



Cover

A two-seater CF-188 Hornet flies over the Parc des Laurentides en route to the Valcartier firing range, 22 November 2012.

**Credit : DND Photo BN2012-0408-02
by Corporal Pierre Habib**



CANADA'S WHOLE OF GOVERNMENT MISSION IN AFGHANISTAN - LESSONS LEARNED



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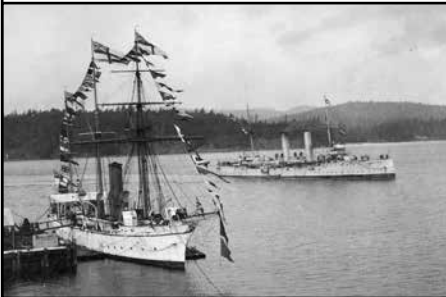
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AN OVERVIEW OF COMPLEXITY SCIENCE AND ITS POTENTIAL FOR MILITARY APPLICATIONS



THE NAVAL SERVICE OF CANADA AND OCEAN SCIENCE



CANADA'S FUTURE FIGHTER: A TRAINING CONCEPT OF OPERATIONS

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NOTE TO READERS

As a bilingual journal, readers should take note that where citations are translated from their original language, the abbreviation [TOQ] at the end of the note, which stands for "translation of original quote", indicates to the readers that the original citation can be found in the published version of the Journal in the other official language.

EDITOR'S CORNER

Welcome to the 50th issue of the *Canadian Military Journal*. As one who has been associated with the publication from the outset, I take great heart from its enduring nature, but I am also humbled by the all-too-rapid passage of time that has brought us to this stage of our development. All of us here at 'Ground Zero' appreciate the continued and frequently-articulated support we receive from you, our readership, and we look forward to providing informative and thought-provoking coverage with respect to a host of defence-related issues for a very long time to come.

And now, on to the current issue. Taking the point, Lieutenant-Colonel Kimberley Unterganschnigg, a senior Canadian Forces logistician with considerable deployment experience, reviews Canada's Whole of Government (WoG) mission experience in Afghanistan, and presents the findings and recommendations that arose from an end-mission workshop that was convened to determine the lessons learned and the best practices gleaned from the field operations mounted there. Next, on a technological bent, armoured officer Captain Michael MacNeill offers that while traditional methods of increasing armour protection, such as add-on armour packages, have evolved over the years and certainly have merit, "... such considerations should also embrace non-traditional protective measures." MacNeill argues that any future Canadian expeditionary force activities should also embrace Active Protection Systems, which are proactive in that they eliminate incoming projectiles before they can reach the target vehicle.

Stéphane Blouin, a Defence Scientist at Defence Research and Development Canada, notes that the concepts of 'complexity' and 'complex systems' have proliferated in many forms of literature, particularly that related to policy, economics, management, and science, but they remain difficult to fundamentally understand, "... partly due to a lack of clarity with respect to definitions, concepts, and principles." To that end, the aim of his article is to introduce our readership to the concept of complexity itself, to include its various tools, and its impact upon military operations.

We offer a rather extensive military history section this time out. In deference to the Senior Service, Commander (ret'd) Mark Tunnicliffe, a former sailor turned Defence Scientist at Defence Research and Development Canada in Ottawa, charts the birth and development of the embryonic Department of the Naval Service of Canada in 1910 and beyond, with particular emphasis upon its Fisheries Protection, Tidal and Current Survey, Hydrographic Survey, and Wireless Telegraph branches. Moving right along, Ryan Goldsworthy, a

post-graduate specialist in Canada's combat role during the First World War, homes in on what was perhaps the Canadian Corps' most memorable accomplishment of the war, namely, the Hundred Days Offensive of late-1918. "Ultimately, this article will argue that while on the tactical level, and to a lesser extent, the operational level, the offensive was successful, Canada's Hundred Days was by and large a strategic failure." Goldsworthy then goes on to opine that a model adapted from this experience can now be applied to any modern Canadian military engagement, in order to comprehensively determine its success or failure. Concluding this section, Royal Military College professor Mourad Djebabla examines the relationship of Canadian farmers to the First World War effort. According to the author: "The problem was that it was difficult to know which duty was more pressing: stay in Canada and work the land to produce food, or, as recruiters were urging men to do, join the Canadian Expeditionary Force and fight in Europe."

In our Views and Opinions section, former fighter pilot Brigadier-General Dave Wheeler, currently the Director of Air Staff Coordination for the Commander of the Royal Canadian Air Force, tables an embryonic training concept of operations for Canada's future fighter aircraft, whatever that may be. He is followed by Major Dan Doran, a reservist combat engineer, who argues, "...that reservists must not only be given a clear mission, but must train in a manner that supports said mission." Doran opines that is currently not the case, and that "...[this] must change to prevent further attrition of members as a result of lack of interest." Chief Warrant Officer Ralph Mercer closes this section with a review of current Non-Commissioned Member (NCM) education in the Canadian Forces, and argues: "By enriching the breadth and depth of education opportunities for NCM self-improvement, and, while fostering a culture that appreciates and rewards individual intellectual growth, the CF will mobilize its greatest asset for operational success, its people."

Finally, we offer Martin Shadwick's latest stimulating and probing commentary, this time examining the potential roles and contributions of the Canadian Forces in the upcoming years, comparing today's situation to that experienced during "... the relatively relaxed Canadian approach to security and defence that characterized the détente era." We then close, as usual, with a rather extensive selection of book reviews for further consideration by you, our readership.

Until the next time.

David L. Bashow
Editor-in-Chief
Canadian Military Journal

VALOUR



DND photo G62012-0600-051 by Master Corporal Dany Veillette, Rideau Hall

Group shot of the recipients at the 15 November 2012 presentation ceremony held at Rideau Hall.

Canada's three military valour decorations, namely, the Victoria Cross, the Star of Military Valour, and the Medal of Military Valour, were created by Her Majesty Queen Elizabeth II, Queen of Canada, on 1 January 1993. All the decorations may be awarded posthumously.

The **Victoria Cross** is awarded for the most conspicuous bravery, a daring or pre-eminent act of valour or self-sacrifice, or extreme devotion to duty in the presence of the enemy.

The **Star of Military Valour** is awarded for distinguished or valiant service in the presence of the enemy.

The **Medal of Military Valour** is awarded for an act of valour or devotion to duty in the presence of the enemy.

Additionally, the **Mention in Dispatches** was created to recognize members of the Canadian Forces on active service and other individuals working with or in conjunction with the Canadian Forces for valiant conduct, devotion to duty, or other distinguished service. Recipients are entitled to wear a bronze oak leaf on the appropriate campaign or service medal ribbon. Like the military valour decorations, the Mention in Dispatches may be awarded posthumously.

On 15 November 2012, His Excellency the Right Honourable David Johnston, Governor General and Commander-in-Chief of Canada, presented 2 **Military Valour Decorations** and 43 **Meritorious Service Decorations** to members of Canadian and allied forces. The Governor General said, in part:

"This is the time of year when Canadians pause to give thanks for the sacrifices made by our veterans and their families. Therefore, in addition to recognizing your achievements today, let us take this opportunity to remember that military sacrifices continue to be made on our behalf, to the present day. For this, all Canadians are grateful. These decorations are

among the highest honours our country can award to members of the Canadian Forces and to the armed forces of our allies. You serve with so many dedicated and deserving servicemen and women, but today we honour you for your extraordinary accomplishments. Having read your citations, I can understand why. Simply put, each of you has shown outstanding ability and determination in the exercise of your duties. In some cases, those virtues took the form of incredible bravery and selflessness under fire... In all instances, you answered the call to service in remarkable ways.

...With these decorations for military valour and meritorious service, your responsibility among your comrades and colleagues is now even greater. Never underestimate the power of your example to inspire others.

...These decorations are a testament to your courage, ingenuity and quiet determination, and they also extend to your families and loved ones, who in their own way have accepted the demands of service.

And so it is with great admiration that I offer my thanks and congratulations to each of you for your service and valour.

Thank you."

MILITARY VALOUR DECORATIONS Star of Military Valour

Private Taumy St-Hilaire, SMV - Montréal, Quebec

Medal of Military Valour

Specialist David Fletcher Graves,
MMV (United States Army)
- Wolfe City Texas, U.S.A.

VALOUR



Victoria Cross



Star of Military Valour



Medal of Military Valour

CITATIONS

Private Taumy **St-Hilaire**, SMV
Montréal, Quebec
Star of Military Valour

On April 19, 2011, Private St-Hilaire demonstrated exceptional courage during a battle in Afghanistan. While engaging the enemy from his rooftop position, he noticed an Afghan father and son pinned down under enemy fire. On his own initiative, and despite enemy aggression from three separate positions, he requested covering fire before going down to the exposed victims to lead them to shelter. Private St-Hilaire's bravery and selflessness enabled him to save both lives and to quell the attack.

Specialist David Fletcher **Graves**,
MMV (United States Army)
Wolfe City, Texas, USA

Staff Sergeant Adam **Hever**,
MMV (United States Army)
Peabody, Massachusetts, USA
Medal of Military Valour

On August 3, 2010, Specialist Graves and Staff Sergeant Hever, both of the 1st Squadron, 71st Cavalry Regiment of the United States Army, and part of the Canadian-led Task Force Kandahar, were conducting a training exercise within Kandahar Airfield when insurgents tried to force their way inside the compound. Unarmed and under fire, Specialist Graves and Staff Sergeant Hever secured weapons and moved to a position of cover in order to engage the enemy. Despite intense enemy action, they maintained their position and delivered accurate return fire. Their courage, decisiveness and soldiering ability neutralized the attack and enabled friendly forces to find safety.

Staff Sergeant Hever received his insignia at an earlier ceremony.



Private St-Hilaire receives his Star of Military Valour from the Governor General at Rideau Hall.



Specialist Graves is congratulated by the Governor General after receiving his Medal of Military Valour.

DND photo GG2012-0600-001 by Master Corporal Dany Veillette, Rideau Hall

DND photo GG2012-0600-002 by Master Corporal Dany Veillette, Rideau Hall

LETTERS TO THE EDITOR

The Reflection Project at HMCS Prevost

Sunday 28 October 2012 marked the third annual poppy placement at the Battle of the Atlantic Memorial at HMCS *Prevost* Naval Memorial Park in London, Ontario.

It all began in 2010 as a project for the Royal Canadian Navy (RCN) centennial celebrations. The first installation in the park was the Battle of the Atlantic Memorial. It is a series of 24 granite stones, each engraved with the name, the hull number, and the date of loss of an RCN ship during the Battle of the Atlantic. The stones are placed along a steep, 300-metre hillside in chronological order of their date of loss. Information panels along the base of the hill provide visitors the story of each ship and her brave crew. The memorial was dedicated in May, 2010.

As Remembrance Day 2010 approached, there was a desire to honour specifically those represented in this memorial without detracting from the official ceremony at the city cenotaph. The result was a poppy placement ceremony about a week before Remembrance Day. Each stone commemorates a ship and the crewmembers that perished with her. To honour these men, a single poppy for each life lost is placed alongside that ship's stone. Some stones have a few poppies, while others have well over a hundred of them, reflecting losses. The view of the memorial hillside as it turns red with poppies is overpowering, as one realizes that each poppy signifies an individual ultimate sacrifice.

As the 2012 ceremony approached, the thoughts of HMCS *Prevost's* company turned to those members of ship's company who had perished during this battle. It was decided to acknowledge them by placing their small framed photos at the appropriate stones. Thus, a few photos were placed upon the hill. As it materialized, these young faces reflecting back from the hillside produced a very emotional impact. It was then decided that every poppy on the memorial should be accompanied by a photo of the brave young Canadian it represents.

"This is an aggressive undertaking by HMCS Prevost, "said Lieutenant-Commander Iain Findlater, the Commanding Officer, "...but the end-state of almost 1500 young faces reflecting from the hillside will be incredibly moving. We owe it to them. This will help us remember that these were young men with families, with friends, with hopes and plans and

dreams which were all ended too soon. Incredible individual sacrifices."

To locate, copy, and frame an individual photo of each hand lost is a monumental task. This year's poppy placement featured the first 50 photos. It is hoped that by next year, the majority of representative photos will be located and put in place. To do so, HMCS *Prevost* needs everyone's help. They are calling upon every Royal Canadian Legion branch, every Naval Reserve Division, local Books of Remembrance, Navy Leagues, newspaper archives, surviving family members, and so on. If you have a photo of a Royal Canadian Navy sailor who perished during the Battle of the Atlantic, please contact HMCS *Prevost*.

The Reflection Project at HMCS *Prevost* is truly a reflection upon all of us.

Contact:

The Reflection Project at HMCS *Prevost*
The Royal Canadian Navy in London, Ontario
hmcsprevost@gmail.com
Sub-Lieutenant David Lewis
Public Affairs Officer HMCS *Prevost*



CPO2 Jeff Gourlay and his wife Debbie place poppies at the HMCS *Alberni* stone. Chief Gourlay's great uncle, Leading Seaman James Walker, was lost with HMCS *Alberni*. His photo was provided by the Gourlay family, and it is placed at the ship's stone.

Sub-Lieutenant David Lewis

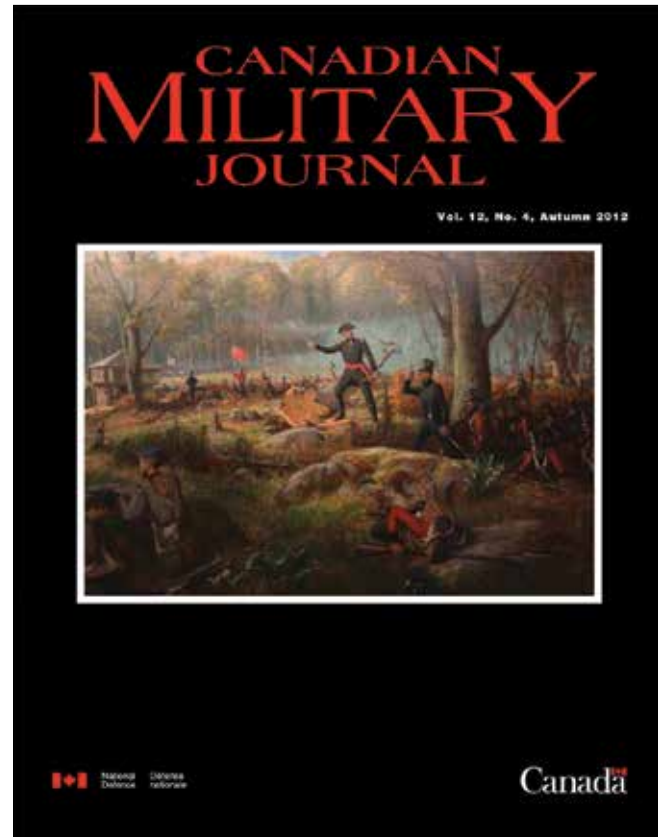
LETTERS TO THE EDITOR

Dear Editor,

I refer to the 'views and opinions' piece (Vol. 12, No.4, Autumn 2012), entitled *The PLQ Mod 6 Conundrum: How the Army Punishes Reservists for Civilian Achievement*, by Major Dan Doran. Therein, Major Doran discusses the difficulties reservists encounter in attempting to advance within their military career path, given that said path is based upon a Regular Force model. Further, Doran states that the Regular Force does not understand the 'whole picture' as it pertains to reservists. I wish to endorse Major Doran's published viewpoint in every way. As a naval reservist of 25 years, I can confidently state that his observations apply equally to the Canadian Naval Reserve, and to those who design various training programs for its members. When will the leaders of the aforementioned organizations sit up and take notice of this sadly-wasted potential, when CF reservists are forced to make untenable choices between civilian employment and part-time military employment?

Thank you.

Lieutenant (N) James Parker
Victoria, B.C.



DND photo SU2012-0636-013 by Corporal Heather J.L. MacRae



DND photo IS2005-2211a by Sergeant Frank Hudec



The outgoing Director of the Kandahar Provincial Reconstruction Team (KPRT), Tim Martin, Representative of Canada to Kandahar, and the incoming Director, Ben Moening, shake hands during the Transfer of Authority (TOA) of the KPRT to the USA, 12 January 2011.

CANADA’S WHOLE OF GOVERNMENT MISSION IN AFGHANISTAN – LESSONS LEARNED

by Kimberley Unterganschnigg

Introduction

As the end of Canada’s Whole of Government (WoG) mission in Afghanistan approached, a workshop was convened with civilian and military members of the Kandahar Provincial Reconstruction Team (KPRT) and Task Force Kandahar Headquarters (TFK HQ) to discuss lessons learned and best practices from field-based operations, which fed into a larger Privy Council Office WoG lessons learned exercise. The workshop included representatives from all key departments, including the Department of National Defence (DND) and the Canadian Forces (CF), the Canadian International Development Agency (CIDA), the Department of Foreign Affairs and International Trade (DFAIT), the Royal Canadian Mounted Police (RCMP) and Correctional Services Canada (CSC), involved in the WoG mission. This article presents the findings and recommendations that arose from this workshop.

Background

The 2008 Manley Report¹ provided the context and rationale for Canada’s largest foreign policy involvement since

the Korean War. Led by the Privy Council Office, Canada’s WoG effort operated under a Memorandum to Cabinet that provided strategic vision² and six priorities³ for participating government departments. This document represented Canada’s grand strategy for Afghanistan, and, as such, did not delineate how the departments would collaborate in the field; this level of detail was left to WoG representatives in Afghanistan to determine. Quarterly reporting to Parliament⁴ focused upon progress in relation to benchmarks⁵ for each of the priorities, including three signature initiatives.⁶

“Various models have been developed to guide the planning and de-confliction of civilian and military operations at the tactical level....”

There are numerous studies focusing upon the benefits of a WoG approach to programming in a fragile state. These studies emphasize the importance of having a unifying strategic vision and a shared understanding of the mission’s goals and objectives.⁷

They further conclude that policy coherence at the strategic level should be combined with a clear understanding of each

Lieutenant-Colonel Kimberley Unterganschnigg, MMM, CD, MSc, MA, is a Logistics Officer who has accumulated considerable overseas experience with the UN and NATO. She was deployed as the Joint Lessons Learned Officer for Task Force Kandahar from September 2010 to July 2011. She is grateful to her WoG colleagues who helped prepare and edit the report.

DND photo IS2008-7407 by Captain Adam Thomson



Correctional Service Canada Representative Paula Milino speaks with the Director of Education and Training, Colonel Mohammad Ismail, at the Sarpoza Prison in Kandahar City, 17 November 2008.

sector-specific frameworks;¹¹ and a uniform Provincial-District Stability Framework¹² developed jointly by the civilian departments/agencies and the military. This was very much a ‘bottom-up’ response within theatre to the need for a mechanism for coordination of civilian, military, and coalition activities. The tool was based upon recent experience, and was used to coordinate the security and development efforts by commanders in the field, Provincial Reconstruction Teams (PRTs), and District Stabilization Teams (DSTs).¹³

It must be noted that major shifts occurred to TFK’s area of operations in early- 2010. With the influx of troops generated by the US surge, TFK’s responsibility decreased from the whole of Kandahar Province to three districts: Daman, Dand, and Panjwa’i. This shift resulted in a divergence between the KPRT’s area of responsibility, which was dictated

department’s roles and responsibilities, enabling the team on the ground to prioritise and to de-conflict activities. Coherence should also extend to financial policies and common funding mechanisms.⁸ Specific lessons from the United States (US) and the United Kingdom (UK) on the functioning of PRTs, as well as a 2009 report on the Canadian WoG experience reinforced this need for coherence from the strategic to the tactical level.⁹ Further recommendations common to all of these reports are the requirement for: an integrated structure; common IT systems; physical collocation of the civilian and military elements; joint civil-military planning; and pre-deployment training to familiarize each department with the roles and responsibilities of the others, as well as to exercise these through scenarios.

by the longer-term goals represented by the six priorities and three signature projects throughout the entire province, and TFK’s focus upon its assigned districts. As a result, the KPRT and TFK main efforts were no longer aligned, and occasional friction arose. As the transition towards a US lead of the KPRT progressed, this divergence became somewhat more noticeable. It did not, however, impair the ability of TFK and KPRT to support each other’s activities. The comments which arose from the discussions are evidence of this success and of the importance of strong inter-personal relationships in achieving this success.¹⁴

Various models have been developed to guide the planning and de-confliction of civilian and military operations at the tactical level, often in the absence of strategic level vision and guidance. Early in 2011, the Regional Platform South (US Department of State, US Agency for International Development) and Regional Command South (International Security Assistance Force - ISAF) revised the Stability Continuum¹⁰ to guide programming by the coalition militaries and the civilian department/agencies in the region. Called the Region South Stability Approach, it included the phases of the Stability Continuum (Shape, Clear, Hold A, Hold B, and Build/Transfer);



Nicholas Gosselin, Political Officer for the Department of Foreign Affairs working with the KPRT, records notes during an exchange of information with Afghan officials regarding the functioning of the Afghan justice system, 29 November 2007.

DND photo IS2007-0728 by Master Corporal Robert Bottrill



The Gorgon village school in the Dand district, after opening on 23 December 2010, was further improved by Canadian contingency funds administered by Canadian Civil-Military Cooperation (CIMIC) teams.

Findings and Recommendations

The findings and recommendations that arose from the workshop have been grouped into six themes that are common to the literature: vision/goals/strategy; organizational structure and accountability; processes, mechanisms and agreements; people/culture/relationships and training; budget/funding/contracting; and communication and information technology. Although the recommendations are derived from the Afghan experience, most are considered applicable to future WoG missions in fragile states.

Vision/Goals/Strategy

International and National Goals and Strategy

Inconsistency in strategies at the international and national (Canadian) levels, such as strategies for the rule of law sector, impeded progress in security, governance, reconstruction and development. Although the Afghan National Development Strategy resolved many of these issues, it was apparent that a more detailed international strategy and framework was required to coordinate the efforts of the international allies and the affected host nation ministries, including the establishment of agreed upon principles. This would have ensured consistency in training of host nation personnel across the country and sustainability of projects and initiatives. In the Canadian context, the national Memorandum to Cabinet, framework and campaign plan should have established clear objectives and benchmarks that served to coordinate the efforts and priorities of the departments, throughout the mission, in support of the international strategy. The lack

of a clear international strategy and clearly defined roles for the departments led, at times, to friction between WoG departments in Kandahar as to their roles, responsibilities and priorities, particularly where there tended to be an overlap between stability and development activities. There was also occasional friction between a department's priorities and that of its Government of the Islamic Republic of Afghanistan (GIROA) partner. Much of this friction could have been avoided through the establishment of a policy framework, based on host government priorities, that provided effects/results (and measures/indicators) that were meaningful. In future such a framework should be developed to form the basis of a unified WoG architecture for planning, monitoring, and reporting, thus ensuring focus and consistency throughout the mission. Furthermore, an internationally or at least nationally agreed approach to missions in fragile states, based upon a tool such as the stability continuum, should be put in place to provide clarity on roles and responsibilities of each department, particularly with respect to activities in support of governance and development.



Shura in the Panjwa'i district.

Our National Goals versus the Host Nation

Although there was tacit recognition that tactical patience was required, overly ambitious objectives and plans on the part of coalition forces sometimes tended to hamper the development of governance capacity. In some cases, the international community's interest in getting results superseded the medium and longer term goal of developing GIROA's capacity to connect to its people and deliver services. To address this, the host government, particularly at the local level, should be involved in the planning process, at a minimum, to get their 'buy-in' or concurrence, even when rapid progress/action is

required. Whenever possible, time should be built into the decision-making process to enable them to make a significant contribution to the plan and its implementation.

It may be that letting the host government drive progress means that we need to adjust our own expectations of what can be achieved in a particular rotation. Careful planning needs to occur to determine with whom each organisation should be working at each stage of the stability-development spectrum, and to develop a strategy to accomplish these objectives. We also need to find ways to support the host nation government's capacity to plan at the strategic and tactical level, and to implement at the provincial and district level. On the military side, the last Canadian task force headquarters notably determined to continue initiatives begun by the previous headquarters, a marked departure from the tendency towards 'roto-it is' that had caused significant changes in approach to governance, reconstruction, and development from headquarters to headquarters.

The Host Nation versus itself: National Priorities versus Local Requirements and us in the middle

There was a significant disconnect between Kabul-driven GIRoA policy and expectations, and what was needed at the Provincial and District levels. The WoG team tried to implement strategies and policies created in Kabul that were too complex, un-resourced, or inappropriate, and that may prove to be unsustainable. There was also a significant gap between what the locals understood about the role of each level of government, and what Kabul intended. This was further complicated by a disconnect between Canadian stability and development objectives. Our approach to building expectations and coordinating governance capacity must better reflect our understanding of the appropriate balance between the host nation's longer term sub-national governance policy priorities and local needs. In particular, applying development principles (that focus upon Host Nation-driven medium and long term effects or results) in a counter-insurgency environment (that focuses upon immediate local effects) remains one of the key challenges facing the WoG effort to put the Host Nation Government 'in the driver's seat.' Instead of the Canadian 'six and three' type of national goals, there needed to be a WoG strategy and plan that identified potential activities that could be used in a coordinated fashion by the departments (especially the CF, CIDA, and DFAIT) as the environment moved through the phases of the stability spectrum.

Civilian-Military Organizational Structures and Accountability

Within TFK Headquarters, there was a unified organizational

structure. However, the roles and responsibilities of the civilian staff members from the other government departments were not clearly defined, and the expectations of the military branch heads and these civilian staff as to their roles sometimes diverged. This was exacerbated by the small number of civilian staff employed in the headquarters, which limited the availability of expertise from the other government departments to military branches responsible for planning stability operations, including those with clear governance and reconstruction impacts. The employment of a senior military liaison officer and military engineering and support personnel within the KPRT provided the KPRT with ready access to military advice. It became apparent that, in a WoG effort, both the civilian and military headquarters must be appropriately staffed with sufficient, qualified, and experienced personnel from key departments who have clearly defined roles and responsibilities.

There is need for more clarity with respect to civilian-military roles and responsibilities in terms of who leads and who supports a particular issue or file, in order to avoid the perception of 'too many bosses,' and to prevent unnecessary infighting. While the relationship between the senior civilian in Kandahar, the Representative of Canada in Kandahar (known as the RoCK), and the military commander was stronger than had been the case in some earlier rotations, with the shifting of the RoCK to the KPRT, there was a loss of consistent direction from the top, resulting in unnecessary duplication of effort. There was also a perception of too much 'push' from the military side on core governance, reconstruction, and development issues. Leadership is critical when there are somewhat parallel organizations whose lines of responsibility intersect. The senior civilian representative and the military task force commander need to be seen to be visibly cooperating and to be acting upon a coordinated strategy. They should be collocated wherever possible, or where this is not possible, liaison mechanisms should be put in place (meetings, liaison officers) to ensure consistent messaging and a clear division of responsibilities.



DND photo IS2011-1012-20 by Sergeant Matthew McGregor

Canada's Prime Minister, the Right Honourable Stephen Harper, the Canadian Minister of National Defence, the Honourable Peter MacKay, and Tim Martin, Canada's Representative in Kandahar, walk through the wheat fields at Tarnack Farms near Kandahar City during a surprise visit, 30 May 2011.

Processes – Mechanisms and Agreements, including Planning

Although the ‘value-added’ of each department was recognized, the different pace and priorities of the civilians and the military created challenges when developing a common approach to planning, decision-making, on-going management of governance, reconstruction and development issues, as well as reporting. Effort needs to be made to design work processes that require contributions from civilian and military colleagues that result in WoG products that are efficient and effective. These processes should range through all levels of operational planning and reporting, down to project design and implementation. Physical co-location of civilians and the military proved to be invaluable in enabling collaboration, with the district stabilization team emerging as the most effective civilian-military structure. In each case, departments were able to work effectively together on projects, with each adding value through contributing their expertise and resources. The success of this approach reinforces that, wherever possible, WoG teams should be established and developed. At a minimum, the civilian and military organizations should be collocated to enable the development of effective networks.

With the geographical separation of the KPRT and TFK headquarters, the reduction of the task force’s area of operations, and the increasing emphasis placed upon governance, reconstruction, and development, the TFK Commander decided to deploy a liaison officer to the KPRT. In turn, the RoCK’s deputy, the Senior Civilian Representative, was assigned to TFK Headquarters in order to provide strong linkage to the civilian departments. These officers were senior, highly experienced members of their respective departments. The employment of liaison officers, who have the appropriate levels of seniority and experience, as well as experienced officers at the working level between the military and civilian headquarters should be considered wherever collocation is not possible.

There was widespread recognition that civilians and the mili-

tary work at different parts of the stability continuum and they overlap at some stages; differences in departmental approaches to and pace of planning, tasking and reporting were also evident. It is important that the relationship between security, stabilization, and development be better understood by each department, and that the approaches and activities of each department through the stages of the stability continuum are well coordinated. For example, TFK used cash for work projects as part of ‘shape, clear, and hold,’ in order to provide employment and address infrastructure requirements. Focusing these projects upon key economic infrastructure (roads, irrigation canals) can be used to enable development activities in support of promoting economic growth, whenever the security situation permits.

“We were late to work with Kabul and the Provincial governance system to ensure that there were financial resources available to support their operations.”

The need for increased civilian-military integration became apparent in an unexpected manner. The civilian members

of the other government departments had very restricted freedom of movement, which impaired their ability to meet with GIROA officials and to participate in important activities away from the District Centre and KPRT. As such, military members were the primary representatives of the WoG team ‘outside the wire.’ In order for military members to be effective and consistent with the WoG messaging, they needed to be integrated into networks with the civilian departments. Departments such as CIDA and DFAIT need to re-examine their limitations on the movement of their civilian staff during stability operations. DND’s policies are more flexible, and they enable DND civilian staff, such as language and cultural advisors, as well as science advisors, to move wherever their duties demand of them.



The Dahla Dam and irrigation system, one of three Canadian signature projects in Afghanistan.

DND photo AR2011-0061-066 by Corporal Jean-François Carpentier

Developing Host Nation Capacity

The WoG team developed a number of approaches to support GIRoA, including mentoring, training, support to the governance, reconstruction and development process and projects responsive to the needs of the population. For example, the local communities were encouraged to select leaders to engage with the district government in order to bring forward their requirements for projects. The district stabilisation teams then worked with the district governments to prioritize these requirements, and to match them to national or provincial plans, or recommend them for funding by the military (Canadian Commander's Contingency Fund or the US Commander's Emergency Response Program),¹⁵ or the programs put in place by civilian agencies (CIDA, DFAIT, and USAID). These approaches encouraged the development of a nascent capacity to deliver basic services to the population at the provincial and district level. The WoG team needs to be flexible in order to capitalize upon emerging opportunities, and yet, to have a sufficiently stable approach to ensure continuous progress, from rotation to rotation.

In time, and based upon the excellent relationships established with our GIRoA counterparts, the WoG team was able, in some cases, to shift the focus of our support, from shaping, to mentoring, to advising, emphasizing the principle of putting the Afghans first, from face to voice, to action, to ownership. This is significant. As the host nation partners progress, the WoG team must be prepared to step back from doing, to leading, to mentoring, to advising. The WoG team must also be comfortable with "letting their host nation partners fail" – recognizing that this too is a developmental opportunity.

We were late to work with Kabul and the Provincial governance system to ensure that there were financial resources available to support their operations. This hindered our ability to help the provincial /district and local government and ministry representatives build financial management and planning capacity. Financial resource management skills should be developed as early as possible at the provincial and district levels, with clear and streamlined processes put in place to receive devolved operating budgets. This could be accomplished through the introduction of projects and programs using different program mechanisms put in place by the WoG team, as well as through mentoring at all levels of the government.

Reporting

The weekly reports from the district stabilization teams were incorporated, with input from the civilian and military staffs, into a single, WoG, weekly situation report from RoCK and Comd Task Force Kandahar. This reporting activity

served to create a shared understanding of the key issues and a common acceptance of priorities. A unified WoG reporting structure, based upon a shared set of effects or results, and indicators or measures, should be established prior to deployment, and then continued for every rotation throughout the length of a given mission.

The Bi-National PRT

The bi-national KPRT was an exceptional example of a unified organizational structure, starting with the command structure, and percolating down to each section. This resulted in a high degree of trust and extremely strong relationships, enabling each section to develop an effective approach to supporting GIRoA. Because of the KPRT's unified organisation, they were able to develop complementary programming efforts that reflected integrated decision-making, planning, and chain of command. This was typified by the development of sector-specific working groups that proved to be tremendous assets for coordinating activities across sections, and between the KPRT and the regional coalition structures (such as Regional Command South). As soon as is practicable, sector-specific working groups that pull participants from all departments and each of the nations participating in the provincial (or subnational) reconstruction teams, should be established as a basic coordination mechanism to work on particular issues.

These bi-national, interdepartmental working groups were often able to draw funds from either national program. However this occasionally led to confusion with GIRoA partners as to whom their implementing partners were for reporting purposes. In a bi-national PRT environment, the development of pooled funding would enable close alignment of both countries' current and future programs in support of the host nation's priorities. This would also reduce transaction costs for host nation partners when accessing financial and technical support from the Coalition.



The Kandahar Provincial Reconstruction Team's Senior Police Advisor, RCMP Superintendent Dave Fudge, greets the Honourable Stockwell Day, Minister of Public Safety, and the Honourable Vic Toews, the Treasury Board President, shortly after their arrival at the KPRT's Camp Nathan Smith, 2 April 2007.

DND photo AR2007-A038-0004 by Sergeant Craig Flander

Interestingly, the Americans relied heavily upon Canadian service support for the KPRT. This led to an undue burden being placed upon the limited Canadian staff. There was also a delay in transition of these responsibilities, as the US did not have their support arrangements in place until quite late. In a bi-national or multinational PRT, a clear set of roles and responsibilities, particularly with respect to common services (i.e., visits, accommodation, movements), would ensure a more balanced distribution of effort and a more seamless transition, should one of the coalition nations depart.

People/Culture/ Relationships and Training

While all civilians who deployed were able to participate in a limited amount of training with the military, there were no opportunities for the military to train with their colleagues from the other departments. As a result, there was a general lack of understanding of each others' organisations, cultures, roles and responsibilities, and work methods. Ideally, the Government of Canada (GoC) should establish an independent Centre of Excellence for Fragile States, in order to build on lessons learned from the WoG effort in Afghanistan. This Centre of Excellence would be an interdepartmental platform staffed with personnel with significant security, governance, and development expertise in fragile states. Building upon lessons learned and best practices, this formation would permit the GoC to prepare for future missions in other troubled areas, ensuring that these missions would benefit from building upon the civilian-military policies, practices (including programming), and organizational structures developed in Afghanistan.

Given the current fiscal environment, at a minimum, personnel selected for deployment from all of the departments should participate in several weeks of each other's pre-deployment training. Collective pre-deployment training enables relationships to be built, roles and responsibilities to be defined, and the potential contribution each organisation can make to the mission to be clearly communicated. Pre-deployment training should include exposure of DND staff to development principles, and exposure of civilian staff to the rigours of the DND planning process.

Opportunities for interdepartmental training and deployments into other departments should also be promoted in order to develop a cadre of personnel with experience working in a Whole of Government environment. This would contribute to establishing effective networks of interpersonal relationships and improved cross-cultural communication between the departments.



Wayne Wouters, Clerk of the Privy Council, Ahmadullah Nazak, Dand District Governor, Tim Martin, Representative of Canada to Kandahar, and William Crosbie, Ambassador of Canada in Afghanistan, hold a meeting, 12 January 2011.

DND photo AR2011-0011-040 by Corporal Jean-François Carpentier

Team Composition

In many cases, the WoG team either did not have the appropriate experience to provide the technical advice and training to GIROA officials (i.e., to a Governor or to a Director of Agriculture, Irrigation, and Livestock), or they were unaware of Afghan legislation and guidelines (i.e., the sub-national governance policy). Ensuring that the team had the right skill mix to provide the support needed, particularly for officials at the Provincial and DG levels, would have increased our impact. In the future, a thorough assessment of the partner government's needs, supported by a proactive recruitment, staffing, and training approach within the WoG departments, should be conducted to ensure that we provide the very best technical advice. Furthermore, WoG missions in fragile states should include the involvement of each department whose specialist expertise is required by the host nation (i.e., justice, agriculture).

Budget/Funding/Contracting

Delivering activities quickly in hostile and insecure environments necessitates a great amount of flexibility in contracting and funding procedures. Indeed, contracting

“Delivering activities quickly in hostile and insecure environments necessitates a great amount of flexibility in contracting and funding procedures.”

and financial policies and procedures need to be developed to suit the context of the operational environment. DND's enhanced financial delegations, use of the 'Afghan First' principle, and the ability to pay contractors through local banks are best practices that should be captured in interdepartmental policies and procedures for future operations. The flexibility and responsiveness of CIDA's Kandahar Local Initiatives Fund, and DFAIT's Global Peace and Security Fund were unparalleled among the international community, and they should be adopted as the funding model for supporting local priorities. To maximize our ability to effectively use the various funds available, common practices should be adopted by all departments in the field, and ideally, a centralized common service unit (finance and contracting) should be established.

Successful contracting often depends as much upon the host nation government's rules and regulations as upon our own. One of the key impediments to completion of several contracts was our lack of knowledge of GIRoA tax regulations, and therefore, our failure to include a tax clause in the contracts. To alleviate this problem, and support their capacity development, the host/local government should be involved in the contracting process as early as possible, preferably with the development of the Statement of Work.

One of the problems that arises almost without fail in multinational operations is competition between coalition partners for host nation human resources, particularly skilled employees. This competition drove up prices and salaries, robbing GIRoA of qualified candidates. Coordination is required with the government and coalition partners to avoid negative impacts upon the local economy and governance. This coordination requires consultation, at a minimum with coalition forces, during early stages of operational planning.

