and NATO*. Unpublished MA Thesis, Kingston: Royal Military College of Canada, September 2007. pp.10-11.

<sup>50</sup> Jonathan Parshall and Anthony Tully, *Shattered Sword: the Untold Story of the Battle of Midway*, Dulles VA: Potomac, 2005. p.83.

<sup>51</sup> Don Neill, *China’s Evolving Nuclear Posture: Part 1 - Background and Benchmark*, DRDC CORA Draft TM XXX-2011, May 2011. p.2.

<sup>52</sup> Harold Winton, Introduction: On Military Change,” in Harold Winton and David mets, eds., *The Challenge of Change: Military Institutions and New Realities, 1918-1941*, Lincoln NB: University of Nebraska Press, 2000. pp.xi-xii.

<sup>53</sup> Gladman & Roi, para.73.

development and experimentation. However, to ignore or minimize the only source of empirical evidence for military operations surely tempts fate.

As has been stated, most strategic level lessons identified and analysis work likely falls into the longer-term time horizon and probably does not require deployable or dispersed personnel due to the nature of study and contemplative work that is required.<sup>54</sup> For operational-level work the structure employed can take a number of forms. For example, there could be a centralized repository of lessons learned personnel, a mix of personnel from a centralized unit supporting staff at an operational command, or any number of variations. It really matters only so much as to assure that the lessons learned structure suits the particular force employment and command and control arrangements in place at any given time. It is important however, to have a centralized repository such as a 'warfare centre' that can facilitate the coordination of activities, manage the collation and distribution of data and analysis, and provide command impetus to the implementation of lessons throughout the entire military structure. This centralized repository can then help drive change through the integration of the lessons learned, doctrine, and concept development cells. One major benefit of such an arrangement is that there is little logical argument against a work plan for doctrine, concepts, and experimentation that is driven by the empirical evidence of ongoing, recent, and more distant military operations. To be absolutely clear, what is being advocated is a process driven by analysis of operations but informed by the consideration of trends and implications of trends as set out in the policy and assessment framework. At no place is the argument being made for a myopic misuse of history or doctrinal rigidity that has been shown to be a leading factor in innovation failure.<sup>55</sup> The use of history, recent or more distant, does not constitute a narrow minded effort to study the last war in ignorance of what might come. Unless, of course, it is done improperly.

It must be made absolutely clear that the benefit of a greater emphasis on analysis of operations would not be the provision of ready-made answers but rather the clarity attendant to having specificity and nuance to the problems identified. This is crucial for innovation because it helps counter flavour-of-the-month thinking, and preserves a command focus on strategic planning activities. The alternative to specificity in problem definition may be misguided concept, doctrine, and other force development activities.<sup>56</sup> This point cannot be made strongly enough. Murray, in determining the factors necessary for successful innovation has written: "The [factor] that occurred in virtually every case was the presence of specific military problems the solution of which offered significant advantages to furthering the achievement of national strategy."<sup>57</sup> The evidence produced by Murray directly counters the belief that anything but the "study of the future" "results in force development that only delivers today's org chart with shinier kit."<sup>58</sup> It also highlights the fact that the study of tactical and operational level activities does not result in a tactical 'in the weeds' perspective. Conducted properly, analysis of operations and the use of

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<sup>54</sup> That said, there will be situations where deploying personnel involved in specific strategic level lessons identification and analysis will prove fruitful. It would be foolish to dismiss the value of personal knowledge of a situation or event. These situations though will be fewer than is the case with tactical and operational level issues.

<sup>55</sup> Murray, "Innovation," in Murray & Millett, pp. 318-325.

<sup>56</sup> One relatively recent occurrence of such misguided force development is the creation of Information Operations doctrine in the US in the mid-1990s.

<sup>57</sup> Murray, "Innovation Past and Future," in Murray & Millet (1996), p.311.

<sup>58</sup> "DFSA Handover Part 2: From Futures to Concepts" presentation given to the incoming new DFSA circa September 2010, slide 3.

historical evidence in general, will not simply re-validate existing doctrine and processes or create a situation where one ‘can’t see the forest for the trees.’ On the contrary, one must understand the trees before one can understand the forest; knowledge of current operations and history allows for proper contextualization of issues encountered. Properly trained personnel are necessary to avoid these pitfalls; one of the primary reasons why militaries have failed to innovate in the past was the misuse of history, which includes both employing historical evidence improperly and ignoring the evidence altogether.<sup>59</sup>

Finally, it has to be acknowledged that it can be difficult (if not impossible) to avoid short-term demands from senior leadership that can have a negative long-term effect on the work program of those involved in the learning and innovation process. This is often exacerbated by the relatively short posting durations of military personnel. However, if a proper focus on analysis of operations is implemented, the entire process will be better prepared to provide correct and timely information to senior leadership. In some cases, this information may be used to counter incorrect perceptions.

