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Artist rendering of *Resolve*-Class AOR performing humanitarian and disaster relief operations
Credit: Project Resolve Inc, © Chantier Davie Canada Inc.

Off-the-Shelf or New Design? Considerations for the Canadian Surface Combatant Program

Institutional Excellence: An Initial Roadmap

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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 Winter 2015 edition of the *Canadian Military Journal*, our 61st iteration of the quarterly, if anybody is keeping track.

With respect to our cover image, a bit of background is warranted. In February 2014, a devastating fire destroyed the Royal Canadian Navy's Auxiliary Oiler Replenishment ship, HMCS *Protecteur*. As a result, Project *Resolve* was established to provide a fast track, fully compliant and affordable interim solution in order to keep our navy fully operational until a permanent solution can be launched. After more than a year of design, engineering, and planning, Davie Shipyards and its partners, Aecon, NavTech, and V.Ships, reached an agreement with the Government of Canada in August 2015 to provide At-Sea Support Services to the Royal Canadian Navy. This resulted in the purchase of a modern container ship, the MV *Asterix*, which will be converted into a modern replenishment vessel and delivered for service in the summer of 2017. The cover image is an artist's conception of how *Asterix* will appear after the planned transformation.

Taking the point this time out, strategic analyst David Rudd examines the renewal initiatives dedicated towards the Royal Canadian Navy's surface combatant fleet, particularly as they apply to the Canadian Surface Combatant (CSC) Program, which is intended to replace the current fleet of frigates and destroyers. Rudd's intent is to "…contribute to a broader understanding of naval procurement by defining and discussing military-off-the-shelf (MOTS) as a procurement option for a major naval platform. A non-exhaustive list of advantages and disadvantages will be examined, along with a brief exploration of allied experiences, all with a view to enhancing the ability of decision-makers to assess the suitability of this option for the CSC program." However, while Rudd contends that this option holds many attractions, the pursuit of such an option is not risk-free.

Next, Major-General Éric Tremblay, Commander of MILPERSGEN, and his Senior Staff Officer Professional Concepts, Dr. Bill Bentley, explore the elusive quality of Institutional Excellence (IE), and how it relates to the Department of National Defence (DND) and the Canadian Armed Forces (CAF). The authors contend that through the CAF's profession, that is, the profession of arms, it is, along with other government agencies, "…responsible for the national security of Canadians and the protection and promotion of Canadian values and interests." Further, this profound and demanding responsibility, which must prevail in the unstable and dangerous external environments of our time, must "…not only *achieve* excellence, but needs to be *perceived* as excellent by all stakeholders, above all, the elected government, other national security partners, international partners, and most importantly, by Canadian society."

Defence scientist Anna Ebel-Lam then takes a fresh look at the personnel requirements of individual occupational professions in the CAF, due to dynamic and ongoing changes in the service's operating environment, coupled with the introduction of new operating capabilities. Dr. Ebel-Lam contends that some of the changes to the selection and training standards that result from the environmental and enhanced capabilities perspectives "…are significant enough to completely alter the nature of an existing occupation, or to warrant the development of a new one. Given the importance of such activities to the operational effectiveness of the CAF, there is clearly a need to adopt a rigorous approach to identifying the attributes that CAF personnel may require in the future."

Professor Dave Blackburn, a highly-experienced social worker within the CAF, and now a professional academic in the field in the civilian sector, chronicles the history of social work within Canada's armed forces. Blackburn contends that today's military social workers practice their profession as members of multidisciplinary teams, and while they are aimed at helping members to improve their well-being, because they are exclusive *only* to helping CAF members, "…the 'formal' practice of social work in a military context is restrictive and limits the inclusion of family, social, and community components. With that in mind, how is it possible for social work in a military context to fully meet the current needs of soldiers and their families, and offer solutions to social problems in the community?"

In the last of our major articles for the issue, US Army strategist Major Daniel Sukman opines that while autonomous systems and robotics have, and will continue to have a place in modern society, he believes they will inevitably play an ever-increasing role on the battlefields of the future. Therefore, Sukman's stated intent is to "…examine the history, domestic and international policy trends, and the ethics of lethal autonomous systems on the battlefield of the future."

This brings us to our two very different Views and Opinion pieces this time out. In the first, Captain Christopher Hartwick, an infantry officer, offers that an amphibious capability for Canada's armed forces, given the massive extent of our coastlines and today's chaotic and uncertain security environment, "… is not something that Canada *wants,* but something that Canada *needs.*" He further argues that while "… there is no denying the current fiscal restraints, there is also no denying the fact that so many of Canada's allies agree that an amphibious capability brings with it enhanced flexibility to conduct Canada's military operations and the ability to further collaborate with allied nations on matters of global importance."

Next, Padres Yvon Pichette and Derick Marshall review the traditional role and responsibilities accorded to Canadian military chaplains, including the provision of advice to the Chain of Command. However, they have noted that when the Defence Ethics Program (DEP) was created in 1994, for whatever reasons, it was decided that military chaplains would not be active participants with respect to delivery of this new initiative. Pichette and Marshall maintain that "… that decision was unfortunate… [and] chaplains must be involved in Canadian Armed Forces ethics training, even more so now than ever before, particularly given the increasingly new and complex ethical issues that face our military. However, [as chaplains], our role is unique in that it involves ethics at a deeper level than is possible in the DEP alone."

EDITOR'S CORNER

Then, our own resident commentator Martin Shadwick recounts some of the Defence-related issues as they applied to Canada's recent federal election campaign.

Finally, as is our wont, we close with a number of book reviews that hopefully will pique the interest of our readership during those cold winter months by the fire.

Until the next time.

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

The Canadian Press/Justin Tang

Canada's new Minister of National Defence, The Honourable Harjit Sajjan, OMM, MSM, CD, reacts after being sworn in during a ceremony at Rideau Hall, Wednesday 4 November 2015, in Ottawa.

The Canadian Press/Adrian Wyld.

Chief of the Defence Staff General Jonathan Vance, CMM, MSC, CD, in an animated presentation at a recent change of command ceremony in Ottawa.

BMT Fleet Technology Ltd.

A concept design of the Canadian Surface Combatant.

Off-the-Shelf or New Design? Considerations for the Canadian Surface Combatant Program[1]

by David Rudd

David Rudd *is a strategic analyst with Defence Research and Development Canada (Centre for Operational Research and Analysis) in Ottawa. He is currently working within the Directorate of Naval Strategy. Mr. Rudd is formerly president and executive director of the Canadian Institute of Strategic Studies, and he holds a Master's degree in International Relations from Dalhousie University.*

Introduction

The costs associated with building a new generation of naval vessels is a matter of deep concern for the Government of Canada (GoC) and the Royal Canadian Navy (RCN). While the 2008 Canadian First Defence Strategy (CFDS) calls for the renewal of the RCN's surface fleet, concerns have been recently raised about the feasibility of these plans given expected resources.[2] In the case of the $26.2-billion Canadian Surface Combatant (CSC) – a program intended to replace the current fleet of destroyers and frigates – a once-in-a-generation procurement will put tremendous pressure on stakeholders to agree on an achievable list of operational requirements and deliver them on time and within strict budgetary parameters. The process is further complicated by the particular competitive environment created by the National Shipbuilding Procurement Strategy (NSPS), the need for re-industrialization of Canada's shipbuilding sector, and by the desire of the GoC to avoid the negative publicity of another defence mega-project that fails to deliver.

This CSC program demands a rigorous analysis of procurement options to determine how the RCN can best fulfil its requirements. Although this is not the decisive factor in how a ship should be procured (electoral politics and industrial policy are other drivers) it raises the question of whether an optimum balance between cost, capability, and risk is best achieved by purchasing existing ship designs – perhaps with some modifications – or pursuing a new design customized to the RCN's particular requirements. Although the new Liberal government has not pronounced on the CSC program, there are indications that the momentum is moving toward the adoption of an extant design – perhaps of European origin.

This article will contribute to a broader understanding of naval procurement by defining and discussing military-off-the-shelf (MOTS) as a procurement option for a major naval platform. A non-exhaustive list of advantages and disadvantages will be examined, along with a brief exploration of allied experiences, all with a view to enhancing the ability of decision-makers to assess the suitability of this option for the CSC program. It will be shown that despite the many attractions of extant designs for budget-minded navies, understanding MOTS is not a straightforward matter, and pursuing it is far from risk-free.