Information Technology

The bi-national KPRT and TFK Headquarters were faced with a plethora of information technology systems that could not interface effectively with one another, and for which some staff did not have the appropriate security clearances or accounts. This was compounded by the different unclassified systems used by the civilian departments and the military. A common information technology platform, where information could be stored and shared (similar to SharePoint sites), would have significantly improved the overall effectiveness of communication within and between the organizations, while reducing the time spent by staff managing, transferring, and re-doing work done on a variety of systems.

“Friction also arose at times due to overlapping roles and responsibilities of the various departments involved in governance, reconstruction, and development.”

Strategic Communications

As demonstrated by DND, an effective communication strategy requires the tools to capture imagery, and the freedom to engage the media as events arise. Because the CF has dedicated imagery capability (Combat Camera), an embedded media program managed by the task force headquarters' public affairs officer, and permission to tell their story, 'military' stories dominated the press. The other departments did not have this capability, and they were required to go through a complex process for approval to speak to media. As a result, their stories were almost unheard. It is important that *all* departments be given the latitude and tools required to communicate effectively with the press and the Canadian public in order to properly portray the WoG effort.

One of the great successes was the cooperation of GIRoA and the GoC on the establishment and training of staff of the Government Media Information Centre (now the Kandahar Media Information Centre) and District Public Affairs Officers. These capabilities truly enabled GIRoA to communicate effectively with the populace and to counter Taliban propaganda. A further initiative, training Public Affairs Officers within the Afghan National Army, also led to a stronger connection between the population and its army. Building the capacity of the host government to communicate with its people should be considered an essential element of similar COIN and stabilisation missions. It can produce a large impact for a relatively small investment in human and financial resources.



Tim Martin, the Representative of Canada in Kandahar, the Right Honourable Stephen Harper, Prime Minister of Canada, and the Honourable Peter MacKay, the Canadian Minister of National Defence, examine some of the wheat grown at Tarnack Farms near Kandahar City, 30 May 2011.

DND photo IS2011-1012-21 by Sergeant Matthew McGregor

Conclusion

Interdepartmental civilian-military cooperation was essential to address the broad scope of security, governance, reconstruction, and development activities that were undertaken by the KPRT and TFK in the final year of Canada's involvement in Kandahar. Looking back, rather than a strategy document focused upon fixed signature projects, a more comprehensive framework and approach to the WoG mission that provided clarity on the roles and responsibilities of each of the departments, particularly with respect to activities in support of governance and development, would have improved our effectiveness, as it would have guided consistent progress over the years.

Overall, the WoG Team's ability to support the development of the governance capacity of key officials within the provincial and district levels of the GIRoA, and therefore, GIRoA's ability to reach the villages, benefitted from the expertise provided from each of the participating departments.

NOTES

1. The main rationale for Canada's involvement in Afghanistan per the Manley Report is to counter the terrorist threat following on from 9-11. The report also discussed how Canada became involved in Kandahar, starting with 850 troops to support Operation *Enduring Freedom* in 2002, followed by assuming the leadership of the Kandahar Provincial Reconstruction Team in 2005. The report provided a number of suggestions, including the need for a 'ramped up' WoG civilian-military effort led by the Prime Minister, and the importance of 'signature projects,' so that Canada's contribution would be more readily identifiable.
2. "A more secure Kandahar that is better governed and can deliver basic services to its citizens, supported by a more capable national government that can better provide for its security, manage its borders and sustain stability and reconstruction gains over the longer term."
3. The six priorities were: Security; Basic Services: Humanitarian Assistance; the Border, National Institutions; and Political Reconciliation. Lead departments were identified for each priority, with the exception of National Institutions, which was shared by the Canadian International Development Agency (CIDA) and the Department of Foreign Affairs (DFAIT).
4. Canada's Engagement in Afghanistan consists of a narrative, supported by an Appendix providing details on progress for each of the six priorities.
5. Recognizing that programming is a challenge in a fragile state, a set of benchmarks or reference points was established to help assess progress in priority areas. Some were *quantitative* (numerical), while others were *qualitative* (perceptions or assessments on the implementation of policies and programs).
6. The Dahla Dam and Irrigation System (\$50M). Education (\$12M). Polio Eradication (\$60M).
7. Stuart Gordon, "The UK's Stabilisation Model and Afghanistan: Assessing the Impact on Humanitarian Actors," in *Disasters*, Vol 34, Issue Supplement S3, pp. 368-487, dated 16 September 2010; Gavin Buchan, "Breaking down the Silos: Managing the Whole of Government Effort in Afghanistan," in the *Canadian Military Journal*, Vol. 10, No. 4, Autumn 2010; Centre for Army Lessons Learned, *Complex Operations II Newsletter*, November 2010; UK Stabilisation Unit, "Responding to Stabilisation Challenges in Hostile and Insecure Environments: Lessons Identified by the UK's Stabilisation Unit," November 2010, at www.stabilisationunit.gov.uk, accessed 20 January 2011; Chief Review Services, Evaluation of CF/DND Participation in the Kandahar PRT, Final Report 1258-156 (CRS) December 2007; Willemijn Keizer, Review of Existing studies and Evaluations of Whole of Government Integration and Operations, March 2009; Robin Hart, Report on Wilton Park Conference 895 – Civil-Military Co-ordination in Complex Humanitarian Situations, April 2008, at <http://docstoc.com/docs/10899190/Report-on-Wilton-Park-Conference-895-CIVIL-MILITARY-CO-ORDINATION>, accessed 8 March 2011.
8. Cristina Hoyos and Robert Muggah, "Can Coherent, Coordinated and Complementary Approaches to Dealing with Fragile States Yield Better Outcomes?" in *Politobis* Nr. 46, 1/2009.
9. Center for Complex Operations, PRT Interagency Lessons Learned Project, October 2010; UK Stabilisation Unit, "Responding to Stabilisation Challenges in Hostile and Insecure Environments: Lessons Identified by the UK's Stabilisation Unit", November 2010, at www.stabilisationunit.gov.uk, accessed 20 January 2011; Theatre Lessons Report (TLR) 09-032 "Comprehensive Approach in JTF-Afg (TFK HQ 5-09) Whole of Government Team in Stabilization Operations," dated November 2009.
10. Refer to Canadian Land Forces Counter-Insurgency Operations B-GL-323-004/FP-003 Chapter 5, Section 4, US Army Field Manual, FM 3.24 "Counterinsurgency Operations," and the UK Army Field Manual "Countering Insurgency" Volume 1, Part 10.
11. Rule of Law, Governance, Health and Education, Agriculture and Economics, Infrastructure, and Security.
12. The Stability Framework is used as a civil-military tool to coordinate the marshalling and prioritization of resources and efforts—by sector. Done in partnership with GIRoA counterparts and in consultation with District Stabilization Teams as appropriate, the Framework will inform the updating or development of District Stabilization Plans for priority districts. These plans will be incorporated into GIRoA 2011 Provincial and District Plans.
13. The Stability Continuum is driving district planning efforts by: identifying in which phase a specific district currently lies; and aiding the selection of the most appropriate combination of security, development, and governance activities needed to advance to the next phase. For instance, the 'shape' phase of the continuum can be characterized by a security environment that is insecure and the lack of ANSF capacity - resulting in a dangerous environment. Simultaneously, governance may be limited and the population hostile, suspicious and/or unwilling to cooperate with GIRoA/ISAF/ANSF. Economic development may be low or non-existent. Together, these characteristics are useful to identify an appropriate set of activities and/or projects, and to guide district-level and below planning efforts by military and civilian actors.
14. The importance of inter-personal relationships to building unity of effort in the civilian-military environment in Afghanistan was previously noted by Howard Coombs and General Rick Hillier in "Command and Control during Peace Support Operations: Creating Common Intent in Afghanistan," in: Allan English (ed.), *The Operational Art: Canadian Perspectives on Leadership and Command* (Kingston, ON: Canadian Defence Academy Press, 2006), Chapter 8.
15. The Canadian Commander's Contingency Fund, and the US Commander's Emergency Response Program have similar purposes. They provide commanders funds for humanitarian relief and reconstruction activities. The Canadian Commander's Contingency Fund may be used to advance military objectives in aid of a particular mission, and may also result in positive and tangible effects related to fostering governance, development, reconstruction, or humanitarian assistance. Deployed commanders can use CCF funds as an enabler to realize immediate effects towards mission objectives, and to advance the level of cooperation of a local population.



Photo courtesy of Yiftach Kleinman, Business Development Manager, Rafael



Israeli Merkava Mk 4 Main Battle Tanks with Trophy in operation. The Israeli Defence Forces has now equipped a full Merkava Mk 4 brigade with Trophy.

ACTIVE PROTECTION SYSTEMS: A POTENTIAL JACKPOT TO FUTURE ARMY OPERATIONS

by Michael MacNeill

Introduction

Whether one looks at conventional state actors such as North Korea and Iran, or nationalist and ethno-religious asymmetric threats, such as those found in the Sudan, Afghanistan and Somalia, many within the wider academic community have identified a measurable growth of instability within the international system since the end of the Cold War in the early-1990s. This growth in geopolitical instability, along with economic and domestic political factors, has resulted in a recent transition of Canadian foreign policy. Canada has witnessed a measurable shift from largely lower-level conflict and United Nations-based peacekeeping operations, such as the Suez, Cyprus, Iraq, and even Bosnia, to now include more volatile operations in Kosovo, Afghanistan and Libya. But while the Canadian government has decided to slowly wind down operations in Afghanistan by temporarily shifting our remaining forces from a 'combat role' to a presumably less dangerous training facilitation role with the Afghan National Army around the Kabul region, our activity in this turbulent region has nevertheless hammered home the need for greater protection for our armoured combat vehicle fleet in future expeditionary operations. Extensive resources have been provided

to improve communications, counter-improvised explosive device technologies and techniques, and countless other efforts limit the potential casualties incurred through both enemy contact and fratricide. Considerable effort has also been dedicated to improving the traditional armour protection of our individual personal protective equipment with newer protective vests, and there has been an evolution of add-on armour packages for our older and up-and-coming combat vehicles. It is the position of this article that while traditional avenues of increasing armour protection to our fleets of combat vehicles have merit, such considerations should also embrace non-traditional protective measures. Any future Canadian expeditionary force should also include the introduction of Active Protection Systems.

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LAV IIIs and a *Leopard* tank forming up for Operation Rear Entrance in the Panjwa'i district of Afghanistan, 8 June 2007.

evident, but usually at the expense of an individual's mobility and flexibility.¹ This correlation of armour weight with limited mobility with regard to individual speed, endurance, and flexibility of movement represents what will henceforth be referred to as the armour conundrum.

This same armour conundrum also finds expression with the advent of mounted armour. Both the heavily armoured mounted knights of the late-Middle Ages and the *King Tiger* tank of the German *Wehrmacht* during the Second World War provided considerable protection against much of an enemy's arsenal, but both were very slow and cumbersome on the battlefield. Along with the weight factor,

The Armour Conundrum

Since the introduction of standardized armoured soldiers with Greek Phalanxes and Roman Legions, Western society has been fascinated with providing the greatest potential protection of its military forces to help facilitate victory. Historically, this focus upon introducing body armour was a given regime's effort to reinforce the myth of survivability in order to boost their troops' confidence and courage, even when subjected to the carnage of close combat. Even today, the use of the term 'body armour' serves somewhat as a misnomer. While such systems may lend some increased potential protection for a soldier, it is by no means a guarantee. Regardless of the ultimate value of armour protection, Western military history has provided us with evidence of the continual ebb and flow of this line of thought through the evolution of the armoured knight of the medieval period, to the full introduction of standardized helmets and tanks during the First World War, and even the re-introduction of body armour variants for the average soldier by the 1960s. The inclusion of armour protection does, however, have one key physical limitation, that of weight.

Throughout history, there have always been difficult problems which had to be addressed when introducing armour protection to either personnel or equipment. Whether as an individual Roman legionary carrying his heavy chain mail shirts, or *lorica segmentata*, to armoured foot knights of the Middle Ages, the advantages armour provided to protection were

the armour conundrum also includes the constant ebb and flow of the technology gap. Whereas a formation of heavy mounted knights could readily break a wall of well-disciplined infantry, the large-scale introduction of organized archers, such as occurred at the Battle of Agincourt, eventually led to the end of the knight's supremacy on the medieval battlefield. Simply put, for each advancement in armour protection, there is an eventual leap in anti-armour weaponry, and vice-versa. Throughout much of our history, this has revolved around adding additional heavier layers of iron or steel, which directly influenced armour conundrum's weight factor yet again.



The Battle of Agincourt (1415). From the *Chronicles of Saint Albans*, Flemish, 15th Century. Note the archers.



Library and Archives Canada PA-002946

A Mark IV tank getting ready to move out during the Amiens Offensive, 8 August 1918.

The armour conundrum has witnessed dramatic technological advancements since the end of the Second World War. By the end of that conflict, advances were made in anti-armour weaponry with the development of new weapons projectiles, such as the sabot round. The sabot, which is largely composed of the exceptionally strong metal known as tungsten, had the ability to punch holes through all existing armour at the time. In consequence, advances were also made in composite and modular armour plating for armoured vehicles, which ultimately found expression in many of the present-day battlefield giants such as the *Challenger*, *Abrams*, *Leclerc* and *Leopard* Main Battle Tanks (MBTs) of the west, as well as highly functional Infantry Fighting Vehicles (IFVs), such as the *Bradley* and the *Warrior*.

“Even today, the use of the term ‘body armour’ serves somewhat as a misnomer.”

(hp/t). The newest version, labelled the *Leopard 2A7+*, weighs almost 68 tonnes “... when optimized for urban operations,” and thus results in a decreased power-to-weight ratio now at 22.22 hp/t.² This serves as one of many examples of how increasing the weight of combat vehicles by only including additional traditional armour will only continue to have an “... adverse effect on vehicle mobility and can also mean that the power-pack (including the engine, transmission and cooling system) and suspension have to be upgraded to maintain cross-country mobility.”³ The sole utilization of traditional armour protection schemes is no longer sufficient. Rather, a collaborative effort must be considered with both traditional armour technology and other avenues, such as Active Protection Systems (APS). Only by a combination of passive and pro-active armour protection can modern armies compensate for the armour conundrum, and thus make their combat vehicle fleets more mobile and deployable.



Library and Archives Canada PA-131043

A Canadian 8th Hussars *Firefly* tank passes through Putten in Holland on the way to the Zuider Zee, 18 April 1945. Note the different varieties of steel track welded to the front of the hull for additional protection.

The Development and Availability of APS Today

Initial industrial research into the potential of APS, sometimes referred to as Defensive Aids Systems, began in the late-1990s, and has resulted in the availability of many of these products within today’s commercial market and foreign armed forces.⁴ Such systems have found considerable value, due to the recognition of the inherent weakness and limitations of traditional armour protection systems within the modern complex battlespace. Whereas traditional armour systems, including explosive-reactive, composite, spaced and layered modular armour, or a combination thereof, are based upon the

incoming projectile being defeated by the strength and slope of the vehicle's metallic material, or detonated prior to striking the plate and thus significantly limiting its potential penetrating effects, an APS package takes this concept one step further. It focuses more upon eliminating incoming munitions before they reach the vehicle. The system represents an integrated package that revolves around a 6400 mils radar-based detection system directly linked to either a 'hard-and soft-kill' strike kit, or a combination of the two. Should the system either expend its protective munitions, or a projectile penetrate the APS 'bubble,' the traditional armour package would serve as the last line of defence for both the vehicle and its crew. This new approach theoretically tosses the traditional idea of armour protection on its head. It is now the role of traditional armour packages to complement initial bubble of protection provided by APS packages.

This ability to protect MBT and IFV fleets by detecting the approach of incoming projectiles and missiles, immediately swinging the strike kit and eliminating the threat by either intercepting or jamming its approach, represent "... a higher level of protection against Rocket Propelled Grenades (RPGs) and Anti-Tank Guided Weapons (ATGWs), as well as some lower-velocity gun-launched projectiles fired from main battle tanks (MBTs)."⁵

The employment of APS kits to in-service armour combat vehicles is becoming an increasingly common practice. The Russians, Ukrainians, and Israelis have already begun to implement such systems, not only in their own armed forces, but also for export. The Russians have begun to fit the *Arena-E* hard-kill and *Shtora-1* soft-kill systems to the BMP-3



Armoured soldiers from 3rd Battalion, The Royal Canadian Regiment Battle Group, aboard a *Leopard 2*, rumble to their battle position in the Zharey district of Afghanistan during Operation *Janubi Tapu 2*, 25 November 2008.

DND photo AR2008-J011-181 by Corporal James Nightengale

series of IFVs. The *Shtora-1* APS has already been mated with some of their T-90 MBT fleet.⁶ The Ukraine's state-owned Ukrspec-export has stepped up export marketing of their *BM Oplot* MBT, based upon a heavily modified T-84 version. Purchase of this new MBT can include both the *Varta* electro-optical counter-measures soft-kill and *Zaslon* hard-kill APS kits. While it is yet unsure if Thailand's procurement of 100 *Oplot* MBTs will include the APS kits, it is quite possible that the Ukrainian Army's original 10 *Oplots* will be upgraded.⁷

The Israeli Defence Force (IDF) drew upon lessons learned from their 2006 Lebanon conflict, and have since made massive strides to implement APS kits on their *Merkava* Mk 4 MBTs and *Namer* heavy IFVs. In December 2010, the IDF "... deployed its first battalion of *Merkava* Mk 4 MBTs equipped with Rafael's *Trophy* APS...

[which] provides 360-degree protection against ATGWs, rocket propelled grenades and tank-fired high explosive anti-tank (HEAT) rounds."⁸ According to *Jane's Defence Weekly*, the system "consists of an *Elta* radar linked to four antennas located on the front, rear, and sides of the MBT...(which) detects threats and then activates one of two launchers that discharges a cloud of hard-kill countermeasures to initiate and neutralize the incoming warhead."⁹ Meanwhile, the *Namer* heavy IFV, based upon the chassis of a *Merkava* MBT, will include a combination of the Israel Military Industry's *Iron Fist* APS and Rafael's technology for the same purpose.



A *Leopard 2* tank firing to adjust its 120 mm gun in the Panjwa'i district of Afghanistan, 14 February 2008.

DND photo AR2008-Z110-04 by Corporal Simon Duchesne

Photo (DSC_8213) courtesy of Yiftach Kleinman, Business Development Manager, Rafael



Israeli *Merkava* Mk 4 MBTs equipped with the *Trophy* Active Protection System (APS).

Although the presence of APS packages has witnessed considerable growth over the last several years, other systems are also readily available on the market. Some of these include Textron Systems' Tactical Rocket-Propelled Grenade Airbag Protection System (TRAPS), ARTIS Corporation's AMAP-ADS, and Saab's Land Electronic Defence System (LEDS). Along with several other systems, each of these is presently being tested and considered for the United States military's 'Future Combat Systems' program.¹⁰ Like most of its other competitors, Saab's LEDS comes in various levels of active protection. The LEDS-50 package includes the "Active Defence Controller (ADC) and a number of laser warning sensors" for "... 360 degree azimuth coverage of a platform by using four LWS-310 sensors," including the possibility of a LWS-500 version for the detection of full-hemispherical covers such as top attack munitions.¹¹ The LEDS-100 provides soft-kill "multi-spectral smoke" countermeasures by means of the High Speed Directed Launcher (HSDL). According to Saab, this system is "effective against laser based targeting and guidance systems, such as range finders, designators and beamriders."¹² Meanwhile, the LEDS-150 version includes the *Mongoose* hard kill missile to "physically destroy the efficiency of the thermal ballistic capability without residual penetration of the protected vehicle."¹³ According to Saab, the system as a whole can simultaneously detect, track and eliminate multiple incoming projectiles through a tandem firing capability with the *Mongoose* interceptor missile.¹⁴ Saab claims that their system is effective against RPGs, anti-armour missiles, recoilless rifles, and anti-tank guns firing high-explosive (HE), HESH, and HEAT ammunition with low collateral damage.¹⁵

APS as a Future Jackpot for Canadian Expeditionary Operations

While the potential introduction of APS technology into the armour conundrum has some theoretical benefits, the real question revolves around what such a kit could provide to the Canadian Army in future operations. Much of this depends upon *if*, and *how*, the Government employs its military resources in the future. There has been some direction on this issue of future employment, with Ottawa publically outlining its desire for the maintenance of a small, yet highly effective and flexible army able to operate within multitude of potential conflict types, sometimes concurrently.

Over the last decade, many in the government and military establishments have aimed at developing a Canadian Forces able to operate, not only at home, but also on expeditionary operations under varying approaches, such as U.S. Marine General Charles Krulak's concept of the 'three block war' scenarios.¹⁶ While it is not the aim of this article to enter into the debate of the 'pros and cons' of such concepts, there is a general recognition among many in both the Government and military that we must be able to deploy to theatres of operation abroad that can quickly vary from low-level peace-keeping and humanitarian intervention conflicts, to higher-level asymmetric and conventional counter-insurgency and war fighting scenarios. As a result, it is the position of this article that the introduction of APS technology to the army's armoured combat vehicle fleet is advantageous where expeditionary operations may become more prevalent.



Saab LEDS 150 fitted to a BAE Systems CV 90 *Armadillo*.

Since the end of the Cold War in the early-1990s, countless sub-national entities have surfaced. This has occasionally led to the establishment of new countries, such as the now-separate Czech and Slovak Republics, and the somewhat

BAE Systems and Saab

peaceful introduction of the Ukraine, Georgia, and the Baltic states of Lithuania, Latvia, and Estonia onto the international stage. Unfortunately, these largely peaceful developments only represent a small percentage of what has become a violent and turbulent late 20th Century and early 21st Century. Much of this period has been characterized by global economic difficulties, the persistence of aggressive regimes such as North Korea and Iran, the tenacity of international terrorism, and the cancer of countless failed states within the international community. As the most significant internationally legitimate and legally binding inter-governmental organization, the United Nations *has and continues to make* a concerted effort to resolve these difficulties through peaceful diplomatic and cooperative means, albeit occasionally without success. When these failures have occurred, for whatever reason, the United Nations has had to call upon its member states, and more often, alliance bodies, such as the North Atlantic Treaty Organization (NATO) and the African Union, to help enforce its resolutions. But this was not the original intent of NATO. NATO was originally developed to counter the potential threat of aggressive Soviet expansion while promoting economic and political cooperation among like-minded states. Unfortunately, both Canada and its NATO partners have come to witness more military action in the last 20 years than it had throughout the entire War Cold War era. Some of these actions have included the involvement of military forces in Bosnia, Kosovo, Afghanistan, and Libya, as well as predominantly naval operations off Somalia. Along with our involvement in NATO-led operations in far-off lands, Ottawa has also increasingly employed its military capabilities on countless humanitarian intervention missions, such as Haiti and the 2004 Tsunami in Japan. The Government has even gone so far as to publically affirm that this trend is not likely to end, especially with the West's additional focus on fighting the 'war on terrorism.' According to Prime Minister Stephen Harper:

Canadians live in a world characterized by volatility and unpredictability. Looking back, it is clear that the peace dividend that resulted from the end of the Cold War was relatively short-lived. The 1990s saw the emergence of difficult security challenges, including failed and failing states, civil wars and global terrorism. Many countries, including Canada, were slow to fully appreciate and adjust to these new realities. Today we live in an uncertain world, and the security challenges facing Canada are real. Globalization means that developments abroad can have a profound impact on the safety and interests of Canadians at home.¹⁷

“Canada’s geopolitical end-state is clear. It will not isolate itself from international humanitarian and security requirements abroad.”

With the advent of the *Canada First Defence Strategy*, the Government has outlined a firm direction on foreign and defence policy by reaffirming its commitment to keep Canada and its citizens safe and secure, thus “... ensuring that Canada can return to the international stage as a credible and influential country, ready to do its part.” It also outlined the Government’s plan for “... rebuilding the Canadian Forces into a first-class, modern military...(as) a fundamental requirement if we are to deliver on these goals...(while) recognizing that global security challenges and the capabilities required to meet them will continue to evolve...”¹⁸ Canada’s geopolitical end-state is clear. It will not isolate itself from international humanitarian and security requirements abroad. Rather, it will proactively participate within the international system to work with like-minded states and allies to legitimately project security requirements abroad in order to protect the nation’s interests. This has increasingly found expression through our increasing involvement in expeditionary operations since the 1990s, regardless of the level or type of conflict. To facilitate this, the Government has publicly directed that Canadian’s require a ‘state-of-the-art’ military with a flexible, multi-purpose capability that will enable the country to respond effectively and successfully to a sundry of potential military operations in the near future. This would naturally include an ongoing requirement for a highly mobile and versatile armoured combat vehicle fleet.



Trophy mounted upon and successfully integrated with a General Dynamics (Land) Stryker Infantry Fighting Vehicle (IFV). The Stryker is derived from the Canadian LAV III IFV.

While military procurements are usually a lengthy and detailed process involving many governmental departments and stake holders with varying agendas, the potential gains of an APS system for the army’s combat vehicle fleet easily outweigh the losses. The gains include an increasingly available and highly versatile defensive capability that could assist in alleviating the armour conundrum, to a possible improvement of the air mobility potential of our armour vehicle fleet, with the likely limited exception of Main Battle Tanks. The poten-

Photo (Trophy-on-Stryker 31) courtesy of Ylflach Kleinman, Business Development Manager, Rafael

tial reduction in weight requirements afforded by an APS system will significantly counteract the armour conundrum, and thus provide a direct advantage to the deployability of our combat armour vehicles by our air mobility resources, such as the C-17 and C-130 fleets. The employment of such a system on expeditionary operations would theoretically facilitate the speedy 'ride-on, ride-off' deployment of armoured vehicles, as compared to only utilizing the more traditional modular and add-on armour kits which, aside from adding to vehicle weight, also require considerable time, equipment, and resources to outfit vehicles upon arrival. For example, according to *Jane's*, the total combined weight of the Rafael's *Trophy* APS is only roughly 800 kilograms.¹⁹ While this may sound like a lot to the average light infantry company commander, it is very little compared to the average weight of add-on armour packages for IFVs and MBTs.



DND photo LX2013-002-050 by Master Corporal Dan Pop

The Department of National Defence receives the first modernized LAV III from General Dynamics Land Systems Canada in London, Ontario, 24 January 2013. The upgrades and enhancements will help protect soldiers against Improvised Explosive Devices (IEDs), land mines, grenades and other threats. This is part of an upgrade project for 550 LAV IIIs. The upgrade project is one of four Family of Land Combat Vehicles projects that aim to capitalize upon both existing and evolving technology to improve the protection, mobility, and lethality of the LAV III fleet.

With the publication of the *Canada First Defence Strategy*, the Government has publically dedicated itself to rebuilding the Canadian Forces into a first-class, modern military to include "... the progressive acquisition of a new family of land combat vehicles and systems that will prove robust and flexible for Canada's soldiers on high-risk missions abroad."²⁰ Much of this falls under a program called the Family of Land Combat Vehicles (FLCV) projects. The program is "... valued at approximately \$5 billion, including an estimated \$1 billion to upgrade the current fleet of Light Armoured Vehicles," and the delivery of the next generation of land combat vehicles.²¹ The Government has also made countless other heavy expenditure to improve the military's armour combat vehicle potential at home and abroad. The procurement of 100 *Leopard 2* MBTs represents an initial investment of \$650 million, \$95 million for 75 RG-31, and the still-undetermined cost of upgrading up to 630 LAV IIIs for roughly \$1.064 billion in the very near future.²² Then, there is the potential cost of the Government's planned procurement of other future programs, such as a new Close Combat Vehicle. This all represents a very significant investment in a future armoured combat vehicle fleet that needs to be capable of operating in a myriad of potential theatres of operations while engaged in both domestic and expeditionary activities. The inclusion of APS suites on the above mentioned fleets, and any future programs, would easily fall under what the Government has entitled providing a "state-of-the-art military that Canada needs and deserves" with a "flexible, multi-purpose capability that will enable the Canadian Forces to respond effectively and successfully to the full spectrum of (future) military operations."²³

Recent experiences by the Canadian and coalition armies in Afghanistan and Iraq have demonstrated the "... ongoing requirement for a highly protected, yet highly mobile light-armoured vehicle" to counter not only mines and improvised explosive devices, but also to defeat "anti-armour weapons (that have) become more prevalent, posing a greater risk to personnel."²⁴ At present, the proposed upgrades include the "installation of additional armour, heightening its protection against increased threats."²⁵ This will likely revolve around additional modular armour packages and cages to deal with incoming projectiles, such as those launched by RPGs and ATGWs. Unfortunately, these modernizations or upgrades continue to represent the two central criticisms brought forward in this article. In addition to falling back upon premise of allowing incoming projectiles and missiles to strike our vehicles and then 'hope for the best,' the increase of traditional armour packages inherently leads to significant growth in total vehicle weight. This consequently means a requirement for the "upgrade of mobility systems, such as powertrain, suspension, running gear, and brakes..."²⁶ As a result, these additional mobility upgrades could prove to be an unnecessary substantial expense. While upgrades are always going to be a factor, the real issue is whether the army should 'continue down the stove-pipe' of traditional protection, or look to a more composite layered approach where APS packages serve to eliminate incoming projectiles before they strike vehicle crews. Focus should be more upon eliminating incoming projectiles before they reach a vehicle. As a result, the role of traditional armour should be to complement the 'initial bubble' of protection provided by APS packages and to defeat small arms fire.



A convoy that includes a LAV III and a *Leopard 2A6M* Main Battle Tank during operations in the volatile Panjwa'i and Zhari districts of Kandahar Province, Afghanistan, 13 October 2010. The camel is not an official participant.

significantly outweigh the negatives. The financial costs, although not insignificant, are miniscule when compared to the increased potential loss of life on future expeditionary operations conducted upon a highly unstable international stage.

The material and human toll of the army's involvement in Bosnia, Kosovo, and Afghanistan has been significant, but hopefully, not in vain. Along with providing invaluable assistance to the Afghan populace, we have learned many new lessons with respect to asymmetric and expeditionary operations, and validated the need for increased interoperability with our NATO allies and other like-minded coalition partners. The significant expansion of networks for inter-agency and

Conclusion

In today's networked-based CNN-covered international conflicts, where violence and loss are commercially valuable marketing and sales tools, the difference between mission success and failure not only comes down to issues of defeating enemy forces and limiting collateral damage. Mission failure can also result from the potential loss of small numbers of friendly forces and resources due to enemy fire. Western populations are, at present, not willing to indulge in the large losses of friendly troops which were representative of the Second World War. Even the loss of a single platoon can have dramatic political ramifications which could ultimately result in the withdrawal from coalition operations, due to political pressure at home. This departure could result in a continued ripple effect to include the likely loss of credibility in the face of our partners and allies, which could potentially have additional political and economic consequences. While nothing can guarantee that such losses will never occur, outstanding leadership, training, and the application of pivotal equipment, such as APS suites, can have a very significant influence upon mission success. Regardless of which course of action one takes in looking at the possible introduction of APS suites on the army's combat vehicle fleet, the positives

inter-governmental cooperation, along with continued recognition of the need for cooperation with non-governmental organizations, has provided considerable insight and benefits when dealing with humanitarian intervention and low-level conflicts. But while the employment of the army strictly along conventional lines may have taken a temporary back seat to largely-asymmetric operations, it is widely recognized that we must not lose this skill-set. We do possess the unfortunate trait of always training for the last war when preparing for future operations. Rather, the army must be more flexible and functional in its approach. This has everything to do with ensuring the maintenance of top-grade training and equipment, such as our fleet of armoured combat vehicles.



Photo IMG-013-1 courtesy of ADS Protection.Deutschland

A RMMV *Fuchs 1 A8* IFV equipped with ADS HAT ~ A full rocket and missile Active Defence System.

Photo IMG-09-1 courtesy of ADS Protection, Deutschland

There is a high probability that the army's deployment to future conflicts will revolve along a combination of any number of levels of involvement. This could include both conventional and asymmetric operations, along with humanitarian intervention and peace-building activities, sometimes conducted in urgent relation to one another, when based upon either a spatial or time-linear proximity. But in order for the small Canadian army to properly provide a viable role in such activities, it must not only continue to develop its highly professional and capable human resources, but also take advantage of lessons learned by itself and other states when considering what equipment to stock in its 'operational tool box' in order to facilitate success. The inclusion of APS packages for the army's combat armour vehicle fleet, and the subsequent adaptation of tactics, techniques, and procedures for its application can only improve the potential survivability of our limited

personnel and material resources during future expeditionary operations. In the end, APS systems serve as another critical mission enabler.



A Patria AMV (8x8) equipped with ADS HAT ~ A full rocket and missile Active Defence System.

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Wikimedia Commons

Canadian militiamen and British soldiers repulse the American assault at Sault-au-Matelot, Québec, 31 December 1775, by Charles William Jefferys (1869-1951).

IS YOUR WORLD COMPLEX? AN OVERVIEW OF COMPLEXITY SCIENCE AND ITS POTENTIAL FOR MILITARY APPLICATIONS

by Stéphane Blouin

Introduction

On New Year's Eve, 1775, American revolutionary General Richard Montgomery's ill-fated decision to lead the assault through a fallen barricade in Québec City was decisive in preserving a British presence in North America. Had Montgomery instead used his troops as a shield, he might have survived and captured Québec, which would now be part of the United States. This example illustrates how complex battles and wars can be sensitive to a single event or decision.

Over the last decades, an impressive number of publications bearing words like 'complex systems' and 'complexity' have proliferated in the management, economics, biology, and policy literature. Despite this massive documentation, notions associated with complexity remain difficult to understand,

partly due to a lack of clarity with respect to definitions, concepts, and principles. This article aims to provide an introduction to the concept of complexity, its tools, and its potential impact upon military operations.

Not surprisingly, explaining complexity is complicated. The complexity research field is not yet mature and is more akin to a loose network of interconnected and interdependent ideas.^{1, 2} Most complexity concepts relate to how life, as

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described in physical, biological, and social sciences, happens, and how it evolves. The term 'complex system' means an assemblage of entities interacting according to rules, and exhibiting emergent behaviours through adaptation. Common-life examples of complex systems are the stock markets, eco-systems, and immune systems.

Procter & Gamble, Southwest Airlines, and other private businesses have already claimed benefits by implementing complexity concepts.^{3, 4} Procter & Gamble (P&G) optimized the flow of raw materials for several of its confectionary products by injecting simple, ant-like rules to its supply-chain practices and software, the analogy being that when the path borrowed by ants becomes blocked, they figure out collectively a new and efficient route. Ultimately, P&G could reduce routing time and costs by half. For Southwest Airlines, computer models showed that the transfer of packages to the most direct flights led to unnecessary handling and storing of packages. By allowing more roundabout routes, the carrier could reduce the package transfer rate by 70 percent, thus saving millions of dollars.

Examples from many disciplines and parallels with military operations are used here to convey the main ideas and concepts. Given the extent of the topic, the coverage is not exhaustive, and references to original publications are provided for the interested reader.

Complex Systems Defined

Complex systems are those systems sharing all of the following properties:

- Made of a collection of entities such as hardware, software, and people
- Component interactions are based on rules
- "Open" or exchanging energy, matter and information, with their surroundings
- Emergent collective behaviour
- Irreducibility: "The whole is more than the sum of its parts"
- Capable of adaptation and self-organization.



Southwest Airlines, the launch customer for Boeing Aircraft's new 737 Max, 13 December 2011.

The distinctive trait of complex systems is that of emergence, where overall system behaviours emerge from interactions between components.

The Origins of the Complexity Concept

How to defeat a decentralized terrorist group? How can we gain advantage over an enemy force on a battlefield? How can we stabilize a region and build trust with its residents? These difficult questions have more in common with how living organisms evolve than how a mechanical clock operates. In a similar fashion, the concept of complexity is influenced by questions pertaining to how life happens, and how it evolves in natural systems and societies.

So, why should a military organization care about complexity? Many good reasons relate to the fact that:

- the classic Newtonian⁵ approach, which assumes a machine-like operation, is often inadequate,
- the potential breadth of military applications is large,
- complexity often provides answers and insights not derivable by any other existing theories,⁶ thus potentially providing a superiority advantage, and
- military organizations and their operations like wars and stabilization efforts are complex systems.

The main driving forces behind complex systems research have been findings from biological sciences, rapidly evolving computation technology, and the fact that often, the answers and insights provided by complexity cannot be derived in any other way. Early research efforts in various disciplines eventually converged into overarching principles and universal properties forming the complexity field as we know it today.

“The distinctive trait of complex systems is that of emergence, where overall system behaviours emerge from interactions between components.”

The evolution of complexity research is best illustrated by listing a few key results; more complete historical perspectives can be found in the literature.⁷ In the late-1950s, the cybernetics pioneer W.R. Ashby⁸ developed a law stipulating that the



NOAA

National Oceanic and Atmospheric Administration (NOAA) satellite image of Hurricane *Katrina*, 24 August 2005.

“space of possibilities” of a system should at least match the scale of the challenge to be met.⁹ For instance, compared to traditional war fighting, the key to success in today’s complex warfare is the capability of small units to act independently with relatively weak coordination, thus increasing their “space of possibilities.” This strategy is the exact opposite of the large-scale coherence of forces fielded in the First and Second World Wars.

In 1963, the world-renowned mathematician and meteorologist Edward Lorenz¹⁰ published his computer simulation results about “strange attractors.”