Finally, the process must be owned by a military command with sufficient rank authority to force institutional change. The ‘change authority’ must be able to override unwarranted objections to be able to break any parochialism or other bias sure to exist in large organizations. This is also an important factor (but no guarantee) that an intellectual environment suitable for honest self-reflection will be created and sustained.<sup>60</sup> Although bureaucratic structures are necessary for innovation, they can also act as a hindrance. Particularly during wartime when the need for adaptation is critical, any bureaucracy can act as a brake on efforts to adjust to the realities of warfare. Williamson Murray has described the problem in these terms:

One of the most serious impediments to effective adaptation is that human institutions, particularly the bureaucracies that run them on a day-to-day basis, do not exist for the purpose of adapting to a changing and uncertain world. They aim at imposing order and form on a world that is inherently disorderly and ambiguous. They exist to act as a brake on significant changes that upset the current patterns of behaviour. In fact, most bureaucracies oppose change, because it represents a direct threat to their position. [...] Ironically, even effective military organizations require functioning bureaucracies but such bureaucracies require close watching in war if they are to achieve their real purpose, which is to support the sharp end, not maintain their comfortable peacetime practices. [...] Nevertheless, at the same time the rhythms and culture of most bureaucracies are antithetical to successful adaptation. They are the product of peacetime practices and measures of effectiveness. They are more about efficiency than effectiveness. [...] In the twentieth century, military bureaucracies proved absolutely necessary for the functioning of military institutions but at the same time they have more

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<sup>59</sup> Murray, “Innovation: Past and Future,” in Murray & Millett (1996), pp.319-320. See also Murray, “Thoughts on Military History...” in Murray & Sinnreich, p.79. See also Linn, p.237 for a discussion of the improper use of historical evidence.

<sup>60</sup> Jonathan Bailey, “Military History and the Pathology of Lessons Learned: the Russo-Japanese War, a Case Study,” in Murray & Sinnreich, p.184; also Harris “Obstacles” in Murray & Sinnreich, p.213.

often than not proved the enemy of innovation in peacetime and adaptation in war.<sup>61</sup>

Even those parts of modern military bureaucracies mandated with a responsibility to try to overcome the uncertainty of what might occur in the future can become impediments to adaptation. This can occur for a number of reasons including the typical bureaucratic desire to protect one's organization, 'group-think' and maintaining internal processes regardless of outside pressures. Many of these problems are related to the intellectual environment prevalent in an organization.

### 2.2.3 Intellectual Environment

The third essential element for a military to be able to learn and innovate is an intellectual environment that encourages debate, constructive dissent, demands intellectual honesty, and is supported by senior leadership. The support of senior leadership is critical so that honest, comprehensive, relevant and timely analysis of potentially embarrassing failures or less-than-entirely-successful activities is not suppressed or discouraged. Such contentious issues are sure to arise if the LL process is being run properly. Historical analysis has demonstrated broad agreement on what constitutes a healthy intellectual environment that stimulates learning and innovation in militaries.<sup>62</sup> In some ways, DND, and various leaders within the department, have said all the right words in this regard. The *Department of National Defence & Canadian Forces Organizational Learning Strategy* was published in October 2010. This document, although thin, articulates a list of organizational learning principles and a strategy that does not clash with the historical evidence.<sup>63</sup>

The structures discussed above and the words published in official documents and orders are, on their own, not enough to encourage learning. Learning and innovation are not linear, particularly in peacetime when the focusing effect of combat operations on militaries is absent.<sup>64</sup> Learning, for individuals or organizations, is not neat and becomes less so the larger the problem being considered and the greater the pressures weighing on a military force. Thus, while correcting a tactical level problem might be relatively straightforward (and largely adaptive rather than

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<sup>61</sup> Murray (2009), pp.1-20; 1-22; 1-23; 1-26. Murray's arguments are not exclusive to any particular component of military bureaucracy. It is applicable to everything from force development, training, and strategic planning.

<sup>62</sup> See for example, Winton "Introduction" in Winton and Mets; Chapters 8, 9, and 10 in Murray and Millett; Paret, in particular chapters 3 & 4. See also Chapter 2 in Walter Goerlitz, *History of the German General Staff, 1657-1945*, NY: Praeger, 1963, for detail supporting Paret and James Corum *The Roots of Blitzkrieg: Hans von Seeckt and German Military Reform*, Lawrence KS: University of Kansas Press, 1992 for, arguably, the continuation of the tradition of learning and self-examination begun by Scharnhorst; Brian Linn, *The Echo of Battle: the Army's Way of War*, Cambridge: Harvard university Press, 2007, particularly for the need of forums to debate and the requirement to tolerate constructive dissent in the various forums; and, Keith Bickel, *Mars Learning: the Marine Corps' Development of Small Wars Doctrine, 1915-1940*, Boulder: Westview, 2001, which overall illustrates the large number of official and unofficial processes that lead to the development and promulgation of sound doctrine.