MOTS: Definition and Discussion

An 'off-the-shelf' solution refers to the implementation of readily available and mature technologies/systems for applications which have traditionally been handled by customer-unique or customized systems. A concise definition of the military variant of off-the-shelf – or MOTS – is somewhat elusive, although general characteristics of MOTS equipment include that which:

- is already established in-service with the armed forces of another country or [the buyer's]; it is not a new design;[3]
- is sourced from an established production facility;
- has minor modifications to deliver interoperability with existing [buyer's] and/or allied assets[4]

And yet, this definition may be too restrictive. In the world of naval platforms, MOTS can arguably encompass 'modular' designs whereby the on-board systems vary according to customer requirements, but the ship's size, shape and displacement are broadly similar to the vessel of origin. The German '*Merhzweck-Kombination*' (MEKO) 200 series of general-purpose frigates were originally built for Turkey as the *Yavuz* class, but were subsequently ordered by other allied navies with slightly different weapons/sensor packages. At the time of writing 25 of these units were in service. This attests to the soundness and longevity of the design, and speaks well to its affordability over the 15-year span of the build programs.

An even more expansive understanding of the MOTS approach can be found in the practice of acquiring vessels second-hand, rather than through new-build programs. Royal Navy Type 22/23 frigates, as well as ex-Royal Netherlands Navy M-class frigates have found second homes in the navies of Chile, Romania, and Belgium, to name but a few. These ships are delivered largely 'as-is,' and are ideal for countries looking for proven capability without the need for extensive modifications, albeit at the possible cost of long-term supportability and earlier capability obsolescence.

"An even more expansive understanding of the MOTS approach can be found in the practice of acquiring vessels second-hand, rather than through new-build programs."

MOTS does not encompass projects where a number of off-the-shelf components are integrated together for the first time. Thus, the Canadian Patrol Frigate program of the 1980s/1990s, employing an otherwise-proven suite of sensors and effectors, would not have qualified as MOTS, under even this expansive definition.

The Complexity of Ships

As noted by a RAND Corporation study, the acquisition of naval vessels is fundamentally different from land or air systems – particularly if the former are constructed for/by the buyer, rather than acquired second-hand.[5] Systems such as armoured vehicles or fighter aircraft may be built in their hundreds. By contrast, naval vessels are typically built at low production rates, ranging from a handful to a few dozen. Land and air systems are developed differently; both go through prototype phases. For navies, there are no pre-production or prototype ships; each hull is expected to enter service, and so, pressure to ensure that the lead vessel is perfect (or near-perfect) is particularly intense.

Military aircraft tend not to be offered *à la carte*, or in the modular format of some naval vessels such as the MEKO frigate design; they come with a more fixed architecture – a given size, a given powerplant, and a given sensor suite (if applicable). Beyond communications gear and minor alterations to satisfy national air worthiness requirements (known as 'non-discretionary modifications'), there may be rather little for a buyer to customize. Thus there is less chance of a buyer attempting to take the design in directions that may result in technical failure. (The speed and success of the air force's C-17 and C-130J acquisition programs attest to this.) Similarly, most land systems are also purchased largely 'as-is.' Even the most complex systems such as armoured vehicles may offer choice of armament or defensive aids, but little else. Ships, on the other hand, are more complex. With a much greater number of systems (and therefore system inter-dependency), they will typically take longer to design and to build.

This latter point – the degree of design complexity – is relevant in that a combatant ship is a true 'system of systems.' It boasts the widest variety of sensors, effectors, and command/platform management systems of any single military platform, sourced from a potentially wide variety of manufacturers.[6] Moreover, the complexity of any given design is not necessarily fixed. While a buyer may settle on a foreign design, he may also want certain modifications or system substitutions to satisfy his particular operational, regulatory, and industrial requirements.[7] The MOTS approach to naval construction thus represents an approximate, or 'best fit' solution to a naval capability deficiency. The approach yields, according to one study, "capabilities that are close to what is desired…they inevitably leave some desired requirements unfulfilled. To close this gap there is a need to modify the technology."[8]

In view of this, it is clear that the acquisition of a combatant vessel presents unique challenges. It is not a question of choosing either an off-the-shelf solution or an original design. Indeed, MOTS may be a matter of degree; a design may fall along a continuum in which it is tailored to customer needs, with the buyer requiring (due to operational, industrial, or environmental directives) certain systems in lieu of those on the original design. Depending on the degree of customization, the result may be a 'MOTS+' or 'MOTS++' design that is easily identified as a cousin of the original but may in fact incorporate significant internal or external design changes (the '+' or '++' referring to the degree of deviation from the parent design.) To illustrate this, a conceptual design continuum is found in Table 1.

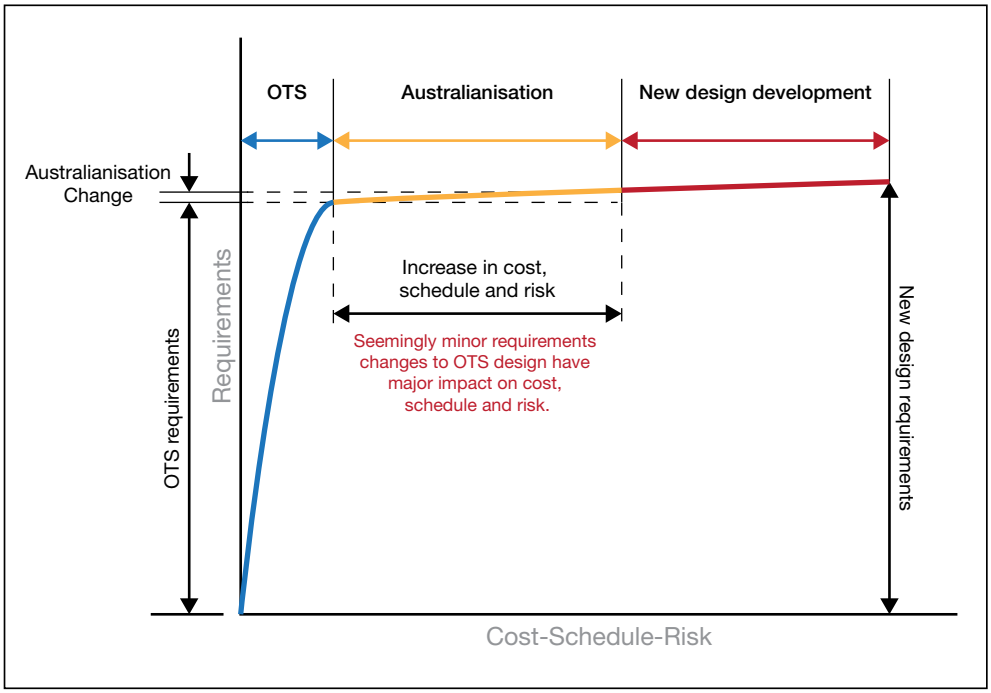
'Basic' MOTS	MOTS+	MOTS++	'Clean Sheet'
Interior/exterior design identical to lead ship	Near-identical design/minor mods to external structure, internal systems, sensors and effectors	Similarity in design but with significant structural and/or systems changes for enhanced capability	Unique design and systems lay-out; next-generation technologies incorporated
High fidelity to parent navy's SOR	Overlap with parent navy's SOR	Minor fidelity to parent navy's SOR; different/expanded roles envisioned	Uniquely tailored to buyer's SOR
Likely built by OEM	Built by OEM or buyer, or co-operative build with some local content	Built by buyer, or co-operative build with significant local content	Built by OEM
Low program risk	Low/Medium program risk	Higher program risk	Higher program risk
Examples: Moroccan *Mohammed VI* (copy of French *Aquitaine* class); Portuguese *Bartolomeu Dias* class (acquired 2nd-hand from Netherlands)	Examples: RAN Adelaide class (derivative of US *Perry* class); Saudi *Al Riyadh* class (derivative of French *La Fayette* class); MEKO 200 series	Examples: Singapore *Formidable* class (derivative of French *La Fayette* class); Danish *Iver Huitfeldt* class (derivative of *Absalon* class)	Examples: *Halifax* class; UK *Daring* class

Table 1: General categories of surface combatant designs.

Author

The main challenge posed by customization is to *program risk* – defined as the likelihood of failing to achieve design functionality and manufacturability within given budgetary and time limits. Theoretically, adherence to an original design will minimize program risk, while introducing modifications will, again theoretically, heighten the chances that delays and/or cost overruns will occur. Having said this, Table 1 may not accurately illustrate the progression of risk in all cases. While the 'clean sheet' option is situated to the right of the continuum, seemingly to present the highest degree of risk by virtue of the originality of the design and the desire to push the technological threshold, it is possible that the MOTS++ option may in fact pose greater risk to budgets and schedule because an otherwise functional design is being significantly altered and the additional requirements may not be served by the original design.[9] If a cost/capability trade-off is improperly performed, if a buyer fixates on an established design but calculates that it can (and must) be changed to suit his particular requirements, the result may be a hybrid design that is more costly and/or complex than one that is developed from scratch.[10] Thus, potential buyers should not automatically conclude that an original design is the least palatable route to naval re-capitalization. It may depend upon the project at hand.