A strange attractor is a system that has an extreme sensitivity to initial conditions and never settles into a predictable state. Lorenz showed that weather is such a system and that it cannot be predicted with 100 percent accuracy. He introduced the “butterfly effect” metaphor in 1972 by giving a talk entitled: “Predictability: Does the Flap of a Butterfly’s Wings in Brazil Set Off a Tornado in Texas?” Similar to the butterfly effect, large international consequences can result from small regional events. A classic example is that of the outbreak of the First World War, following the assassination, in June 1914, of the Austrian Archduke Francis Ferdinand and his wife in Sarajevo.¹¹

In 1967, the social psychologist Stanley Milgram conducted an experiment¹² to model connectedness in human societies. His experiment revealed the “small-world” or the “the six degrees of separation” phenomenon, stipulating that any two people are only six people apart in the network of acquaintances.¹³ Such a notion has a significant impact when a military force stabilizes a region by building trust with its residents through social networks.¹⁴

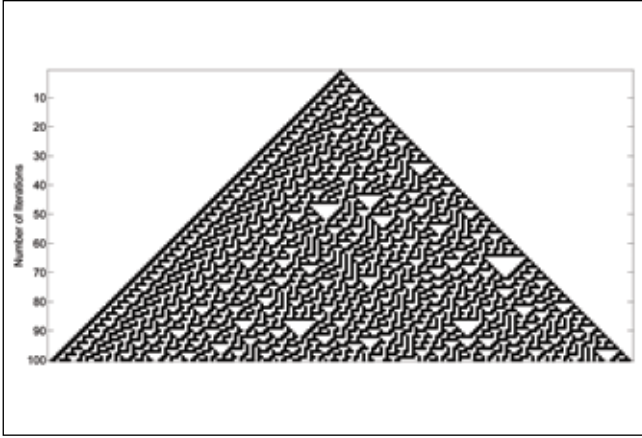
In 1983, Stephen Wolfram,¹⁵ the main developer of the Mathematica software, published simulation results showing that simple rules may lead to complex natural patterns. Indeed, Wolfram’s algorithm creates a pattern resembling that of a snail shell.



Gianni Dagli Orti/The Art Archive at Art Resource, NY

Assassination of Franz Ferdinand, Archduke of Austria, and his wife Sophie, in Sarajevo, Bosnia, 28 June 1914, at the hands of Gavrilo Princip, by Achille Beltrame.

Stéphane Brouin



Wolfram simulation pattern.



http://fr.wikipedia.org/wiki/Fichier:C3%B4ne_textile11.png

Wolfram's algorithm creates a pattern resembling that of a snail shell.

Much more complex patterns found in nature can also be generated, yet the patterns are governed by simple rules.¹⁶ Another example where simple rules capture complex natural behaviour is that of Reynolds' flocking simulation results,¹⁷ published in 1987. As an artificial life and computer graphics expert, C.W. Reynolds demonstrated how systems governed by three simple rules could produce the efficient, yet highly flexible, flocking behaviour observed in birds. Similar flocking rules have been encoded into unmanned aerial vehicles to ensure they fly in a formation while avoiding collisions.¹⁸

“It is remarkable how a small set of interaction rules in a complex system can result in a large number of outcomes.”

The concepts of emergence, irreducibility, and adaptation are well illustrated by the example of flocking birds. The “V” shape pattern that migrating birds naturally adopt in flight formations is the classic example to convey the emergence concept. As such, emergence and irreducibility are closely related in the sense that the overall system, a bird formation, cannot be understood by understanding the parts in isolation, i.e., a single bird. Adaptation is illustrated by the fact that if the leading bird is removed, then any other bird can take the lead position. Similarly, some terrorist groups have taken on the structure of informal local groups where any member can take on the role of leader.¹⁹ Also, the organized society of an ant colony is determined not by the dictates of the queen, but by local interactions among thousands of worker ants.²⁰ This order arises, despite the absence of a centralized

authority, through interactions between components governed by cooperation and competition.

It is remarkable how a small set of interaction rules in a complex system can result in a large number of outcomes. Those same rules may lead to emergence. Referring to past examples, there were eight rules in Wolfram's algorithm, and three rules in Reynold's flocking birds. In fact, a small number of rules may lead to a very large number of outcomes. For instance, the game of chess has only a few dozen rules, but after hundreds of years, we keep discovering new strategies for playing it. Ill-conceived rules defining local interactions between components can have undesired global consequences. As an example, the blackout of 14 August 2003, during which 20 percent of the North American power grid went down, was the result of many local and interdependent interactions.



Starlings flocking à la C.W. Reynolds.

Vince MoFlicker



forecasting model is not 100 percent accurate, a complexity practitioner must be comfortable with unanticipated outcomes and a less-than-perfect prediction capability. As a pioneer in complex systems and non-linear science, J.H. Holland²² states: "... with a careful research plan, under controlled conditions, using selected agents, complex systems do pretty much what they damn please."

One of the greatest challenges for a complex system practitioner is that the outcome will be highly context or history dependent. A challenge

The Complexity Approach

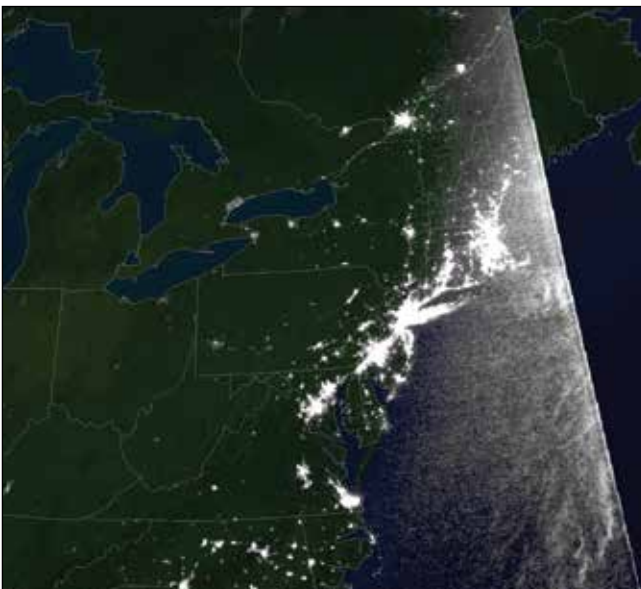
Advantages and Drawbacks

Complexity suggests new ways of thinking about problems, and new questions that should be answered. Some authors claim that complexity "... allows old concepts to be understood in different ways, allows for new generalizations about certain kinds of phenomena, and has unique concepts of its own."²¹ Despite their limited predictability, one may still be able to draw valuable conclusions from studying complex systems. Indeed, even though weather is not fully predictable, the space of possible outcomes is still known by meteorologists.

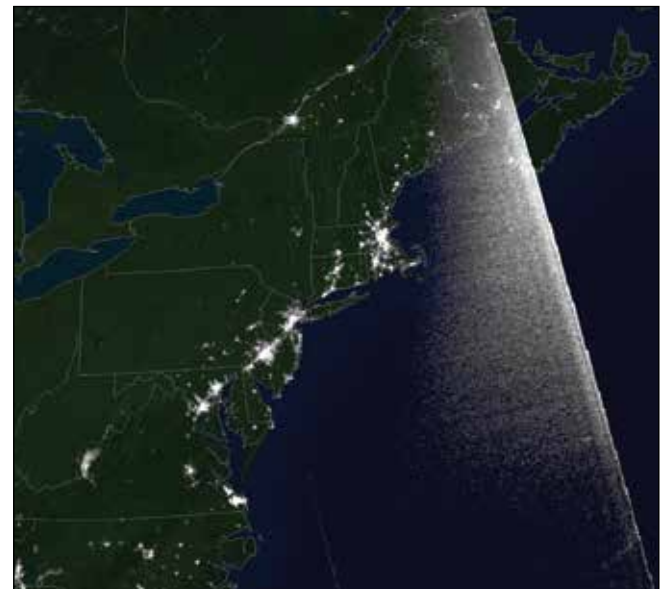
The adoption of a complexity approach leads to outcome uncertainties. Just like a meteorologist knows his/her weather

for military applications is that commanders may find it difficult to rely upon systems that lack a quantifiable measure of effectiveness.²³ Complexity, in its purest sense, is also challenging to use because it does not always indicate what people might need to do differently in specific contexts.²⁴ These last two concerns can be partially addressed by testing distinct scenarios numerous times, and comparing their outcomes.

One of the most common tools for studying complex systems is a system model simulated on computers. The main difficulties with computer models are that they may lack scientific rigor, and that there is no consensus among the various model types, and also about their validity. Diane Hendrick, an active member of the Peace & Collaborative Development Network, raised an interesting question:²⁵ "How useful and reliable can the model then be if the emergent properties are



Prior blackout 14 August 2003



Blackout 14 August 2003

actually constrained by the model-makers interpretations?” Another difficulty with such computer models is their calibration to produce strong correlations with real-world systems. Some critics claim that complexity models have shown only mixed results and limited applicability.

Points of Contention

The complexity approach also has its share of contention. In “What is Complexity Science, Really?”²⁶, author S.E. Phelan states: “Complexity science introduces a new way to study nature’s laws that differs from traditional science. Complexity science posits simple causes for complex effects.” However, the fact that simple mathematical rules have occasionally generated behaviours similar to those found in nature or society does not prove that there exists a set of simple rules explaining every complex phenomenon in the world.

Clarity often lacks about what “system” means in “complex systems.” An additional problem in modeling complex systems is that they often have fuzzy boundaries.²⁷ After all, where does one ecosystem stop, and the next one start? This common situation poses serious challenges for calibrating computer models to produce strong correlations with real-world phenomena. One such example is the coupled ocean-atmosphere, where neither system is independent of the other.

Many authors also confuse “complex systems” with “complicated systems.”²⁸ To clarify the difference between those concepts, consider a formation of migrating birds and a fighter jet. Both systems are made of multiple components interacting with one another. Each fighter jet component has a clear role and functions, which cannot adapt ‘on the fly’ as can a flock of migrating birds. Thus, the fighter jet is ‘complicated,’ but not ‘complex.’

Applying the Complexity Approach

Complexity concepts can be used individually or as part of an integrated approach to describe, understand and model phenomena. Various methods can be used to study complex systems. Simulation using computer models is by far the preferred tool. Simulations allow a series of thought experiments to test various ‘what if’ scenarios.

The main categories of computer simulations of a complex system reduce to system dynamics (SD), cellular automata (CA), and agent-based models (ABM). At the physical level, system dynamics is represented by equations obeying the laws of physics, while at the organization-level system dynamics are higher-level abstractions comprising loops and inputs where an input could be a successful marketing campaign.

A cellular automaton contains a large number of simple identical components whose interactions are limited to neighboring components. Each component has a finite set of possible values evolving in discrete time steps. An agent-based model involves a number of decentralized decision-makers (agents) interacting through prescribed rules.²⁹

A limited number of generic simulation packages exist for organizational and physical SD, whereas numerous packages offer CA and ABM capabilities. A recent review³⁰ surveys more than 30 ABM simulation-based platforms for generic applications. Most CA applications enforce a specific rule set, and its best introductory example remains John Conway’s “Game of Life.”³¹ Among military-oriented applications, many nations, including the United States of America, New Zealand, and Australia all have developed sophisticated simulation packages geared toward specific needs.³²

“A cellular automaton contains a large number of simple identical components whose interactions are limited to neighbouring components.”



National Geographic 1192545/Alaska stock images

Snow geese flying in arrowhead formation

Gaining in popularity, agent-based models are used to explore a wide-range of issues, from disease propagation and social networks, to manufacturing and combat.³³ Agent-based sensitivity studies demonstrated that even a 50 percent air traffic reduction would not dramatically slow the spread of certain types of pathogens. Policymakers thus now know that restricting air travel is unlikely to be the most effective policy tool for dealing with Severe Acute Respiratory Syndrome (SARS).³⁴



Christos Nicolis/Juanes Research Group, MIT, at <http://dx.doi.org/10.1371/journal.pone.0040961>

Contagion spread of SARS outbreak

Military applications of agent-based models include studying the impact of degraded communications for army troops, investigating the integration and use of unmanned surface vehicles for naval operations, and exploring the impact of squad-size formations in an urban environment.³⁵ A degraded communication study³⁶ evaluated how factors like latency, maximum range, buffer size, accuracy, reliability, and jamming impacted the ability of a networked force to conduct a company level attack while using the Future Combat System (FCS). The FCS utilizes modern battlefield sensing, networking, and lethality features to engage the enemy at a standoff distance. Using MANA³⁷ and the Caspian Sea as a fictitious battlefield area, the impact of the above communication factors was quantified by tracking the battle length and causalities. Through a large number of simulations with different settings, it was found that (1) a communication range resulting in a coverage that is less than 75 percent of the battle space has large and negative consequences, and that (2) a slow network is nearly as detrimental as having a diminished communication range.

Another successful example of computer-based simulations relates to the coupling of DARNOS³⁸ with a battle-space dynamic representation thus enabling the analysis of different C2 (command and control) networking structures and the assessment of the operational effectiveness of a networked force.³⁹ A squad-size study using agent-based models investigated the possibility of reducing the army infantry squad from 12-to-9 soldiers, while incorporating the futurist concept of an Armed Robotic Vehicle (ARV).⁴⁰

The study explored the impact of varying Blue Force characteristics, such as the squad size, the number of squads, the weapons, and sensor ranges in an urban environment where Red force troops evolved. An interesting sensitivity outcome from simulation results concludes that squads composed of 9 or 12 soldiers suffer a similar number of casualties

as long as the ARV survives, but the survivability of smaller squads is greatly reduced when the ARV is dysfunctional.

In the majority of cases, simulation outcomes can be classified into a relatively small number of distinct categories. As stated in “The Use of Complexity Science” by T.I. Sanders and J.A. McCabe⁴¹ with respect to agent-based models in particular: “When used to support real world decision-making, these interactive computer-based models enhance our thinking and lead to better responses, fewer unintended consequences and greater consensus on important policy decisions.”

“Both quantitative and qualitative assessments of results originating from complexity concepts have been performed.”

Among the lessons learned through the application of complexity theory, it is clear that the inherent context and history dependence of complex systems has implications in many fields. For instance, “... the success of a nation may be best explained not by its population’s virtues, its natural resources and its government’s skills, but rather simply by the position it took in the past, with small historical advantages leading to much bigger advantages later.”⁴² This last reference also highlights that in the realm of knowledge management and organizational learning strategies, ‘best practices’ may need to be replaced by ‘good principles,’ because what worked in the past may not work the next time around.

Another important lesson is that the quality of relationships between individuals may be more critical than individuals themselves, just like a sport team with the best individual players behaving egoistically can lose to a cooperative team of less talented players. Also, complexity implies that hierarchical organizations can never be as resilient as complex networks.⁴³ Interesting military concepts include steering enemy forces, either to a *chaotic* or an *equilibrium* mode.⁴⁴ In the *chaotic* mode, the enemy force is subject to a decision overload in a short time frame, thus potentially having a destabilizing effect. In an *equilibrium* mode, the enemy force gets closer to a linear behaviour, thus being easier to predict and to defeat.



Reuters RTR384/n by Suhail Salem

Members of Hamas' national security forces demonstrate during a graduation ceremony at their destroyed security compound in Gaza, 2 December 2012.

Complexity concepts are sought after because their outcomes often suggest unconventional and radical ideas, such as evolving at the edge of out-of-control, where a system is most adaptive, flexible, and energized. Viewed through the lens of complexity, the system that can best and most quickly adapt will be the system that prevails. When a complexity viewpoint is adopted, "... one's focus turns from knowing the world to making sense of the world, from forecasting the future to designing the future, from discovering the right force structure to keeping the force structure fluid, and from overcoming the limits of the system to unleashing the dynamic potential of the system."⁴⁵ This reinforces the belief that the "... capacity to tolerate uncertainty is a better predictor of success than straight cognitive ability."⁴⁶ Complexity "... also suggests that predicting the long-term future is less important ... than is maintaining the ability to learn and adapt to a rapidly changing and largely unpredictable environment."⁴⁷ A counter-intuitive complexity notion inspired from nature is that living organisms usually seek *adequate* solutions, as opposed to *optimal* solutions.

Complexity concepts have already been used to study various types of military operations.⁴⁸ At the tactical level, concepts borrowed from complexity theory led to new approaches for dealing with insurgencies and terrorists.^{49, 50} Interestingly enough, these tactics do not favor the eradication of specific members but instead targets their relationships. Making a network analogy, individual fighters, cells, tribes and clans represent the network nodes, and relationships between nodes are the network links. In the present context, links between nodes could mean communication channels, financial, ideological, spiritual, or technological dependencies, sanctuary access, and so on. The proposed tactics recommend either re-enforcing the network links to increase

models, and JANUS, a commonly-used interactive high-resolution ground combat simulator, in the squad-size context described earlier.⁵² The outcomes of all three types of simulation showed strong similarities in determining the key factors impacting the squad performance.



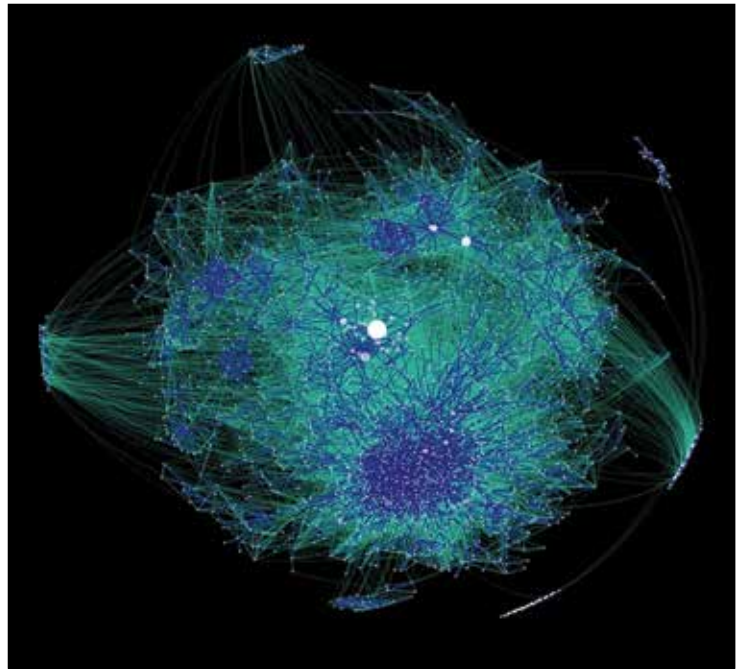
General Matthew Ridgway

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On-Going Research & Dynamic Networks

The study of Complexity was originally inspired by natural and social systems. Today, researchers are applying complexity concepts to understanding and designing man-made systems. A decade ago, the question, “How do we build artificial systems so that properties that emerge are the ones we want?” was raised by D.G. Green and D. Newth.⁵³ Since then, the emergence simulation trend morphed into an investigation about how one can instead influence emergent behaviours, knowing that “controlling a complex system” is an oxymoron.⁵⁴ This change of attitude coincides with the fact that “complex networks,”⁵⁵ a large class of complex systems, has recently experienced an explosion of research efforts due to the need of better understanding social networks, propagation of diseases, electricity grid stability, and so on. Around the same time, the Information Technology professor D.G. Green⁵⁶ demonstrated that any complex system inherits the properties of a very generic class of networks.

Today, questions related to network dynamics have significant momentum in the complexity community. This trend is likely to remain in the near future, as researchers are just starting to grasp the impact of local actions on large-scale networks, i.e., rumors spreading over social networks, or viruses propagating through computer networks. For many military operations, communication and data networks are critical for operating unmanned vehicles and off-board sensors. Given that the use of such systems will likely increase,⁵⁷ we will soon face the challenge of managing heterogeneous networks, whose nodes have distinct capabilities and various levels of autonomy.



Internet blog map.

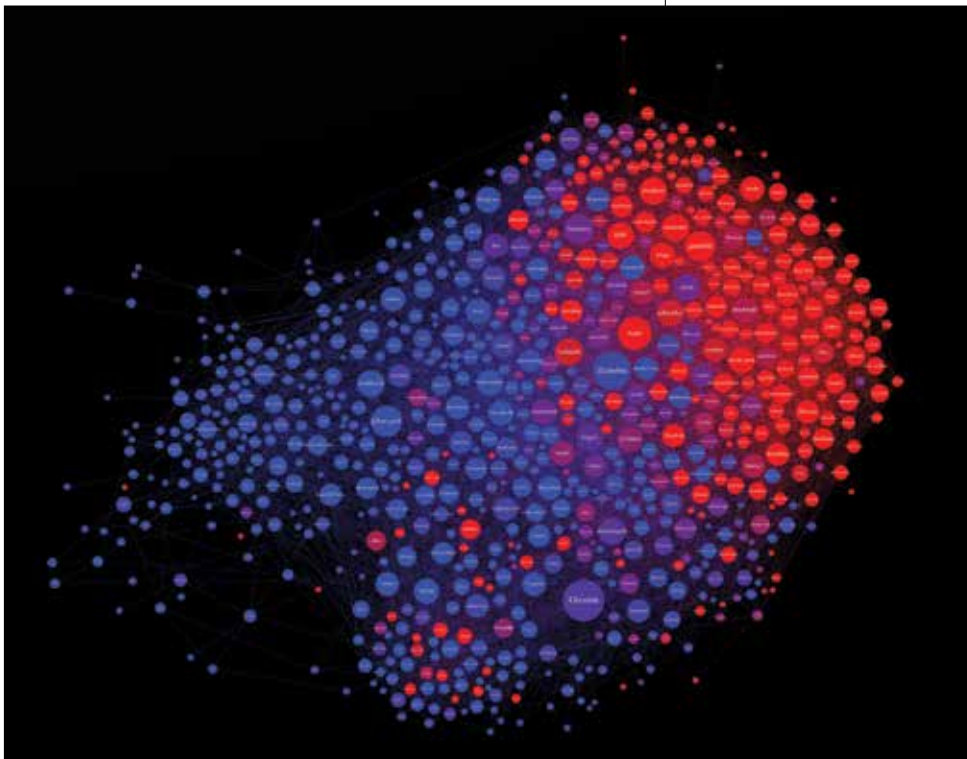
Matthew Hursi/Science Photo library

Current research on networks covers a wide range of activities pertaining to various network types based on their structures, their communication links, and their natural or man-made origins. One of the main questions is to determine the necessary rules and connectivity to prevent emerging undesirable behaviour. For instance, it can be shown that certain connectivity conditions are required for a network of distributed agents to reach a consensus by exchanging data.⁵⁸ In the absence of such conditions, consensus cannot be reached, and each agent could have a significantly different

version of the truth, thus diminishing the potential for military mission success. Autonomy rules could also dynamically change, based upon the presence and configuration of the network, thus allowing a *collective*, rather than an *individualistic* assessment of situations. For instance, once established, the network could enter into a ‘survival’ mode, and force mobile agents to manoeuvre in a formation pattern to favour strong network connectivity.

Conclusion

Although complexity lacks integrated theoretical foundations, its concepts, tools, and principles are widely applicable to understanding and enhancing military effectiveness. Applications with potentially high benefits are those



Kovras Boguta

Egypt influence network.

where the life and living system metaphor is a more adequate description than that of a machine operating with a clockwork precision. Numerous examples conveyed that complexity concepts can impact military decisions at the tactical, strategic, and operational levels.

To a large degree unpredictable and uncontrollable, complex systems have distinctive traits common across many disciplines. Whereas original complexity research focused on investigating emerging behaviour in systems found in nature and societies, recent research trends include influencing the emergent behaviour of man-made systems.

Conclusions reached through complexity concepts often lead to unconventional guidance emphasizing autonomy, decentralization and adaptation, and diminishing the importance of long-term predictions and rigid hierarchies. Such conclusions may encounter serious oppositions from many

establishments, including military formations, because it is somewhat contrary to the conventional way of thinking.

So, if your world is indeed complex, what are the advantages of adopting the complexity manner of thinking? Complexity remains the most promising theoretical framework available today to study questions pertaining to military structures and operations, due to their strong similarities with how living organisms survive through adaptation, competition, and cooperation.

Acknowledgement

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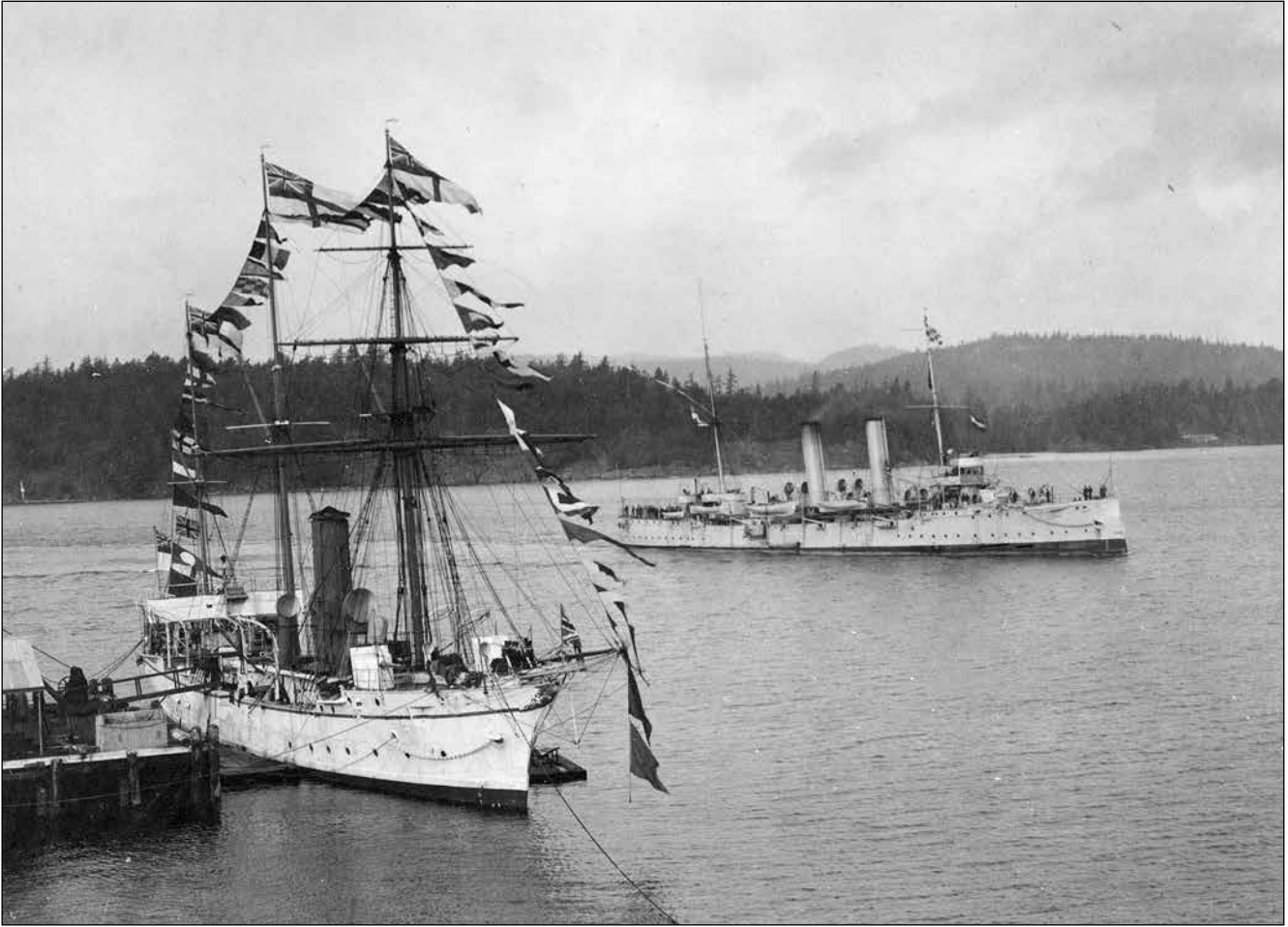
Robot soldier

Victor Habbek visions/ Science Photo Library Kovas Boguta

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HMCS *Shearwater* and HMCS *Rainbow* in 1910.

THE NAVAL SERVICE OF CANADA AND OCEAN SCIENCE

by Mark Tunnicliffe

Introduction

The Canadian Navy was born joint. Not ‘joint’ in the sense of some affiliation with the army or the air force (which, of course, did not exist at the time), but integrated with the other marine arms of the Government of Canada with which it had a common professional background and national objective – namely, security in the Canadian maritime environment and national sovereignty. The authority for the institution of a Canadian navy was The Naval Service Act, which was assented to on 4 May 1910. That Act established the Department of the Naval Service, which was initially presided over by the Minister of Marine and Fisheries, who retained sole authority and responsibility for its management and operation. In addition to the combat capability traditionally associated with navies, Section Two of the Act declared that: “[The Canadian] ‘naval Service’ includes, besides His Majesty’s service in respect of all naval affairs of which by this Act the Minister is given control and management, and also the Fisheries Protection Service,

Hydrographic Survey, tidal observations on the coasts of Canada, and wireless telegraph service.”¹

The Department, therefore, was initially organized into the five branches specified by the Act: Naval, Fisheries Protection, Tidal and Current Survey, Hydrographic Survey, and Wireless Telegraph.² Thus comprised, the Department actually commanded a fairly sizable number of ships in addition to the two naval vessels which initially equipped the Naval Branch. Its Fisheries Protection Branch, whose assets had been transferred from the Department of Marine and Fisheries, had antecedents which extended back to the Provincial Marine services in existence well before Confederation, and it was already operating as a quasi-military organization. In 1910, it brought a fleet of eight fisheries cruisers (under the command of Rear Admiral Charles Kingsmill) into the Department of the Naval Service, includ-

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ing the armed CGS *Canada*, and the “first modern warship to be built in Canada,” CGS *Vigilant*.³



Admiral Sir Charles E. Kingsmill.

The Hydrographic Service, under the direction of the first Canadian Chief Hydrographer, William Stewart, also brought a small fleet of vessels to the Department – some chartered, some borrowed from other departments. Some, however, like CGS *Lillooet* – “... the first officially designated and constructed vessel in the hydrographic fleet,”⁴ - were modern purpose-built vessels owned by the Department. Finally, the Tidal and Current Survey Branch conducted operations from the old steamer CGS *Gulnare*, using her to communicate with its 11 permanent tidal stations. Consequently, when the Department of the Naval Service of Canada was born, it was already provided with a relatively comprehensive fleet of little ships even before the arrival of its first two military units, HMCS *Niobe* and HMCS *Rainbow*, some five and six months later respectively.⁵

The composition of a navy which included a fleet of survey ships was not unusual, and for an institution whose purpose was to provide a “... security for such as pass on the seas upon their lawful occasions,”⁶ it was particularly appropriate for a nation such as Canada, where uncharted waters and unmapped currents were gener-

ally more hazardous to shipping than acts of an enemy. In Great Britain, hydrographic survey *was* (and *remains*) a function of the Royal Navy (RN), and, to this day, the RN’s fisheries protection squadron remains its oldest front line unit. It is therefore not surprising that the newborn Naval Service of Canada would copy the structure of its parent. Since these non-military branches of the Service were already well established Canadian institutions in May 1910, their activities tended to attract much of the attention of the Department of the Naval Service in its formative years. The early history of the Naval Service of Canada therefore was dominated by programs of exploration, survey, and research – programs that continued throughout the First World War. Canada’s new navy was very much a technical and scientific organisation, which played a significant role in mapping and surveying the maritime environment of a still-young nation.

Research, Survey, and Exploration under the Department of the Naval Service

The challenge to Canada’s maritime sovereignty in its early years stemmed, not so much from direct foreign intervention, but rather in defining and charting its boundaries (particularly in the Arctic), and in demonstrating competence in executing domestic authority and responsibility for safe navigation and commerce in its internal waterways and adjacent seas. Consequently, the activities of the Naval Service of Canada in its early years with respect to pursuing this mandate were marked by considerable interest from Parliament and the public. This interest was often expressed in the provision of additional generally ‘state-of-the-art’ ships and equipment, that is, with the exception of the Naval Branch, which, as has been well documented elsewhere, was almost immediately left to languish.



HMCS *Niobe* at Daybreak, by Peter Rindlisbacher.

Survey and Exploration

The Royal Navy’s hydrographic service had initially looked after much of Canada’s maritime survey requirements, albeit subsidized by the Dominion government. However, the

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demands of inshore navigation on the Great Lakes (facilitated by the development of steamships), and stimulated both by U.S. surveys in their portion of the Lakes and by the traffic occasioned by increased immigration, prompted the Dominion government in 1883 to obtain the services of Staff Commander Boulton from the RN to commence a survey of the waters of Georgian Bay.⁷ With this initiative, a national hydrographic survey capability was born, managed within the Department of Marine and Fisheries. Other similar work was also being undertaken by hydrographic units established by the Department of Public Works and by the Department of Railways and Canals, as part of its development operations. In 1904, however, all these operations were consolidated in the Canadian Hydrographic Survey, then being directed by Boulton's former assistant, William Stewart. It was a timely consolidation, because in that same year, the RN, as part of its consolidation of the British fleet to home waters, withdrew its hydrographic support to the 'colonies.' It did so with the 'parting shot' that the current coastal surveys and charts for colonial waters were now quite inadequate for modern inshore navigation. The new hydrographic service would have its work cut out for it.

By the time the Canadian Hydrographic Survey was transferred to the navy in 1910, it was executing seven survey programs. In addition to the work on the Great Lakes, the requirements for the east and west coasts, inland waters and Hudson Bay were also being addressed. It was the latter survey program that got the Naval Service of Canada almost immediately involved in Arctic exploration. Britain, which had conducted much (but not all) of the initial exploration of the high Arctic, had transferred its claims to sovereignty in the area to Canada in 1880, but the young Dominion had done little to assert these inherited rights. Indeed, much of the exploration of the north-west Arctic to this point had been conducted by Norwegians, notably Roald Amundsen and Otto Sverdrup. Fortunately, Norway did not press any claims to the area, based upon their exploration, and, in 1903, the Canadian Government purchased Sverdrup's charts in an attempt to assert Dominion sovereignty over the entire Arctic Archipelago.

Hudson Bay

Sovereignty was not the only issue driving northern maritime development. With increased immigration to the west and concomitant commercial traffic to the new settlements established there, developers were looking for shorter rail routes to handle the expanding western grain trade. One option that appeared attractive was a rail route to Hudson's

“The team deployed three parties that conducted detailed surveys of Port Nelson and Churchill and surveyed the magnetic declination changes in Hudson Bay.”

Bay – if the issues of ice and inadequate hydrographic and tidal surveys in that area could be solved. Initial investigations into these challenges had been taken in the 1880s by the Department of Marine and Fisheries on three expeditions intended to investigate the impact of ice upon the navigation season. While voyages of exploration and sovereignty claim were continued by the Department of Marine and Fisheries after the inauguration of the Naval Service, meeting the demands for safe navigation in Hudson's Bay now fell under the new department's mandate. Shipping required not only accurate charts and surveys of the approaches to potential railheads, but also a thorough understanding of local tidal and current conditions. Additionally, navigation in the high arctic created a wrinkle for ships piloted solely with the aid of magnetic compasses: the need to cope with the rapid changes of magnetic declination in the region.

Consequently, the Department of the Naval Service dispatched Commander Miles of the Hydrographic Survey with the experienced Newfoundland ice pilot, S.W. Bartlett, to conduct a preliminary investigation of Hudson's Bay. Their objective was to determine the impact of ice upon the navigation season, and, in particular, to make a determination between Churchill and Port Nelson as the optimal port terminus for the proposed western railhead. Using the ice-breaking steamer *Stanley* loaned from the Department of Marine and Fisheries to act as a mother ship for a small schooner and survey boats, Miles conducted an initial survey during the summer of 1910. The results were sufficiently encouraging that the Department of the Naval Service sent the team back again the following year, this time with the support of the icebreaker *Minto* and two survey schooners, *Chrissie Thomey* and *Burleigh*, which were purchased for the purpose. The team deployed three parties that conducted detailed surveys of Port Nelson and Churchill and surveyed the magnetic declination changes in Hudson Bay. This work continued for the next two years, and this effort was augmented in 1913 by an additional asset.



Hydrographic Survey Schooner (HSS) *Chrissie C. Thorney* on the Nelson River, Manitoba, circa 1910.

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That asset was the steamer CGS *Acadia*, built at Newcastle-on-Tyne, Great Britain, to Canadian specifications, and it had arrived in Halifax in July of that year. Commanded by Captain F. Anderson of the Hydrographic Branch, she was quickly put to work, and by the middle of August, she was anchored off Port Nelson in Hudson Bay. This 12 knot, 1700 tonne ship was purpose-built for the task, and was specially strengthened for navigation in ice, "... proving to be a first-class sea boat [that] gave a very good account of herself in any ice encountered."⁸ Her special construction was soon put to the test by heavy weather that autumn, and it was not long before she became involved in the rescue of 28 seamen from the steamer *Allete*, an event eagerly tracked by the Canadian public, that was fed daily details of the event via the ship's wireless - the first electronic equipment to be fitted in any Canadian survey vessel.

By the beginning of the First World War, the Hydrographic Branch had effectively assumed responsibility for survey work in Canadian waters from the Royal Navy (RN), and was conducting a vigorous program of work with a 'cutting edge' fleet of vessels - many of them quite new. CGS *Lilloet*, supplemented by the new schooner *Naden*, was charting the British Columbia coastline; CGS *Bayfield* and *La Canadienne* the Great Lakes; CGS *Cartier*, the Lower St. Lawrence River; and CGS *Acadia*, the Atlantic Ocean and Hudson Bay. Unfortunately, the *Chrissie Thomey* had, by 1913, become a permanent fixture of the Hudson Bay shoreline. Being too badly damaged by the ice, she was beached and converted into a shore-bound base ship.

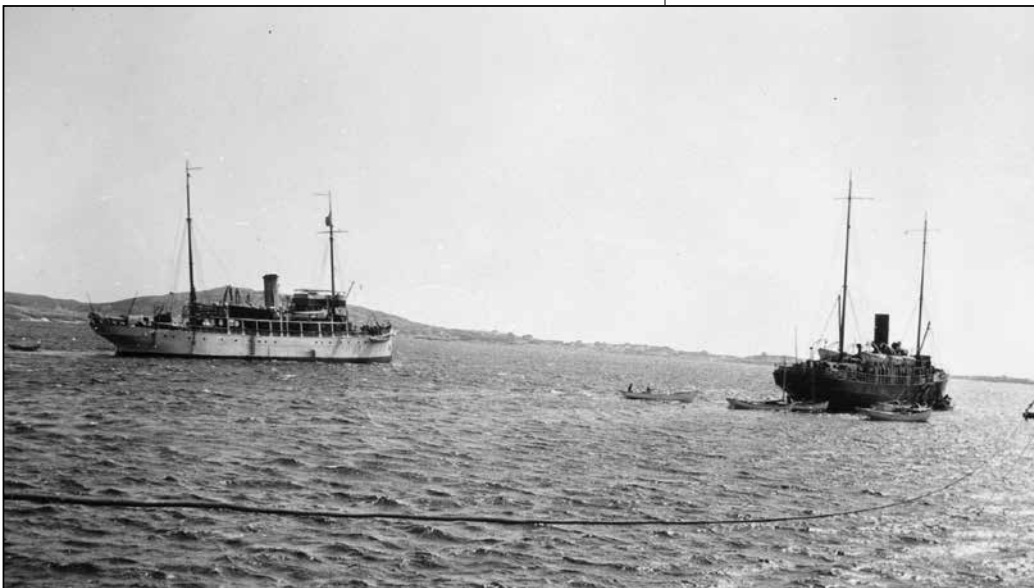
from 1904 and into the 1920s, with the primary objective of formally cementing Canada's claims of sovereignty in the eastern high arctic, these expeditions were crowned by Bernier's claim, made on Dominion Day 1909, of the entire Arctic Archipelago for Canada, which he commemorated with a tablet placed on Melville Island. Unfortunately, this was about as far west as he was able to force his little ship.