<sup>63</sup> DND, *Department of National Defence & Canadian Forces Organizational Learning Strategy*, DND: Ottawa, October 2010. For list of principles see p.5, para 24; for the strategy see p.6, para 29.

<sup>64</sup> Combat operations should have a focusing effect on militaries and the supporting civilian bureaucracies although experience indicates that this is not always the case.

innovative) the process becomes much more complicated and non-linear proportional to the scope and level of the problem being considered. This is potentially an even greater challenge with the civilian bureaucracy supporting the military, many or indeed most of whom are likely to have had very little contact with the operational and tactical levels (or indeed no contact whatsoever), and, as a result, have at best only a peripheral awareness of the human cost of war. Keith Bickel, looking at the USMC development of small wars doctrine, neatly illustrated the non-linearity of process and time required to overcome a specific set of military problems. The result, the USMC Small Wars Manual, has fundamentally stood the test of time, indicating that the process needs to be flexible and adaptive in order to be effective.<sup>65</sup>

A useful example from wartime is Robert Foley's study of the LL process developed by the German Army during the Battle of the Somme in 1916.<sup>66</sup> Under the crushing weight of Entente material and manpower and facing enemy employment of new tactics, the front-line units and commands of the German Army were forced to create a system of lessons identification and analysis that would allow them to fight more intelligently. This system saw line units create written reports capturing the lessons learned during their time in the line that could then be distributed in the first instance laterally to units moving up to the frontline and then upward through the chain of command. The important consideration for our purposes is that this was not a top-down process driven by higher command but a case where the very real threat of death and the loss of a crucial battle drove learning and lasting innovation upward beyond the tactical level. The lessons learned process developed by the Germans at the Somme caused important change at higher command levels through reorganization of what would now be considered operational level command and control systems and force structure and the enshrinement of a new learning process. This new process allowed the German army to disseminate up-to-date information throughout the army and helped to create conditions which enabled rapid adaptation when faced with new enemy tactics for the remainder of the war. Because of this new process, Foley concludes that "the German army emerged from the battle an intellectually more flexible, and hence stronger, army, despite its grievous casualties."<sup>67</sup> The point to be taken away is that learning, innovation, and adaptation, particularly in wartime, requires flexibility and tolerance for informality by higher command staffs to allow those at 'the sharp end' as it were, to drive the learning process.

For larger problems, such as the combined arms systems developments during the interwar period, the process becomes even more complex. As Barry Watts and Williamson Murray have written: "innovations of this sort rarely reach fruition over short periods of time. They require military organizations to weave together many disparate elements within a complex tangle of interactions created by the personalities, strivings, values, past experiences, history, visions, and cultures of the individuals and institutions involved. The process of such innovation in peacetime appears to be highly non-linear."<sup>68</sup> For any of this to work the senior leadership of a military must inculcate and not only tolerate but actively encourage an intellectual environment that enables vigorous informed debate and that is tolerant of constructive dissent with official positions for the

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<sup>65</sup> Bickel, *passim*.

<sup>66</sup> All material in this paragraph is drawn from Robert Foley, "Learning War's Lessons: The German Army and the Battle of the Somme 1916," *The Journal of Military History*, Vol.75, No.2, April 2011, pp.471-504. See in particular pp.474-475, 480, 503-504.

<sup>67</sup> Foley, p.475.

<sup>68</sup> Barry Watts and Williamson Murray, "Military Innovation in Peacetime," in Murray & Millett, p.375.

sake of making substantive progress on key issues. In such an environment junior personnel would not be penalized for constructive disagreement with the official positions, particularly on issues of doctrine. Any supporting civilian bureaucratic organization must also allow for the same type of intellectual environment to exist and flourish. Indeed, it is more important that supporting civilian organizations possess such an intellectual environment because of the natural severe constraints on dissenting thought imposed by military rank hierarchies.