How far can a design be modified to accommodate buyer's capability requirements without exceeding cost/risk limits? To be sure, 'discretionary modifications' will increase tension between the need to deliver on time and the desire to squeeze the last drop of performance out of an existing solution. Altering a design creates numerous technical and operational challenges such as manufacturability, system performance, testing, operator workload, and mission accomplishment. These issues are almost certain to crop up in a ship-design/build program where a financially-constrained buyer concludes, perhaps too hastily, that an otherwise attractive extant design can be easily (and significantly) adapted for his own use. The implications of even a 'slightly' modified design are illustrated by a conceptual diagram developed by the Australian Defence Management Organization. Figure 1 shows how even a small amount of customization ('Australianisation') can push the cost and schedule of an acquisition to unexpected levels.



Author

Figure 1: Impact on cost, schedule, and risk of volume requirements.[11]

H. Franssen © THALES

HMDS *Absalon*, the first of the Flexible Support Ships of the Royal Danish Navy.

Thus, notwithstanding the point made earlier that *heavily* modified designs may exceed the complexity of 'clean sheet' designs, it is evident that modifications of whatever degree have the capacity to increase program risk.

To illustrate the point further, an analysis of the Royal Australian Navy's (RAN) future surface combatant requirements postulated that the *Hobart*-class air warfare destroyer (AWD) could act as the basis for an anti-submarine warfare (ASW) frigate. But according to Andrew Davies of the Australian Strategic Policy Institute, such a MOTS-based plan, while feasible, is fraught with difficulties:

> At the very least, the [*Hobart*'s] *Aegis* air defence system will be replaced, meaning that the ships will need a new radar and combat system. As well, they would greatly benefit from a second helicopter, requiring some redesign in their superstructure. The sonar systems fitted to the AWDs should be quite capable, but mightn't be the best solution for a dedicated ASW ship. All these changes are doable, but experience should teach us not to take any redesign and integration work for granted. There are also some engineering questions to be asked about the suitability of the AWD hull and propulsion systems for the ASW task, for which reduced radiated noise from heavy machinery and flow around the hull is required to reduce the detection range of the vessel by a hostile submarine. It might be the case that a modified AWD isn't as effective in the role as a different design and the level of compromise would have to be looked at carefully.[12]

Davies goes on to point out that Britain's Royal Navy (RN) also considered a MOTS-based solution for a successor to the Type 23 general-purpose frigate. Looking to adapt Type 45 *Daring*-class AWD to achieve economies of scale and reduced fleet running costs, the concept of an ASW variant of the *Daring* class was subsequently shelved as the costs and risks of the modifications required were found to outweigh the benefits.[13] The RN has now opted for a new general-purpose design – the Type 26 Global Combat Ship.

Both the Australian and British experiences may inform RCN attempts to reconcile AAW with ASW into an identical (or near-identical) class of surface combatant. This is not to say that the task is impossible. The Royal Danish Navy's *Iver Huitfeldt*-class air-defence frigates may be viewed as a MOTS+/++ derivative of the less costly *Absalon*-class patrol/command frigate (although the latter does not have a particularly strong ASW capability). The main differences include a more powerful radar suite, propulsion system, main gun and missile armament, and the deletion of the flexible deck in the air defence variant. However, the rarity of this approach to naval re-capitalization suggests that allied navies are wary of attempts to derive a 'family' of ships from a parent design. Were Canada to select an existing design as the basis for CSC, it would do so knowing that the design was meant for only either AAW or ASW – not both. It is noteworthy that the Danish program achieved the success that it did by opting for an original design solution!

MOTS Advantages and Disadvantages

A number of considerations need to be weighed before choosing whether to build to a new or established design, or a variation of the latter. These include initial development costs, the satisfaction of operational requirements, the ease of manufacture,[14] in-service date, and long-term sustainment/capability enhancement. Seen through this lens, buying a naval vessel off-the-shelf holds a number of potential benefits, including:

- more timely delivery resulting from a generally shorter acquisition schedule;[15]
- reduced development risk – all MOTS ships were once clean-sheet designs for the parent navy, so a high degree of (technical) risk mitigation has already taken place and the complex 'system of systems' has reached a level of maturity/functionality that should leave few surprises to potential buyers;
- if built concurrently or in tandem with parent navy, larger production quantity may result in savings;
- large user base may uncover design defects early and more readily identify upgrade opportunities;
- existing design may help the buyer gain a better understanding of initial project costs.[16]

On the surface, and excluding considerations relating to industrial development, MOTS potentially represents the most attractive procurement option for budget-conscious navies. The issue of timely delivery is perennial concern and has caused many in Canada's naval community to argue for selecting an extant design and building it before the current fleet obsolesces.[17]

MOTS may also be attractive for political decision-makers eager to avoid procurement 'debacles' characterized by slow delivery and/or cost overruns. Indeed, where there is low risk-tolerance, where the political ground is infertile for even the perception of mismanagement, choosing an extant design may provide a degree of psychological reassurance to stakeholders that an unproven design cannot. As MOTS does not exclude the possibility of domestic production, the government of the day may see it as the best of both worlds – a way to manage complexity, schedule and cost while generating significant employment.

"MOTS may also be attractive for political decision-makers eager to avoid procurement 'debacles' characterized by slow delivery and/or cost overruns."

These considerations must be balanced by the many short- and long-term drawbacks of buying a mature design. The following represents non-exhaustive list of concerns:

- overall project cost may be difficult to discern due to differences in labour rates/efficiency between the OEM and domestic builder;
- if a build program is not large enough, the buyer may not have sufficient market power to negotiate the most favourable terms with the original equipment manufacturer (OEM) – more so if the design is idiosyncratically tailored to local needs (i.e., buyer's maritime geography, habitability/environmental/safety standards, or crewing concepts);[18]
- the buyer might have to pay a significant premium to secure the intellectual property required for in-service support and mid-life upgrades;
- even with an existing or modified design, the manufacturing process may need to be altered to suit local industrial capability, thereby adding time and cost;[19]
- possible incompatibility with other MOTS systems that are acquired concurrently;
- the MOTS design may not be backward-compatible with in-service equipment or supporting infrastructure, necessitating (costly) changes to the latter to ensure compatibility;
- the OEM might insist on retaining sole right to export to other nations, even if modifications resulted in a new sub-class of ship;
- (premature) retirement of MOTS ship by the parent navy may result in loss of economies of scale stemming from a narrower supply chain;
- if the buyer's defence industrial policy seeks technology or skills transfer, older MOTS solutions may have less to contribute than a new design;
- mature designs may bring forward the date of class obsolescence unless a clear margin for technological growth is evident.

Taken separately, none of these potential disadvantages are significant enough to exclude MOTS as an acquisition option. Since the majority of a ship's cost is not in its design and construction but in the following decades of operations and maintenance, initial industrial/manufacturing challenges may be of less importance to the buyer.[20] Indeed, they may be viewed as acceptable costs of moving the project along. And neither established nor custom designs are decisively advantageous in preventing change or disruption to a purchaser's training syllabus – particularly when the program seeks new-generation technologies. Whether a buyer chooses MOTS or an original design, he will need to adopt new tactics that will allow him to exploit more capable onboard systems. (Indeed, the new systems *must* be substantially more advanced else they will not provide the customer with a generation's worth of capability.) In some cases these changes may happen for reasons that have little to do with the ship itself. For example, the advent of ship-based unmanned air systems for intelligence, surveillance, and reconnaissance has opened up opportunities for virtually all fleets, regardless of the provenance of their designs.

The point here is that whichever route Canada takes to the re-capitalization of the RCN surface combatant fleet, it will have to confront a host of potential pitfalls – some technical, some operational, some industrial, others political. Many of these will befall DND/RCN, even if allegedly 'safer' existing designs are considered. But the challenges may deepen depending on the degree to which the RCN insists on altering a MOTS design to suit its particular operational, regulatory and industrial requirements (see Figure 1). Thus the choice of which procurement route to take is not as clear as some might suspect.

DND, CFJIC IHS89-4-3

HMCS *Halifax* under construction in St. John, New Brunswick.