Since, as noted earlier, exploration of much of the north-western portion of that archipelago had been accomplished by the Norwegians, Canada's claim to that area was potentially open to question. Consequently, when, in 1913, the Canadian explorer and ethnologist Vilhjalmur Stefansson proposed to the Canadian Government that he lead an expedition to explore the western high arctic, the government enthusiastically responded with support and funds. While a number of departments backed the mission, the Department of the Naval Service was selected to lead it, and the Department placed Stefansson in charge.

The object of the expedition, which was divided into northern and southern components, was to determine if a new continent existed north of Alaska, and to conduct scientific observations on wildlife and current drift. The Department purchased the 247 tonne auxiliary brigantine *Karluk*, which Stefansson had previously obtained for \$10,000, assigning the veteran Captain R.A. Bartlett to command her.⁹ Two smaller vessels, *Mary Sachs* and *Alaska*, were also obtained to support the southern portion of the expedition in its exploration of the western arctic mainland. Unfortunately, *Karluk*, a former US fishing supply ship, although reinforced for operation in the ice periphery, was poorly suited to the task of deep penetration into arctic ice. Indeed, her 150 horsepower "coffee pot of an engine" was, in the opinion of her engineer, quite inadequate for ice navigation.¹⁰

Consequently, it was not long after she set sail from Nome, Alaska in July 1913 that *Karluk* became stuck in the ice and while Stefansson and some members of the northern party were off the ship

on an extended hunting trip, *Karluk*, with the remaining members of the crew, was carried off westward. Finding her gone, Stefansson's group was forced to hike back to Cape Smythe, near Barrow. By January 1914, *Karluk* had drifted far westward into the East Siberian Sea. By the 10th of January, she was so badly holed that Captain Bartlett had the men evacuated with supplies onto a camp on the drifting ice. In the best traditions of the new Service, Bartlett stayed with his charge, but the ship proved to be irreparable. The next day, to the tune

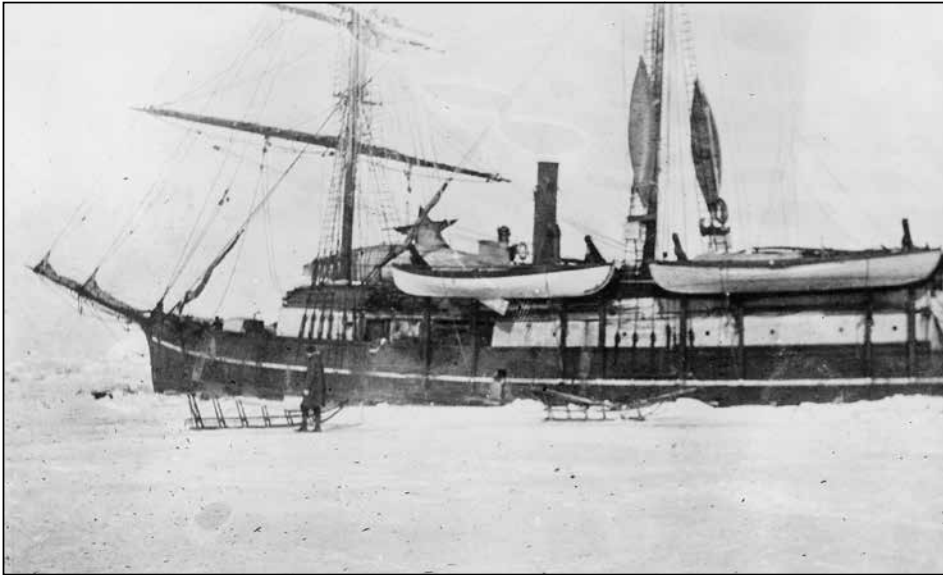


CGS *Cartier* and SS *Sable Island* resting anchor in Harrington Harbour, Quebec, probably during the inter-war years.

The Canadian Arctic Expedition: 1913 - 1916

By the turn of the century, stimulated to some extent by American enquiries into the sovereignty of parts of the Arctic Archipelago, the Dominion began extending its interest in Canada's maritime frontier to the north as well. This concern was the impetus for the legendary expeditions by Captain J. E. Bernier in his wooden ship CGS *Arctic* under the sponsorship of the Department of Marine and Fisheries. Conducted

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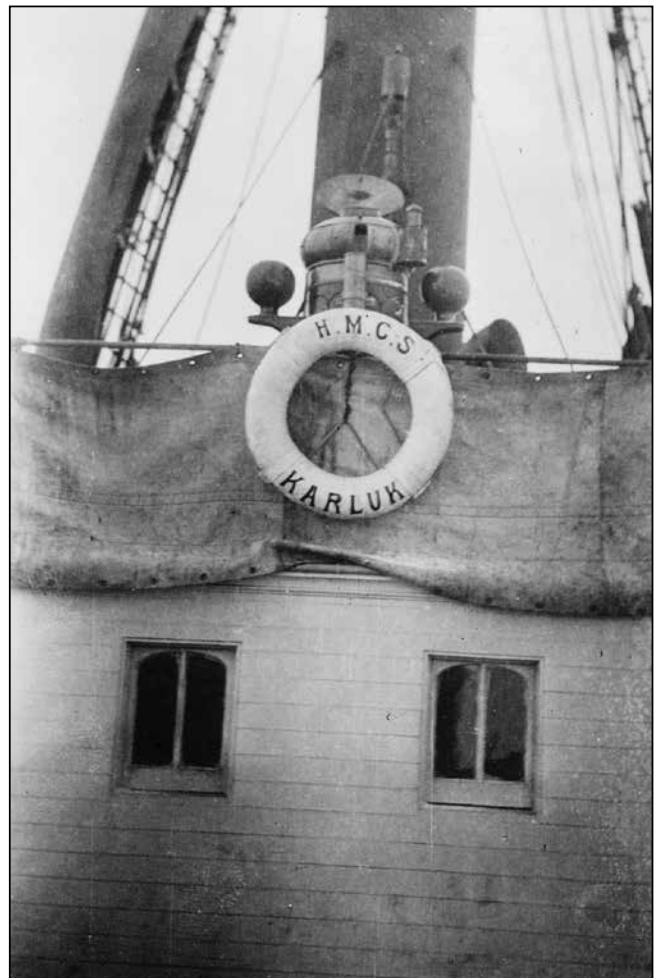
HMCS *Karluk* drifting, October 1913.

of Chopin's funeral march playing on Bartlett's wind-up phonograph, and, "... with the blue ensign at the main topmast head, the *Karluk* disappeared, going down in 38 fathoms of water ... 60 miles North by East of Herald Island."¹¹ Four of the party attempted to make Alaska on foot but were never seen again. When it was decided to attempt to trek to Wrangel Island, 60 miles to the south, an advance party of another four individuals set out to lead the way, but they also got lost, and were eventually found dead on Heard Island many years later. The remainder, led by Captain Bartlett, did reach Wrangel Island and set up camp there. At this point, Bartlett, with an Inuk companion, completed the remaining 110-mile trip over the ice to Siberia, and from there, shipped back to Alaska from whence a rescue expedition was mounted. Eventually, the stranded party was rescued in September 1914 by a trading ship and a US Coast Guard cutter.¹²

This setback was not fatal to the expedition, however, and Stefansson, who had returned over ice to Alaska, purchased another ship, *North Star*, and continued his exploration. Over the next two years, it would take him north along the coast of Banks Island and still further north to Prince Patrick Island, where he discovered a cairn left by the McClintock expedition of 1853. Yet, even further north, he discovered a new coastline, the southern shore of the Queen Elizabeth Islands, which had not been previously charted. His travels, which involved buying several more small vessels for support, were largely undertaken by sled over land and ice, and were generally supplied by living off the land. While he was no doubt a very controversial character, Stefansson was a hardy and competent explorer and, aside from an engineer in one his schooners who had suffered a heart attack, no more members of the expedition were lost. He remained in the Arctic until 1918, discovering a number of new islands in the western Arctic and demonstrating that it was quite feasible for non-native people to survive there indefinitely if they adopted the Inuit lifestyle. His degree of competence, or perhaps nonchalance, is no doubt illustrated by the quote often ascribed to him: "Adventure is a sign of incompetence."

nationally for analysis.

Despite its less-than-promising beginning, the Canadian Arctic expedition of 1913 – 1916 achieved all the objectives assigned to it, and, in so doing, it reinforced Canadian claims of sovereignty in the western arctic. In particular, the efforts



Pilot house aboard the HMCS *Karluk*, August 1913.

of Captain `Bob` Bartlett to rescue his crew established a standard of endurance, leadership, competence, and courage that captured the attention of Parliament and the Canadian public.¹³ Scientific investigation under these circumstances could indeed demand of Canadians much the same qualities of character, endurance, and courage that the Canadian Corps was now drawing upon at the Western Front.

The Canadian Fisheries Expedition 1914 – 1915

The Department took rather less notice of another initiative in ocean research it sponsored during the same time frame, but one which ultimately would have a more direct benefit to the operations of the Royal Canadian Navy (RCN) in the next war. The science of biological oceanography and its practical value to the fisheries had been established in Europe by the expeditions of Doctor Johan Hjort, Director of Fisheries for Norway, and Sir John Murray of Great Britain. One of their investigations, conducted in the Norwegian fisheries research vessel *Michael Sars*, took them off the coast of Newfoundland in 1910, where nominal similarities in the ocean conditions to those in Norwegian waters were noted. Since the Norwegians had successfully exploited information on ocean characteristics to develop new fisheries, the president of the Biological Board of Canada persuaded Doctor Hjort to conduct a similar investigation off the east coast of Canada to determine if similar benefits to the Canadian fisheries could be identified. As the Board lacked the resources to support the work itself, it enlisted the support of the Deputy Minister for the Department of the Naval Service to underwrite it. The intent was to make physical, chemical, hydrographical, and biological surveys of the Atlantic coastal and Gulf of St Lawrence waters to determine the optimal conditions for further development of the Canadian fisheries. The Deputy Minister of the period, George Desbarats, agreed, and the Department of the Naval Service underwrote the costs.

Following some preliminary work in 1914, Hjort determined that there were a number of commercially viable herring populations which might be differentiated as a result of the impact of the ocean environment on their breeding cycles. Consequently, he proposed a program of biological and oceanographic observations, focussed upon the Gulf of St Lawrence and the waters off the Scotian Shelf. Two cruises in each location were planned – one in the spring of 1915 during spawning season, and the second in late-summer to note the migration of the resulting herring young. The Atlantic cruises were conducted by the Naval Service's hydrographic ship *CGS Acadia*, while the Gulf investigations were conducted from the Marine and Fisheries vessel *Princess*. Neither vessel was particularly well-equipped for this type of work, so Hjort had to bring with him some basic instrumentation from Norway, including Nansen bottles (for collecting sea water samples) and reversing thermometers. These were lowered to selected depths on 4mm wire operated from hand winches equipped with a meter wheel for noting the package depth. Biological samples were collected using a variety of plankton nets developed for the purpose by the Norwegians. These were some of the first relatively-extensive physical oceanographic measurements of Canadian coastal waters to be collected and subsequently analysed.

The work was evidently not particularly popular with the navy. The Department of the Naval Service noted the deployment of *Acadia* in May, and again in August 1915, rather briefly in its annual report¹⁴ - with the effort seemingly viewed as somewhat of an interruption of the 'real' hydrographic survey work that *Acadia* was normally tasked to pursue. The final report of the expedition,¹⁵ which was eventually produced under the imprimatur of the Department of the Naval Service of Canada in 1919, comprised six papers on *biological oceanography*, and two on the *physical oceanography* of the area. The report proved to be the foundational work for the science of oceanography in Canada, and the



Canadian War Museum 19940001-980

portion on physical oceanography was characterised as "... the treatise on hydrodynamics, which occupied a prominent part of the report, has for 50 years continued to be valued as a text. Further, the methods of investigation introduced into Canadian oceanography were to be adopted by Canadians in the years that followed."¹⁶ However, the Department itself did not appear to be particularly impressed, as distribution of this foundational document was apparently fairly limited.¹⁷ Nevertheless, the RCN would find itself rather more interested in the subject of the thermal structure of Canadian coastal waters some 30 years later.

Conclusion

With the National Defence Act of 1922, the Department of the Naval Service ceased to exist, along with the RCN's direct association with its other marine branches, The Hydrographic, Tidal, Fisheries Protection, and Wireless Branches were transferred back to the Department of Marine and Fisheries, while the Naval Branch joined the new Department of National Defence. With the nation thoroughly tired of war, the Navy now entered a period of severe retrenchment and budget cuts, with no mandate or interest in research and survey work.

That work continued, however, with the Department of Marine and Fisheries picking up the development of the nascent science of oceanography in Canada, driven, as it had been before, by the demands of the resource industries – primarily the fisheries. A physicist (and reserve army officer) H.B. Hachey, operating out of the Marine Biological Station at St. Andrews in New Brunswick, continued the investigations into the physical oceanography of Canada's east coast that had been initiated by the earlier Fisheries Expedition. Extensive measurements were made of currents and sea temperatures in the Strait of Belle Isle, Cabot Strait, and the coastal waters of Newfoundland as part of a 1923 international survey conducted under the auspices of the North American Council on Fisheries Investigations. Additional work was conducted in the 1920s and 1930s in the Bay of Fundy area to determine the possible impact upon the fisheries of tidal power station development, again under bi-national sponsorship. Furthermore, a series of fisheries research expeditions were mounted to Hudson Bay between 1929 and 1931.

On the west coast, studies were conducted by biologists to examine the impact of the Fraser River discharge into the Strait of Georgia on marine fauna distribution and the influence of seasonal variation in water characteristics on fish populations. The physical and chemical aspects of this work were pursued by John. P. Tully, a chemist, at the biological station at Nanaimo, British Columbia, in 1931. Tully instigated a number of projects, including the first survey of the offshore oceanography of the waters around Vancouver Island with the aid of the RCN's old battle class trawler, HMCS *Armentières*, from 1935 to 1938.



HMCS *Armentières* off Esquimalt, British Columbia, 9 December 1940.

“Nevertheless, the RCN would find itself rather more interested in the subject of the thermal structure of Canadian coastal waters some 30 years later.”

While the involvement of the RCN in ocean science during the inter-war years was relatively small, the relationships established with marine scientists would be important to its technical development late in the Second World War, and also during the immediate post-war years. As explored elsewhere,¹⁸ the capabilities and infrastructure developed on both coasts by Hachey and Tully, and the data bases collected and established on the physical oceanography of the Canadian coastal waters, inaugurated by the Fisheries Expedition, and expanded upon by these individuals, would be key to understanding the performance and limitations of ASDIC (sonar) during the Second World War.

The exploration and survey work sponsored by the Naval Service of Canada under the auspices of its Hydrographic Branch played a significant role in exploring the boundaries of a rapidly expanding nation, and in establishing and demonstrating sovereignty over its high arctic frontier. Not surpris-

ingly, there is little discussion of the activities of the Naval Branch in the unclassified annual reports of the Naval Service to Parliament during the war – the details were classified. Consequently, these reports focussed upon the activities of the Hydrographic Branch, and particularly, upon the dramatic exploits of Stefansson’s Arctic expedition which excited the imagination of the Canadian public. For the Naval Service of Canada, the First World War was very much a ‘home game.’

Today, the navies of many nations retain responsibilities for maritime survey and hydrographic work similar to those responsibilities initially assigned to the Naval Service of Canada in 1910. In Canada, it has proven more useful to split the maritime sovereignty functions of defence and survey/exploration between DND and the Department of Fisheries and Oceans (DFO). Collaboration between these departments (or their predecessors) has waxed and waned with the nature and intensity of the challenges facing the nation. Today, with increasing international and national interest in the Arctic, the navy, and Canada’s science-based institutions, are being increasingly called upon to support the nation’s interests and sovereignty claims to the region. Not surprisingly, therefore, cooperation between the two, and consequently, the role of DND in supporting arctic marine science and hydrography is increasing.

This has been illustrated recently in the support provided by DND’s research arm, Defence R&D Canada (DRDC) to the combined National Resources Canada (NRCan.), DFO, DRDC project that used autonomous underwater vehicles (AUVs) to conduct under ice surveys of the ocean floor north of Borden Island in Canada’s western arctic. In two surveys conducted in 2010 and 2011 respectively, *Project Cornerstone*¹⁹ used two *Explorer* AUVs that travelled over 1000 kilometres under the ice while conducting surveys of Canada’s extended arctic continental shelf in support of Canada’s claims for extended arctic sovereignty under the terms of the UN Convention on the Law of the Sea (UNCLOS).

Surveying Canada’s maritime boundaries is still a work in progress and it probably will be for a long time to come. The conduct of marine science and survey in waters we claim our own is very much a statement of national sovereignty. Consequently, the interest of DND and the RCN in ocean science will also continue in both a lead and supporting role – just as it did when the navy was created 100 years ago.



Photo by Gina Millar, ISE Control Systems Engineer, ISE Ltd.

NRCAN Arctic Explorer *Yamoria* over the ice.

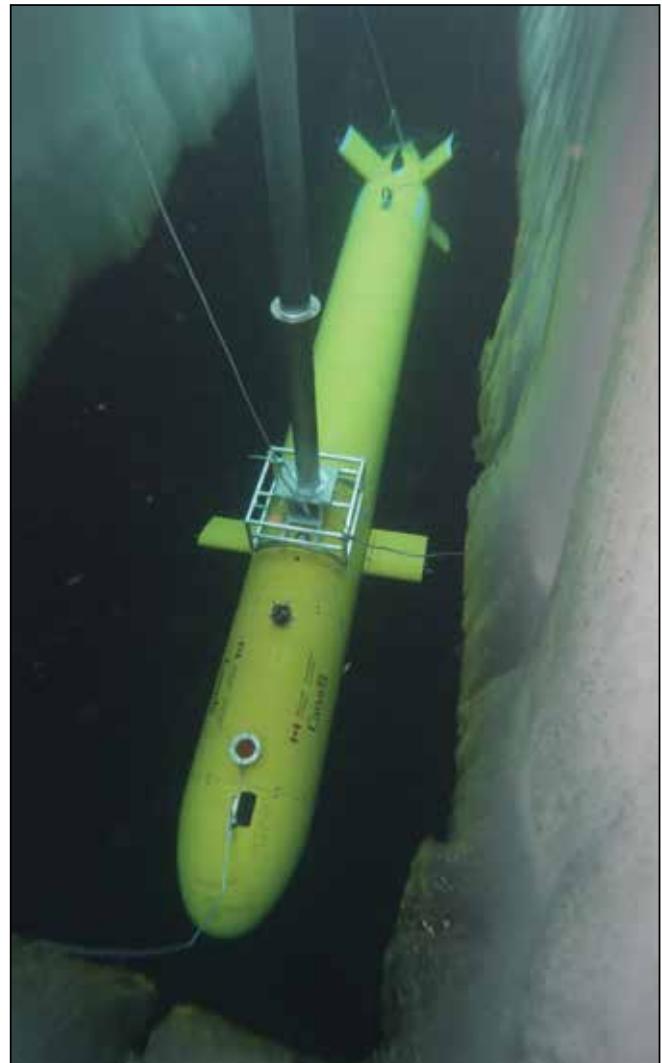


Photo (at uncles 2010_0394s) courtesy of James Ferguson, ISE Ltd.

Another view of *Yamoria* in suspension during *Project Cornerstone*.



Photo (OTT_10_6247) courtesy of James Ferguson, ISE Ltd.

Yamoria's happy crew at project completion.

NOTES

1. Text of the Naval Service Act as Passed in 1910, 9-10 Edw VII, c. 43 as reprinted in App V to G.N.Tucker, *The Naval Service of Canada, Its official history, Volume 1: Origins and Early Years*, (Ottawa, King's Printer, 1952), pp. 377 – 385.
2. As reported in the introduction to *Report of the Department of the Naval Service for the Fiscal Year ended March 31 1911 – Sessional Paper No 38*, (Ottawa, King's Printer, 1911). p. 7. The Life Saving Service would be added in 1914.
3. At least as characterized in T.E. Appleton, *Usque ad Mare: A History of the Canadian Coast Guard and Marine Services*, (Department of Transport, Ottawa, 1968), p. 80. The 396 tonne *Vigilant* was built by Polson Iron Works Ltd, Toronto, in 1904 and was armed with four small quick firing guns.
4. O.M. Meehan, "The Canadian Hydrographic Service: From the time of its inception in 1883 to the end of the Second World War", (W. Glover and D. Gray [Eds.]), *The Northern Mariner/Le Marin du Nord*, Vol XIV, No.1 (January 2004), pp 1 – 158. *Lilloet*, built in Esquimalt by the British Columbia Marine Railway Company in 1908, was joined by a near-sister ship, the 522 tonne steamer *C.G.S Cartier*, which arrived at Québec 6 May 1910, from her builders in Great Britain, two days after the birth of the Navy.
5. The Wireless Telegraph branch did not have any dedicated ships but they did operate some nine wireless stations on the West Coast and thirteen on the East Coast and noted the existence of ten Marine and Fisheries steamers equipped with wireless transmitters which were available for message relay as required. These stations would prove to be a very useful asset in the world war to come.
6. Extract from The Naval Prayer.
7. The wreck of the SS *Asia* in Georgian Bay 14 September 1882, with a heavy loss of life, created the necessary stimulus. The RN, under Lieutenant H.W. Bayfield, RN, had surveyed the deep waters of the Great Lakes during the early 19th Century but the inshore waters (which were typically considered unsafe for navigation by sailing vessels) had not been adequately considered. Once steam vessels started using the more shallow waters, a new requirement for charts for inshore waters emerged.
8. *Report of the Department of the Naval Service for the Fiscal Year ended March 31 1914 – Sessional Paper No 38*, (Ottawa, King's Printer, 1915).
9. The nephew of S.W Bartlett who had served with the Hudson's Bay survey. Both Newfoundlanders were veterans of arctic navigation, having supported one of Peary's expeditions. Appleton, p. 258. Karluk is an Aleut word for fish.
10. The reaction of the crew to the state of the ship is described in some detail in R.J. Diubaldo, *Stefansson and the Canadian Arctic*; (Montreal and Kingston, McGill-Queen's Press, 1999).
11. From Captain Bartlett's diary as quoted in *Report of the Department of the Naval Service for the Fiscal Year ended March 31 1915 – Sessional Paper No 38*, (Ottawa, King's Printer, 1915). Herald Island lies just to the east of Wrangel Island north of Siberia.
12. Of the 17 who made it to Wrangel Island, 14 lived. Based upon their extended stay on the otherwise-uninhabited island north of allied Russia, Stefansson wanted to claim the island for Canada – which prudently declined the honour. In 1921, he planned another expedition to the island to claim it for Britain – which resulted in an international incident, and the death of most of the participants.
13. The progress of the expedition was reported annually in much more detail than the activities of the rest of the Department in most of its reports in the 1913 – 1919 time frame. A summary report is provided in *Report of the Department of the Naval Service for the Fiscal Year ended March 31 191 – Sessional Paper No 38*, (Ottawa, King's Printer, 191). pp.36 – 40 and appendices
14. in *Report of the Department of the Naval Service for the Fiscal Year ended March 31 1916 – Sessional Paper No 38*, (Ottawa, King's Printer, 1916), p. x
15. Department of the Naval Service, "Canadian Fisheries Expedition, 1914 – 1915: Investigations in the Gulf of St Lawrence and Atlantic Waters of Canada, under the direction of Dr Johan Hjort, Head of the Expedition, Director of Fisheries for Norway," (Ottawa, J De Labroquerie Taché, Printer to the King's Most Excellent Majesty, 1919).
16. H.B. Hachey, "History of the Fisheries Research Board of Canada", (Ottawa, Fisheries Research Board of Canada Manuscript Report (Biological) No 843, 1965), p. 292
17. A. C. Hardy, 'Dr Johan Hjort: 1869 – 1948', *Obituary Notices of Fellows of the Royal Society*, Vol. 7, No. 19 (November, 1950), pp. 167-181. Hardy notes that Hjort's "... series of reports on those [Canadian] waters were issued in a government 'blue book' with an absurdly small circulation; it is among the rarest and most prized of publications that an oceanographer can possess."
18. Mark Tunnicliffe, "Ocean Acoustics in World War II – Dawn of a New Science in Canada," in *The Journal of Ocean Technology*, Vol. 5, Special Issue 1, pp 1-12. (2010)
19. <http://www.nrcan.gc.ca/earth-sciences/geography-boundary/boundary/continental-shelf/autonomous-underwater-vehicles/3879> consulted 13 March 2012, is a useful Natural Resources Canada (NRCan) summary of the project.



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Armoured trucks of the Motor Machine Gun Brigade during the advance from Arras, September 1918.

MEASURING THE SUCCESS OF CANADA'S WARS: THE HUNDRED DAYS OFFENSIVE AS A CASE STUDY

by Ryan Goldsworthy

Introduction

During the final three months of the First World War, the Allies instigated a series of offensives against Germany on the Western Front which would be known as the Hundred Days Offensive. In this offensive, the Canadian Corps served as the spearhead for the British Empire, and effectively inflicted a series of decisive defeats upon the German Army. "Canada's Hundred Days," so-called because of Canada's prominent and substantial role in victory, began on 8 August 1918 with the battle of Amiens, and carried through to the Battle of Mons on the date of the armistice, 11 November 1918. Although Canada was ultimately instrumental in achieving victory, since it defeated parts of 47 German

divisions and cracked some of the most seemingly impenetrable German positions, the Canadian Corps suffered enormous losses. The Corps sustained over 45,000 casualties in a mere three months of fighting, which was not only its highest casualty rate of the entire war, but in the subsequent history of the Canadian military.¹

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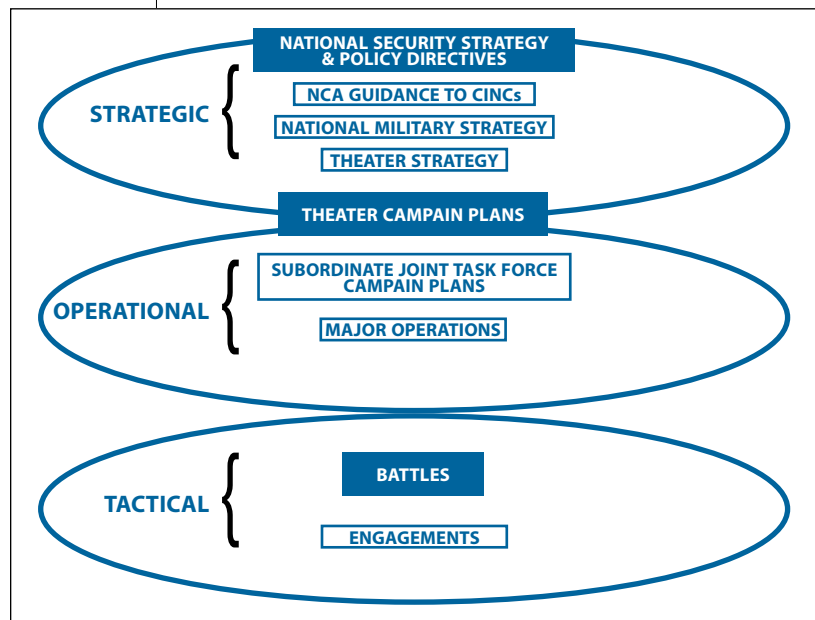
Directorate of History and Heritage

basic definitions of the levels of military aims are based upon the model created by the modern Canadian Department of National Defence (DND), but, similar to any model, it is relatively rudimentary, not without its flaws, and should rather be used as a tool in grasping the concepts.

Through analyzing the success of the offensive by placing these three levels in the context of 1918 and its immediate aftermath, the most pressing question is how can 'success' be defined or measured. More specifically, *who* is it that determines what constituted successes in the context of the Hundred Days? To answer these questions of success, and to ultimately assess the offensive, this article will adapt the DND's 'levels of war' model to include the measures of success established or implied by the key individuals of 1918 who occupied each of these three levels, including: Canadian Corps Commander Arthur Currie, Field-Marshal Douglas Haig, and Canadian Prime Minister Robert Borden. In this study, these measures of success, and what these individuals were trying to achieve in the offensive, will be 'fleshed out' and analyzed. Subsequently, a more accurate evaluation of whether or not Canada's Hundred Days can be considered a full success will surface. Ultimately, this article will argue that while on the tactical level, and to a lesser extent, the operational level, the offensive was successful, Canada's Hundred Days was by and large a strategic failure. Moreover, this adapted model can be applied to any modern Canadian military conflict, such as that conducted in Afghanistan or Libya, in an attempt to comprehensively analyze its success.

Traditionally, historians of Canada's involvement in the Hundred Days have erred on the side of presenting the offensive as a highly successful, albeit costly campaign for the Corps. These studies, which have highlighted the success of the Hundred Days, have most often assessed the offensive from the tactical level alone, or the individual battles from the perspective of the Canadian Corps. However, in comprehensively evaluating the success of Canada's Hundred Days, a three-tiered evaluation of success in the context of 1918 and its aftermath is essential. This is important because each level of war has its own measures of success, and military operations must therefore be analyzed for their successfulness based upon the parameters established at each of these unique levels. These three levels include the tactical, or the individual battles and engagements; the operational, or the theatre campaign plans and major operations; and finally the strategic, or the political direction of war, the national security and policy directives, and the national military strategy.² These three

tary conflict, such as that conducted in Afghanistan or Libya, in an attempt to comprehensively analyze its success.



US Army FM 9-6



Lieutenant-General Sir Arthur Currie and Field Marshal Sir Douglas Haig, February 1918.

Historiography

Much has been written about Canada's Hundred Days by many highly respected Canadian scholars. Historian Bill Rawling offers perhaps the most succinct summary of the traditional historiography of the Hundred Days, concluding that the battles of the offensive have tended to be looked upon favourably by historians, mainly because of the way they ended – with victory.³ Similarly, Denis Winter contends that the last hundred days of the Great War have always been presented as a “triumphal march towards an inevitable victory.”⁴ In one of the seminal volumes of Canadian military history, *The Military History of Canada*, Desmond Morton assessed the offensive as the triumph that the “generals had prayed for.”⁵ Terry Copp also emphasized the tactical successes and “spectacular gains” of the Canadian Corps in 1918, espousing the popular argument that the Hundred Days determined the final outcome of the war.⁶ The study which perhaps comes closest to addressing the three levels of war in Canada's Hundred Days is Shane Schreiber's *Shock Army of the British Empire*. He argues that Currie may have been thinking beyond the tactical level, and concludes that Currie and the Corps straddled the “... imaginary and amorphous boundary between the tactical and operational level of war.”⁷

However, the most recent historiography has noted that these victories during the Hundred Days were not always accompanied by flawless logistics and tactics. In *Shock Troops*, Tim Cook admits that while Canada's approach during the Hundred Days may have constituted the epitome of war fighting, many of the operations conducted during the campaign may have been “hurriedly and haphazardly planned.”⁸ In his expanded and even more recent study, *The Madman and the Butcher*, a comparative analysis of Sir Sam Hughes and Sir Arthur Currie, Cook effectively brings to light the sentiments of some of Currie's contemporaries who were critical of the offensive's casualties, and the purpose in engaging in combat from the second-to-last-day of the war.⁹

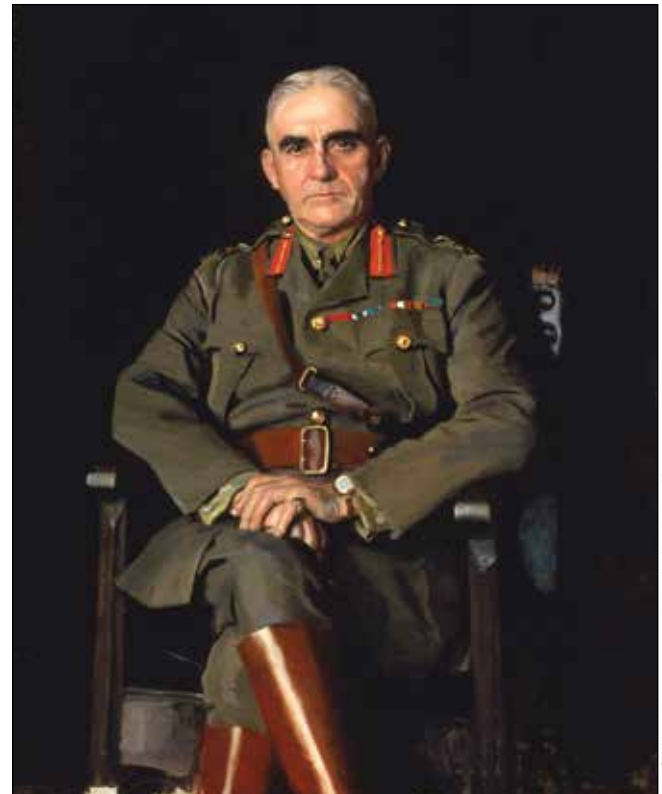
In connection with the misgivings of Cook, and in a divergence from the traditional Hundred Days historiographies, British historian Tim Travers, in *How the War was Won*, is critical of both the operational and strategic doctrines of Haig and the armies under the British Expeditionary Force during the offensive.¹⁰ None of these studies, however, have comprehensively analyzed the success of Canada's Hundred Days through each of the three levels of war, or through the measures of success established by the key individuals, Arthur Currie, Douglas Haig, and Robert Borden.

Arthur Currie – the Tactical Level

Although General Currie was always aiming to achieve battlefield victory, he gauged this success through various aspects – much more than the typical measures of ground, guns, and prisoners taken. In fact, the Canadian Corps never lost a battle in the final two years of the

Great War, and based upon that statistic alone, the Corps was successful at the tactical level. Currie would come to view the last months of 1918 as the most significant achievement of the Canadian nation and the British war effort.¹¹

However, by early-1918, the Canadian Corps was plagued by a state of administrative turmoil and uncertainty. The Canadian government wished to impose a 5th Canadian Division upon the Corps (under the command of the incompetent Garnet Hughes, son of Sir Sam Hughes), the BEF desired



Lieutenant-General Sir Sam Hughes.

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a reorganization of the corps both for “political effect”¹² and to mirror British organization, and the four established Canadian divisions were not fighting together on the front. British command also aimed to integrate American battalions into the depleted Corps, which Currie predicted would be a complete disaster, and would destroy its “strong feelings of *esprit de corps* and comradeship.”¹³ Currie, quite naturally, was opposed to any measure which was not “in the best interests of Canada’s fighting forces.”¹⁴

Ultimately, Currie, with the aid of the Overseas Ministry, which afforded him the autonomy and support to achieve his goals,¹⁵ prevailed against all of these proposed changes, and kept the Canadian Corps fighting together for the entire offensive, which kept both its proven formations and its *esprit de corps* intact. Currie insisted that there was a direct correlation between tactical efficiency and unit organization, and organizational changes could just as easily *impede* rather than *improve* battlefield success.¹⁶ Currie’s view is supported by Desmond Morton, who contends that because of the tactics and circumstances of 1918, Currie’s insistence upon maintaining the structure of the Corps probably made his formation much more powerful in the series of offensive battles which filled the last three months of the war.¹⁷ The Corps benefited greatly from Currie’s efforts to keep it together, fighting together, and working together, and he ensured that divisions and brigades learned from each others’ successes and failures.¹⁸



Canadian transport moves across makeshift bridges constructed in the dry bed of the Canal du Nord.

Currie was also able to keep the Corps relatively independent from British command, and he instilled a sense of a national Canadian identity within it, to the point where, regardless of whether or not its personnel were British-born, the war “turned them into Canadians.”¹⁹ Tim Cook rendered his verdict upon Currie’s decisions on organization as having been “clearly right” and important to achieving success ‘at the sharp end.’²⁰ Therefore, Currie’s measures of success, which included the maintenance of the formations, identity, and strength of the Canadian Corps, were all achieved.

The next measure of military success from Currie’s perspective was the maintenance and aggrandizement of reputations. Although he was consistently focused upon perfecting the fighting capabilities of the Corps in 1918, he was also “highly cognizant” of how he and his men would be remembered in the annals of history, preparing for both the war on the ground, and the ensuing war of reputations.²¹ In terms of espousing the success of the Canadian Corps, Currie believed that it was the pre-eminent fighting force on the Western Front and he would not shy away from promoting this belief to anyone who would listen.²² These proclamations from Currie only strengthened the increasingly held opinion on the Western Front that the Canadian Corps was one of the most professional, reliable, and hard-hitting formations in France; its victories spoke for themselves. They became to be perceived as the ‘shock troops’ of the British Empire, and were inevitably, regardless of fatigue and previous sacrifices rendered, called upon to spearhead the Hundred Days. Although Currie achieved the heightening of the reputation of the Corps, many soldiers lamented the role, willing to trade their reputation for a reprieve in the reserve.²³



CWM-19710261-0539 painting by Sir William Newenham Montague Orpen

Lieutenant-General Sir Arthur Currie.