There are, of course, limits to disagreement in a military context. The command structure must be maintained and respected. Dissent must be constructive, and debate must be informed. Indeed, the problem for the military is that “the demand of discipline and rigid respect for one’s superiors—on which cohesion in battle depends—are antithetical to the processes of adaptation, which requires a willingness on the part of subordinates to question the revealed wisdom of their superiors. It is this inherent tension between the creation of disciplined, obedient military organizations, responsive to direction from above, and the creation of organizations adaptive to a world of constant change that makes military innovation in peacetime and adaptation in war so difficult.”<sup>69</sup> The discipline and respect for authority inculcated by the rank hierarchy during military training can make it very difficult to counter conventional thinking or to openly disagree with senior leadership. Indeed, in this regard there is a very fine line between voicing constructive dissent and insubordination requiring corrective action and there is no way in which to provide a template to determine what constitutes one and not the other. Clearly this is something that must be considered on a case-by-case basis. Instilling the confidence to challenge conventional thinking is also a result of the scholarly background and operational experience possessed by the analyst. As is discussed in the final section, the skills required for the sort of analysis called for in the framework are not taught by the military—such instruction is the purview of universities.<sup>70</sup> Moreover, such skills, which are founded upon inquisitiveness and the necessity to challenge ideas and conclusions, naturally run counter to the strictures of discipline that underpin order in armed forces. This is not to say that military personnel cannot balance the two; some do very successfully. It simply points out that there are intellectual forces unique to the military environment that work against the establishment and maintenance of an ideal intellectual environment.

In a relatively small military such as the CF there is a risk posed by the natural, and understandable human desire to shield close comrades from what might be seen as career-limiting criticism. An ideal intellectual climate would emphasize that the learning and innovation process seeks not to attribute responsibility for success or failure, but rather to determine what happened and why.<sup>71</sup> These are two very different goals and it is important to distinguish that the learning and innovation process is not an exercise in arm-chair command bent on second-guessing decisions made under the stress of operations. This point was important enough to Clausewitz that he devoted much of his chapter on critical analysis to this. Clausewitz underscored that it is impossible for those conducting critical analysis, interpretation, and evaluation of military operations, to be completely objective and that therefore the distribution of praise or blame should

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<sup>69</sup> Murray (2009), pp.1-2, 1-3.

<sup>70</sup> Notwithstanding the existence of graduate and post-graduate programs at the Royal Military College of Canada to which some members of the CF are posted to as part of their PD. It is not a primary task of the CF to instill such skills to all members.

<sup>71</sup> Cohen & Gooch, p.46.

not be the goal of analysis of operations.<sup>72</sup> Attributing responsibility is an important function of the military and political leadership but not of the learning and innovation process. Operational pressures may also lead to the lack of sufficient staffing for lessons identification and analysis, as noted above. Deadline pressures can also work against proper debate and discussions on contentious issues; the inability to influence deadlines established by senior positions may force commanders to eventually quash debate for the sake of meeting a deadline through forcing a common voice on an issue. It is also possible to have senior leadership dictate a line of thinking or the content of a document. All of these are not necessarily problems for documents that are essentially staff products but are potentially fundamental problems if a document is meant to constitute a serious piece of research and analysis.

On the civilian side, internal departmental or external political considerations may make senior management reluctant to release research and analysis that diverges from official policy positions or that suggests certain activities had not gone as well as they might. Research or advice from subject experts that contravenes established research programs or officially adopted organizational or institutional positions might be suppressed or simply ignored. Indeed, such a situation would confirm Williamson Murray's argument that bureaucracies can have a negative effect on learning, innovation, and adaptation. To help avoid such a situation, research products must be clearly labelled with appropriate disclaimers to assure that rigorous, forthright and therefore useful and relevant research and analysis is not altered to suit parochial interests or because of sensitivities over the results of research and analysis.<sup>73</sup>

This is not an issue of management, but one of intellectual leadership that demands confidence in the skills of analysts, the methods employed to conduct analysis, and the courage to stand behind the results of legitimately produced analysis that may prove controversial. Because DND is an arm of government and, as such, must be at all times subordinate and responsive to civilian authority, and because DND's role, tasks and resources are assigned by government, it is unquestionably reasonable to require that decision outputs conform to, or at least do not overtly contradict, official policy. The decision-making process, however, is undermined if the recommendations deriving from analytical inputs to that process are subjected to a policy filter before they are reviewed and acted upon by decision-makers. Honest, unbiased, comprehensive and rigorous empirical analysis that considers all aspects of a problem and that provides conclusions and recommendations without regard to political nuance is the *sine qua non* of sound decision-making and is one of the purposes behind a permanent bureaucracy that transcends any particular parliament and which is granted legal authority by the formal executive. Thus divergence from policy for research and analysis purposes is legitimate if it is defensible on the basis of intellectual rigour. Furthermore, providing policy-neutral analysis as an input to the decision-making process is the *raison d'être* of organizations such as DRDC. Such principles are already in effect for DRDC personnel. All DRDC research reports possess a clear and unequivocal disclaimer, and the peer review process, whether internal or external or some combination thereof, is the accepted means of ensuring that advice provided to decision-makers meets methodological standards. Intellectual leadership consists in standing by the disclaimer

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<sup>72</sup> Carl Von Clausewitz, *On War*, Michael Howard and Peter Paret, eds. Princeton: Princeton University Press, 1976. See Book Two, Chapter Five, especially pages 164-169.