MOTS for Canada: Non-operational considerations

Aside from cost, design longevity, marketability, etc., other high-level considerations stem from Canada's particular defence-industrial landscape and are summarized in Table 2. The GoC's National Shipbuilding Procurement Strategy has designated a builder for the CSC program. If a foreign design is chosen, who will be the all-important single point of accountability answerable to the Crown? Irving Shipbuilding has now been designated the prime contractor, but the ship design and combat systems integrator are still unknown. If a completely new design is chosen (presumably from an experienced design house), one may assume that the client-server arrangement that characterized the *Halifax*-class build will prevail – i.e., the builder will also be the prime contractor. This may be a more attractive model than one involving a foreign OEM offering a MOTS or MOTS+/++ design through its Canadian build partner and then having to deal with a local combat systems integrator who is unfamiliar the original design and may not offer systems to fit that particular ship configuration.

As the GoC's nascent Defence Procurement Strategy seeks to maximize the industrial and technological benefits of large procurements for the Canadian economy, is there any advantage to choosing one procurement option over another? Assuming that the RCN is not contemplating recycling existing all sensors and effectors from existing and retired vessels, these will be sourced externally, regardless of which path is chosen. The combat management and certain platform management systems may likewise be sourced from a foreign manufacturer, although the integration may be entrusted to a domestic firm. These transactions would likewise take place if either a MOTS(+/++) or designed-in-Canada solution was chosen. Steel and most fittings would be sourced locally to the greatest degree possible. Again, this would be the case irrespective of the final choice. If MOTS(+/++) is the preferred route, but policy demands that certain systems on the parent design may be replaced by Canadian-made products wherever possible, planners will have to determine what premium (if any) will be paid for import substitution.

If Canada's defence-industrial policy ever envisions the export of complete systems, it will likely have to negotiate terms with those who retain intellectual property rights over the original design (in the case of MOTS variations) or the various individual systems that go into a ship's hull (in the case of an indigenous design). There is no clear advantage here; either procurement option could result in a marketable product. However, if a MOTS-based approach is taken, the export laws in the country of origin could be a significant factor in whether the complete ship could be sold to third parties.

GoC Consideration	'Basic' MOTS	MOTS+/++	'Clean Sheet'
Defence-Industrial			
• Single point of accountability	less desirable	less desirable	optimal
• Benefits to Canadian designers	less desirable	desirable	optimal
• Benefits to Canadian suppliers	neutral	neutral	neutral
• Export Potential	less desirable	desirable[21]	optimal
Schedule			
• Design completion	optimal	less desirable	less desirable
• Workforce familiarity	neutral	neutral	neutral

Author

Table 2: Summary of Non-operational Considerations.

Note: The summary is for illustrative purposes only. Degrees of desirability should be treated with caution in that a finding of 'less desirable' does not necessarily denote an unacceptable degree of risk to defence-industrial priorities and schedule, while 'optimal' does not equate to nil risk.

If, on the other hand, a unique design is pursued, there will need to be at least one experienced private-sector design house in Canada or abroad. It would require time and money to come up with a new design, since a large engineering team would need to be assembled. But with a custom design, Canada might have more latitude over the choice of on-board systems and the method of their integration. Critically, the customer would own the intellectual property so critical to in-service support, mid-life upgrades, and possible foreign sales.

The other key part of the industrial base – the shipyard workforce – will have to ascend a steep learning curve regardless of which acquisition route is taken. Whether the ship design is indigenous or contracted from a foreign party, the challenge facing the yard will be to overcome initial unfamiliarity with the design and gradually increase the efficiency with which it assembles the new class. As there is no clear advantage, it might be premature to conclude that MOTS provides the path of least resistance.

"The other key part of the industrial base – the shipyard workforce – will have to ascend a steep learning curve regardless of which acquisition route is taken."

Operational Considerations

Without the benefit of a final statement of operational requirement (SOR), it is difficult to speculate what extant MOTS designs the RCN might choose for the CSC program. What is known is the CSC program must adhere to two broad parameters. First, the CSC will replace, not one vessel, but two within a single program – an anti-air warfare/task group command-and-control (AAW/TG C2) variant, and a general-purpose (GP)[22] variant. Second, the RCN will attempt to maximize commonality between the variants to achieve economies of scale during the build phase as well as operations/maintenance savings over the longer term.[23] If consistent with the SOR, similar hulls and hull systems (i.e., propulsion, shipboard management) will be acquired while procuring somewhat different combat systems, sensors, and effectors.[24] Are there extant designs which can possibly fulfil these requirements?

With the exception of the US Navy's formidable *Arleigh Burke*-class destroyer, most of Canada's allies separate AAW/TG C2 and GP functions into different ship classes. If Canada forges ahead with a MOTS(+/++)

PixelSquid, by ES3DStudios at https://www.pixelsquid.com/stock-images/arleigh-burke-destroyer

Artist rendering of a US *Arleigh Burke* Class destroyer.

Grégoire Chaumeil © Marine Nationale

FREMM *Aquitaine* during its first put out to sea off Lorient, 2011.

approach to the hull/system commonality challenge it will have a narrow field from which to choose. The only allied build program which has taken a 'family' approach in recent years is the aforementioned *Absalon-/Iver Huitfeldt*-class from Denmark. Taken together, the original design (*Absalon*) and the AAW/TG C2 sub-class may possess much of the capability sought by the CSC program – when deployed in a notional task group, they can prosecute targets in the air/surface/sub-surface domains and provide limited support to forces ashore. French shipbuilder DCNS has promised to roll out an air-defence variant of its FREMM/ *Aquitaine*-class frigate, but this remains only a concept. BAE Systems would undoubtedly welcome Canadian participation its Type 26 program. But since there is no dedicated air defence version being planned for the RN, a re-design to suit the RCN's AAW needs could throw up some of the same problems that caused the British to opt not to develop a general-purpose variant of the *Daring* class.

It is unclear whether the lack of extant candidates is a statement against a MOTS 'family' as a solution for the CSC program. On the one hand, it may reflect the engineering challenges associated with adapting a parent design for other roles – a challenge which Canada nevertheless took up in the 1990s when it married ASW with AAW/TG C2 in the heavily modified *Iroquois*-class destroyer.[25] On the other, the dearth of candidates may be a simple matter of timing in that many allies have not yet come around to the Canadian (or Danish) way of thinking (re: commonality). But for most navies, the replacement of ship classes is an incremental process in which different classes are retired at different times; countries with several classes of surface combatant do not typically replace their *entire* fleets in one large program. Those that have done so recently tend to have only one type of major combatant to begin with, and invariably choose a similar type of ship[26] to replace it rather than expand their capabilities by acquiring a 'family' of vessels. Thus the decision to combine the replacement of the RCN's two classes of surface combatant into a single program, while not unique, is certainly unusual and could present many challenges.

If two types of vessels are to be replaced within a single program that emphasizes commonality, adopting a MOTS design is arguably more problematic. In order to achieve commonality, a family approach is theoretically desirable. But since the only MOTS example currently in allied service has been built to satisfy The Royal Danish Navy's requirements, adopting both designs (AAW/TG C2 *and* GP) means the CSC program would be twice disadvantaged from a requirements standpoint. The RCN would either have to adapt its requirements to suit the vessels on offer, or would have to pursue two sets of design changes to bring the parent designs in line with its requirements. While the latter option may be technically possible, it raises serious questions as to whether the resulting MOTS+/++ solution is more operationally suitable than one designed from scratch. Indeed, if an original design can take advantage of the latest advances in scalable, flexible, and space/weight-saving technologies available mid-decade, this may confer a degree of commonality and 'future-proofing' on the CSC that may not be available from designs conceived ten or more years ago.

Conclusion

There is a theoretical and practical argument to be made for adopting off-the-shelf solutions to defence procurement in general and to naval re-capitalization in particular. Defence planners may favour MOTS to meet immediate needs in a timely fashion. They may also favour MOTS on the assumption that it provides greater cost predictability in fiscally-challenging times.

But while MOTS might seem to be the wave of the future, it is not necessarily the best solution. Over the course of a ship's lifespan, the user will demand an expanded capability range – something that the MOTS design may or may not be able to deliver. Those expecting an established design to address the full range of specific user requirements will likely be disappointed. If the prospective buyer feels tempted to seek more customized (MOTS+/MOTS++) designs he may inadvertently create engineering and construction challenges that are difficult to surmount. Such is the high level of system inter-dependency in modern warships that even a small change to a design built to another navy's specifications can have a ripple effect throughout that design, causing a degree of program risk out of all proportion to the change being sought. Australian and UK experience suggests that a rigorous cost-capability trade-off should be performed before a decision is made on whether to adapt an existing design or not.

It should be remembered that the construction of the next-generation fleet is not solely a matter of defence policy. Governments are expected to take a wider view – one encompassing industrial, technological, and skills development. Big projects seen through the lens of the broader national interest will often demand that decision-makers be willing to pay some sort of premium to meet these objectives. For a government intent on maximizing Canadian content in its broadest sense, there may be virtue in allowing for more time to contract for an original design and taking it through the build stage. For a navy aware that it has but one chance in a generation to more fully meet all its requirements, the in-house route may offer certain advantages over MOTS.