Canadian infantry advance under fire towards the Drocourt-Quéant Line, a heavily fortified series of German trenches.

By as early as late-1918, Currie was smarting from his belief that the British press and General Headquarters (GHQ) had downplayed the success of the Corps in the Hundred Days, and that the US propaganda machine was promoting an exaggerated account of the American role in the offensive. He responded to these issues with the creation of the Canadian War Narrative Section (CWNS) in December 1918. This historical section was established to maintain a sense of Canadian control on how the Hundred Days would be documented in print and presented to the public.²⁴ Tim Cook argues that the report of the CWNS was not only an important step in recording and presenting the due credit of the Canadian Corps, but also in restoring Currie's damaged reputation, which had been battered by Sam Hughes and his supporters in Parliament, who were enthusiastically accusing Currie of wasting Canadian lives and dubbing him a 'butcher,' and by some of his own soldiers, many of whom bought into the representation of Currie as a "butcher."²⁵

This element of casualty rates relates to the *third*, and arguably the *most important* measure of success for Currie at the tactical level – limiting casualties on the field. Arguably, Currie's reputation as a butcher is unsubstantiated. His agony over casualty rates, his conscious attempts to minimize these numbers in battle, and the comparison of Canadian Corps casualty rates to the other formations on the Western Front indicate that Currie was as successful as possible in achieving his aims. Currie emotionally recorded that the most challenging element of his capacity was signing "the death warrant for a lot of splendid Canadian lives."²⁶ He was forced to accept the trade of the casualties for victory; it was the grim reality of war, and it was his role in it. This is perhaps best captured through his realistic statement: "You cannot meet and defeat in battle one-quarter of the German Army without suffering casualties."²⁷

Currie's application of lessons learned²⁸ from past offensives in an effort to abate casualties are quite clearly evident in the Corps' casualty rates compared to other forces on the Western Front during the Hundred Days. For instance, in comparison with the American Expeditionary Force (AEF) during the Hundred Days period, the inexperienced Americans suffered an average of 2170 casualties per German Division defeated, while the Canadians accrued 975 per division defeated; the Americans advanced 34 miles and captured 16,000 prisoners, while the Canadians advanced 86 miles and captured 31,537 prisoners.²⁹ Despite the fact that the AEF was six times the size of the Canadian Corps, Currie outstripped the AEF on every single tactical level. These numbers not only speak to the Canadian Corps' greater experience and effectiveness on the battlefield compared to the Americans, but also to Currie's efforts and consequent accomplishment to achieve great tactical

success while minimizing casualties.

What also characterised the Corps under Currie was a determination to use the maximum allotment of material in the hope that it would save lives and win objectives.³⁰ During the Hundred Days, Currie would refuse to engage without proper logistical support, as well as artillery support. At Cambrai, for instance, Currie insisted upon delaying combat until he had acquired adequate logistical support, undoubtedly sparing hundreds or thousands of Canadian lives.³¹ Bill Rawling, although sceptical that heavy artillery saved more lives, argues that by at least attempting heavy, strategic bombardments, Currie showed that he did not consider massive casualties to be a necessary price for victory.³² Shane Schreiber notes more forcefully that Currie ensured that during the offensive, the Corps "... paid the price of victory in shells, not in life."³³



French Prime Minister Georges Clemenceau (fourth from left) in discussion with Field Marshal Sir Douglas Haig (fourth from right).

In sum, Arthur Currie's determinants of success included the upholding of the strength, unity, and organization of the Canadian Corps, advocating and ensuring the reputations and honours bestowed upon the Corps, and limiting casualties through planning, learning from mistakes, and through the generous expenditure of war material. In each of these tactical aspects, Currie was successful.

Douglas Haig – the Operational Level

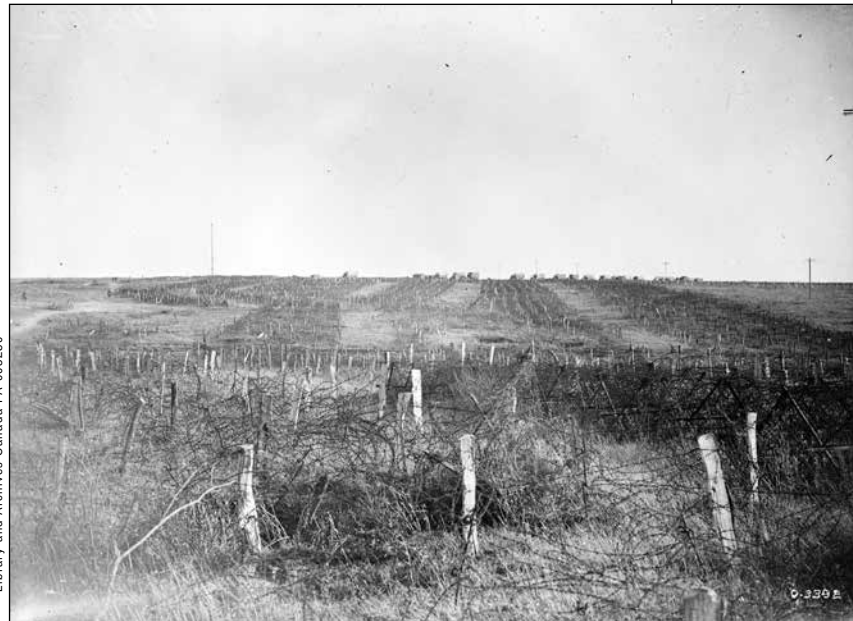
By August 1918, neither the French nor the Americans were ready to commit to a long campaign, due to exhaustion and inexperience respectively, and it fell upon the BEF and its 'colonial' soldiers to spearhead the offensive. Field-Marshal Douglas Haig's self-proclaimed albeit vague operational measure of success during the offensive was "... the defeat of the enemy by the combined Allied Armies [which] must always be regarded as the primary object..."³⁴ The Allied offensive was launched as a response to the German's Spring Offensive in March, and the Canadian and Australian Corps were meant to spearhead an assault by the Fourth Army with the objective of easing the pressure on the lateral line at Amiens. Historian Ian Brown has argued that Amiens was seen as a "complete operational success," ushering in for the first time mobility on the Western Front, where Haig was then able to successfully shift the axis of the BEF's thrust following the blow.³⁵ Furthermore, the deep penetration of the Hindenburg Line in September precipitated Haig's hoped for withdrawal of the enemy along the whole of the front, and all gains of the German Spring Offensive had effectively been reclaimed.³⁶ Therefore, based upon the terms of Haig's desired objectives at Amiens and the Hindenburg Line, and upon his overall objective in the Hundred Days, the first phases of the offensive were an operational success.

it is not certain that any defensive positions could have withstood them."³⁸ Prior to the offensive, however, the British General Staff proposed that the new munitions programs would not be ready until June 1919. This, however, was contrary to Haig's operational goal of an autumn 1918 victory and his material-heavy operational doctrine, and so, flush with success, he ignored the GHQ, stressed the need to continue, and ultimately forced the Germans to accept an armistice in lockstep with his desired timetable in November.³⁹ Haig was successful in putting an end to the war in 1918 and in refusing to stall for the new munitions programs. Although at times at great expense of life was required, Haig's operational objectives for the Hundred Days were achieved.

Where the operational level of the Hundred Days was arguably a failure, or at least flawed, was in managing and limiting casualty rates. Throughout the war, British command was often wasteful in attempting to achieve its objectives. This trend was continued into the beginning of the battle of Amiens, when, following the spectacular gains of the first day of combat, the hope of a significant breakthrough began rapidly to dissolve, and both Haig and Fourth Army Commander Henry Rawlinson refused to stop pressing forward. The second day at Amiens revealed confusion in the Allied command, which exacerbated the losses to the infantry, who were ordered forward with inadequate artillery and armoured support.⁴⁰ To continue operations under such conditions would only result in staggering casualties, but battle was sustained for another costly two days, followed by several days more of intermittent fighting. In fact, the combat at Amiens did not let up until Currie and the Australian Corps Commander, John Monash, appealed to Haig to stop before their respective corps were "pounded to pieces."⁴¹ Haig declared that his eventual stoppage at Amiens was because of his responsibility to his "gov-

ernment and fellow citizens in handling the British forces,"⁴² making it clear that he had at least begun to measure operational success with the management of casualties.

However, because of the Canadian Corps' role as the spearhead, a role which Haig had assigned to the Canadians, and despite the great efforts made to abate casualties by Arthur Currie, the heavy losses continued for the relatively small 100,000-strong Canadian force throughout the offensive.⁴³ The Allied command had not experienced breakthroughs and movements like this in the entire war, and thus elected to continue on with little preparation, less rest, and sometimes ignorance with respect to the human costs incurred 'at the sharp end.' These factors were the consequences of Haig's operational doctrine in the offensive, which held that "... if we allow the enemy a period of quiet, he will recover and the 'wearing out process'



Belts of barbed wire protecting the Hindenburg Line.

During the offensive, Haig and the BEF developed a new material-heavy operational offensive doctrine,³⁷ and in October 1918 alone, the British expended 2,000,000 artillery shells, carried out in such a "... coordinated and skilful manner that

must be [our strategy]" adding that "the enemy's troops must be suffering more than ours...feeling that this is the beginning of the end for them."⁴⁴ Clearly, Haig was committed to the operational goal of a 'short-term' defeat of Germany.



Canadian troops, viewed by German POWs, advancing towards Cambrai, September 1918.

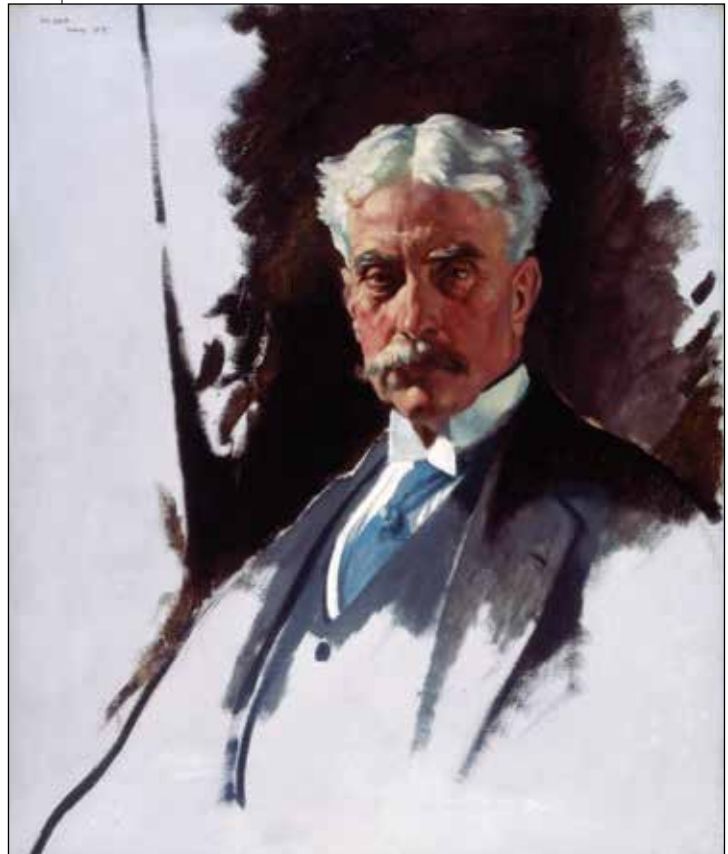
Given the surrender and collapse of Russia in 1917, coupled with the mutinous state of the French Army, there was arguably a significant lack of political desire among the Allies to continue the war past 1918. Furthermore, if Germany had been allowed time to recover, then their 'Class of 1920' would have added 450,000 new men by October (plus 70,000 'patched-up' wounded per month), and 100 German divisions would be made available following a simple shortening of their line to the Meuse. The War Office expected that, by virtue of a combination of these changes to German forces on the front, by spring 1919, the Germans would have over a million fresh troops ready for action.⁴⁵ There was also a lot of Allied intelligence reports which suggested that Germany still posed a formidable resistance and the capability for a counter-attack.⁴⁶ Haig thus assessed correctly that Germany had to be defeated as quickly as possible, or another period of attrition could possibly commence. In a certain sense, Haig was arguably saving lives in the long-term by bringing an end to the war in the short-term.

From Haig's perspective, Canadian casualties in the offensive were less of a political liability to him than British casualties. As Schreiber bluntly contends, Canadian casualties did not represent the same political threat to Haig's continued career as commander of the BEF, because Haig answered to British voters through David Lloyd-George, and not to Canadian voters through Robert Borden, and he concludes that "... in the stark terms of political capital, Canadian lives were, for Haig, cheaper than British lives."⁴⁷ However, the importance of the Canadian Corps to Haig is not to be understated. Haig was unofficially warned by the British War Cabinet that if he did not achieve success with manageable losses on the Hindenburg Line, his position as commander-in-chief would be in jeopardy.⁴⁸ The reality was that with each British casualty, domestic political pressure mounted in Britain for Haig's removal. Haig relied heavily upon the Canadian Corps in the final push for

victory, not simply because Canadian casualties were politically less 'costly' for him, but because the Corps was arguably the only combat formation on the Western Front capable of consistently delivering battlefield victory. Thus, although Haig used the Corps as the spearhead to achieve his operational objectives, often at great expense, he valued them as a resource "not to be squandered."⁴⁹

As a cursory notice, the Hundred Days was arguably proven to have been a success through the reality of the ultimate continuance of Haig's military career. Simply, the ultimate lack of action by Haig's superiors against him indicates that the operations in the final hundred days of the war (both by the measure of casualty rates and in battlefield victories) were being viewed by Haig's superiors as successful. Through these ends, both in preserving his military career while facing substantial warnings, and in the unleashing

of his shock troops to seize victory and ultimately end the war, Haig's command was a success. Ultimately, while at the operational level the Hundred Days was a *costly* and arguably an *unsustainable* affair in the longer-term, Haig and the BEF were able to achieve, and ultimately sustain, their operational objectives by bringing the war to an end in 1918 through relentless pursuit and material-heavy doctrine, by preventing the creation of another attritional stalemate, and by arguably saving lives in the long-term.



Sir Robert Borden, Prime Minister of Canada.

Robert Borden – the Strategic Level

Political historian John English has perhaps best captured the controversial legacy of Sir Robert Borden, telling us that: “[Borden was] author of disunity yet creator of independence, an expression of Canadian commitment but the deliverer of the young to the slaughter.”⁵⁰

First, where Borden can be credited as having been successful in the offensive was in his attempts to advocate for Canada’s place in international affairs, its role in the British Empire, and also, in fostering a sense of Canadian nationhood. Ultimately, through his efforts in advocating a place for Canada in the peace negotiations at Versailles and at the League of Nations, Borden ensured that Canada’s sacrifices during the Hundred Days would not go unnoticed or unrewarded in the postwar world. It was Canada’s great military contributions in the war, arguably the most significant of which occurred in the final hundred days (what David Lloyd George called “enormous sacrifices”⁵¹), which gave Borden the credence and justification in lobbying for Canada’s autonomy and more independent role in the postwar period. In this, Frederic Soward, a soldier in the Canadian Corps and eventual historian, wrote with conviction: “It was Canadian blood which purchased the title deeds to Canadian autonomy in foreign affairs.”⁵² With respect to Borden’s role, former Prime Minister Brian Mulroney wrote that Borden was the “father of Canadian sovereignty,”⁵³ and Desmond Morton and Jack Granatstein have even contended that the First World War, for Canada, was a successful war of independence.⁵⁴ By all these accounts, Borden was successful.

During the Great War, unlike Britain, Canada actually had nationally defined war aims. Borden established Canada’s these aims relatively early in the war, aims which were rooted in legal moralism and aimed to punish the German “military aristocracy.” By 1918, shortly before the Hundred Days Offensive, Borden had elevated his aims in the context of the other Allies, contending that Britain was “... disinterested in reaching a decision to its duty,” while Canada was ready to fight, “... [to] the last cause as we understand it, for every reasonable safeguard against German aggression and for peace of the world.”⁵⁵ In a very similar vein, during the summer of 1918, Borden resolutely proclaimed, “... the [war] must be settled now and Germany must learn her lesson once and for all.”⁵⁶ Although Germany was defeated in 1918, and to this end Borden succeeded, it would be the character of Borden’s war aims and policies that dictated the extremely high sacrifice which would be paid by the Canadians in Flanders.

Despite the fact that Borden believed the war could continue for another costly two years,⁵⁷ his position to “fight it out to the end,” regardless of the costs, never wavered. Simultaneously, Borden does not appear to have consulted with either Haig or Supreme Allied Commander Ferdinand Foch on their strategies for the offensive, which adhered to the “relentless pursuit” doctrine. In fact, Borden only learned of the offensive once the Canadian Corps was already engaged in combat at Amiens.⁵⁸ Borden would therefore base the national strategies of war on his incorrect assumptions on the remaining duration and commitment to the war. Robert Craig Brown,

perhaps the most detailed biographer of Borden, has suggested that Borden was perhaps “too earnest” and “too committed” to winning the war to see, as other Allied leaders had, the long-term consequences for Canada in the total defeat of Germany.⁵⁹

In early September 1918, in one of his speeches, Borden stated: “The duty of a Prime Minister is to centre his effort upon that which chiefly concerns the welfare of his country.”⁶⁰ Therefore, it is clear that the *accountability to and responsibility for* Canadian lives overseas was one of Borden’s primary concerns. However, despite Borden’s warning to Lloyd George not to repeat the costs of Passchendaele,⁶¹ Canadian casualty rates only worsened during the Hundred Days, and yet Borden never exerted any serious political pressure upon either the Overseas Ministry or the commanders on the front to curtail these numbers (unlike the British War Cabinet’s warnings to Haig).



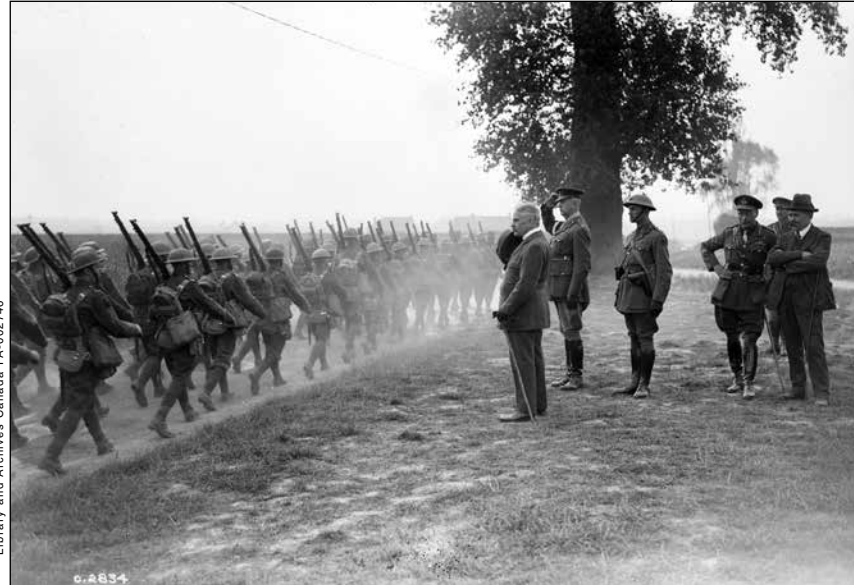
Canadians advancing through the rubble of Cambrai, October 1918.

Furthermore, the total size of the Canadian force, and also the method by which it was kept up to strength, was ultimately the responsibility of Borden and his colleagues; Borden continued to order enlistments and conscripts to the front in 1918 regardless of the weight of the casualties.⁶² Contextually, although conscription had been introduced approximately a year before the Hundred Days began, all those conscripted did not reach the front until at least when the offensive had begun, and thus, all the ‘conscript casualties’ occurred entirely during the offensive. Borden’s conscription policy, as argued by Jack Granatstein, was instrumental in supplying men to the ‘sharp end’ during the Hundred Days, and in allowing the Corps to function with great effectiveness and efficiency.⁶³ Indeed, in this way, conscription was tactically and operationally a suc-

cess. However, the more men were forced into service, the more they were placed in harm's way, and the more the national war efforts became divided, particularly between French and English Canada. Even outside French Canada, as the casualties mounted during the conscription period of the war, the previously marginalized pacifist and anti-war movements in Canada began to find wider acceptance and substantial growth in the number of participants.⁶⁴

Conservatives.⁶⁸ The cyclical ebb and flow of party politics is almost inevitable, but the fortunes of the Conservative party were invariably afflicted by the repercussions of their wartime decisions in the immediate postwar period. Several historians have suggested that the historic defeat in the 1921 election can be attributed, not only to the divisive conscription crisis, but also to the huge losses (monetarily and in casualties) sustained in the final months of war; losses which were still fresh in the Canadian consciousness, and a factor in the nation's slumping economy in 1921.⁶⁹ Thus, in terms of preserving the strength of the Conservative Party and promoting a re-election for his successor, Borden failed in these aims.

Ultimately, the strategic level of Canada's Hundred Days was not a complete failure. Robert Borden successfully advocated a more independent place for Canada in the world, and a more substantial role in its foreign affairs. He accomplished his goal of the defeat of Germany through victory in the First World War, and he was able to supply and support the Canadian Corps with fresh recruits during its most dire hour. However, his aggressive and overly-committed war policies led to a massive increase in Canadian casualties during the Hundred Days, and these casualties were met with no strategic effort or pressure to curtail them – unlike the efforts of Currie, and, to a lesser extent, Haig. Although conscription was tactically and operationally advantageous, conscription increased the likelihood of casualties and contributed to the shattering of national unity, and it hardened anti-war movements both inside and outside Quebec. Finally, the Conservative Party was virtually decimated in the immediate postwar period. By these standards, from Borden's perspective, the strategic level of Canada's Hundred Days, was largely a failure.



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Sir Robert Borden and Sir Arthur Currie take the salute at an end-of-war parade.

If the blame for casualty rates rests somewhere, the burden rests largely at the highest level of policy – policy which was ultimately responsible for how many individuals would be sent overseas. In sum, although the nature of the tactical and operational doctrines during the Hundred Days may have engendered higher casualties, Currie, and, to a lesser extent Haig, had at least exerted efforts to reduce those casualties, while Borden, despite his concerns over the enormous amount of Canadian losses and his accountability to the welfare of the Canadian people, did not impose enough pressure or use any leverage to try and abate them.

pressure to curtail them – unlike the efforts of Currie, and, to a lesser extent, Haig. Although conscription was tactically and operationally advantageous, conscription increased the likelihood of casualties and contributed to the shattering of national unity, and it hardened anti-war movements both inside and outside Quebec. Finally, the Conservative Party was virtually decimated in the immediate postwar period. By these standards, from Borden's perspective, the strategic level of Canada's Hundred Days, was largely a failure.

Finally, the most rudimentary measure of success for a Prime Minister, and something that one is consistently attempting to achieve, is election or re-election. Robert Craig Brown has noted that by 1917, Borden was anxious to avoid any action which would excite party controversy.⁶⁵ Borden's loyalty to his party was also explicitly evident during the offensive itself, where he recalled several political concerns in his memoirs which consumed his mind during the period.⁶⁶ Although Borden retired from politics in 1920, because of "overstrain and illness,"⁶⁷ the Canadian federal election of 1921, (the first following the Great War), was ultimately a disaster for the



CWM 19710261-0813; Beaverbrook Collection of War Art. © Canadian War Museum

The Return to Mons, by Inglis Sheldon Williams



CWM 19710261-0085

Canadians Passing in Front of the Arc de Triomphe, Paris, during the great victory parade. Painting by Lieutenant Alfred Bastien.

Conclusions

While Canada experienced a virtual ‘baptism by fire’ during the Great War, and subsequently earned a much more autonomous and independent place in the postwar world, the sacrifices made by the young nation were steep – none steeper than in the final three months of the war. The Hundred Days Offensive ultimately resulted in the successful conclusion of the war, and the Canadian Corps, as the spearhead, was arguably the largest single contributor to the successes of the offensive. Success in war, however, according to the standards of the military and of politics, must be gauged through three levels: tactical, operational, and strategic. Battles and campaigns are rarely completely successful, and while many military engagements may find success at one or more of the three levels of war, they may also simultaneously fail in others.

Significantly, however, the methodology of the three levels is imperfect, and amongst the three, there is a reasonable amount of blurring and appropriation of issues and interests of the same concern, and also a degree of imprecision in neatly categorizing each level within its own boundaries. Historian Richard Swain has

even noted that the labels of “strategic, operational and tactical levels in war are merely artificial intellectual constructs created by academics to fashion neat boundaries that actual practitioners of war cannot be concerned with and may not perceive.”⁷⁰ However, the methodology of using levels, despite its shortcomings, serves as an apt tool in comprehensively assessing the success or failure of war.

Analyzing the comprehensive success of Canadian Forces operations has only become increasingly relevant in the 21st Century, particularly with consideration to the recently completed missions in Afghanistan and in Libya. In fact, in November 2011, Prime Minister Stephen Harper declared that the Canadian military mission in Libya was a “great military success.”⁷¹ The

major question which remains after the Prime Minister’s comments is: what is the definition of and the criterion for a “great military success?” Applying the “levels of war” model used in this article to modern Canadian conflicts would require a simple interchange of the relevant key individuals of the era and the measures of success established by these individuals.



DND photo by Sergeant Ronald Duchesne.

Lieutenant-General (ret'd) Charlie Bouchard with Governor General David Johnston after General Bouchard was appointed an Officer of the Order of Canada, 28 September 2012.

In the case of the 2011 Canadian military intervention in Libya, for instance, the measures of success established by individuals such as Prime Minister Stephen Harper, NATO Secretary General Anders Rasmussen, and Lieutenant-General Charles Bouchard would aptly fit the assessment of this conflict. With these facts in mind, and with consideration to the difficulty in defining the term “great military success,” this model is perhaps a useful method for clarifying the term and in ultimately gauging the success or failure of any given modern military endeavour.

Ultimately, in terms of the conclusive offensive of the First World War from the perspective of the Canadian Corps, reviewing the measures of success, aims, and objectives established by Arthur Currie, Douglas Haig, and Robert Borden, at each of the three levels, reveals that while on the *tactical*, and,

to a lesser extent, the *operational* level, Canada’s Hundred Days was successful. However, it was largely, but not completely, a *strategic* failure. By analyzing contemporaneous Canadian conflicts with the same model applied here to the Hundred Days, with consideration to key individuals at each level, a much fuller and accurate evaluation of whether or not success has been achieved may surface.

I would also like to offer an acknowledgement to RMC/Queen’s scholar and professor Allan English, who has given me great support and guidance during the process of writing this article.

Ryan Goldsworthy



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“FIGHT OR FARM”: CANADIAN FARMERS AND THE DILEMMA OF THE WAR EFFORT IN WORLD WAR I (1914-1918)

by Mourad Djebabla

Introduction

When Britain declared war on Germany on 4 August 1914, patriotic feeling ran high in Canadian cities, but rural Canada was less demonstrative. In the summer of 1914, farmers were busy with their harvests. But they were no less concerned with the conflict: it was their fields that would supply the soldiers overseas with food.

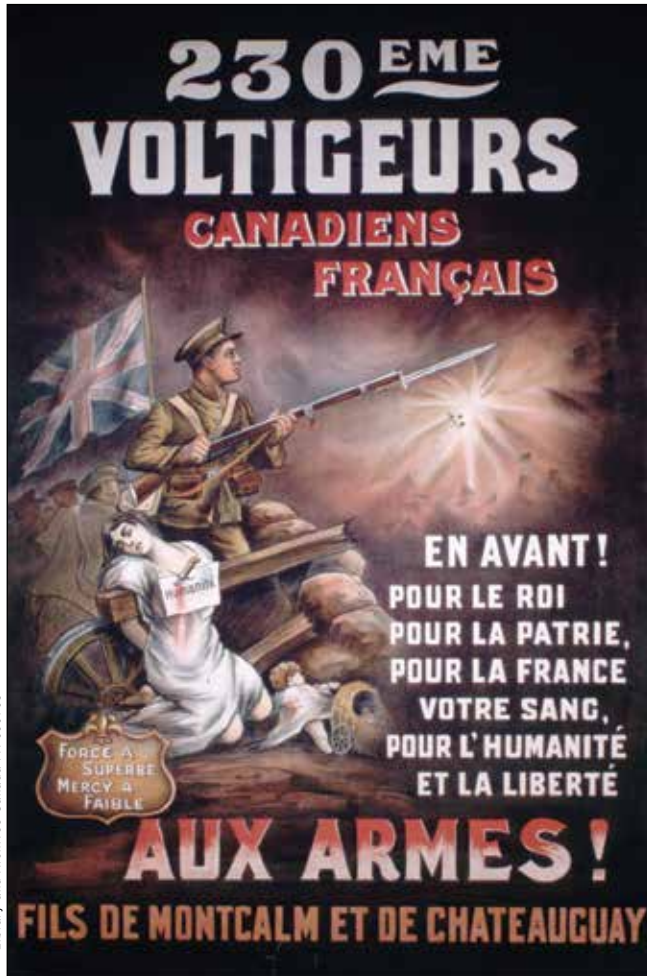
Canada was a dominion of the British Empire, and its colonial status meant that it was automatically involved in Britain's conflict. Canada became an active participant in the imperial war effort, working not only to meet Britain's military needs, but also to provide economic and food support. Before 1914, Canada was already an exporter of food to the British market.¹ Indeed, agriculture was the primary link between the Dominion and its mother country in peacetime.

The 'gifts' that Canada and each of its provinces made to Britain at the beginning of the war illustrate this: for example, one million sacks of flour were sent by the federal government, and another 500,000 sacks by Ontario, while Quebec contributed four million pounds of cheese.²

As the Allies' hopes for a short war faded after September 1914, the agricultural sector was mobilized, along with the rest of the economy.³ Britain had to exploit the resources of its

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colonies and dominions for its own benefit. Because of its geographical location, Canada, as well as the rest of North America, assumed a leading role in the effort to supply Britain, which was under pressure at the time from German submarine warfare. Given the situation, the Canadian government's policies of higher-than-usual food production from 1915 to 1918 encouraged farmers to continue to supply the domestic market, while also producing more goods to meet the demand from overseas.



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The British authorities wanted Canada to send both soldiers and food, and newspapers in rural Canada echoed the message that it was farmers' duty to produce bigger crops so that Canada would be able to meet Britain's needs. In October 1914, the newspaper *L'Éclaireur*, from the Beauce agricultural region south of Québec City, reprinted an excerpt from the Westminster Gazette in which the authorities in London made their expectations clear: "We are proud of the troops Canada is sending us, but we also expect wheat, which next year will be even more necessary for our national security [translation]."⁴ But from a rural point of view, the farmers' relationship to the war effort was not so simple. The problem was that it was difficult to know which duty was more pressing: stay in Canada and work the land to produce food, or, as recruiters were urging Canadian men to do, join the Canadian Expeditionary Force and fight in Europe?

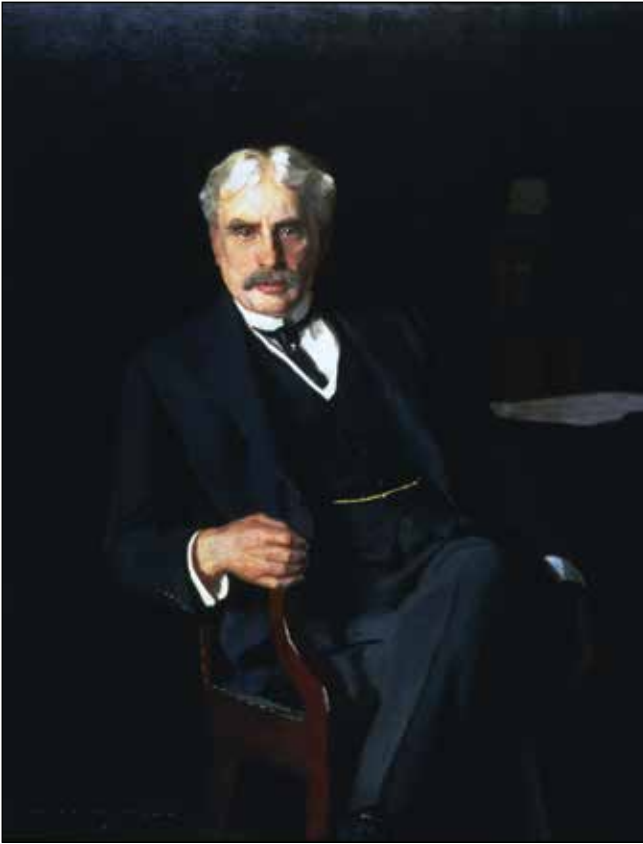
“Regional and cultural differences aside, Canadian farmers on the whole were not disposed to enlist...”



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Discussion

From the beginning of the war in August 1914, the rural newspapers had been saying that farmers had the specific duty to support and nourish the soldiers. This contrasted with the urban press, which called for everyone to mobilize to support the Empire at the front.⁵ But people in farming communities, which had been losing residents through migration to the cities since the late-19th Century, took a dim view of the idea of serving at the front. On 13 August 1914, in response to a rumour circulating in the Beauce region that all the men would be sent off to the war, *L'Éclaireur* reassured its readers, saying that recruitment in Canada would be on a voluntary basis, and that the farmers' duty was to work the land.⁶ The federal Minister of Agriculture reassured farmers with his first Canada-wide food production campaign, "Patriotism and Production," in 1915. The campaign urged farmers to increase wheat production in Canada at any price to feed Britain, making them indispensable in the fields. But not everyone accepted that definition of the role of Canada's farmers—especially the military authorities, who had to (also at any price) find men to fill their battalions. Throughout the war, despite the federal Minister of Agriculture's annual food production policies, military recruiters were covering the length and breadth of the Canadian countryside. That pressure intensified as the federal government kept increas-



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Sir Robert Borden, 1918. Painting by Harrington Mann.

ing the numbers of fighting men it sought to recruit for the Canadian Expeditionary Force. After the first 30,000 volunteers in the summer of 1914, Prime Minister Robert Borden set further objectives on 29 October 1915 (250,000 men), and in January 1916, 500,000 men.⁷ Given the difficulty officers were having in filling their ranks from urban centres alone, more pressure was exerted on rural communities from 1915 onward.