<sup>73</sup> For example, an appropriate disclaimer might appear as: The reported results, their interpretation, and any opinions expressed herein remain those of the author and do not represent, or otherwise reflect, any official position of DND or the Government of Canada.

and the method in order to ensure that decision-makers receive all of the information they need to do their job. A proper intellectual environment for learning and innovation, therefore, would hold that the sole considerations for release of a report are whether it contributes to decision-making on a defence-relevant problem, and whether it is rigorous and intellectually defensible. Debates resulting from the release of controversial analysis and advice should be deemed a positive result, as stimulating discussion on important and timely issues is one of the more important roles of research. In fact, the utility of such debates is directly correlated to quality of the evidence and the rigour of method, and can only be undermined if a report does little more than rehash approved language or reaffirm conventional wisdom.

Moreover, while there can be no official departmental criticism of policy decisions by government, debate over these decisions and their impact on the military's ability to achieve the goals assigned by government, must be permitted and encouraged within appropriate fora, and subject to routine disclaimers. In terms of supporting a robust intellectual environment, senior civilian and military leadership must be prepared to actively and forthrightly defend the obligation of professionals within an organization to engage in informed debate on the full scope of that organization's activities and responsibilities, emphasizing as necessary that individual conclusions and opinions do not necessarily represent Departmental or Government views or policy. Finally, this also means that rigorous research and analysis conducted within the Department must be disseminated for purposes of supporting discussion and debate – even if (especially if!) the conclusions deviate from current or past practices. There is no point in the exercise if the fruits of research and analysis are simply buried within internal files or library archives.

A major influence on the intellectual environment is institutional culture. Beyond the discussion of the nature of civilian bureaucracies above, military institutional culture can be both a hindrance and a benefit.<sup>74</sup> Besides the tired example of the interwar German Army, the interwar U.S. navy that can broadly be pointed to as a positive example.<sup>75</sup> The U.S. Army provides both positive and negative examples. Without delving too much into the debate, Brian McAllister Linn notes that, for all the professional discussion and debate, there is little agreement, and, according to his thesis, a less than successful institutional culture in the U.S. Army during peacetime.<sup>76</sup> William Donnelly provides a further specific negative example of US Army institutional culture creating negative effects.<sup>77</sup> The issue is not clear-cut; however, the case has been convincingly made that the U.S. Army has also proven decisively adaptable during war,<sup>78</sup> an institutional ability surely

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<sup>74</sup> Murray, "Innovation," in Murray and Millett 1996, pp.312-318.

<sup>75</sup> Beyond the discussion by the various authors in Murray and Millett (1996) Joel Holwitt provides a succinct, up-to-date reappraisal of the current state of the academic literature on the subject of the force development and strategic planning by the interwar U.S. Navy. See "Reappraising the Interwar U.S. Navy," *The Journal of Military History*, Vol.76, January 2012, pp.193-210. The general success, however, was most dramatically tainted by the failure of the U.S. Navy Bureau of Ordinance regarding torpedo design and testing. On this latter point which makes a fine negative case study in and of itself, see the most popular available account provided by Clay Blair Jr. in *Silent Victory: the US Submarine War Against Japan*. NY: Lippincott, 1975.

<sup>76</sup> Linn, *passim*.

<sup>77</sup> William Donnelly, "Bilko's Army: A Crisis in Command?," *Journal of Military History*, Vol.75, October 2011, pp.1183-1215.

<sup>78</sup> For example see Michael Doubler, *Closing With the Enemy: how GIs fought the war in Europe, 1944-1945*. Lawrence KS: University of Kansas Press, 1995.

rooted partly in the peacetime institution. The point is that military culture is a factor to be considered and that it can act as both a legitimate brake on ill-considered innovation and an illegitimate brake on valid transformative efforts.

From this it is clear that learning, developing innovative solutions to problems, and adapting methods takes time and is messy. The patience of leaders and institutional tolerance for what can be time consuming and likely to span more than one military posting cycle is critical to the effectiveness of the learning and innovation process as a whole. With regard to the posting cycle, military leaders must resist the temptation to put an individual ‘stamp’ on something in their time in a given position. This desire can be as disruptive a force as any other influencing the process. While it is impossible to eliminate demands for quick answers by political leaders that will inevitably occur, the impulse to directly transmit those demands to lower levels by senior leaders should be resisted at all costs, or, at the very least, minimized. This is because these demands for quick answers often translate into disjointed and directionless work programs that very quickly become slaves of day-to-day pressures, generating lax scholarship that misuses historical evidence, is likely to pose and answer the wrong questions, and risks sending the institution down the wrong path. Indeed, the effects of day-to-day bureaucratic demands on the learning and innovation process are well documented.<sup>79</sup>

If an intellectual environment such as that described above is not established, supported, and protected, the entire LL process risks simply generating material parroting current policies, doctrine, and flavour-of-the-moment concepts; in essence, the antithesis of what a lessons learned process and learning organization should be.