Suffice to say that despite the many arguments in favour of MOTS there may be fewer clear advantages to it than one might suspect. Accordingly, stakeholders in the GoC and the RCN will have to carefully weigh the pros and cons of sourcing the Canadian Surface Combatant off-the-shelf, knowing that the choice will have consequences far beyond the performance of the finished product.

NOTES

1. This is a condensed, updated version of an internal DRDC report published in July 2014.
2. Office of the Auditor-General of Canada, *Report of the Auditor General of Canada*, Chapter 3 – National Shipbuilding Procurement Strategy, Ottawa: Public Works and Government Services, Fall 2013, pp. 19-21.
3. For the purposes of this study, 'design' will refer to the complete ship encompassing the platform (hull and machinery), as well as the combat system.
4. David Mortimer, *Going to the Next Level: The report of the Defence Procurement and Sustainment Review*, Commonwealth of Australia (Defence Materiel Organization), 2008, p. 17.
5. Jeffrey Drezner, *et al*., *Are Ships Different? Policies and Procedures for the Acquisition of Ship Programs*, RAND National Defense Research Institute, 2011, pp. xi, xiii.
6. Commander David Peer, "Estimating the Cost of Naval Ships," in *Canadian Naval Review*, Vol. 8, No. 2 (Summer 2012), pp. 4-5.
7. Regulatory requirements may not enhance combat capability, but, in keeping with national or international laws, must be adhered to nevertheless. They might include improvements to environmental standards (i.e., on-board waste management), safety standards (i.e., reinforced fuel tanks) and habitability standards (i.e., crew accommodations).
8. Leo Hogan, "Good Enough? Off the Shelf Procurement in Defence," Raytheon Australia Occasional Paper, Undated, p. 5. Accessed 15 November 2013 at: http://www.raytheon.com.au/rtnwcm/groups/rau/documents/content/rau_ots_procurement_occ_paper.pdf.
9. For example, a study by the US Government Accountability Office concluded that the addition of a remote mine-hunting system to the 40th *Arleigh Burke*-class destroyer (DDG-91) would necessitate alteration of nearly 30 percent of the ship's design zones. See Government Accountability Office, *Defense Acquisitions – Improved Management Practices Could Help Minimize Cost Growth and Navy Shipbuilding Programs*, February 2005, 40. Accessed 28 November 2013 at: http://www.gao.gov/new.items/d05183.pdf.
10. Of the three options to satisfy the RCN's Joint Support Ship (Version 2) requirement – MOTS, MOTS+ and a new design – MOTS+ was considered to be the most risky. Interview with Directorate of Naval Program Support, Gatineau, 3 December 2013.
11. Warren King, General Manager Programs, Defence Management Organization. See Mortimer, p. 18.
12. Andrew Davies, "Trouble at the docks? Part II." Accessed 31 October 2013 at: http://www.aspistrategist.org.au/trouble-at-the-docks-part-ii/.
13. Navy Matters, "Medium sized Vessel Derivate (MVD)". Accessed 31 October 2013 at: http://navy-matters.beedall.com/mvd.htm.
14. This refers to the ability of the shipyard and combat systems integrator to perform their respective duties, but also to link their processes at the point where the combat systems are mated to the hull.
15. Andrew Davies and Peter Layton, "We'll have six of them and four of those – Off-the-shelf procurement and its strategic implications," ASPI Special Report, November 2009 (Issue 25), p. 4. The authors refer to a 2008 report by the Australian National Audit Office which found that the acquisition cycle could be considerably accelerated when the major defence articles are procured off the shelf. This 'general rule' may need to be re-considered if a shipyard builds an existing design with which it is unfamiliar.
16. Peer, 5. By contrast, initial cost estimates for purpose-design are harder to determine, varying at least 40 percent either way.
17. Peter Haydon, "Choosing the Right Fleet Mix: Lessons From the Canadian Patrol Frigate Selection Process," in *Canadian Naval Review*, Vol. 9, No. 1, p. 68.
18. Stefan Markowski *et al*, "Australian Naval Procurement Cycles: Lessons for Other Small Navies," Proceedings of the Fifth Annual Acquisition Research Symposium, Naval Postgraduate School, Monterey, CA, 14-15 May 2008, p. 359.
19. Interview with Directorate of Naval Program Support, Gatineau, QC, 3 December 2013. The choice of the *Berlin*-class support ship for the JSS requirement will require a revised set of blueprints and a different build schedule because the designated builder, Vancouver Shipyards, does not have the same construction capability as the OEM, Thyssen-Krupp Marine Systems.
20. Markowski *et al*, p. 382.
21. Theoretically, if Canada were to request (and pay for) more design changes, the intellectual property for the final design is more likely to accrue to Canada. Nevertheless, many on-board systems may still require re-export permission from the foreign supplier if the design is to be sold to third parties.
22. For the purposes of this study, 'general-purpose frigate' refers to a combatant ship with the ability to, at minimum, self-defend against surface, sub-surface, and short-range air threats and to prosecute targets in all three domains within short to medium distances from the ship. It does not have the ability to act as task group command ship or to assume responsibility for the air defence of such a group.
23. Government of Canada, *Defence Acquisition Guide 2014* – Naval Systems, Canadian Surface Combatant. Accessed 17 June 2014 at:http://www.forces.gc.ca/en/business-defence-acquisition-guide/naval-systems.page?
24. Discussions with senior RCN officers, 16 January 2014.
25. Admittedly, the modified *Iroquois*-class did not mount a dedicated anti-ship weapon, although the Standard surface-to-air missile could have been used, if necessary.
26. In Norway's case, the five ageing *Olso*-class frigates were replaced with an equal number of *Fridtjof Nansen*-class general-purpose frigates, beginning in 2006.

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National Defence Headquarters Ottawa

Institutional Excellence: An Initial Roadmap

by Éric Tremblay and Bill Bentley

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A Culture of Excellence

Institutional Excellence (IE) is an elusive quality sought after by many organizations including armed forces. The Canadian Armed Forces (CAF) is certainly no exception. Although IE is an elusive goal, it is nevertheless one for which it is worth striving. Enduring fiscal pressures on national governments, global interdependence and competition, heightened public awareness and expectations, among other factors, place a premium on striving for IE. In the context of this article, IE is especially important because the current and proximate security environment compels it.

As an institution the CAF, established through the National Defence Act as part of the Department of National Defence, is given a separate and unique identity — Part II, NDA Section 14: *The Canadian Forces are the armed forces of Her Majesty raised by Canada and consist of one Service called the Canadian Armed Forces.* The CAF, therefore, is a distinct institution that is nonetheless inextricably tied to the wider Department of National Defence. Furthermore, its institutional strength is to one degree or another dependent upon its connection with important stakeholders domestically, across government, and internationally.

Embedded in the CAF is a profession — the profession of arms — whose function is the ordered application of military force as directed by the Government of Canada within its civil-military relations tradition. The CAF, as an instrument of Government policy, along with other Whole of Government partners is responsible for the national security of Canadians and the protection and

promotion of Canadian values and interests. Such responsibility always involves prevailing in unstable and dangerous external environments characterized primarily by uncertainty and asymmetric challenges. This is a profound and demanding responsibility requiring excellence on all fronts. The CAF must not only *achieve* excellence, however, but needs to be *perceived* as excellent by all stakeholders, above all, the elected government, other national security partners, international partners, and most importantly, by Canadian society.

There are many components that, taken together, comprise excellence in any organization. They can be analyzed separately, but ultimately, they must be seen holistically, in systemic terms. Only the synergy that arises through their interaction can produce the desired end state — institutional excellence. In any organization, this synergy in action can be described as the culture of that organization; its organizational culture. As agents, leaders create and change culture while bureaucrats and administrators live within it. That is to say, leadership is *direction*, management is *process*. Leaders, including bureaucrats in their capacity as leaders, therefore, strive to create and maintain a culture of institutional excellence. Institutions also have a capacity to shape the behaviour of individuals who occupy them. This symbiotic relationship between agents and structure is worth noting, and as such, it places a great premium upon aspiring towards institutional excellence.