Regional and cultural differences aside, Canadian farmers on the whole were not disposed to enlist: In 1916, they made up only 8.5 percent of volunteers.⁸ In total, from 1914 to 1918, out of the 600,000 men that constituted the Canadian Expeditionary Force, only 100,000 were farmers.⁹ The Montreal newspaper *La Presse* published a brochure, “Nos volontaires sous les armes” [Our volunteers in arms], that responded to accusations made by the urban Ontario press that Quebec was not doing its duty. *La Presse* pointed out that, unlike the Ontario population, the French-Canadian population in Quebec was mostly made up of farmers. But, like the farmers in Ontario or Saskatchewan, those in Quebec preferred to continue working the land and profit from the war while doing their ‘duty.’¹⁰

If a farmer enlisted, there would be serious consequences with respect to the

operation of his farm. On the other hand, city dwellers could easily be replaced at the factory or the store, often by women. If a young farmer wanted to enlist, he had to rent out his farm or entrust it to the care of a neighbour. That could have repercussions, as was revealed in a letter written by a Saskatchewan soldier who returned home from the front in the summer of 1918:

This place has been uncultivated since 1914; on joining the Army, August 1914, I obtained a promise from a neighbour to rent it during my absence, on the usual terms. He, however, failed to do so, without notifying me, then overseas, of this failure on his part; and on my return I find the place very considerably grown up with weeds.¹¹

There were also expenses involved in running a farm, and the farmers had to produce crops in order to pay their bills. To do that, they needed to stay at home. In the first Contingent of the Canadian Expeditionary Force in 1914, those who enlisted in large numbers were unemployed men from the cities, for whom going to war was a way to escape their situation, and British immigrants, who still felt a close connection with their mother country.¹²

Even with the federal “Patriotism and Production” campaign in full swing, the harvests of 1915 did not stop recruiters from visiting the countryside, as described in an article in the *Saskatoon Phoenix* about the raising of the 65th Battalion. The officer acknowledged the difficulty of recruiting at that time of year when everyone was working in the fields—half his battalion was on leave for the harvest¹³—but recruiting had to continue.¹⁴ Even *The Globe*, writing about the 1915 harvest in Ontario, recognized the negative effect that recruitment could have, given the labour shortage it caused.¹⁵



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British Prime Minister David Lloyd George and Canada's Minister of Militia Sam Hughes addressing Canadian troops,

Recruiting officers, who were focused upon filling the battalions, complained that farmers were not interested in supporting Canada's army. An officer in Simcoe County, Ontario, reported that he "... was surprised when at home the other day to learn that recruiting had practically come to an end in Barrie, and that no young men were offering for active service. (...) Are the young men afraid of hardship or of being shot? (...) Wake up boys!"¹⁶ The situation was the same in rural Saskatchewan, where recruiters were trying to find men for the 53rd Battalion.¹⁷ In the autumn of 1915, the Minister of Militia announced that from then on recruitment in rural areas would be carried out locally, not by the units trying to fill positions. That decision gave rise to the "rural battalions."¹⁸ Recruiting officers travelled through the Quebec and Ontario countryside by train in order to reach even the most remote farms.¹⁹ Among the rural units raised were the 178th Battalion, recruited in Quebec's Eastern Townships, and the 153rd Battalion, most of whose members were recruited in Guelph, Ontario, in 1916.²⁰ However, local recruiting did not produce the desired results, so on 15 August 1916, the federal government appointed recruiting directors in each military district. The intent was to put a better structure in place for recruitment, given the steady decline in the number of volunteers,²¹ from 32,705 in March 1916, to just 8675 in July of that year.²² In addition, from 1916 onward, pressure from patriotic associations intensified. But as the government continued to

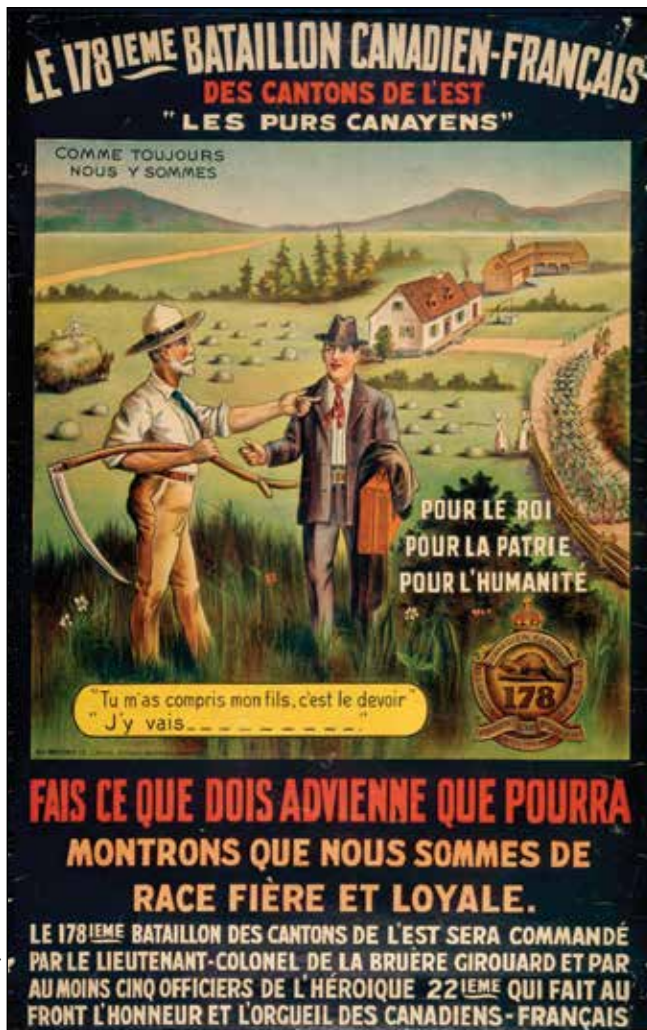
increase its recruiting targets for the Canadian Expeditionary Force, voices were raised in the financial sector, notably that of the president of Canadian Pacific, Lord Shaughnessy, who urged that the available agricultural workers be kept in Canada.²³ According to *The Globe*, the impact of recruitment upon the farm labour supply began to be felt in 1916. In rural areas, each new recruit meant one less person to help with the harvests, and that affected the quantity and quality of the crops produced.²⁴

The farmers' associations were pressuring the federal government to take that problem into consideration in its recruiting policy in order to ensure the success of the food production campaigns. For example, in February 1916, at the end of their second annual convention in Toronto, the United Farmers of Ontario passed a resolution, which they then published in rural Ontario newspapers. It emphasized the importance of farmers remaining in their fields to support the British war effort, and pointed out that recruitment was undermining that support.²⁵ In the West, at the annual convention of the Saskatchewan Grain Growers' Association in February 1916, association president J.H. Maharg gave a speech stating that the Empire needed food, and that it was the farmers' duty to produce it. Therefore, their place was in the fields. Maharg did not question the need for recruitment but, like the Ontario farmers,²⁶ he urged that sources of recruitment other than the rural population be found, in particular by mobilizing workers from industries that were deemed non-essential.²⁷

In July 1915, the Beauce newspaper *L'Éclairer* asserted that Canada had sent enough men to fight overseas, and that it was time to concentrate on supporting the war effort from Canada, with the same importance being placed upon agricultural production as upon munitions.²⁸ The paper's position was very similar to that of the English-Canadian farmers, and it echoed that of the French-Canadian nationalists, especially Henri Bourassa. Bourassa believed that, rather than draining itself of its life blood, Quebec could make an ample contribution to the war effort through its industries and agriculture. As early as September 1914, he warned the Canadian government of the dangers of sending farm labourers overseas.²⁹ In December 1914, Bourassa created controversy when he expressed that point of view in a speech in Toronto. At a time when that city's attention was focused upon recruitment, he argued that food production should take priority. His North American view of the contribution to the war in Europe was consistent with that of the farmers:

[O]n 17 December 1914, in the midst of an unrelenting uproar that lasted for an hour, Mr Bourassa read these words: "Just a few weeks ago, one of the most prominent newspapers in London, the Westminster Gazette, was obliged to remind us that we can better serve the mother country and the Empire by producing wheat than by raising soldiers," and a group of soldiers brandishing the Union Jack rushed the platform, forcibly interrupting the meeting.³⁰ [translation]

That approach was not well received in 1914, but it became unavoidable as the war continued. In Canada, as long as the agricultural war effort and efforts to recruit new units were car-



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Henri Bourassa in July 1917.

ried out simultaneously, there was an inconsistency. How could the federal government allow both campaigns to be pursued at the same time without establishing which should take priority? The problem would intensify and later culminate in the conscription crisis. Some farmers simply did not understand the positions taken by their federal and provincial governments, which were asking them to increase their production while simultaneously exhorting them to enlist.

The farmers justified their position with regard to recruiting by pointing to the federal government's policies, which instructed them to increase food production to support the Empire. They argued that those who stayed in Canada had a specific duty to fulfil in order to support the war effort. Indeed, the farmers could point to government publications from 1915–1916—especially the *Agricultural War Book* produced by the Ministry of Agriculture, which set objectives for them to reach—as support for their decision to stay in Canada. After all, the federal agricultural production campaigns depicted food as a weapon to be used in defeating the enemy. In Saskatchewan, during the 1916 federal food production campaign, “Production and Thrift,” the *Saskatoon Phoenix* related an incident in which farmers flatly refused to enlist, citing the Minister of Agriculture’s expectations of them.³¹

In the cities, that attitude was interpreted as proof that farmers were putting their own personal interests first while others were making sacrifices.³² R. Matthew Bray notes that in Ontario, the urban centres, which were the primary source of recruits, expected rural areas to do their fair share.³³ *The Globe* was a very early critic of the farmers’ reluctance to join the army.³⁴ In an article that appeared on 22 January 1915, the paper even called upon rural men to show more patriotism toward the Empire by donning a uniform: “Is rural Ontario losing its Imperial spirit? (...) Will the rural regiments allow the city regiments to put them to shame?”³⁵ Viewed from the cities, the apparent quiet of the countryside made it seem a world apart, disconnected from the fighting overseas. City dwellers may have resented what appeared to be farmers’ lesser involvement with the Canadian Expeditionary Force. The two perspectives were very different because people in the cities, who were being subjected to pressure from recruiters every day,³⁶ did not (or did not want to) understand the importance of food production, which was constantly being hammered home in the rural newspapers.

Rural people did not appreciate such accusations. On 22 August 1916, the *Canadian Military Gazette* published a letter from a farmer’s wife. She took issue with an article which had created the impression that farmers were disinclined to enlist because they preferred to profit from the war. In her opinion, accusing farmers of being profiteers belittled the genuine patriotism shown by farmers in the war effort, women’s work in the fields to compensate for the labour shortage, and the ‘vital’ needs of Great Britain, for which it was the farmers’ duty to meet.³⁷ Rural Ontarians may have been less demonstrative in their patriotism, but they were no less loyal to the Empire. From the rural point of view, the duty of farmers was to produce food, and that of the cities was to provide men to send to the front.³⁸ The mutual incomprehension between the farmers and the military authorities became even more pronounced when conscription became an issue.



Sir Sam Hughes, Minister of Militia in the Borden government, 1911-1916.

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The history of conscription in Canada has been depicted largely in terms of ethnic conflict, with an emphasis upon the opposition to the measure by French Canadians in Quebec. But it has also been characterized in terms of the position taken by rural Canada.³⁹ The Canadian government imposed conscription in response to international political events and the military situation on the Western Front. In 1917, the Allies were hard pressed, what with intense submarine warfare, the fall of the Eastern Front with Russia's surrender, the bloody defeat of the French-British offensive in the spring of 1917, heavy Canadian losses suffered during the taking of Vimy Ridge, and the Germans' determination to push through the Western Front before the massive arrival of American soldiers, which was expected after the United States entered the war in April.



French Canadian officers of the first French Canadian battalion to be formed under conscription, nearly all of whom went to the 22nd Battalion, the 'Vandoos.'

Meanwhile, the number of new Canadian recruits had been declining since as far back as 1915, and it was no longer sufficient to replace the soldiers being lost at the front. For example, in April 1917, after the Battle of Vimy Ridge, in spite of the loss of an estimated 13,477 men [fatal and non-fatal casualties ~ Ed.], there were only 5530 new volunteers.⁴⁰ In 1917, the Canadian Expeditionary Force suffered the loss of an estimated 129,890 men, but only 64,139 new soldiers were recruited.⁴¹

and English Canadians, made the debates on the issue more complex than Borden could have imagined.⁴³ The farmers believed that conscription would aggravate the problem caused by the pressure recruiting officers were putting on rural areas by depriving the countryside of the strong men needed for farm labour. Those concerns were expressed in the House of Commons by the farmers' representatives during the period of debates on the bill. On the second reading, Liberal Opposition Leader Wilfrid Laurier, who had strong support in the Prairies at the time, moved that a referendum be held, as had been done in Australia, but his motion was defeated. The Act was passed on third reading on 24 July 1917, and it came into effect on 29 August 1917.⁴⁴



Soldiers advancing across No-Man's-Land.

On 18 May 1917, four days after his return from the Imperial War Conference" in London, Robert Borden announced to Parliament that he intended to impose conscription to support the Canadian troops.⁴² The conscription bill was introduced on 11 June, and it gave rise to a long period of debate. Rural Canada's opposition to conscription, which went beyond a mere cultural opposition between French Canadians

The *Ottawa Citizen* accused the federal government of ignoring the need to conserve strength in Canada, if it was useful for industry or agriculture.⁴⁵ On the other hand, the urban press, which was close to the government, recognized the importance of conscription in view of the military situation, and it expressed confidence in the government's ability to distinguish between people who would be useful at home, and those who would be useful at the front.⁴⁶ The fiercest opponents of conscription were farmers and industrial workers, the groups that were reluctant to enlist. The issue had provoked demonstrations, often violent ones, by industrial labourers in urban and industrial centres, especially in Quebec and Ontario.⁴⁷ Farmers' resistance was generally less visible and less spectacular, but the rural newspapers expressed the same concerns. In farming communities, the main argument put forward against conscription was that it would interfere with farmers' ability to plant, cultivate and harvest their crops. To justify their opposition to conscription, the farmers maintained that it was not only in their own interest, but also consistent with the national and

supranational interest, for them to stay home and feed the troops of Great Britain and its allies. In response to those concerns, it was decided that the law would not go into effect in farming communities until mid-October, so that the farmers could finish harvesting their crops from the summer of 1917. Thus, the major impact of the legislation would be on the planting and harvests of 1918.

In order to show that it was not disregarding the importance of food production, the Canadian government, rather than exempt all farmers from conscription, decided that individual cases would be reviewed by exemption tribunals. Only the tribunals would decide on an exemption, based upon whether or not the farmer in question was recognized as being essential for carrying out the work on his land.⁴⁸ In 1917, 1387 local exemption tribunals were established. Each had two members: one designated by a Parliamentary selection committee, and the other by a judge from the county or district. Their decisions could be appealed to one of 195 appellate tribunals, which consisted of a judge appointed by the province's Chief Justice. Appellate tribunal decisions could be appealed one last time to the Central Appeal Tribunal, whose decision was final.⁴⁹



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Monseigneur Paul Bruchési, Archbishop of Montréal.

The local exemption tribunals had to make their decisions based upon the conditions in their jurisdiction. They could decide to keep an individual in Canada if he was deemed

“The local exemption tribunals had to make their decisions based upon the conditions in their jurisdiction.”

indispensable to the local economy, and, by extension, the national economy.⁵⁰ Not only farmers, but also industrial and commercial workers could apply for exemptions.⁵¹ According to the federal authorities, in February 1918, the majority of exemptions were granted to farmers, while the majority of the appeals were from individuals who claimed that they could help with food production.⁵² According to the official figures, in 1918, out of the total of 161,981 farmers who applied for exemptions, only 20,449 were refused.⁵³ In 1917, out of a total of 404,395 men eligible for conscription under the Military Service Act, 380,510 requested exemptions, leaving only 24,000 conscripts available.⁵⁴ In all, by the end of 1917, 380,510 requests for exemptions had been made and 278,779 had been granted by the tribunals.⁵⁵

However, some of the tribunals' decisions were called into question. On the Prairies, farmers complained that some tribunals were refusing exemptions, even though the conscripts could not be spared from their farms.⁵⁶ Moreover, John Herd Thompson noted that English Canadians on the Prairies were irritated by the inflexibility of the tribunals' process for granting or refusing exemptions. It seemed to Westerners that the tribunals were not as harsh in French-Canadian districts, or in Quebec.⁵⁷

Farmers who did not obtain an exemption had to leave everything behind. On 6 January 1918, Saskatchewan's Minister of Agriculture wrote to the Minister of Militia to tell him that in his province, enforcement of the Military Service Act meant that many young farmers who were conscripted had to auction off their equipment and livestock. Taking an alarmist tone in order to emphasize the harmful effects of conscription on food production, the Minister of Agriculture warned that many fields would not be cultivated. However, the Minister of Militia merely replied that it was up to the exemption tribunals to judge each case.⁵⁸

On 13 October 1917, once the harvest was in, despite the disruption caused by the process of submitting applications to the exemption tribunals, the Class 1 conscripts (childless single men and widowers aged 20 to 34) were ordered to report to the military authorities no later than 10 November. The Minister of Militia asked for 25,000 conscripts initially, then another 10,000 per month.⁵⁹ It was not until 3 January 1918, after the federal election of 17 December 1917, that the first 20,000 conscripts were ordered to report to the armouries. Some refused to report, forcing the federal government to track them down.

The farmers were becoming more and more discontented about not receiving a mass exemption. They had had great expectations of the tribunals, believing that they would recognize the role played by farmers in the war effort. Faced with these growing recriminations and the threat of lower production in 1918, as well as the federal election of December 1917, and the Allies' increasing difficulty in ensuring their food supply, the Canadian government had to take a position. On 12 October 1917, Robert Borden formed a Union govern-



Two Vandoos in the trenches, July 1916.

ment to emphasize the unity of the parties and the country in the pursuit of the war, particularly with respect to conscription. During the federal election campaign of November–December 1917, the federal government softened its position with regard to farmers. The federal Minister of Agriculture assured them that the government had no intention of taking men who had skills required for agricultural work out of the fields,⁶⁰ and on 24 November, General Mewburn, Minister of Militia, made a promise that calmed farmers. In a speech to rural voters in Dundas, Ontario, he announced that an exemption would be granted to all farmers' sons and experienced farm labourers so that they would be available for planting and harvest in 1918. He also promised to review any judgements refusing these people exemptions.⁶¹

In rural areas, his announcement was dubbed “the Mewburn promise.” From that moment on, the chairman of the Military Service Council instructed the exemption tribunals to take agricultural workers' situation into consideration.⁶² On 2 December 1917, the promise became law in the form of a decree that granted exemptions to young farmers and agricultural labourers.⁶³ The federal Minister of Agriculture dispatched representatives from his ministry into rural ridings to help agricultural workers file appeals and obtain exemptions.⁶⁴ For example, a young Ontario farmer, W.H. Rowntree, obtained his exemption from the appellate tribunal on 8 December 1917. That judgement became a precedent: it recognized that Rowntree had to stay on the farm

because he was the only person available to help his elderly father and younger brother cultivate 150 acres near Weston.⁶⁵ The judgment, delivered by Lyman P. Duff, a justice of the Supreme Court, was published in newspapers across Canada⁶⁶ under the authority of the Office of the Director of Public Information, the official Canadian propaganda organization set up in 1917. The publication of that judgment during the federal election was a communication strategy designed to show the Union government's concern for the farmers. It was a way of calming their discontent so that the rural vote would not go to Wilfrid Laurier's Liberals, who were campaigning against conscription. The Quebec vote may have been a lost cause for the Union government, but it had to make sure it won the rural English-Canadian vote, especially in Ontario and the Prairies, which generally supported the Liberals.

Exemptions enabled farmers to plan more calmly for the planting and harvest of 1918, knowing that their sons and hired men would be there to work side-by-side with them. In Ontario, the exemptions granted encouraged the farmers to increase their seeded acreage in the spring of 1918 to meet Britain's needs.⁶⁷ And in Quebec in February 1918, Le Saint-Laurent referred to the exemptions when urging farmers to produce more.⁶⁸ Unfortunately, military developments in 1918 that were unfavourable for the Allies, beginning with the Germans' Spring Offensive, changed the situation drastically.

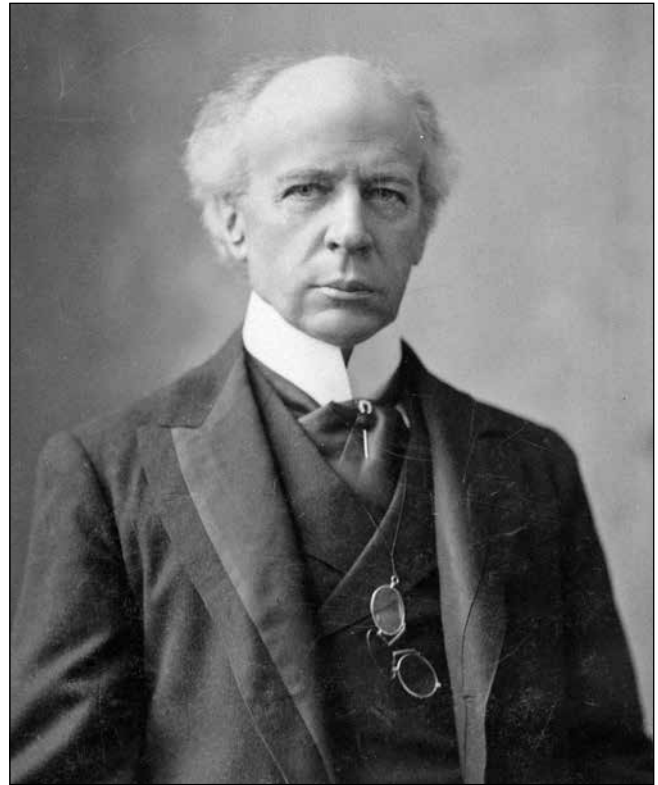


Anti-conscription parade in Victoria Square, Montréal, Quebec.

On 21 March 1918, the Germans broke through the French–British lines. In Europe, Canada’s Minister of Overseas Military Forces, A.E. Kemp, was worried about the dwindling numbers of reinforcements coming from Canada. On 27 March 1918, he sent the Minister of Militia a dispatch stating that he needed 15,000 reinforcements for the infantry and 200 for the cavalry, and that the men must leave England for the front by the end of April. But as the Military Service Act had not produced the required numbers of recruits, the Minister of Militia replied on 8 April, after the bloody riots in Quebec City, that the best he could do was to send 4900 conscripts overseas in April or early-May.⁶⁹

In response, Robert Borden decided to act. On 19 April 1918, he raised the issue in the House of Commons by presenting a ‘draft’ decree that highlighted the urgency of the situation on the Western Front, and provided for the lifting of the exemptions. The Prime Minister felt that he was justified in modifying the Military Service Act by decree before even discussing it in the House, because the normal legislative process would cause delays that would be unacceptable, given the military situation. He simply asked the members of Parliament to pass a motion recognizing the decree. Wilfrid Laurier rose to declare that the manœuvre was undemocratic and violated the rules of Parliamentary procedure.⁷⁰

The government was pursuing two contradictory goals, to recruit more men and to increase food production, and it was becoming more and more difficult for Canada to persevere with its war effort on two fronts at once. Manpower was stretched to the limit, and the farmers did not understand the government’s priorities. As he had in 1917, Wilfrid Laurier pointed out the government’s apparent inconsistency.⁷¹ Throughout the war, the Canadian government was never truly able to manage the issue of farm labour in light of its objective of providing men for the Canadian Expeditionary Force.⁷² The lack of conscription for active Canadian labourers had its effect for the entire duration of the First World War, unlike the Second World War, where the lessons learned were incorporated into the National Resources Mobilization Act of 1940. Liberals representing farming provinces introduced two proposed amendments that would have preserved the exemptions, but they were defeated in the House.⁷³ On 20 April 1918, the exemptions granted in 1917 were lifted. Young farmers (ages 20 to 22) had been granted 72,825 exemptions; now 41,852 of them were lifted.⁷⁴ The impact was soon felt: in June 1918, 10,290 conscripts shipped out to Britain, then another 11,158 in July, and 13,977 in August. But the price was high.⁷⁵ The farmers regarded the lifting of the exemptions as a breach of the Union government’s election promise.⁷⁶



Sir Wilfrid Laurier, Prime Minister of Canada, 1896-1911.

In the East, the United Farmers of Ontario organized a march on Ottawa in May 1918. Quebec’s Minister of Agriculture, J.-E. Caron, asked to be part of the delegation.⁷⁷ On 14 May, members of the United Farmers of Ontario, representing Ontario, and the Comptoir coopératif de Montréal, representing Quebec,⁷⁸ assembled to meet with Robert Borden in Ottawa. The delegation was made up of 5000 farmers (3000 from Ontario and 2000 from Quebec). Despite the cultural ten-



Voting ‘up the line’ during the 1917 federal election. All Canadians engaged in military service were eligible to vote, and ninety percent of them did so for Sir Robert Borden’s Union government that ran a campaign based upon invoking conscription.

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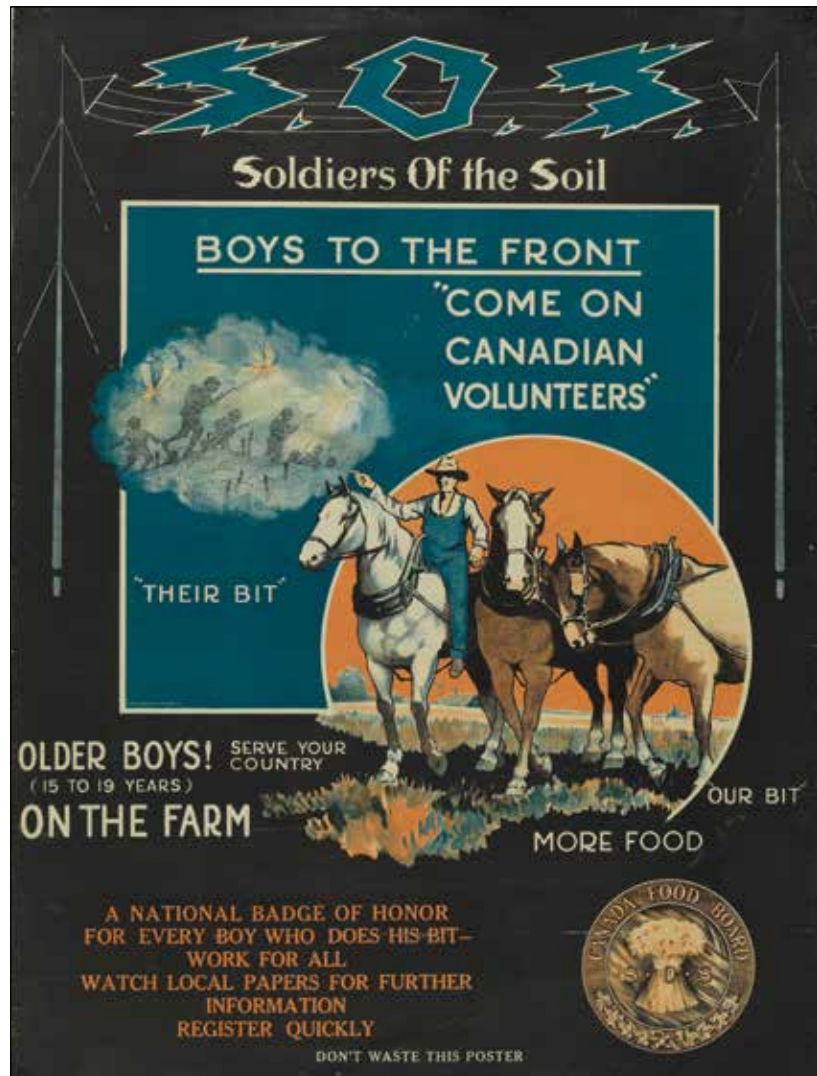
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sions of previous years over French schools in Ontario and over enlistment, the farmers from both provinces spoke with a single voice, warning the government about the effect the lifting of the exemptions would have on the 1918 harvests. For most of the farmers who participated, it was the first time they had openly questioned a federal government policy that they considered contrary to their interests.⁷⁹

The farmers met with Prime Minister Robert Borden, the federal Minister of Agriculture, the Minister of Militia, and the President of the Privy Council and the Vice-Chairman of the War Committee. In his memoirs, Robert Borden noted that the atmosphere of the meeting was extremely aggressive.⁸⁰ Four people, including J.-E. Caron, spoke on behalf of the farmers. The first was Manning Doherty from Malton, Ontario, who read the petition on which the farmers had gathered signatures at the Russell Theatre. He emphasized that the farmers were not in any way rebelling, but that they wanted to inform the government of the consequences of lifting the exemptions for food production and to make it known that they were disappointed that the promise to exempt them had been broken; they had lost confidence in the government. They had been able to increase their seeded acreage before the exemptions were lifted, but now they were facing a labour shortage that would cause Canadian food production to drop by at least 25 percent⁸¹ To demonstrate their contribution to the war effort, the petition highlighted the paradox that the farmers had been encouraged to produce as much as possible from 1915 to 1917, but because of conscription, they were being prevented from doing so in 1918.⁸²

After the farmers aired their grievances, Robert Borden told them that the lifting of the exemptions had already been voted on, and that they would have to obey the law.⁸³ He reminded them that, for the time being, Canada's first duty was to send reinforcements to support the men at the front.⁸⁴ The farmers saw his position as disrespectful to them, in that Borden did not acknowledge the efforts they had made in previous years.⁸⁵ *Le Soleil* reported that, after their meeting with the Prime Minister, the farmers left angry and dissatisfied.⁸⁶

Even though the government was not swayed, the march on Ottawa had some effect. On 25 May 1918, exemptions were granted to enable rural conscripts still stationed in Canada to help with the planting and harvests of 1918.⁸⁷ At harvest time, the Minister of Militia published an insert in rural newspapers to inform farmers that they could obtain leave for the 1918 harvest. He emphasized, however, that sending conscripts overseas was the higher priority.⁸⁸ Thus, it can be seen that the military authorities were not completely indifferent to the issue of food, and that Canadian politicians were well aware of the impact of conscription upon the harvests.⁸⁹



Soldiers of the Soil. The Canada Food Board issued this poster in a national appeal for farm labour. It asked boys aged 15 to 19 to volunteer their summers as "Soldiers of the Soil" on farms desperately short of labour. 22,385 'soldiers' would serve, replacing farm hands who had enlisted for military service.

Conclusion

The farmers did not carry out their threat to reduce the acreage cultivated in 1918. In fact, 42 million acres of Canadian land were cultivated in 1917, and that rose to 51 million acres in 1918. Despite their criticisms, Quebec and Ontario farmers met the objectives that had been set by the federal and provincial authorities: to increase the amount of cultivated land in Quebec by 600,000 acres, and in Ontario, by 1,000,000 acres. But despite the increase in cultivated land that had been achieved before the exemptions were lifted, the main consequence of conscription was that the harvests of 1918 were disastrous. Canada's production of wheat, which at the time was defined as a 'munition' to support the Allies, dropped from 233,742,850 bushels in 1917, to only 189,075,350 bushels in 1918.⁹⁰ Moreover, the loss of trust in the relationship between the government and the farmers of Canada would have an impact during the post-war period.

CMJ

CWM Artefact Number 19890086-885

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DND photo CX2012-0152-37 by Sergeant Robert Bottrill

Canada's 2012 Demonstration *Hornet* soars over the Strait of Georgia and Vancouver Island's coastline, 4 May 2012.

CANADA'S FUTURE FIGHTER: A TRAINING CONCEPT OF OPERATIONS

by Dave Wheeler

"Canada leads the world in developing simulation technology, and we export this technology throughout the world," Lieutenant-General Yvan Blondin, Commander of the RCAF, said recently.

"I plan to take advantage of this – to review our requirements and determine where and how we can use simulation. In fact, I want the RCAF to be a leader in this among international air forces.

"I believe we can achieve better training through simulation and achieve operational savings. In doing so, we can extend the life of our aircraft, and, at the same time, reduce our carbon footprint. This is good for the RCAF operationally, and will also be good for Canada fiscally."

Although using simulators to train pilots has been with us since before the Second World War, rapid advances in computer technology have led us to a point where the virtual world of a simulator is incredibly realistic – almost

indistinguishable from reality, in fact – and gives pilots the sensations and challenges of flying a real aircraft. With simulation, we can control different variables, such as weather, terrain, and threats, and conduct training that can actually be more rigorous and varied than flying the actual platform. As a result, much of our training *can* – and *should* – be conducted on simulators.

As we look toward the future, and as technology continues to improve, we know that the amount and quality of training we will be able to conduct in simulators and in virtual realities will continue to grow. This has significant implications for training on all our platforms, but especially for the very expensive training of fighter pilots. We anticipate that a large percentage of the initial training for the RCAF's future fighter, the replacement for the CF-188 *Hornet*, could be carried out using simulators.

The Royal Canadian Air Force intends, therefore, to 'lead from the front' in the use of state-of-the-art simulation technology and concepts in order to best prepare its fighter pilots for combat and support operations.



Carleton University

The CF-188 cockpit display at the Carleton University simulation laboratory.

veillance and control of vast amounts of airspace and surface waters. This includes covering the entry corridors on the east and west coasts, as well as Canada's internal airspace, including the airspace across the entire Canadian Arctic.

The defence of North America and its airspace is also critical, and it is carried out through the North American Aerospace Defense (NORAD) agreement. The benefits of this relationship continue to contribute to our national interest and to international peace and stability.

Contributing to International Security. Canada's values and interests are global in nature, and to that end, the Canadian Forces will continue to contribute to international security. Canada will play an active military role in the United Nations (UN), the North Atlantic Treaty Organization (NATO), the Organization for Security and Co-operation in Europe (OSCE), and coalition forces as deemed appropriate by the Government of Canada.

This new training concept of operations for fighter pilots will have the additional advantage of reducing expenses for fuel and sustainment, thereby reducing the carbon footprint of the aircraft, which is in line with the RCAF's environmental policy.

Operational Roles of Canada's Future Fighter

Operating Environment. The environment in which our future fighter force will be employed will cover a wide variety of missions, often in very complex scenarios. The Canadian Forces will, therefore, require its future fighter aircraft to be able to operate worldwide in all weather conditions, employ a wide range of air-to-air (A/A) and air-to-surface (A/S) missions, and be interoperable with coalition partners.

Our fighter operations will continue to include overland and coastal operations throughout Canada (including the Arctic), as well as over the landmass and coastal areas of other countries during deployed operations.

Defending Canada and North America. Maintaining Canadian sovereignty involves ensuring Canadian law is respected and enforced within its area of jurisdiction.

There are increasing challenges to our sovereignty from those who wish to exploit our nation's immense size and resources through illegal activities. Securing Canada's borders against such actions is paramount and involves the sur-

Force Generation

The training concept of operations for pilots of our future fighter will be significantly different from the manner in which we currently train CF-188 *Hornet* pilots.

At present, all Canadian Forces officers selected for the pilot occupation begin their training with Primary Flying Training, conducted at Portage La Prairie, Manitoba, which introduces them to military flying and procedures.

The next phase is Basic Flying Training, conducted at 15 Wing Moose Jaw, Saskatchewan, under the auspices of the NATO Flying Training in Canada (NFTC) program. This phase contains the bulk of flying training and, upon completion, pilot candidates are selected for one of three training paths: helicopters, multi-engine aircraft or fighters.

The third phase is Advanced Flying Training, after which pilot trainees receive their pilot wings. For fighter pilots, this phase involves training on the CT-156 *Harvard II* under the NFTC program.

These three phases are not expected to change significantly under the new training concept.

After Advanced Flying Training, fighter pilots begin their Phase IV *Hawk* Transition at 15 Wing, and their Fighter Lead-In Training (FLIT) at 4 Wing Cold Lake, Alberta.

“There are increasing challenges to our sovereignty from those who wish to exploit our nation's immense size and resources through illegal activities.”

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FLIT is followed by training at an Operational Training Unit (OTU), also at 4 Wing, where pilots fly the CF-188 *Hornet*. Finally, fighter pilots undertake their Combat Ready Training, at their main operating base (MOB), either 3 Wing Bagotville, Quebec, or 4 Wing.

The new concept could eliminate the need for OTUs, which require a full complement of aircraft, pilots, maintainers, support personnel, and infrastructure to run.

Newly-winged fighter pilots would, in the future, go through three phases of training:

- An Enhanced Fighter Lead-In Training (FLIT) Phase.
- A simulation-intensive Conversion Phase conducted at a Virtual Training Unit (VTU).
- An extended Combat Ready (CR) Phase.

This new three-phased concept would result in an effective and efficient manner of producing new pilots for the fighter force. As well, it would make additional fighter aircraft available to the Commander of 1 Canadian Air Division for force employment, and it would reduce expensive training costs.

Enhanced Fighter Lead-In Training (FLIT) Phase. A large portion of the tactical training currently taught at an OTU could be devolved to the less expensive Enhanced FLIT Phase, while some aspects would remain in the Conversion Phase.

The Enhanced FLIT Phase, envisioned to be conducted at 4 Wing, would require a new aircraft to replace the CT-155 Hawk advanced tactical jet, as part of the follow-on training contract that will eventually succeed the NFTC program.

This aircraft would ideally have an integrated but unclassified cockpit in the style of the future fighter, complete with

a simulated avionics capability. The *Hawk* replacement would closely replicate the ergonomics of the future fighter (although not its performance) and would include simulated radar, data-link, weapons system, an electronic warfare suite, and more. The new training aircraft would need to be a two-seat variant, permitting an instructor to act as a backseat safety pilot during the critical initial combat training missions.

To ensure consistency of tactics, techniques, and procedures (TTPs), pilots flying the FLIT aircraft may well use the same tactical manuals that they would use on the future fighter.

Editor's Note: To provide a measure of the cockpit sophistication required for the *Hawk* replacement, the cockpit displays of representative next acquisition fighter aircraft are presented on following pages, in no particular order.

While it is anticipated that the Enhanced FLIT would be longer than the current FLIT Phase under the NFTC program, it would not necessarily result in an increase in flights because of a greater emphasis being placed upon the use of simulation. Along with ensuring a better selection of future fighter pilots, the concept would also allow pilots to begin their conversion training to the future fighter with more flying experience, a good grasp of aircraft functionality, and situational awareness with the TTPs.

The core fighter pilot skills that could be devolved to the Enhanced FLIT syllabus include:

Air-to-air (A/A):

- Basic fighter manoeuvres (BFM).
- Air combat manoeuvres (ACM).
- Air intercept (AI).



DND photo CK2005-0284-02, by Corporal Jean-François Lauzé

CT-155 *Hawk* advanced jet trainers in formation.



© Lockheed-Martin Corporation

Lockheed-Martin F-35 *Lightning II* cockpit.

- Radar theory and radar intercepts.
- Beyond visual range (BVR) weapons tactics.

Air-to-ground (A/G):

- Low-level awareness training (LLAT).
- Air-to-ground academic weapons (AW) delivery.
- Air interdiction (AI).
- Close air support (CAS) (up to two aircraft).
- Air-to-ground tactical employment.
- Suppression/destruction of enemy air defence (SEAD/DEAD).

Other pilot training conducted at the FLIT would include:

- Visual flight rules (VFR) skills.
- Instrument flight rules (IFR) skills.
- Night flying.
- Formation flying (up to four aircraft).
- Reconnaissance.
- NORAD procedures.

Conversion Phase. The Conversion Phase would take full advantage of the experience that pilots would gain during the Enhanced FLIT Phase. This phase would focus heavily upon simulation, using the actual future fighter only for con-



© Boeing image c12-22831-13

Boeing F/A-18E/F *Super Hornet* cockpit.

firmation sorties and additional training where required. The simulation training could be conducted through the concept of virtual training within a Virtual Training Unit (VTU).

Simulator training would be based upon the training plan and qualification standard approved by the Fighter Standards and Evaluation Team, and it is envisioned that the simulator-to-flying ratio for the Conversion Phase would heavily favour the simulator. The objectives of focusing upon simulation would be to maximize the operational availability of the future fighter for force employment, while reducing training costs and optimizing training effectiveness.

The flying portion of the Conversion Phase would be conducted by a combination of qualified fighter force instructor pilots who are members of the VTU, the wing standards section, or tactical fighter squadrons. No fighter aircraft would be permanently assigned to the VTU; the relatively small amount of time spent flying the future fighter would take place using aircraft assigned to the tactical fighter squadrons.

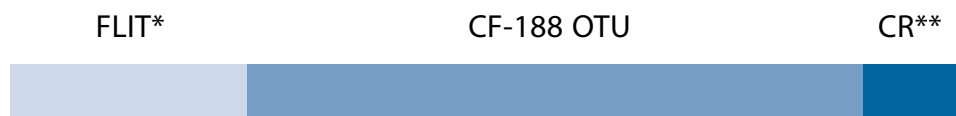
Combat Ready Phase. The Combat Ready Phase would ideally begin once the new fighter pilot has completed the Conversion Phase and has been assigned to a tactical fighter squadron.

The bulk of flying training in the future fighter would be flown in this phase, which would be conducted at tactical fighter squadrons by tactical fighter squadron-qualified instructor pilots and wing standards pilots. Simulator support would be provided by the VTU facilities, although there would be a higher flying ratio in the Combat Ready Phase than in the Conversion Phase.

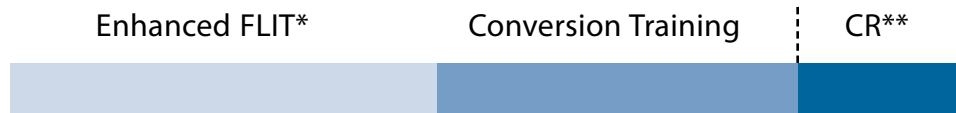
As in the current system, the new fighter pilot would become a combat-ready wingman after completing the Combat Ready Phase.