#### **2.2.4 Staffing the Comprehensive Lessons Learned Structure**

It is clear that learning and innovation are complex endeavours requiring the involvement of the entirety of an organization to be successful. At the centre of the process there must be a core group of personnel who can provide the intellectual momentum for adaptation and change. For the military, this means staffing positions with personnel that have operational experience, a grasp of the state of the art as articulated in current doctrine, and who have been assigned to tasks related to their branch, professional development, and experience. In an ideal world, these staff officers will also possess academic backgrounds related to the material they would be investigating. On the civilian side, analysts should ideally possess strong intellectual foundations in the theories of warfare and a broad and deep knowledge and understanding not only of military history, current operational methods, larger international and domestic political issues and the interrelationship between those issues, but also of relevant, empirical research and analytical methodologies. In most cases, this sort of background knowledge will be the result of study in the fields of military history, war studies, strategic studies, or related disciplines.

Selecting properly qualified civilian and military staff to conduct analysis of operations is not a simple task. Gladman has discussed this issue at length:

The staff devoted to gathering and analysing operational experience must be trained to deal with what can be a distorted or incomplete record [...] Although analysts need not be professional historians, they must be trained in research

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<sup>79</sup> See Murray & Sinnreich, “Introduction,” in Murray & Sinnreich, pp.2-8.

methodologies that unlock the potential value of the abundant operational experience the CF has amassed. Rigorous historical analysis can serve as an effective methodology for investigating lessons from specific operations, and can provide a theoretical framework necessary to track either dramatic change or continuity in military trends. The use of historical analysis in this manner is, however, fraught with significant difficulties. For example...those using history must deal with the influence exerted by present day concerns, while avoiding superficial analysis of the operational experience to justify a preferred course of action. Despite these methodological impediments, historical analysis remains of fundamental importance to the rational recommendation of future capabilities and concepts to be explored.<sup>80</sup>

With this in mind, it is obvious that the task at hand is not simple or easy and that the selection of appropriate personnel is therefore all the more difficult. On the military side, the staff personnel selected for such work must possess both operational experience and an understanding of the current state of the art as articulated in doctrine. Their specific military occupation, professional development, and operational experiences should be related to the activities they are called upon to observe and analyse.

On the civilian side, given the requirements noted by Gladman and inferred by the need to base learning, innovation, and adaptation activities on historical evidence, it becomes clear that the selection of personnel is even more difficult.<sup>81</sup> Civilian analysts will need a strong foundation in the theories of warfare and a broad and deep grasp of military history, current operational methods, larger international and domestic political issues and the interrelationship between those issues, and ideally—when engaged in regional-specific analysis—an ability to exploit superior foreign language source material. Civilian analysts who have specialized in specific military-related topics during their academic studies will likely possess many of these characteristics and prove more useful from the outset. This means that they will most likely be drawn from academic programs in the fields of military history, war studies, strategic studies, or something similar. It is not that other academic programs are unable to train analysts that can track trends and note possible issues with convergence of trends, make sense of ambiguity, and be cognizant of the wide array of biases that can influence conclusions.<sup>82</sup> The problem lies with the lack of background knowledge that allows for timely, rigorous and militarily relevant conclusions to be drawn. The difficulties in finding and employing qualified civilians aside, the civilian component to the LL process is important for two reasons. First, independence from the military rank structure allows greater freedom in framing and conducting research and analysis. Second, being outside of the military hierarchy allows for the approach to a given problem to be questioned. Helping the military and civilian leadership ask the right questions when faced with a problem may in fact constitute the greatest service possible, notwithstanding the benefits of good research and analysis. Of course, both of these benefits of employing civilian analysts are negated if the civilians become too closely tied to the military client and see themselves as part of the military

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<sup>80</sup> Gladman, pp.50-51.

<sup>81</sup> The discussion here is not meant to include those scientists involved in operational research. While knowledge of military history would surely benefit, the technical nature of most operational research means that it is not necessarily essential. It would be unrealistic to expect scientists involved in OR to also possess what in essence are graduate-level and higher historical analysis skills and training.

<sup>82</sup> These are some of the tasks identified by Gladman, pp.31, 37, 50-51.

hierarchy rather than an independent asset working closely with the military towards a common end.