Translating Organizational Culture into Institutional Excellence

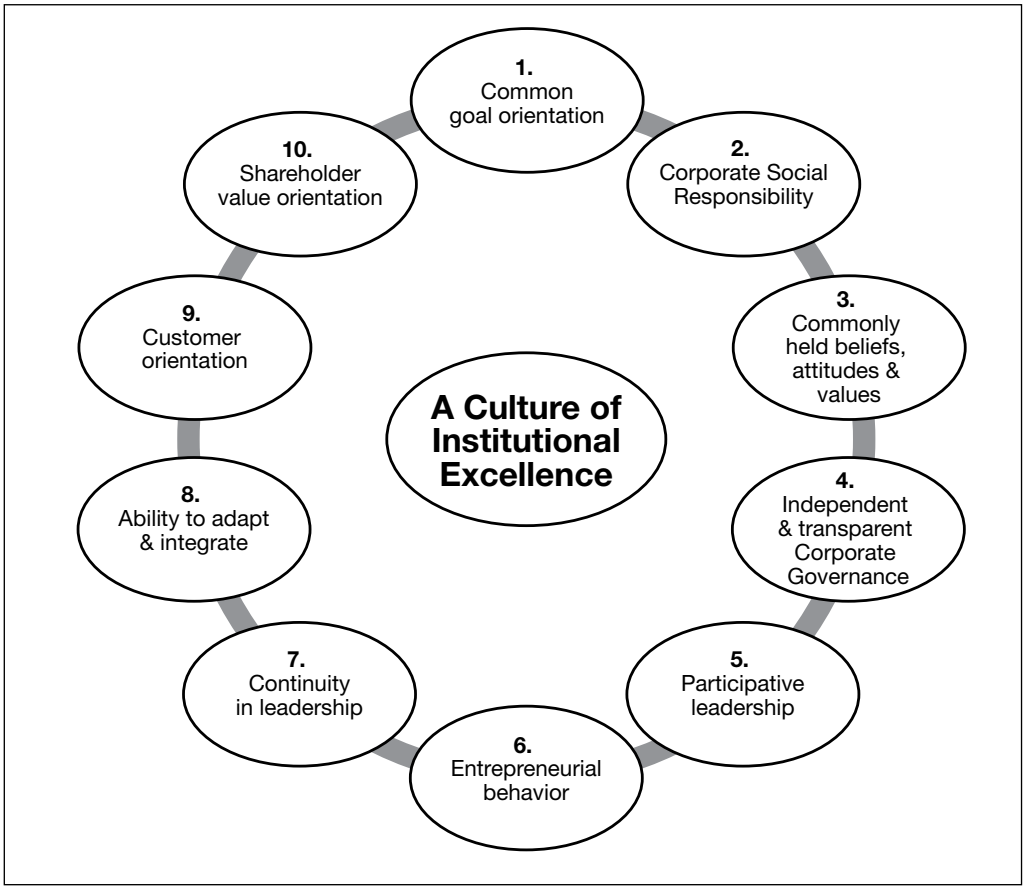
There are, therefore, numerous theories and models that aim to describe what constitutes a culture of organizational excellence. Several authors in the disciplines of Public Administration and Management Science have endeavoured to show how organizations work their way to Institutional Excellence. Well known theorists, such as Chester Barnard (*The Functions of the Executive*), Peter Drucker (*The Practice of Management*) and Henry Mintzberg (*The Rise and Fall of Strategic Planning*) all provide valuable insight. General Gordon Sullivan (*Hope is not a Method*) and Colonel John Boyd (*The Essence of Winning and Losing*) address the military as an institution directly. Each of these authors tends to address elements of the culture in question, but they do not provide a truly comprehensive treatment.

"There are, therefore, numerous theories and models that aim to describe what constitutes a culture of organizational excellence."

One quite recent model that largely achieves this goal is that offered by Professor Emeritus of Management Edgar Schein of the Massachusetts Institute of Technology in *Organizational Culture and Leadership* (4th edition),[1] adapted from a German study of 63 global corporations. The model is depicted here in Figure 1.

It is important to note that the ten criteria, as Schein refers to them, involve both issues of responsiveness and accountability to external and internal stakeholders, on the one hand, and issues of internal integration, vertically and horizontally. The study concluded that institutional excellence had best been achieved by six companies — BMW Group, Lufthansa, Grundfos, Henkel, Hilti, and Novo Nordisk. In order to get past the abstractions that the ten dimensions, extracted from the study represent, they need to be described in terms relevant to a military institution — specifically, the CAF. This is done in Figure 2.

Given the focus of this article, these ten criteria, or dimensions of a culture of excellence, can be further aggregated into three clusters that clarify how they contribute directly to the end state of Institutional Excellence in the context of an organization specifically focussed upon security.



After Edgar Schein, *Organizational Culture and Leadership*

Figure 1: Organizational Culture and Leadership

Three Components of Institutional Excellence

Two clusters represent the 'ways' to achieve the end sought and one represents the means in terms of operational art and tactics. This latter relationship is crucial, since military strategy is best defined as the direction and use made of military force for the purposes of policy, as decided by politics.[2] Military strategy, in fact, connects all three clusters. The resulting trinity, the three-in-one, suffused with the Canadian military ethos, results in the nature of professional excellence that is virtually coincident with Institutional excellence. This construct is depicted in Figure 3.