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CF-188 Training Distribution



Future Fighter Training Distribution



* Fighter Lead-In Training

** Combat Ready Training

Centre of Excellence. It is anticipated that a Centre of Excellence would be created to support force generation, and to prepare the fighter force for force employment requirements. The Centre would be the home of the Fighter Standards and Evaluation Team, the VTU, and the Fighter Operational Test and Evaluation Flight. It would support all fighter force courses, including the Conversion Phase, the Combat Ready Phase, and post-graduate level courses, such as the Fighter Weapons Instructor Course, and instructor pilot training.

While the *development* and *command and control* of these courses would be held within the Centre of Excellence

Team and controlled by the Fighter Community Advisor Group. The program would be a blend of ground, simulation, and aircraft training to ensure a safe and effective fighter force that is capable of carrying out all prescribed tasks *at or above* the standard.

“It is anticipated that simulation will play a key role, and will represent a significant percentage of training hours during the continuation training phase.”

It is anticipated that simulation will play a key role, and will represent a significant percentage of training hours during the continuation training phase.

Fighter pilots may indeed spend up to 50 percent of their continuation training time in a simulation seat, maintaining their qualifications, and filling some experience gaps that could only be addressed in very specific scenarios. Even during deployed operations, we can already



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Eurofighter cockpit.



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Dassault Rafale cockpit.



© Saab AB 2010

Saab 39D *Gripen* front cockpit.

envisage the potential of reaching optimal readiness levels by using a deployable mission rehearsal trainer, which would have multiple advantages from the perspectives of mission success, safety, and resource management.

‘YFR on Demand.’ Concretely, relying more upon simulation will mean that the RCAF fighter force would very likely consume considerably less flying hours to achieve the desired level of fleet and individual readiness. This reduced yearly flying rate (YFR) would correspond in similar proportions to reduced requirements for routine maintenance and other sustainment dimensions. It must be stressed, however, that the ability to surge training and operational activity is paramount to the successful completion of fighter aircraft missions – as demonstrated recently during Operation *Unified Protector*, conducted in response to the crisis in Libya. That surge capability would require immediate access to flying hours, which implies that sufficient ‘on demand’ maintenance and sustainment resources must be available at all times. The concept of ‘YFR on Demand’ is similar to the ‘just in time’ production and delivery

strategies that gave modern industry the efficiency, agility, and increased productivity it needed to meet demanding and fluctuating market expectations. The fighter community could reap similar advantages from a much more flexible and efficient use of precious flying hours.

Training through Transition. The transition from the CF-188 to our future fighter should be conducted in the most efficient and effective manner possible, while remaining ‘resource neutral,’ and ensuring an appropriate combat ready capability.

The Way of the Future. In conclusion, there is little doubt that increased simulation is the way of the future for fighter training as well, as for training on other aircraft. The CC-130J *Hercules* community has already embraced simulation training with the opening of the Air Mobility Training Centre at 8 Wing, Trenton, Ontario, in September 2012. The 17,000-square metre centre houses cutting-edge equipment, such as a J-model *Hercules* flight simulator and fuselage trainer that are being used to train aircrew and technicians.

Canada is a world leader in simulation, and the Royal Canadian Air Force will put this world-class capability to work to train the pilots of our future fighter. Simply put, training that combines flying aircraft and simulators will be more effective, safer, less expensive, and better for the environment. It is a ‘win-win deal’ for everyone.

Brigadier-General Dave Wheeler, CD, is a former CF-188 *Hornet* fighter pilot. Among other postings, he has served as Commander of 4 Wing Cold Lake, Alberta, and Deputy Director of the Air Operations Control Centre at ISAF HQ in Kabul, Afghanistan. He is currently Director of Air Staff Coordination for the Commander of the RCAF in Ottawa, Ontario.



Cockpit of the CC-130J *Hercules* flight simulator at the new Air Mobility Training Centre in Trenton, Ontario.

DND PHOTO TN2 012-0503-16



DND photo VL2012-0001-006 by Corporal Isabelle Provost

REDEFINING THE ARMY RESERVES FOR THE 21ST CENTURY

by Dan Doran

In 2008, the Director General of Land Reserves validated the Chief of Defence Staff's functions of the Reserves as: (1) augment the Regular Force on Canadian Forces (CF) operations; (2) expand the CF in response to natural and man-made emergencies and crises; and (3) form the permanent connection between the CF and Canadian society.¹ Having been issued these directions, Reserve commanders and planners were tasked with creating a training strategy that effectively achieves all three of these objectives while continuing to support operations and activities within their respective areas and brigades, all while staying within an ever contracting annual budget. A Sisyphean task to say the least, made further daunting by the high turnover and limited availability inherent to the majority of its members. These Reserve functions serve well in illustrating a noteworthy disconnect between the Regular Force and the Reserves within the Canadian Army, and the lack of understanding of what actual attributes reservists have to offer the CF and Canadian society.

The Canadian Army's less-than-complete understanding regarding its Reserve component is best illustrated by the first core function noted, that is, augmenting the Regular Force on

CF operations. As any Reserve unit CO will assert, only a little less than ten percent of his or her unit has ever deployed. This can be misleading when Army Reserve units are seen on parade, and many of those present sport campaign and tour medals. These images ignore the high turnover within the Reserves, where the average reservist career extends to only four years of part-time service. Further reinforcing the myth is the fact that those who do deploy also tend to be those with a higher level of commitment to the organization, and who thus not only stay longer, but parade more often, and therefore 'show up' in media photos. The invisible majority of Army reservists simply parade one night a week and one weekend a month while attending summer courses, and taking their release upon completing school and entering the civilian work force. To tie the primary function of the Reserves to a task that is performed by only one-in-ten of its members is akin to renaming all the Combat Engineer Regiments 'Dive Regiments,' because each 350-person unit has a dive troop of 35: it misses the point.

Further, the Army's first priority for the Reserves can be construed as being, at least in part, redundant. This is due to the conservative approach the Army has taken in training

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reservists for deployments. At its longest, pre-deployment training for reservists lasted nearly 18 months prior to deployment. Upon volunteering to serve on an overseas mission, reservists are given Class C contracts and integrated into Regular Force Army units to accompany their new colleagues in every facet of training, from individual battle tasks, up to battle group level collective training. Given this practice, what role do the Reserve units really play in training their members to deploy if said training provides no benefit to members who volunteer to deploy overseas?

Woodstock, Ontario have of the Notre-Dame-de-Grace borough of Montréal? This lack of expertise by the Regular Force member would be compounded in the context of a natural disaster, such as an ice storm, where fallen power lines and trees would make navigating the 'urban jungle' of Montréal's numerous boroughs nearly impossible without intimate local knowledge. This applies to language as well. Many boroughs in urban centres are home to a mosaic of immigrants, whose command of English or French may be very limited. The diverse ethnic make-up of reservists, compared to their

Regular Force counterparts,³ makes them ideally suited to leading operations in these areas, and to tailor humanitarian assistance to the ethnic majority of the region being assisted.

It should also be noted that the Army falls short with respect to properly leveraging the innumerable complementary skills of its Reserve members associated with their civilian jobs. These vary greatly, from heavy-equipment operators, to doctors, engineers, project managers, and architects. It seems odd that no method has been put in place to be more aware of what 'civilian' skills these members could bring to bear, should they be required.⁴ Instead, reservists are saddled with unrealistic military course

requirements that make it impossible to marry military and civilian professional success.⁵ Jointly, these factors serve to discourage many reservists, and lead frequently to their release from the organization. One wonders whether some of Canada's most notable former reservists, such as General Andrew McNaughton – a McGill student, researcher, and future Chief of the General Staff of the Canadian Army – would have been able to sustain such a heavy commitment of course time leading up to the First World War. How well would the Canadian Corps have fared at Vimy Ridge without his counter-battery oscillograph technology⁶ had he left the Militia as a result of not being able to spare enormous amounts of time to be trained within a Regular Force paradigm?

The solution to these challenges requires Reserve brigades to take a three-pronged approach to training their members to be employed in the context of assistance in natural or man-made disasters. The first priority must be at the unit level, where Commanding Officers and Regimental Sergeant Majors must integrate themselves into their local communities and establish firm and deep ties with local governments.⁷ This task has been best exemplified by Reserve units in smaller communities, such as 9 Field Engineer Squadron in



DND photo IS2010-6580-04 by Sergeant Bruno Turcotte

As for the second and third stated functions of the Reserves, these remain 'spot on' in *theory*, but misunderstood and poorly applied in *practice*. These outcomes are a corollary effect of the de-streaming of the Army that has succeeded in conditioning the leadership of the Reserves to ignore its members' greatest strengths: (1) intimate knowledge of regional terrain; (2) capacity for long-term strategic planning; (3) potential for retention of corporate knowledge; and (4) potential for strong links with, not simply the community, but professional organizations and businesses. It is these strengths that truly define the Army Reserve, and which should serve to frame its functions within the context of the CF, as opposed to the current paradigm of templating watered-down Regular Force functions and capacities on an organization ill-designed to achieve them. As such, the second and third functions of the Reserves remain valid,² but must be redefined in a manner that is best tailored to what strengths can be brought to bear by reservists that their Regular Force counterparts are unable to provide.

A salient example of the first strength previously noted would be disaster assistance in an urban environment. What knowledge will a Royal Canadian Regiment corporal from

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DND photo VL2012-0001-031 by Corporal Isabelle Provost

Rouyn-Noranda, Quebec. In small communities such as this, units are intimately connected to the community; the experiences of these units should be leveraged among the urban units where establishing these links has been less successful. The second priority must be at the brigade level, where liaison has to be made with other disaster management bodies at the municipal, provincial, and federal levels, so as to facilitate interoperability when an emergency occurs. The aim at this level should be to pre-empt the ‘forming’ and ‘storming’ stages of group development,⁸ so as to optimize operations in the event of a real emergency. The *final* priority for training to achieve the two CDS priorities for the Reserves must be in-situ training. More often than not, brigade level training is conducted within military training areas – worse than that, in training areas outside the region of the brigade. This type of training provides *challenging* but ultimately *impractical* experience to planners, logisticians, and operators within the training body. The planners and logisticians hone their skills in coordinating large rail and road movements over long distances, while operators conduct training in artificial FIBUA mock-ups, or in more traditional forested training areas. At best, this training has only peripheral application to the challenges of conducting humanitarian operations in built-up urban zones, such as Montréal or Toronto. In these contexts, the difficulty of road moves, for example, is not managing the size and spacing of vehicle convoys, but in establishing and maintaining short-distance routes through congested urban landscapes made worse by debris and hazardous obstacles, such as downed power lines and trees. Further, through this training, operators do not develop and hone their knowledge of local terrain, which has been established as a unique and key capacity that reservists bring to the operations space. So when it comes to the current training model for reservists, what is really being achieved?

In order to achieve meaningful training that will have direct application to what tasks will actually be done, the ‘where’ is as important as the ‘what.’ Reservists have to train,

not just *how* they will operate, but *where* as well. This manner of training will be complex to plan, as it will require coordination with municipal bodies to temporarily close roads and publish notices that military personnel will be operating in an area over a given duration. This is as much a coordination challenge as it is logistical, and, given that municipal staffs are experts in circulation planning and public affairs as a result of regular municipal disruptions, such as road work and snow removal, they would be ideal to mentor and assist military staff in coordinating such training.⁹ At its core, military training must become, not only interesting, but relevant to reservists. Currently, Army Reserve brigades

engage in a circular pattern of work-up training that ends up right where it began. It does not take long for reservists to become disenchanted with the training and no longer feel like



DND photo VL2012-0001-063 by Corporal Isabelle Provost

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they are achieving professional growth. Moreover, this type of training fails to underscore the unique skills that reservists bring to operations. Reservists must not only be given a clear mission, but must train in a manner that supports said mission. This is currently not the paradigm in several Army Reserve brigades, and it must change to prevent further attrition of members as a result of loss of interest.

In so far as changing the amount of training required by reservists, the Army has achieved some recent success. The Primary Leadership Qualification course has been adjusted to incorporate both distance learning and unit-based learning components. In addition, the course residency has been cut into two three-week modules, as opposed to the former six-week module (Module 6), which was not feasible for many members who worked full-time. The reality, however, is that more will have to be done in order to streamline training, most notably for officers, if the Army is to successfully and more rapidly train its Reserve members before they simply leave the system, due to an overabundance of course requirements.

Fundamentally, the paradigm of how the Army Reserves are viewed by the Regular Force Army and the public-at-large

must shift tremendously if the organization is to remain relevant through the 21st Century. In opposition to Jack English's assertion,¹⁰ the days of mass mobilization for war are long gone, or, at best, highly unlikely to reoccur.¹¹ Further, the notion of piecemeal support of the Regular Force is no longer valid, as it simply represents a capability of the Reserves – *not* a core function. Simply put, if reservists are to continue to be considered as 'twice the citizen,' both Regular and Reserve components have to work harder and in closer partnership to understand the Militia for what it *is*, and, more importantly, what it has the potential to *become*.

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DND photo VL2011-0230-008 by Corporal Isabelle Provost



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1. Jack English, *The Role of the Militia in Today's Canadian Forces*, Canadian Defence & Foreign Affairs Institute and Canadian International Council (2011), p.2.
2. *Ibid*, p. 17
3. David Pratt, *Canada's Citizen Soldiers: A Discussion Paper*, Canadian International Council (2011), p. 34.
4. Jack English, *The Role of the Militia in Today's Canadian Forces*, Canadian Defence & Foreign Affairs Institute and Canadian International Council (2011), p.3.
5. *Ibid*, p. 31
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7. J.L. Granatstein and C. Belzile, *The Special Commission on the Restructuring of the Reserves*, Canadian Defence and Foreign Affairs Institute (2005), p. 20.
8. Bruce Tuckman, Developmental Sequence in Small Groups in *Psychological Bulletin*, 1965, Vol. 6(63), pp. 384-99.
9. Jack English, *The Role of the Militia in Today's Canadian Forces*, Canadian Defence & Foreign Affairs Institute and Canadian International Council (2011), p.33.
10. *Ibid*, p. 34
11. David Pratt, *Canada's Citizen Soldiers: A Discussion Paper*, Canadian International Council (2011), p. 31.

DND photo DPPMR-03 by Mario Poirier, RMC Saint-Jean



NCM EDUCATION: EDUCATION FOR THE FUTURE NOW

by Ralph Mercer

Introduction

The requirements for Non-Commissioned Member (NCM) education are very different than they were ten years ago. The combination of technological advancements, changing global culture, ubiquitous social computing, and environmental and economic factors have combined to transform and complicate military operations. The support of Whole of Government (WoG) and multinational operations within this dynamic and ever-changing security environment is now commonplace. NCMs, as a result, must be innovative, mentally agile, and capable of multi-layered critical thinking.¹

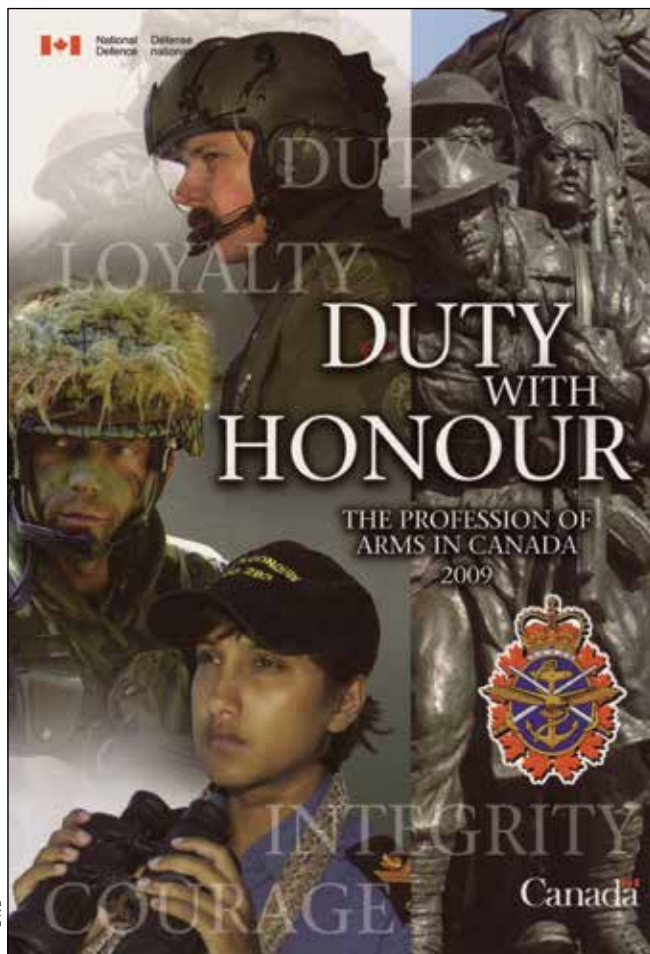
Evolving technologies place increasing responsibilities upon NCMs, and they demand personnel with commensurate levels of intellectual capacities. Additionally, the recruit of the future will come from a technologically-connected and culturally-diverse Canadian society, with an expectation of a high level of digital sophistication within the military learning and working environment.²

If we are to be considered a modern learning organization, the NCM Corps must commit to providing a continuous career-long learning environment for NCMs, to enable and encourage them to improve upon education and upon professional competencies in order to meet the challenges of an ever-changing security environment. These requirements and changes to the

education of the NCM Corps must be captured both in doctrine and in general specifications to build an enduring reference point upon which future generations can build.³

NCMs will increasingly expect a learning environment to be inclusive of their needs, and educational backgrounds where they participate as the learner, content provider, and peer mentors, working in collaborative groups, and focused upon knowledge attainment and understanding. To make this successful, the NCM Professional Development (PD) system will need to be responsive to the expectations of this digitally-connected generation in order to provide an education system that takes advantage of new digital literacies to instil core CF military values and ethos, while offering flexible academic and career opportunities.

It is important that we retain the essential traditional roles of NCMs, while augmenting professional development with sound educational opportunities. These educational opportunities should be guided by the core and supporting knowledge contained within the *Duty with Honour* manual and a career-long educational vision that prepares NCMs to successfully operate at the three levels of leadership.⁴ Ultimately, the modern NCM educational system must provide opportunities for NCMs to take lateral career paths, based upon knowledge, and not upon occupations, while linking career-driven learning to deliberate succession planning to develop, employ, and sustain future key and senior appointments for NCMs.⁵

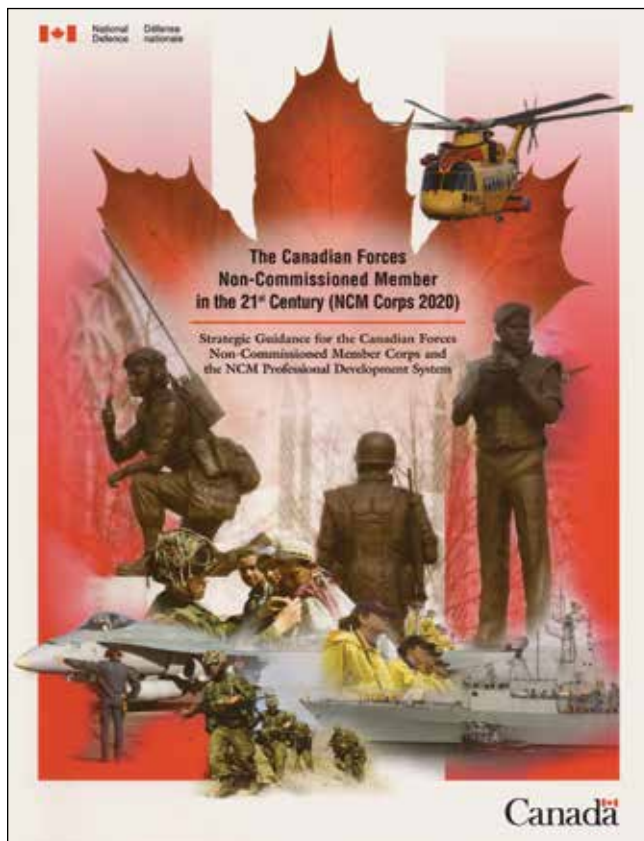


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The Canadian Forces (CF) has an inclusive view of the membership in the Profession of Arms. This inclusiveness was first articulated in the release of *Duty with Honour* in 2003, and further refined in the 2009 edition of the manual, therein stating: “All regular force and primary reserve members of the Canadian Forces, of all ranks, are members of the profession of arms.”⁶ It was from this foundational concept that the Armed Forces Council approved and commissioned *NCM Corps 2020*. It was to provide the strategic guidance for the professional development of non-commissioned members for the next 20 years.⁷

NCM Corps 2020 was published in 2002, nearly a decade ago, as a strategic document that defines and provides guidance to PD requirements (moral, ethical, educational, and leadership qualities) for NCMs into the 21st Century. It speaks to the requirement for NCM mental agility, critical thinking, and understanding of the common body of knowledge related to the profession of arms.⁸ It prescribes moving forward on the basis of a strong, complementary, and mutually-supporting officer/NCM team concept that meets the challenges of the contemporary operating environments. While great strides in NCM professional development were made from this document, the academic development identified in the document remains largely unfulfilled.

Both *Duty with Honour* and *NCM Corps 2020* have been re-focused upon NCM development through the lens of the



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recent publication *Beyond Transformation*, the Chief Warrant Officer Strategic Employment Model. This strategic guidance document provides the NCM Corps and stakeholders with the intent to develop a progressive model which strengthens future command/senior leadership teams by ensuring that NCMs, and, in particular, Chief Warrant Officers (CWOs) have sound intellectual preparation for immediate and meaningful contributions, both institutionally and operationally.⁹

The NCM who will become the CF CWO in 2040 is in the NCM Corps now, and we have an obligation to prepare that cadre of NCMs for challenges of leadership positions in roles that we do not yet understand. Just as the role and scope of duties of the CF CWO is different from that of 20 years ago, it will be significantly different 20 years from now. Our recruits will come from a technologically-connected and culturally-diverse Canadian society, and they will increasingly demand a learning environment where they are a partner in the learning construct, working in collaborative groups, and focused upon understanding, rather than a competitive grading system. New members of the CF will view access to the social web as a fundamental personal right. They will congregate towards careers that allow them to remain connected with their social peer groups, and we must be able to provide an education system that takes advantage of this digital literacy to instill the core CF military ideology while offering flexible academic and career opportunities.

To meet these challenges, the training and education system, and the culture that underpins the elements of what we believe a professional NCM constitutes needs to change. For

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the purposes of this short article, the education requirements for NCMs refer to the common knowledge and expertise found in *Duty with Honour*, and they do not encompass training for occupational or environmental duties. It is in these knowledge areas that cognitive development for NCMs must happen if we are to meet the challenges of the 21st Century.¹⁰ It also must be mentioned that the present training system is not broken, but, like the *NCM Corps 2020* vision, it has reached the apex of where it can take the NCM Corps into the future, and must evolve to remain relevant.

While most of the jobs we now fill did not exist 20 years ago, and many of the jobs for NCMs in the future have yet to be defined, we need a flexible adaptive and open education system to prepare us for the undetermined future. The present training and education system of the NCM is firmly rooted within the 20th Century, designed around conformity, compliance, and rote memory, which is unsuited for the challenges of society in the future.¹¹

Traditionally, the required expertise and knowledge needed to sustain the NCM professional development system was internally sourced and delivered from experts within the military profession, who then disseminated that knowledge downward to maintain a clear sense of identity.¹² Technology, social learning, and the ubiquity of mobile networks have made the wall of the school house transparent, and we are no longer the gatekeepers of our information. While disruptive to our training system policies, this presents us with an opportunity to open up our education and to actively partner with progressive civilian academic institutions to capitalize upon their learning networks and curriculum. This provides the NCM Corps with a low-cost, low-

maintenance path to professional and personal self-development opportunities that benefit the Canadian Forces.

This is an opportunity to seriously look at what we teach as a NCM Corps, and what can be accessed through other institutions. We should teach the areas wherein we are the experts, and what is core to our ideology, but for some of the educational requirements of an NCM, the experts reside outside our organization, and those are the resources we should exploit to provide the learning path.

Conclusion

The classroom is no longer the refuge of learning. Most of what we need to know to have a successful career is best learned at the point of need. Our present learning networks and management systems are not capable of delivering the information content we need when we need it. We need a learning network that is resilient, open, scalable, and 'operating system neutral.' The Internet provides us with this network. We need to access it for our learning and collaboration now, free of unrealistic and 'one size fits all' security restrictions. The Internet is a cost effective and robust solution to network needs, a knowledge network for learning and education, and we need to make it available to all CF members immediately.¹³



DND photo DPPMR-01 by Mario Poirier, RMC Saint-Jean

The Way Ahead

It is from this vantage point that we can now look at what needs to change to accommodate the NCM education of the future. There is no 'just in time' education. It must be ambient, accessible, and progressive, building upon layers of experience and educational opportunities and funded with a long-term vision. We need to shed cultural biases of how education is viewed between the officer and NCM Corps. An educated NCM Corps is a force multiplier to the officer/NCM relationship, and it is a crucial element in the NCM Corps strategic development and acceptance of the responsibilities that come with membership to the profession of arms.

It is becoming increasingly apparent that the full spectrum of activities within the NCM Corps cannot be reduced to a series of tasks within the NCM General Specifications, and arranged in a linear model for training and education. While the tasks may measure a job, the job is only a small portion of the career of a NCM, and it does not reflect the education and knowledge that is required to be truly successful. The effects of education are not always measurable, but they are always risk mitigating, determining how we deal with new situations, and how we understand the commander's intent. We need to provide opportunities for NCMs to learn things that cannot be reduced to a task statement.

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DND photo DPPMR-02 by Mario Poirier, RMC Saint-Jean

The NCM Corps is one of the greatest untapped resources the CF possesses for sourcing solutions. We must enable collaborative networks that source the vast knowledge and skills of the NCM Corps and contribute to the collective knowledge of the Canadian Forces.¹⁴ By partnering with academic institutions to provide education opportunities that compliment CF

Academy Headquarters, tasked with modernizing the NCM PD framework and establishing academic partnerships with civilian institutions. He is a Masters Candidate in Interdisciplinary Studies at Royal Roads University, and is concentrating upon the future of education and effects of social computing on professional development. Chief Mercer is also a frequent speaker on the adoption of emergent technologies to accelerate organizational and personal learning.

needs through CDA-selected programs that recognize the challenges associated with military service, we reduce costs, broaden our knowledge horizons, and become a career of choice for Canadians. By enriching the breadth and depth of education opportunities for NCM self-improvement, and, while fostering a culture that appreciates and rewards individual intellectual growth, the CF will mobilize its greatest asset for operational success, its people.

Chief Warrant Officer Ralph Mercer, CD, is a staff member at the Canadian Defence

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1. Chief of the Defence Staff, *Beyond Transformation*, the CPOI/CWO Strategic Employment Model, (Ottawa: Chief of Force Development, 2012), p. 8.
2. The Canadian Forces Non-Commissioned Member in the 21st Century (*NCM Corps 2020*) KI 6, p. 8.
3. *Ibid*, p. 11.
4. *Beyond Transformation...* p. 9.
5. *Ibid*, p. 16.
6. Chief of the Defence Staff, *Duty with Honour*, The Profession of Arms in Canada, Ottawa/Kingston: Canadian Forces Leadership Institute, 2003, p. 11.
7. *Ibid*, p. 1.
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9. *Beyond Transformation...*
10. M. Taylor, (2011). *Emergent Learning for Wisdom*, Palgrave Macmillan [Kindle Edition] Marilyn M. Taylor contends that solutions to adaptive challenges reside not in the executive suites but in the collective intelligence of the employees at all levels. The locus of responsibility for problem solving must be delegated to the people within an organization.
11. L. Koskela and M. Kigioglou, "On the Metaphysics of Production, IGLC-13." At: http://usir.salford.ac.uk/9378/1/2005_On_the_metaphysics_of_production.pdf
12. L. Ilon, "How Collective Intelligence Redefines Education," in *Advances in Collective Intelligence*, No. 113, pp. 91-102. At: http://link.springer.com.ezproxy.royalroads.ca/chapter/10.1007%2F978-3-642-25321-8_8?LI=true#page-1.
While collective intelligence systems become ubiquitous for learning in knowledge industries, civic life, and personal lives, they have yet to be embraced into formal schooling systems. Lynn Ilon examines the underlying logic of both collective intelligence and formal education systems, and traces education's reluctance to its roots in an industrial era, and the incentives prevailing in its structures. Embracing collective intelligence will require a redefinition of schooling, rather than a mere retooling.
13. D.Tapscott and A.Williams, (2010), "Innovating the 21st Century University: It's Time," in *Educause Review*. At: <http://net.educause.edu/ir/library/pdf/ERM1010.pdf>.
14. J. Verdon, "Stewarding Engagement, Harnessing Knowledge: Keeping the Future in Reserves," in *Journal of Military and Strategic Studies*, Vol. 12, No.4. At: <http://www.jmss.org/jmss/index.php/jmss/article/view/357/379>.
The 'wicked' problem for defence and security is the challenge of developing a social strategy consistent with an open society that enables an internal space for richer, more agile 'cloud-labour,' and 'talent-commons,' providing 'just-in-time' group-forming and peer collaboration within and between organizations. A social strategy that can extent the military network would increase the capability to search a larger solution space, enable knowledge to flow, and increase human and social capital and trust. These critical factors set the conditions for current and future operational agility.



DND photo IS2013-1007-04 by Sergeant Matthew McGregor

A Canadian Forces CC-177 *Globemaster III* aircraft is refuelled in the moonlight at the airport in Bamako, Mali, 25 January 2013.

WHAT ARE THE FORCES TO DO?

by Martin Shadwick

One of the distressing consequences of the current political, bureaucratic, military, media, academic, and public preoccupation with the swampy vagaries of Canadian defence procurement—both the process as a whole and specific procurement initiatives (most notably, but not exclusively, a new fighter aircraft)—has, arguably, been some loss of collective focus on debating and defining Canada's defence policy priorities in the post-Afghanistan era. What *are* the Forces to do in the coming years? What defence priorities will command the broadest possible political and public support? What are the prospects for the profession of arms in Canada? How much are Canadians prepared to pay for their security insurance premium? Where does Canadian defence policy go in particularly tough economic times, and in an unpredictable geo-strategic environment in which the flagship Canadian military activity of the past decade, the operation in Afghanistan, encountered increasingly tepid levels of public support in its later years?

This is not to suggest that Canada's contemporary armed forces confront a crisis of confidence or crisis of relevance identical to those experienced in the late-1960s and early-1970s during the period of East-West détente, or, to lesser degree, during the early post-Cold War period. The relatively relaxed Canadian approach to security and defence that char-

acterized the détente era, for example, is neither prudent nor politically tenable in the post-9/11 era. That said, there are similarities between the Canadian defence policy-making environment of 2013 and that of the détente era. In the latter, the Trudeau government was less than enamoured with Canada's commitments to NATO or to United Nations peacekeeping. In 2013, Canada's diminishing links with NATO have been further eroded by withdrawal from AWACS and AGS, and buffeted by differences over NATO's potential role in the Arctic. Canada's participation in United Nations peacekeeping operations has reached a very low ebb. With two traditional pillars of Canadian foreign and defence policy either undermined or unpopular, the Trudeau government (and some military denizens of Ottawa) sought to re-balance Canada's defence priorities and bolster the perceived relevance of the armed forces by embracing an expanded range of quasi-military (i.e., surveillance and control, internal security) and non-military (i.e., disaster relief, search and rescue) commitments. Might Ottawa be tempted to play the same card today?

Born into an era of détente, the Trudeau government argued that a more benign geo-strategic environment permitted massive reductions in Canadian defence spending, manpower, and equipment—particularly that related to NATO commitments. UN peacekeeping was also de-emphasized in Trudeau's 1971 white paper. NORAD essentially 'broke even,'

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but seemingly, the only ‘winner’ in the new defence policy was “... the surveillance of our own territory and coastlines, i.e. the protection of our sovereignty,” a priority that included aid of the civil power (particularly topical because of the October crisis of 1970), and a growing array of quasi-military and non-military responsibilities. “Although maintained primarily for purposes of sovereignty and security,” noted the white paper, “the Department of National Defence provides an important reservoir of skills and capabilities which in the past has been drawn upon, and which in the future can be increasingly drawn upon, to contribute to the social and economic development of Canada.” Overseas, the military “can also give further support to foreign policy objectives through increased assistance in economic aid programs. National Defence has capabilities to assist in such fields as engineering and construction, logistics policies, trades and technical training, advisory services, project analysis and air transport.”

The white paper positively dripped with references to non-military and quasi-military tasks, including Arctic surveillance, northern development, ice reconnaissance, surveillance of mineral exploration and exploitation projects, coastal and fisheries protection (thereby rescuing the previously doomed *Tracker* fleet), disaster relief at home and abroad, search and rescue (SAR), internal security, and, more broadly, “the protection of our sovereignty” against challenges which were “mainly non-military in character.” Ottawa also indicated, in other statements, that the proposed Long-Range Patrol Aircraft, the intended successor to the *Argus* anti-submarine warfare (ASW) aircraft, might emerge with a comparatively modest ASW suite, but a broad spectrum of civilian-oriented remote sensing equipment. Having thus ‘uncorked the non-military and quasi-military bottle,’ Ottawa was soon receiving pitches for a DND-operated fleet of Canadair CL-215 water-bombers, provincial highway construction (military engineers were already labouring on civilian bridge and airfield construction in the North), and, from the academic and scientific communities, the creation of a military-operated logistical and support hub for civilian scientific research in the Arctic. Professor T.C. Willett of Queen’s University added a plethora of potential projects, including participation in the “planning, reconnaissance, and initial development of new community and town projects, particularly in the north and other as yet undeveloped parts of the country,” provision “of all air services for non-commercial public purposes” including “police work, ambulance, [and] rescue;” and the “provision and manning of social development teams to work with the native peoples all over Canada.”



A CF CS2F *Tracker* flying over Comox Valley, British Columbia, 21 August 1981.

DND photo CXG-81-2519

The white paper did not prescribe a constabulary military—indeed, it declared an intention “to maintain within feasible limits a general purpose combat capability”—but its apparent zeal for non-military and quasi-military roles helped to fuel concerns that Canada’s armed forces were headed for constabulary status. This, in turn, prompted a debate over the nature of Canadian military professionalism. Colin S. Gray, writing in a 1973 *Wellesley Paper*, opined that a “military traditionalist sees the domestic orientation of [the white paper] as a temporary fad, dangerous to the national security, and/or as the possible harbinger of the ultimate demise of the military profession.” A modernist shares the traditionalist’s assumption that Canada needs armed forces, but “perceives that the armed forces must not merely be more obviously *relevant* to Canada’s needs than they have been in the recent past, but—still more important perhaps—they must be seen to be more relevant.” “Our modernist,” notes Gray, “has sought and found an impressive array of new or re-emphasized roles,” thereby demonstrating “how inventive a bureaucracy can be when it feels challenged to come up with something that is politically palatable.” Gray also noted, correctly, that “the armed forces would seem to be realizing, slowly, that there are really not that many tasks they can undertake in their efforts to assist the civil authorities without poaching on the preserves of civilian agencies” (or, one might add for contemporary consumption, the private sector). DND also came to realize that over-selling quasi-military and non-military roles could erode the case for a credible military capacity. Help, however, was at hand.

In 1975, the Trudeau government’s Defence Structure Review restored NATO to its pre-eminent position in Canadian defence policy and rescued the Canadian Forces from both the financial wilderness and the risk of “constabularization.” The product of a less benign strategic environment and entreaties

from allies, the DSR heralded a major increase in defence spending, and a massive rebuilding of Canada's military capabilities. Some of this funding trickled into the quasi-military and non-military sphere (i.e., additional SAR helicopters), but it was telling that the LRPA—the *Aurora*—emerged as the world's foremost ASW aircraft and never did receive its civilian remote sensing suite. Similarly, DND's interest in the Arctic quickly waned.



Library and Archives Canada PA-212560

The Right Honourable Pierre Elliott Trudeau, Prime Minister of Canada.

Other than the normal platitudes about the need for inter-departmental cooperation and the relevance of the armed forces to such tasks as disaster relief, the white papers or major policy statements of 1987, 1994, 2005, and 2008 have, for the most part, devoted comparatively modest attention to non-military and quasi-military tasks. There have, however, been some interesting twists and turns. The Mulroney government's 1987 white paper, for example, differed from its 1971 predecessor in viewing sovereignty protection through a holistic military, quasi-military and non-military lens. A manifestation of this approach was the plan to re-engine and update the *Tracker*, but the project was cancelled in the budget of April 1989 and the air force's coastal patrol mandate summarily transferred to the private sector. The decision was attributed to financial pressures and the "non-military" role of the *Tracker*—others pointed to the political ideology behind alternative service delivery, industry lobbying and the need to remove a key rationale for the retention of CFB Summerside—but the net result was the loss of almost all of the air force's fisheries patrol mandate. Barely 15 months later, the government again reversed course by announcing that the air force would re-enter the coastal patrol business, initially with a trio of recycled *Challengers*. The *volte face*, which left the private

sector as the major provider, was consistent with the government's slim 1992 statement on defence, a document rich in references to non-military and quasi-military tasks. Did this document reflect a sincere belief in the importance of new, post-Cold War paradigms of security, or did it reflect a bureaucratic and military survival strategy at a time when the post-Cold War future of the Canadian Forces was particularly uncertain?

The Chretien white paper of 1994 stoutly defended the need for a "multi-purpose, combat-capable" defence establishment, and rejected a constabulary model based upon non-military and quasi-military roles: "Over the past 80 years, more than 100,000 Canadians have died, fighting alongside our allies for common values. For us now to leave combat roles to others would mean abandoning this commitment to help defend commonly accepted principles of state behaviour. In short, by opting for a constabulary force—that is, one not designed to make a genuine contribution in combat—we would be sending a very clear message about the depth of our commitment to our allies and our values, one that would betray our history and diminish our future." Such a ringing (if underfunded?) declaration was absent from Martin's International Policy Statement of 2005, but its post-9/11 attention to homeland defence appeared to offer some potential, if ill-defined, synergies between assorted military, quasi-military and non-military tasks. On the international stage, the same could potentially be said of its treatment of the three-block war doctrine. The Harper government's *Canada First Defence Strategy* of 2008 was similarly sparse in its discussion of non-military and quasi-military tasks, but several—including disaster relief—appeared on its list of the six "core missions" of the Canadian Forces.