Even when skilled personnel are secured, it is important to recognize that the work they are assigned must be commensurate with their knowledge background. Given that FD is a strategic planning activity that demands sophisticated, nuanced, and focused research products, and given that there almost always seems to be less than ideal amounts of time available for completion of a project, it is important that the skills and knowledge of individuals be closely matched to tasks. This will not always be possible but it is a necessary consideration to help ensure rigorous research and analysis to avoid the inevitably steep learning curve that will result from an analyst or team of analysts tackling a subject of which they have limited knowledge. Undoubtedly it will regularly prove difficult to perfectly match knowledge to task and therefore having analysts whose knowledge is both deep in a specific area but sufficiently broad to enable rapid adaptation to what task might be thrust upon them is important to the full use of available resources. This is another reason why the having analysts with knowledge and experience that match the demands of the framework is important.

### **2.2.5 Conclusion**

The learning and innovation framework described above details the policy and strategic military assessment, organization and structure, intellectual environment, and personnel requirements for a military organization to be a 'learning organization.' It is but a start, however. The reality is that many intangible influences affect how any organization learns and conducts strategic planning. Things such as the various national socio-political and institutional culture factors and influences that affect how the process might work, the ambiguity of the strategic situation, and the immediacy of threats, chance, and many others deserve consideration. However, space and time constraints preclude more in-depth work.

### 3 Conclusion

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Learning, innovation, and adaptation under pressure for any large organization are difficult. For military forces, the singular organization responsible for the planning and conduct of the most hazardous and risk-filled of human activities, the task becomes exponentially more difficult. The body of evidence employed in this study suggests that military forces must fulfill four requirements to be ideally prepared to adapt to changing circumstances. The four requirements are a complete policy and assessment framework; formal organizations and structures to facilitate lessons identification and analysis; an intellectual environment demanding honesty and critical thinking; and, properly trained staff. Underpinning the framework must be a belief that empiricism is crucial to the production of sound, rigorous research and analysis and recognition that, for militaries, this means the historical evidence derived from both recent and more distant military operations.

At present, DND and the CF meet only some of the requirements of the framework. To a certain degree, this is acceptable; it would be extraordinary for any military to match the requirements completely. There is a workable system of structures and processes in place; there is a reasonable policy framework, but not a sufficient military strategic assessment; there is a reasonable, if inconsistent, intellectual environment that can be improved based on existing official documentation; and there are reasonably skilled personnel assigned to learning and innovation related activities. In reality, the largest problems are the manner in which existing resources are allocated and, to a lesser degree, the non-analytic tasks which limit their productivity.

Concept development and futures analysis have absorbed a disproportionate amount of resources over the past few years. The value of such activities should be reassessed with a clear eye, keeping in mind that concept and futures work do not in themselves constitute learning and innovation. The reassessment might perhaps begin with the understanding that not all seemingly new issues require a concept and that perhaps what might at times be required is a rational explanation of what the military can do and what (if any) new doctrine and capabilities might be required to accomplish this. The reassessment must also consider whether a concept hierarchy is useful for the CF. Organizations tend to want to populate charts and hierarchies if they are drafted; with regard to concepts, the CF might not need such a hierarchy. In essence, concept development should take place when necessary and should address a specific gap in political, strategic, operational, or tactical effectiveness. A serious and objective analysis of any perceived problem should take place before significant resources are dedicated to concept development on any particular subject.

To be sure, the emphasis on historical analysis in both parts of this study is not without risks—but the level of risk is less than those posed by the lack of empiricism that infused the methodologies of much of the futures and concept work that has taken place. The supposed comparative complexity of modern military campaigns cannot be used as justification for rejection of the study of history. Rather, this emphasises the greater depth and breadth of historical subjects that must be studied to place current experiences in an appropriate context. There is no panacea for the problem of being prepared for what might come. Historical analysis is not a catch-all solution and indeed, if one searches for specific answers disappointment will be the inevitable result. Also, it is

readily admitted that parochialism has infected much military history.<sup>83</sup> The use of history in an effort to learn and innovate must not be allowed to devolve into an exercise in simplistic reinforcement of current methods and force structures. Moreover, the argument is not being made that historical research should be done in the same manner as that which takes place in academia or the DND Directorate of History and Heritage. The aim is to focus research on those sources, methodologies, and desired outcomes that will inform the development of solutions to specific current military problems.

The future is sure to be as messy and difficult to comprehend as the past. Enemies and adversaries will continue to adapt in an effort to frustrate Canadian and allied efforts to achieve goals. There is nothing new in this, and as has been the case in the past, there are no simple solutions to better preparing the CF for the challenges that will be encountered on future operations. However, reassessment of DND and CF efforts in light of the analysis offered in this paper will hopefully improve efforts aimed at making the CF a smart, efficient, adaptable and continuously effective military force. To that end, the second paper in this series will build upon the framework presented above by providing a framework to guide strategic-level lessons identification and analysis efforts. Included in the second paper will be details on how military organizations learn, definitions and descriptions of what constitute the grand strategic, political/military strategic, and military-strategic levels of analysis, and some examples and explanations of questions that might prove of utility to strategic-level LL research and analysis.