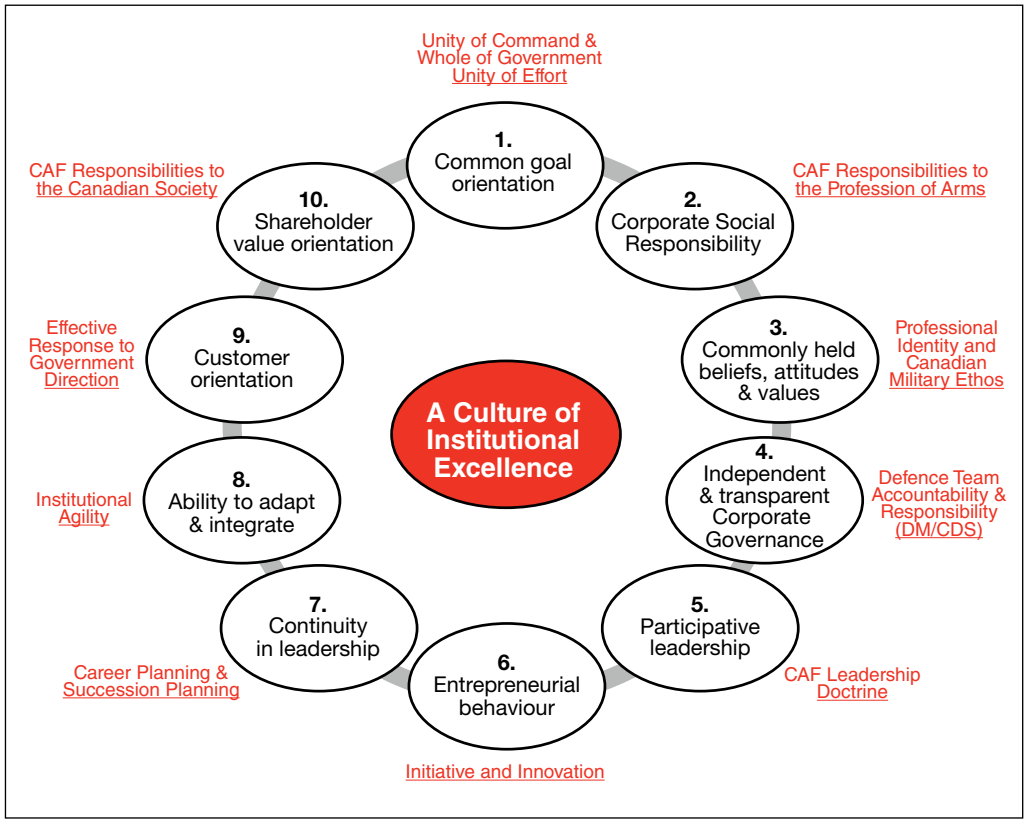


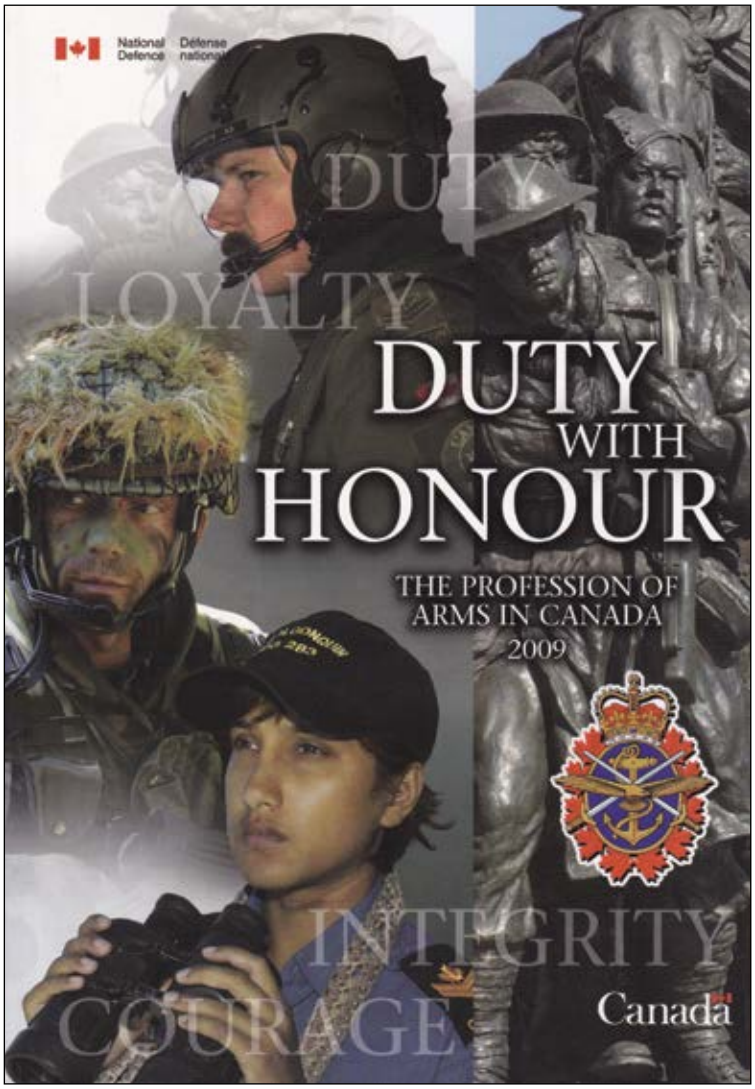
Figure 2: Military Institution

Figure 3: Institutional Excellence[3]

Policy and Strategy

Institutional Excellence, resulting from: the harmonization of the three clusters of 'running the business,' Whole of Government framework and operational excellence is the surest guarantee that the CAF will be optimally prepared to deliver on the Government's direction. A key element in that harmonization is, of course, the military ethos, comprising Beliefs and Expectations about Military Service, Core Military Values and Fundamental Canadian Values as described in *Duty with Honour: The Profession of Arms in Canada*.

Policy ends are achieved through strategic means. That is to say, that the current six missions assigned by the Government to the DND/CAF require a strategy (grand and military) to meet the Governments' expectations. Here, a crucial process



DND, CDA Press.

is the ongoing dialogue between policy makers and strategists, the product of which *is*, or *should be*, a mutual understanding of the need to match resources to political aspiration. There will, perhaps, never be an ideal match here, but strategic stability depends in large part upon a high degree of agreement. The military strategy in question, as depicted in Figure 3, operates through all three clusters in order to deliver the overall strategic effect necessary to deliver policy goals. Thus, the strategic effect achieved in each cluster is cumulative.

In developing the necessary strategy, the issue of the utility of force in international relations in the contemporary world must be carefully considered. Hard military threat and use is now often more difficult to employ today than was the case in the past. However, this greater difficulty does not mean that military force has lost its distinct ability to secure some political decisions.[4] Nonetheless, the quality of justification required for the use of force; (i.e. how much, when, etc.) has risen, which means that the policy domain for military relevance is more restrictive.

If CAF leaders are to rise to the challenge; that is, to be adequately professionally developed as strategic thinkers, it is important to acknowledge that strategy is difficult for many reasons. Foremost of these is that it is neither a question of politics, nor fighting power, but rather, the conversion of *military effort* into *political reward*. Because strategy is uniquely difficult among the sub-systems of war, few indeed are the people able to shine in the role. Their numbers can be increased by education, though not by training, and not at all reliably by the experience of command and training at warfare's operational and tactical levels. Furthermore, US military strategist Barry Watts has argued that the cognitive skills of combatants with tactical expertise in any area of modern warfare differ fundamentally from those required of competent strategists.[5] These skills at the tactical level, however, must be acquired first, through training, experience, and education. Only after thoroughly mastering tactical expertise can the military professional move confidently into the realm of strategy and grand strategy. Once mastered, experienced commanders retain these skill sets and carry them forward to continue to inform strategy formulation.

Bearing this in mind, institutional excellence in the CAF requires a shift in the professional development of institutional leaders from a tactical, training orientation, to a methodology, whose center of gravity is competencies oriented at the operational and strategic levels (Developmental Period (DP) DP3 – DP5). Fundamentally, this requires recognition that the tactical environment and the institutional environment are part of a continuum derived from both the future security environment (FSE) and the future institutional environment (FIE). Warfighting is increasingly about comprehensive preparedness and readiness, from the tactical to the strategic (institutional) levels. Tactical prowess can only be sustained over the long term if institutional governance and strategic direction are of the highest order.[6] Equally important, when effective strategy is absent, the tactical consequences for troops can be appalling.This professional development challenge is addressed later in the section covering the required paradigm shift.

"Once mastered, experienced commanders retain these skill sets and carry them forward to continue to inform strategy formulation."

Running the Business and Military Strategy

Military strategy calls forth the necessary drivers, such as policy, force structure, equipment programs, infrastructure, financial and HR systems, information technology and public affairs to enable the means (campaigns and tactical operations) to be applied. This clearly is a military–civilian effort; ie. the full Defence Team 'running the business.' The strength of the drivers in terms of quality and quantity delivers operational effectiveness with the right force structure or level of readiness to respond to government direction. Efficiencies leading to economies can be achieved by 'right-sizing' the drivers to ensure that we continue to support the government's priorities, while remaining cognizant of the fiscal realities of the day.

The efficient and effective operation of the institution of the CAF viewed, in part, as a business enterprise, is an absolute requirement for institutional excellence. This requires, first, a strong sense of corporate unity within the Defence Team as a whole. Civilian ADMs and L1s, together with their staff, must understand and respect their mutual roles in the institution and how each contributes to the excellence sought. This is represented by Criteria Number Four in the Schein model (transparent corporate governance). Second, the Defence Team thereafter must operate seamlessly with the wider 'town,' keeping all stakeholders connected across the domains of procurement, finance, and HR, among others.

There is, today, a hyper-enabled transparency and accountability directly affecting the governance, management, and leadership of the institution that must be taken into account. Clear, continuous strategic leadership, management, and administration of the institution, based upon best practices drawn from both the public sector and corporate world, are essential. It is here that Criteria Number Six, entrepreneurial behaviour, must be understood and reinforced. The qualities and competencies required at this level can be reflected in the Canadian military ethos. As such, the profession would continue to place great value upon the warrior spirit at the tactical level, however, it would also emphasize what could be considered the entrepreneurial warrior at the political-strategic level. Here, the sense of the word entrepreneurial is the commitment to enhance the value proposition of the enterprise not its profit margin. This will emphasize the initiative, innovation, and risk-taking qualities required to 'run the business.'

There are currently perceptions among some of the institutions interlocutors, partners, and stakeholders that the management of resources is an ongoing issue. In some instances, the senior leadership of the institution has earned a poor reputation regarding the broader question of resource allocation as a whole. All of these areas are encompassed in one way or another by the subject of public administration, best defined as the discipline that prepares civil servants for leadership roles in the Public Service. It focuses upon the social, economic, and political spheres within which Public Servants operate, and provides the necessary skills and knowledge to effectively and reliably lead and ensure accountability to parliament. Now, military professionals are not defined as public administrators, but nonetheless, senior CAF institutional leaders must, to some degree, share this space with their civilian colleagues. In the cluster 'running the business,' institutional excellence requires that military professionals possess a range of competencies different than those routinely found at the tactical level of operations. These would include, for example, entrepreneurial spirit, systems thinking, and participative leadership styles.

The complexity and ever-changing security environment requires the whole of government community to work more effectively together. At the same time, the future institutional environment requires an identical level of effort for collaboration in ways that military officers have not been exposed to

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extensively. New policies, legislation, and government-wide objectives require institutional leaders to conduct business in a thoroughly Whole of Government manner. For example, Defence Procurement Strategy (DPS) and Deficit Reduction Action Plan (DRAP) require corporate management to be exercised in an integrated and 'joined-up' fashion.

Whole of Government and Military Strategy

It is no longer profound to state that the contemporary security environment will remain ambiguous, amorphous, and volatile for the foreseeable future. And while this is not the space to delve into the underlying causes, suffice to say that some of it is located at the intersection of globalization, modernity, and identity. Attending to the myriad challenges places a premium on not only developing strategic thinkers and leaders, but more critically, developing the capacity and ability to enlist the full panoply of instruments of national power of which the armed forces is just one. The sovereign state perhaps no longer holds the monopoly of all components of power, but it remains the defining player. At the same time, there is a profusion of actors on the world stage with enhanced agility and impact enabled by technology. In fact, the whole issue of the utility of force in relation to the causes and effects of conflict needs to be reassessed. The use of military force is no longer as straight forward, and indeed, often as decisive as it was once conventionally thought.