Five years after the release of its *Canada First Defence Strategy*, might the Harper government ponder increased attention to non-military and quasi-military tasks? The answer is potentially complex. In the early Trudeau years, non-military and quasi-military tasks represented a lifeline of relevance at a time when NATO's perceived utility had been reduced by détente and peacekeeping's cachet had been eroded by Egypt's expulsion of the United Nations Emergency Force in 1967. Today's decision-making environment is different. Indeed, the Canadian Forces have been astonishingly busy—across the full spectrum of military, quasi-military and non-military operations, both at home and abroad—since the end of the Cold War. Canadians may not always agree with the tasks and missions assigned to their armed forces, but no one can argue that military personnel have been simply sitting around since the demise of the Soviet Union. That said, public support for latter-day Afghanistans is, to say the least, muted, the prospects for future peacekeeping, peace-enforcement, human security, and Responsibility to Protect missions remains unpredictable (as does, in some cases, Canada's acceptability as a contributor), and NATO's utility as a makeweight on the list of Canadian defence commitments remains suspect. It is also salient to note that public opinion polling continues to show very high levels of support for such non-military and quasi-military tasks as Arctic and coastal surveillance, disaster relief, and search and rescue.

DND photo IS2012-2003-144 by Master Corporal Marc-Andre Gaudreault



A Royal Canadian Air Force CP-140 *Aurora* aircraft from 14 Wing Greenwood, Nova Scotia, lands at Marine Corps Base Hawaii, Kaneohe Bay, Hawaii, 23 July 2012.

Therein rest some problems. The Harper government has made much of its interest—a highly commendable interest—in Arctic sovereignty and security, but its plans for an expanded military presence in the north have been alarmingly descope and repeatedly delayed. Previous governments, meanwhile, have made it difficult to move forward with an enhanced military role in such flagship areas as fisheries protection and search and rescue. The Mulroney government privatized the vast bulk of the air force’s fisheries surveillance role (the trio of recycled *Challengers* did not last long) and the Chretien government privatized the maintenance of the *Cormorant* search and rescue helicopters. Ousting private contractors, even when there are compelling reasons of broader national interest, is not for the faint of heart (and may, in any event, conflict with the Harper’s government’s political ideologies). The search and rescue picture will become even messier if maintenance of the proposed fixed-wing search and rescue aircraft is privatized—and a complete loss to DND if search and rescue as a whole is ever privatized. Even capital projects that can holistically supplement their core military *raison d’être* with secondary or tertiary quasi-military and non-military capabilities are at risk. The utility of the Joint Support Ship for such roles as disaster relief, or as a pollution control headquarters ship, continues to decline in the face of fiscal constraint.

Should the Harper government opt to revitalize the non-military and quasi-military roles of the Canadian Forces, it must choose carefully and holistically, and not undermine the fundamental military *raison d’être* of the Canadian Forces. Excessive or ill-considered non-military and quasi-military responsibilities would threaten the core combat capabilities, the military professionalism, and the military ethos of the Canadian Forces, promote the undesirable ‘civilianization’ of the military, generate unrealistic public expectations, and invite jurisdictional and cost-effectiveness disputes with other government departments, as well as the private sector. A purely constabulary military establishment is not the type of military

establishment that Canada requires in an era of disturbing geo-strategic uncertainty.

That said, non-military and quasi-military tasks, if selected with care, and with a holistic, finely-honed grasp of the broader national interest, can enhance military professionalism, and contribute, directly, or at least indirectly, to the preservation of the core combat capabilities of the Canadian Forces. To those who would reduce, jettison, transfer or privatize the non-military and quasi-military tasks of the Canadian Forces—or fail to re-acquire elements of some previous tasks—one could argue that such measures would: (a) be inconsistent with new definitions and paradigms of security, sovereignty and service to the state, both post-Cold War and post-9/11; (b) erode the nation’s already much diminished stock of multi-purpose, combat-relevant assets, capabilities, and expertise; (c) forego potentially attractive, and cost-effective, synergies between the military, quasi-military, and non-military responsibilities of the Canadian Forces; (d) eliminate demanding and challenging tasks that enhance, rather than diminish, military professionalism and the military ethos; (e) inflict significant damage upon military morale and the military’s self-image; (f) contribute, in a grim irony, to the undesirable ‘civilianization’ of the armed forces by fostering new and deeper linkages between military and civilian (i.e., contractor) personnel; and (f) contribute to the isolation of the Canadian Forces from the Canadian public.

It is right and proper to ask if a military institution can survive if it performs too many non-military and quasi-military tasks, but it is equally right and proper to ask if a military institution can survive if it eschews—or is forced by alternative service delivery-addicted and lobbyist-influenced governments to eschew—such tasks. Too often in Canada have we pondered the *former* while ignoring the *latter*.

Martin Shadwick teaches Canadian defence policy at York University. He is a former editor of Canadian Defence Policy.



A CH-149 *Cormorant* on a SAR training mission.

DND photo IS2006-7002-01a by Master Corporal Kevin Paul

The Patrol: Seven Days in the Life of a Canadian Soldier

by Ryan Flavelle

Toronto: HarperCollins Publishers Ltd.

251 pages, \$29.99 (HC)

ISBN-10: 1443407178

ISBN-13: 978-1443407175

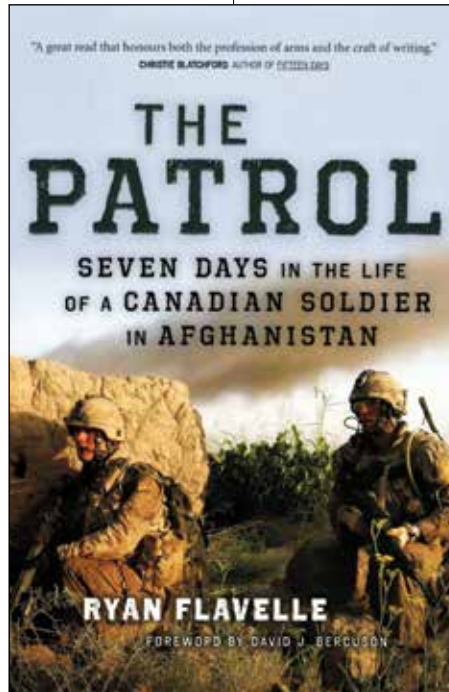
Reviewed by Marshall S. Horne

Canada's combat mission in Afghanistan may be over, but for an entire generation of Canadian soldiers the memories of war will never be fully expunged. Most will probably never share their stories with the outside world. They are simply too personal for those who have no concept of what it is like to carry a C7A2 assault rifle across an Afghan grape field. Yet some, such as Master Corporal (now Sergeant) Ryan Flavelle, a recent graduate of the University of Calgary's Master of Strategic Studies program with the Centre for Military and Strategic Studies, will constitute a small minority of Afghan combat veterans who will share their intimate experience with a wider audience. Consequently, memoirs like *The Patrol: Seven Days in the Life of a Canadian Soldier in Afghanistan* will come to define how the Canadian public understands the nature of the Afghanistan War, and what it is like to be a soldier on patrol.

As a reservist with 746 Communications Squadron, Flavelle augmented the seven-month rotation of Second Battalion Princess Patricia's Canadian Light Infantry (PPCLI) in 2008. Attached as the signaller to the officer commanding of Bravo Company, he spent the majority of his deployment at 'Castle Greyskull,' better known as Patrol Base Sperwan Ghar in the northern region of Kandahar Province. Flavelle lived, worked, and patrolled 'at the sharp end' of the Afghan conflict, far removed from the *Tim Hortons*, shopping outlets, and "mind numbing boredom" of Kandahar Airfield (KAF). Although *The Patrol* frequently details Flavelle's thoughts of home, Afghanistan, and the Canadian military in general, its focus depicts a single seven-day combat patrol between Sperwan Ghar and Mushan that "served as the focal point" of his Afghan experience and how Flavelle came to "see myself as a man."

The Patrol is exceptional for several reasons. Most obviously, it is the particular insight it provides into combat patrolling in Afghanistan. Simply put, patrolling is the ritual and tradition of the infantryman (or woman). Its basics can be easily learned - "keep your spacing, cover doors, and take a knee" - but Flavelle makes it painfully obvious that patrolling is more of a physical and mental challenge than a technical or

tactical challenge. The unrelenting heat of Afghanistan, the weight of a seventy kilogram kit, the unquenchable thirst, and the constant threat poised by unknown IEDs characterize just a few of these challenges. In many ways, the Taliban combatant exists almost as an afterthought. And yet, central to the tradition of patrolling is the soldier's devotion to endure any hardship without complaint. To display any form of reluctance or weakness is to disrupt the ritual and to question your capability as a soldier in front of your peers. At one point, Flavelle risks succumbing to heat stroke rather than admitting weakness by seeking immediate medical assistance. This is only one of the several examples of personal endurance that Flavelle describes.



The Patrol is also somewhat unique in that it describes the many identity conflicts existing within the current Canadian military. As a reservist augmentee, Flavelle often feels excluded from the close-knit camaraderie of the regular force PPCLI. As a signaller, Flavelle self identifies as a nerd, more at ease in repairing a radio than among the "high school locker room" of regular soldiers. He identifies these soldiers as "warriors," but quickly dismisses - perhaps a little *too* quickly - any such notion that he is one of them. Instead, Flavelle simply remains honoured to have lived and patrolled among such dedicated warriors.

Another contradiction exists between the officer and soldier "WOGs" (an undefined derogatory term) of KAF. There is an instant disdain for anyone that wears a red maple leaf insignia, bloused trousers, or field caps, the clear identifiers of soldiers that do not journey "outside the wire," and have thus not shared the burden of the army's patrolling tradition. But perhaps the most interesting contradiction is Flavelle's 'take' with respect to the "new" and "old" army. Specifically, he challenges the notion that today's soldiers are somehow part of a softer, kinder, and gentler army. Toward the more senior members of the "old" army, Flavelle gripes that he is "... tired of hearing about how drunk you were back when you were peacekeeping in Cyprus." Although there were certainly dangers to Canada's long-standing peacekeeping mission to Cyprus, they are simply incomparable to those of the Afghan war. "Cyprus," retorts Flavelle, "is where we go to vacation." The "new" army may appear to some as soft, yet the operational hazards it endured in Afghanistan were unparalleled since Korea.

Ultimately, the strength of *The Patrol* is derived from two different sources. The first is in the nature of Flavelle's memoir. In the main, the power of *The Patrol* is in its depth, not its breadth. Instead of broadly recapping his seven-month deployment and simply providing the cursory details and highlights of his war experience, Flavelle focuses upon the single event that is unquestionably forever etched into his memory. Thus,

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the reader gains a deeper appreciation of patrolling, the life of a Canadian soldier, and the war in Afghanistan in general than would otherwise have been achieved in a more expansive and superficial memoir. The second strength is Flavelle's honest, naked portrayal of the events contained within the patrol. The emotions are raw, and there is no attempt to make himself into a hero or political motivation to justify the Afghan War. Instead there is only an attempt to understand himself and his constitution as events unfold around him.

This memoir is deeply personal, vulnerable, and refreshingly candid. It is highly recommended to anyone interested in Canada's military involvement in Afghanistan, or those that ponder the nature and traditions of soldiering.

Marshall S. Horne is a third year PhD Candidate with the Centre for Military and Strategic Studies at the University of Calgary.

A Sense of the Sea: Our View of the Sea and How We Got It

by Brian G. Whitehouse

Halifax: Glen Margaret Publishing, 2012

228 pages, paperback, \$22.95

ISBN 978-1-897462-23-2

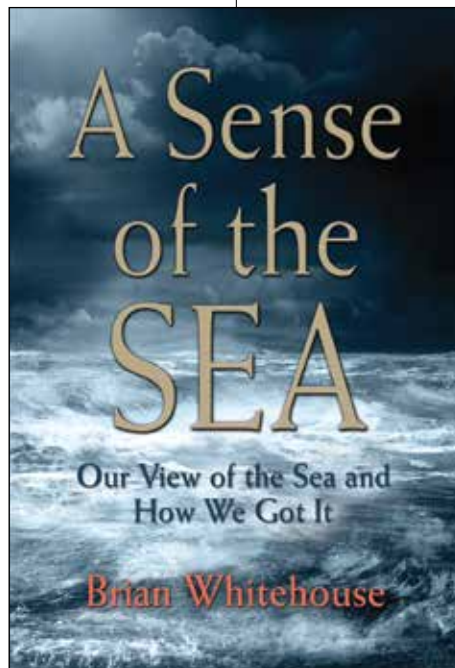
Reviewed by Dan Hutt

What does the ocean mean to people – to individuals and to society as a whole? That is the question Brian Whitehouse answers in his first book, *A Sense of the Sea*. An avid sailor, oceanographer, and former Executive Director of the influential Alliance for Marine Remote Sensing, Dr. Whitehouse charts a fascinating course through the history, technology, and popular culture of the ocean. The journey is a personal one, drawing upon Whitehouse's childhood with his British navy father, his experiences on ocean weather ships as a young university graduate, and his deepening understanding of the sea as a professional oceanographer.

A Sense of the Sea consists of two parts, *The Ocean We Know* and *The Ocean We Perceive*. The first part presents the development of the science of oceanography and the methods used to observe the ocean. Compared to other disciplines, oceanography is a very new science. Our ability to understand the dynamics of the ocean is based upon technologies that matured as recently as the 1990s – Earth observation satellites, supercomputers, and the Internet. Whitehouse explains the importance of being able to model and forecast the ocean. Not only is it critical for naval operations, but the next advance in weather forecasting depends upon ocean modelling. That is because the weakest link in weather forecasting today is accounting for the influence of the ocean upon the atmosphere.

Of particular interest to readers of the Canadian Military Journal is Whitehouse's contention that the science of physi-

cal oceanography grew out of military research – funded mostly by the US Navy, but also by the former Soviet Union, France, and a few other countries. The argument that military research created modern oceanography is made convincingly in *A Sense of the Sea*. Even the Foreword is written by Secretary of the Navy Chair in Oceanography at Scripps institution of Oceanography, Dr. Walter Munk. Thus, during the Cold War, while the public viewed the ocean as a biological wonder, thanks largely to Jacques Cousteau's Undersea World TV series, navy-funded marine scientists concentrated upon the physics of the ocean. Today, operational oceanographers provide deployed naval forces with forecasts of every conceivable ocean quantity including currents, sound speed profiles, through-water visibility, waves, and even bioluminescence.



In *The Ocean We Perceive*, Whitehouse examines the ocean through the prism of popular culture. The underwater scenes in the 1965 James Bond movie *Thunderball* gave the impression that technology could enable people to live easily underwater. Yet, the story is inspired by the real-life Cold War conflict that played out underwater as it did upon land and in space. Whitehouse uses the 2004 movie *The Day After Tomorrow*, where melting polar ice causes a global climate crisis, as a vehicle to explain the world-wide ocean sensing infrastructure that is much more extensive than the public realizes.

Whitehouse recounts the story of Jacques Yves Cousteau's and Émile Gagnan's invention of the underwater breathing apparatus they called the aqualung (later known as Self Contained Underwater Breathing Apparatus, or SCUBA). SCUBA was a significant development in exposing the public to the beauty and mystery of the undersea world, yet ultimately it did not contribute much to our understanding of the physical ocean. That role fell to more remote technologies, such as drifting autonomous buoys, Earth observation satellites, and sea gliders.

Whitehouse's early perception of the sea was derived from his father, a Royal Navy NCO who emigrated to Canada

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in 1953 and became an officer in the Royal Canadian Navy. A tour of Canada's last aircraft carrier, HMCS *Bonaventure*, made a great impression upon the author as a boy. One chapter of *A Sense of the Sea* traces the decline of the Royal Canadian Navy, from the 1950s through integration of the Canadian Forces in 1967, as seen by a young man with a navy dad. Frustrated with the navy during the 1970s, the elder Whitehouse imparted a key piece of advice to his son: "Don't join the navy."

Following his father's advice, Brian Whitehouse satisfied his fascination for the ocean by spending three years working on ocean weather ships in the North Pacific. This experience

led to graduate school at Dalhousie University and a career as an oceanographer, and it is part of the inspiration for *A Sense of the Sea*.

A highly original book, I found *A Sense of the Sea* thoroughly engaging. It gave me pause to reflect upon and to appreciate my own connections with the sea. My next stroll along the beach will be a deeper experience because of it.

Dr. Dan Hutt is a defence scientist with Defence R&D Canada – Atlantic in Dartmouth, Nova Scotia. He is currently Head of the Underwater Sensing Section.

Black Ops, Vietnam. The Operational History of MACVSOG

by Robert Gillespie

Annapolis, MD: Naval Institute Press, 2011

320 pages, \$41.95 (HC)

Reviewed by Bernd Horn

This book was a pleasant surprise. Admittedly, when I looked at the dust jacket cover art my first reaction was to think, "not yet another 'kill 'em all and let God sort them out'" history on special operations forces (SOF). However, once I cracked the cover, it became abundantly clear that the book was a very well-researched, well-written history of the Military Assistance Command Vietnam Special Operations Group (MAVSOG).

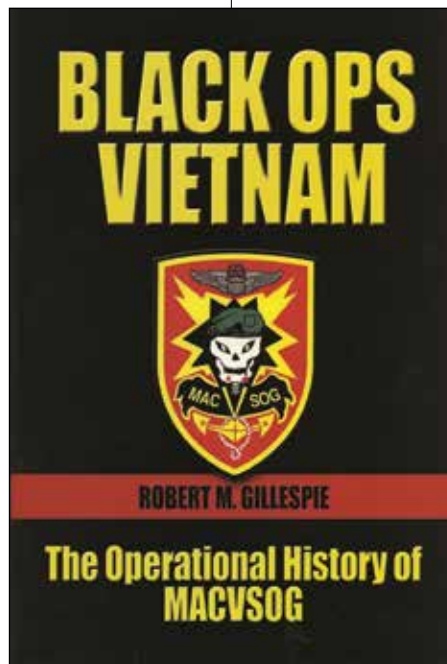
The book starts with an overview of American involvement in Vietnam and special operations prior to the creation of MACVSOG in 1964. The author then takes a chronological approach, methodically running through the life of the organization from 1964-1972, when the formation was dismantled. Each year becomes a chapter, and Gillespie provides an overview of key events, concepts, operations, organization, and programs. Furthermore, each year follows a similar template or construct, so it is easy to track evolution and changes within MACVSOG, as well as its activities. As such, the book becomes an excellent primer and resource tool. Due to the very nature of this approach, the book does not provide the definitive word on all aspects of the organization, activities, or events in Vietnam, but the author has done an admirable job of balancing quality and significance of content with quantity. Although topic areas are handled in a relatively succinct manner, he has expertly filtered the data, and he provides an incredibly complete and concise summary for each of the years covered, and

their respective content. He has, in essence, created a marvelous source book.

What is impressive, aside from the tight narrative, is the fact that the book balances its succinct fact-based approach, rich with detailed statistics and data, with dramatic and exciting vignettes that capture the courage, drama, and heroism of the MACVSOG operators themselves. Specifically, he provides vignettes of winners of the US Congressional Medal of Honor, and also vignettes applicable to some specific operations. This adds a degree of action to an otherwise-historical summary. It also adds context to the operations, and their degree of difficulty in the context of the greater conflict and the geographical location.

The book is also filled with wonderful little-known facts. It brings forward the reality that within the realm of military affairs, there are very few new problems. The book covers the introduction of computers needed to sift through data; the problems associated with coalition operations, specifically, *working with and trusting allies*; the importance of air assets and communications; and the difficulty of fighting a limited war under considerable military and political constraints.

Of great interest is the author's coverage of the psychological warfare component of MACVSOG and the group's efforts at infiltrating the North, and conversely, trying to stymie the avalanche of troops, equipment, and supplies flowing into the South by way of the Ho Chi Minh Trail. The accounts of agents trying to infiltrate, the phantom drops and agents, the counter-intelligence battle, and the use of special tactics to stop SOG teams interdicting the Ho Chi Minh Trail were fascinating. For example, the SOG teams were so successful that the North Vietnamese were forced to take dramatic action. They began to employ a layered defence of trail watchers, individuals maintaining observation on all possible landing zones [LZs] (in fact, by



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1969, almost every possible LZ in Laos was under observation), patrols, rear area security units, tracker dogs, and hunter-killer units.

Overall, the writing is crisp, clear, and easy to follow. The book is well-researched, and it contains a wealth of endnotes that provide both sources and additional information. The author is clearly knowledgeable about the subject, and has utilized seminal sources, both secondary and primary, including previously classified documents.

Another extremely valuable aspect of the book is its bibliography with commentary, which will help the researcher or enthusiast sift through the vast amounts of literature, and focus in upon the more pertinent and authoritative sources. The volume also contains a detailed index and a glossary of abbreviations and acronyms to help the reader circumnavigate the military jargon that is always present in a work of this nature.

One disappointing element of the book was the images provided to augment the text. The author chose to go solely with portraits of the MACVSOG commanders. It would have been greatly beneficial to include other photographs that capture the terrain, personnel, and equipment used in order to bring some of the text to life.

In the end, this is a very valuable resource dealing with American special operations forces used during the Vietnam War. It is highly recommended for military professionals and enthusiasts, as well as anyone studying the conflict, SOF, or counter-insurgency operations.

Colonel Bernd Horn, OMM, MSM, CD, PhD, is the *Chief of Staff Strategic Education and Training Programs at the Canadian Defence Academy*. He is also an *Adjunct Professor of History at the Royal Military College of Canada and Norwich University*.

Give Me Shelter: The Failure of Canada's Cold War Civil Defence

by Andrew Burtch

Vancouver: UBC Press, 2012.

xiii, 300 pages, \$32.95

ISBN: 9780774822411

Reviewed by: Michael J. Thompson

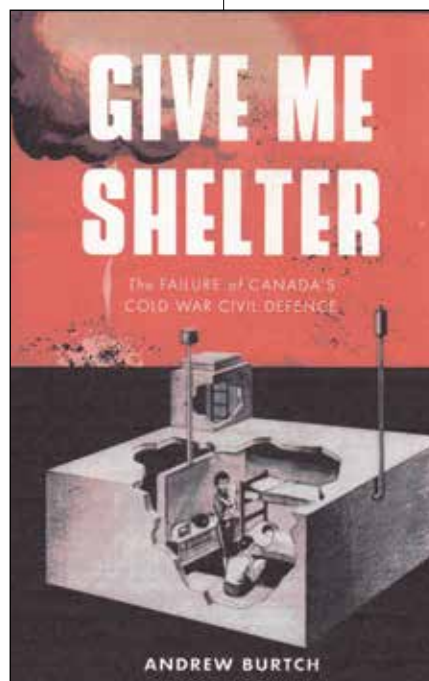
With the end of the Second World War and the dawn of the nuclear age, governments faced a new threat that posed new challenges—the possibility of total, national annihilation. In Canada, federal civil defence (CD) planners were responsible for developing strategies to protect citizens in the event of a nuclear war. Andrew Burtch's *Give Me Shelter* traces the evolution of CD planning during the first half of the Cold War, and outlines the obstacles planners faced in preparing for the worst. Burtch is an historian at the Canadian War Museum specializing in the post-1945 period, and he is therefore well-suited for writing a book on this topic. Covering nearly 25 years of Cold War Canada, Burtch provides what is, for the most part, a chronological analysis of CD's planning evolution.

The author argues that civil defence was a "failure," but the criteria upon which he judges "success" is never made explicit. He explains failure in this way: "Civil Defence Canada...had sought to prepare the public for [a nuclear crisis]. Yet when it happened, people did not

know how to protect themselves, nor were they equipped with the necessary resources to survive...." It appears that success is defined by CD's ability to provide the public with the means of survival (education, workable plans, and resources) which itself was dependent upon citizen contributions. His argues that CD planners needed to develop policies for survival, and success of these plans rested upon linking civic duty to the state, to the need for civilians to participate in fulfilling survival plans. However, he shows how Canadian citizens did not 'buy into' the concept that the costly and dangerous emergency responses necessary after an attack were responsibilities they, as citizens, were expected to bear.

The main emphasis of the book is upon planning and the difficulty involved in developing survival policies within the context of a rapidly changing political, strategic, and technological Cold War environment, and this is wherein the greatest success of the book lies. Burtch adeptly traces the history and development of the CD organization, and the major characteristics of the different strategies that were devised in response to an environment of change. The plans fell into three broad categories: The first was a strategy active from 1948 to 1954, and based upon firefighting and first aid. This was followed by one of urban evacuation from 1954 to 1959, and finally, strategies from 1959 emphasized shelter construction.

Using letters from citizens, CD meeting archives, and newspaper articles, the author posits how citizens never fully accepted the responsibility for nuclear civil defence or the concept of the obligation-based model of citizen as



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defender, willing to give their lives if necessary in helping cope with what was perceived as a 'military' problem. In addition to the practical reasons behind public rejection of CD plans (financial burden and physical risk) was a psychological issue. Canadians were constantly reminded of the dangers of nuclear weapons, but in being asked to prepare themselves for the worst, they were being asked to confront the possibility of Armageddon. This produced a huge amount of anxiety and apathy, which undermined CD efforts and formed a great obstacle to success.

However, Burtch does not expand upon how public policy success or failure should be assessed in such a context. Should CD have done more to change public psychological considerations? How does one define success in a situation where it can never be tested? What lessons are there for policy makers who have to prepare the country for threat or change? Burtch does not extend his thinking in these directions, and therefore leaves us with a book, the usefulness of which in terms of the practicality of policy is short-changed.

Ultimately, however, Burtch's book is more than half-way successful. He shows that citizens did not accept the role CD had devised for them, evidenced by a lack of volunteers; the fact that people were reluctant to invest in the bomb shelters they were told were necessary; and that they did not accept survival training that was highly militarized. He also outlines failures on the part of CD itself—evolving policies often seemed contradictory, and CD reorganizations, uneven municipal programs, and poor communication limited CD usefulness during the 'dress rehearsal' known as the Cuban Missile Crisis.

Yet, Burtch's arguments are not without issues. He fails from the outset to establish within his analytical framework a clear benchmark from which to measure success. It should

also be noted that without a true test (detonation of an atomic bomb on Canadian soil), it is difficult to make judgements with respect to success or failure. One has to question if success was achievable at all, as the scale and scope of nuclear destruction was a threat to which no credible defence could be made, and this is a point Burtch himself acknowledges. Moreover, all the blame cannot fall on CD planning. Civilian apathy, government debates, and financial issues limited resources and capabilities, and general fear and panic were bound to inhibit rational thinking during a crisis. If the ambition of the CD planners was to prepare the public, and this is certainly a measure of success, then it is hard to point to the rejection of such preparation as a failure of CD.

Despite this, the book and its many themes do indeed hold many valuable insights for those studying Cold War Canada from a number of perspectives. Weaving together such a range of subjects—from politics, to psychology, to gender and sociology—is not an easy task, but *Give Me Shelter* is quite successful as a history. Burtch has produced a book on a subject of which little is written in the Canadian context, and he has managed to take a large amount of information and turn it into a highly readable and very efficient historical study. *Give Me Shelter* is well laid out, demonstrates an expert grasp of the subject and of available sources, and is highly readable. Burtch has uncovered a truly fascinating, yet complex area of Cold War history that merits further study, and his book is recommended to anyone interested in Canada's strategic, political, and social Cold War history.

Michael Thompson is a PhD candidate in the Department of History at the University of Ottawa, specializing in the history of defence & security policy in 20th Century Canada. Related areas of study include military procurement, foreign policy, and the history of Canadian science and technology policy.

Playing the Game: The British Junior Infantry Officer on the Western Front 1914-1918

by Christopher Moore-Bick

Solihull, UK: Helion & Company Ltd, 2011

328 pages, \$40.00

ISBN: 978 1 906033 84 2

Reviewed by Chris Buckham

The period 1914-1918 was witness to an unprecedented expansion of the army of Great Britain. This epic transformation may be viewed, not only in terms of numbers, but also speed, breadth of employment, and, one may effectively argue, it also represented the first revolution in military affairs from a technological perspective. During this time, in order to meet the demands of modern warfare, Britain was forced to expand its relatively tiny standing army through augmentation by the Territorial's, "Kitchener's New

Army," volunteers, and by conscription. Each presented unique challenges that impacted and influenced the face of the British military as never before. Consistent through all of these upheavals were the challenges of fighting a war on a scale never before seen or imagined, with technology that served, not only to augment the ability of opposing armies to fight, but also necessitated specific skill sets previously not required (i.e. the operation of machine guns, aircraft, tanks, communications, and so on), as well as the development of doctrine to support these capabilities.

Christopher Moore-Bick's book, *Playing the Game*, addresses these issues from the perspective of the junior officer (second lieutenant, lieutenant, and captain). When one considers the vast array of literature surrounding the First World War, a common theme tends to be that of the 'lost generation,' or the 'inability of the senior officers to deal with the challenges of the new realities of war.' What has not been addressed in any detail is the fact that despite all of the horrors of the trenches, Britain's army did not suffer any general collapse in morale or fighting spirit despite being composed in

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majority measure of non-professionals. That this was so may be largely attributed to the skill and motivation of its junior officer corps; the leaders who were most closely associated with the soldiers on the front lines. What these factors were that defined and influenced the development of the generation of young men who made up this group is the focus of Moore-Bick's book, and why those factors are relevant to the armed forces of today.

Moore-Bick is not interested in the experiences of the officers in the actual front line, except in so far as they add dimension to the traits of the officers themselves. Instead, he focuses upon the environmental elements that shaped their personalities (school, society, religion, and so on), and their sense of duty/obligation. Additionally, he draws distinctions between the different phases of the army's expansion (standing professionals, volunteers of Kitchener, conscription). Specifically, he highlights how each group accepted, adapted, and ultimately supported (in the sense of undertaking one's responsibilities) the war effort, and how these processes changed over the course of the war.

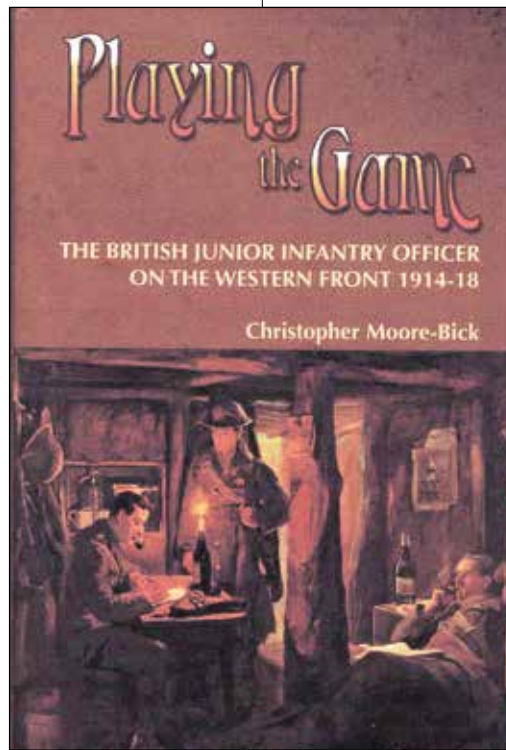
Drawing upon a vast array of primary source material, including diaries, letters, journals, and memoirs, as well as a host of secondary and presently-unpublished papers, Moore-Bick is able to paint for the reader a surprisingly complete picture of the views and thoughts of the junior officers who helped make up Britain's army. Of particular interest is his analysis of the transition from civilian to soldier of these officers, and how that influenced outlook and expectation. This 'professionalization' process had to take place under the most trying of circumstances, and within a very short period of time. That these men were able to adapt as quickly as they did is a testament to their psychological strength and the environments within which they developed. Another area that is addressed in depth is the impact of the public school system on the development of the psyche of these men. He reveals the role that the structure and tenets of the schools, with their emphasis upon loyalty to

one's peers and school, manliness in sports, and the responsibilities of a system that resulted in early personal growth and development played in their development and maturation. The role of the 'heroic' figure in British literature is also incorporated into his analysis. However, what must be emphasized is the balance with which Moore-Bick approaches his subject. It was clear that as the war progressed, officers enlisted with a far different perspective of the war than those who did so in 1914, and that these enlistees were being drawn from a much more varied and non-traditional pool (commissioning from the

ranks, non-public schools, civilian professionals and older generations), and yet they still undertook their duties in a responsible and forthright manner overall. The author's analysis and insight into his subject explains why this occurred, and how their backgrounds influenced their decisions and development.

Moore-Bick's work has drawn attention to an aspect of the First World War that has seen little evaluation, but the importance and significance of which cannot be understated. Armies succeed or fail on the strength of their leadership, particularly at the junior officer and senior non-commissioned rank levels. The lessons to be gleaned from the experiences of the First World War British junior officers in rapidly transitioning from a peacetime to a wartime footing in a very short period of time are numerous. While one may make the argument that these challenges

were approximated during the Second World War, I would contend that they were far more profound during the First World War, due to the technological changes occurring during the period, the speed with which the standing army was required to expand, and the lack of wartime experience among the general population, as was not the case during the precursor expansion period prior to the Second World War. This is Moore-Bick's first publication, and it is an excellent addition to the professional member of the armed forces library. I also strongly suggest that it should be read by anyone looking to expand their insight into the motivators and development of a junior leader.



Besieged: The Epic Battle for Cholm

by Jason D. Mark

Pymble, NSW, AU: Leaping Horseman Books, 2011

596 pages, \$AU 80.00

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Reviewed by Chris Buckham

The Battle of Cholm was one of the first major tests of the performance of the German Army under adverse conditions. *Besieged*, by Jason Mark, is the definitive work of this event.

Set on the Eastern Front, it covers the period from January to June 1942 when the German forces, reeling back under the counter-offensive of the Soviets outside Moscow,

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were forced into a series of *ad hoc* defensive operations. The brutal winter conditions, the collapse of portions of the German lines, and the confusion of the barely-controlled retreat resulted in a small force of a few thousand troops being surrounded in the village of Cholm. The subsequent achievements of this group, designated *Kampfgruppe Scherer* after the senior officer present, was to become one of the most famous stories of the Eastern Front conflict. Made up of a hodge-podge grouping of reservists, infantrymen, military police, service troops, aircrew, and naval drivers (in fact, there were remnants of over 60 different units trapped in Cholm), this force held out throughout the rest of the winter and into the spring against overwhelming Soviet forces.

Jason Mark has presented his subject in a chronological fashion, drawing upon extensive primary source material which provides the readers with a unique insight into not only the tactical challenges presented to the Germans, but also the psychological stresses that the soldiers endured (and the means by which they overcame them). *Generalmajor* (Brigadier General) Theodor Scherer, the commander of 281 *Sicherungs* Division, was assigned the responsibility for the coordination of the defence of Cholm. Thus, circumstance and chance thrust him from command of a second-line security division into the centre of the fray, with the fate of thousands of surrounded forces placed in his hands. Mark's presentation of the material gives the reader a much more personal perspective of events as the battle for Cholm unfolds. One is able to appreciate the challenges faced by the German operational commanders as they grapple with limited resources and multiple concurrent crises in their efforts to stabilize the front from a viewpoint not available to Scherer. Thus, his repeated demands for support and resources, and his frustration at what he perceives as a lack of comprehension by his superiors at his forces' precarious position is clearly defined against the 'bigger picture' with which his higher headquarters is dealing. Nevertheless, one empathizes with Scherer's position and command as he is provided the minimal amount of logistics support to stay solvent, but not enough to create any form of buffer or strategic reserve. As one follows the pressure brought to bear by the Soviet forces surrounding the Germans, it is clear that their situation was dire indeed. Ultimately, through luck, perseverance, outstanding leadership (amongst both the officers and senior NCOs) and professionalism (within all of the trapped units) the siege was finally lifted after three-and-a-half months.

Mark's use of primary source material from both the German and Soviet combatants provides some fascinating insights into the different leadership techniques at play. Of

particular note is the style used by Scherer, who proves himself a leader of no little ability. He displays a very high 'Emotional Quotient,' thereby enabling him to get the best from the forces at his disposal. He is thus able to recognize and take advantage of the strengths of his officers and NCOs, thereby facilitating an incredibly high level of morale. I was particularly struck by his ability to see beyond specific trades and classifications, and to view all as officers/soldiers first. A clear example of this is his recognition of *Oberzahlmeister* (First Lieutenant equivalent) 'Panzer' Schmid with the Iron Cross First Class. Schmid, a paymaster (logistics) officer, assumed a position as an anti-tank crewman when injuries left the guns shorthanded. In this role, he was instrumental in destroying a number of Russian tanks. He was also given command of the north-eastern section of the Cholm defences when casualties among combat arms officers precluded their employment.

Scherer's emphasis/insistence upon recognizing the achievements of his soldiers in a timely manner, irrespective of classification or trade, constituted one of the foundations of his leadership success. Additionally, the professionalism and individual capability of the Germans in terms of initiative and morale is also noteworthy. All of this played against the efforts of the Soviets, who were no less motivated and driven to defeat the Germans.

This siege is also of interest, due to the methods used by the Germans for resupply; namely, gliders and parachute drops. Unfortunately, the conclusions drawn from their success would later lead to an over-reliance upon the effectiveness of these means, with grave consequences for future operations (i.e., Stalingrad). Adding to the narrative are numerous photographs taken during the siege by the Germans. The stark black-and-white images serve to reinforce the desperation of both the defenders and attackers, as well as the challenges faced by the Luftwaffe in effecting timely resupply. Rounding off the situational awareness provided to the reader are numerous maps that highlight and provide context to the narrative. Jason Mark has produced in *Besieged* a book of outstanding quality and depth, and one that is a must for the historian and professional leader of today.

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