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<sup>83</sup> Michael Howard, "Military History and the History of War," in Murray & Sinnreich, p.14.

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(Security classification of title, body of abstract and indexing annotation must be entered when the overall document is classified)		
1. ORIGINATOR (The name and address of the organization preparing the document. Organizations for whom the document was prepared, e.g. Centre sponsoring a contractor's report, or tasking agency, are entered in section 8.)  <b>Defence R&amp;D Canada – CORA 101 Colonel By Drive Ottawa, Ontario K1A 0K2</b>	2. SECURITY CLASSIFICATION (Overall security classification of the document including special warning terms if applicable.)  <b>UNCLASSIFIED (NON-CONTROLLED GOODS) DCM; A REVIEW; GCEC: March 2013</b>	
3. TITLE (The complete document title as indicated on the title page. Its classification should be indicated by the appropriate abbreviation (S, C or U) in parentheses after the title.)  <b>Learning From (Recent) History?: An Assessment of CF Joint-Level Learning, Innovation, and Adaptation Activities</b>		
4. AUTHORS (last name, followed by initials – ranks, titles, etc. not to be used)  <b>Chuka, N</b>		
5. DATE OF PUBLICATION (Month and year of publication of document.)  <b>March 2012</b>	6a. NO. OF PAGES (Total containing information, including Annexes, Appendices, etc.)  <b>45</b>	6b. NO. OF REFS (Total cited in document.)  <b>45</b>
7. DESCRIPTIVE NOTES (The category of the document, e.g. technical report, technical note or memorandum. If appropriate, enter the type of report, e.g. interim, progress, summary, annual or final. Give the inclusive dates when a specific reporting period is covered.)  <b>Technical Memorandum</b>		
8. SPONSORING ACTIVITY (The name of the department project office or laboratory sponsoring the research and development – include address.)  <b>Defence R&amp;D Canada – CORA 101 Colonel By Drive Ottawa, Ontario K1A 0K2</b>		
9a. PROJECT OR GRANT NO. (If appropriate, the applicable research and development project or grant number under which the document was written. Please specify whether project or grant.)	9b. CONTRACT NO. (If appropriate, the applicable number under which the document was written.)	
10a. ORIGINATOR'S DOCUMENT NUMBER (The official document number by which the document is identified by the originating activity. This number must be unique to this document.)  <b>DRDC CORA TM 2013-248</b>	10b. OTHER DOCUMENT NO(s). (Any other numbers which may be assigned this document either by the originator or by the sponsor.)	
11. DOCUMENT AVAILABILITY (Any limitations on further dissemination of the document, other than those imposed by security classification.)  <b>Unlimited</b>		
12. DOCUMENT ANNOUNCEMENT (Any limitation to the bibliographic announcement of this document. This will normally correspond to the Document Availability (11). However, where further distribution (beyond the audience specified in (11) is possible, a wider announcement audience may be selected.)  <b>Unlimited</b>		

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Employing the body of historical literature on military learning, innovation, and effectiveness, this study establishes a comparative framework that identifies four primary requirements for a modern military force to be able to learn from operations, innovate, and better prepare for future warfare. The four major requirements are: 1) a sound policy and military strategic assessment framework; 2) institutional structures and processes to facilitate learning and innovation; 3) an intellectual environment conducive to honest self-reflection and the tolerance of constructive dissent; and, 4) properly trained and educated military and civilian staff to conduct research and analysis. The paper also argues that lessons based on analysis of empirical evidence derived from operations should be the primary driver of doctrine revision and development, concept development, and experimentation. This study then goes on to compare recent DND/CF joint-level activities related to learning and innovation to the framework. The purpose is to identify areas that can be improved, elements that may be currently overlooked, and areas where activities might be rationalized to improve the learning and innovation process. For the most part, only post-transformation (circa 2006) efforts will be considered although reference will be made to some pre-transformation structures and activities. The evidence suggests that while DND and the CF possess a reasonable set of structures and organizations to facilitate learning and innovation, there is in general a lack of focus on analysing the wealth of evidence from recent operations. More specifically, key guiding documents are absent; there are inconsistencies in certain mandates; insufficient command authorities; and, problems with the proper and sufficient staffing of lessons learned cells as resources were directed to other components of force development. All of these issues are partly, but not entirely, attributable to an inappropriate intellectual environment that has discounted the value of empirically based lessons identification and analysis in favour of intellectually incoherent “futures analysis” seeking to postulate conditions that might exist more than 20 years in the future.

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