"National security strategy, or grand strategy, brings to bear all the elements of national power when dealing with the complex problems facing Canada today."

Nonetheless, military force remains a necessary ingredient pursuant to national policy. The utility of such force is no longer simply in its state-on-state application or even necessarily force on force, although these roles remain relevant in some circumstances. In fact, the utility of force may be found in its application to training foreign forces and other elements of nation-building, or in a variety of coalition/NATO/UN operations.

Recalling Figure 1, the imperative of Criteria # 1 – common goal orientation – is, without a doubt, a key objective in responding to the challenges of the contemporary security environment. A central challenge is the reality of increasing demand for security in the context of fewer resources in a more complex world. As such, to shape capabilities and capacities to influence the ability to act in a complex world, you need institutional agility. Institutional agility is gained through enhanced communication, mutual understanding, and selection of courses of action that will lead to the achievement of institutional excellence. In the first instance, the Defence Team must work together in optimize 'running the business' to generate an effective military strategy. This strategy is then connected to the broader grand strategy formulated among all national security practitioners. National security strategy, or grand strategy, brings to bear all the elements of national power when dealing with the complex problems facing Canada today. It is here that Canada's military strategy connects the institution of the CAF to all the other national security practitioners involved in the development and prosecution of Canada's grand strategy over time, and within the geo-political space required.

The Strategy Bridge

The strategy 'bridge' metaphor is probably the best image to convey what is required to bring together all actors involved in grand strategy. Military strategists and CAF institutional leaders share the bridge with a wide variety of other national security practitioners. This community of practice engages policy makers at one end of the bridge proffering strategic advice and shaping policy. At the other end of the bridge, this community translates political goals into actionable objectives for those who must achieve results on the ground, military and civilian. We need to be able to develop military options that are appropriately *informed by* and *sensitive to* the mandate and priorities of our Whole of Government partners. Institutional excellence is achieved when all actors on the bridge, through mutually supporting expertise, shared competencies, trust, and reciprocal respect, engage in the ongoing dialogue. The competencies in question here again differ somewhat from those required in the other clusters and include competent negotiators and collaborative space-makers.

The recent program initiated by the CDS and the DM, directed by the Executive Director of the Directorate of Education and External Engagement Partnerships and, Commander MILPERSGEN is the next step on the road to institutional excellence in this domain. The ambitious goal is to move the community of practice from one of national security practitioners, to one of self-identified national security professionals. This process should be anchored in clearly articulated competencies, a degree of shared expertise that focuses upon shared responsibilities and specific issue areas.

Operational Excellence

The CAF has an extraordinary record of delivering tactical excellence across an entire spectrum of operations. Since 1945, a large (in Canadian terms) professional force has and maintains a training philosophy and methodology that constantly hones the necessary combat skills on land, sea and in the air. Relatively well-equipped units are usually well prepared and ready to act in short order. Alongside a 'well-oiled' training regime is a body of tactical doctrine that enables effective joint operations and a high degree of interoperability in combined operations, especially with our NATO alliance partners.

Underpinning all these factors is a leadership doctrine—leading people—that stresses mission success, warrior spirit, morale, cohesion and the well-being of all members of the team. Leaders direct, motivate and enable subordinates to accomplish their tasks professionally, while maintaining or creating capabilities to ensure mission success. Canadian Armed Forces leaders consistently display courage, physical and moral, and are committed to performing their duty with honour.

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DND photo IS2008-9219 by Master Corporal Robin Mugridge

Tactical prowess is harnessed through the application of operational art. It is here where the coherent accomplishment of strategic objectives through the employment of tactical resources is achieved by the conduct of major operations and campaigns. Operational commanders employ operational maneuver, consisting of the combination of mass and mobility, to achieve their goals.

As discussed previously, this tactical/operational contribution to the overall strategic effect sought can only be sustained and, in fact, maximized when it is firmly nested in a well thought out and executed military strategy informed by the military ethos. Barring this, professional and institutional excellence must suffer.

"The CAF was slow to reflect Canadian society in the 1980s with regard to the integration of women into the combat arms."

Military Ethos

Professional excellence is, not only about 'the fight,' it is entirely dependent upon the CAF military ethos which guides both how military force is applied and the individual and collective conduct of all members of the profession of arms. The military ethos is the foundation upon which the CAF professional identifies. The values inherent in the military ethos ensure subordination to civil authority, and they bind the profession to Canadian society. The CAF must be seen to embody fundamental Canadian values, such as diversity, tolerance, and fairness. By reflecting our common values as Canadians, Canadian society sees itself in us. Without it, the trust, confidence, and support of Canadian citizens will be lost. This is reflected in Numbers Nine and Ten of the Schein model (customer orientation and shareholder value orientation).

Honest reflection suggests that the institution of the CAF has not always been adequately attuned to this reality. The institution cannot be complacent. The CAF was slow to reflect Canadian society in the 1980s with regard to the integration of women into the combat arms. In the end the Government simply legislated the requirement. The Somalia affair and its aftermath was a significant professional blow resulting in the partial revocation of the professional privilege of self-regulation with the establishment of the Ministers Monitoring Committee to oversee the implementation of the 65 recommendations of the Report to the Prime Minister on the Leadership and Management of the Canadian Forces (The Young Report).

Currently, the profession, and therefore, the institution, must accept the findings of the Deschamps Report on sexual misconduct in the CAF, and reflect what those findings mean for the profession of arms. In fact, this latter issue can only be characterized as an example of professional misconduct. Short term corrections can certainly focus upon the specifics of the case, but long-term remedies relate more to the culture of the institution and a reassertion of professional values and behaviour. This was surely the Chief of the Defence Staff General Vance's intent when he wrote that such unprofessional conduct undermines good order and discipline. It is inconsistent with the values of the profession of arms and the ethical principles of DND and CAF.

Institutional leaders in their role of stewards of the profession need to constantly assess the professional climate of the profession in both its internal and external manifestations. Internally, it is crucial that CAF leaders take care to attend to our member's well-being in all respects. This commitment will result in a reciprocal commitment on the part of CAF military professionals to the institution as a whole. The military ethos is surely the pivot around which all components of professional excellence revolve. Without it, institutional excellence is not possible or sustainable.[7]

The Paradigm Shift in Professional Development

The shift in question raised above concerning PD methodology is underway now, and will be completed in the near future. The Leader Development Framework (LDF), now the core of the PD system, is based upon the five meta-competencies of Expertise, Cognitive Capacities, Social Capacities, Change Capacities, and Professional Ideology. Over the past two years, the Leader Development Model (LDM) has been created with the LDF as the foundation. The LDM aligns professional development, personnel assessment, and career planning/succession planning in a logical, coherent HR system to generate institutional leaders in a progressive manner across all DPs for officers and Non-commissioned Members (NCMs). This development philosophy will provide the overarching HR System framework for institutional excellence going forward.

Institutional Leader 2030 (IL 2030)

Institutional excellence requires periodic review and the issuance of strategic guidance. *Officership 2020* and *NCM Corps 2020* (promulgated in 2002) represented such guidance in the wake of the Somalia Affair. Institutional Leader 2030 will replace this guidance. Incorporating the lessons of the Schein model, it will provide strategic guidance with regard to operational excellence, 'Running the Business' of defence, the requirement for national security expertise in a Whole of Government context and professional excellence. In addition, IL 2030 will fully describe and explain the Leader Development Framework and the Leader Development Model. In effect, it will tell the 'story' of the LDM. The 'story' is about the synergies to be gained by aligning professional development, performance assessment, and career planning, using a competency base approach. More specifically, IL 2030 will address how the professional development system, based upon the four pillars of education, training, experience, and self-development will impact officer and NCM development across all developmental periods. IL 2030 will be the roadmap out to 2030, and it will chart the course to ensure sustained Institutional Excellence.

PAO DSC03775 by Major Bernard Dionne

MILPERSGEN Headquarters, Kingston

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2. Colin S Gray, *The Strategy Bridge*, (Oxford: Oxford University Press, 2010), p. 29.
3. Although seven of the criteria fit comfortably in one or another of the aggregated clusters, three —Participative Leadership—Continuity in Leadership— and Institutional Agility cross-cut all clusters.
4. Colin S. Gray, *Hard Power and Soft Power: The Utility of Force as an Instrument of Power in the 21st Century*, (Carlisle, PA: Strategic Studies Institute, 2011), p. vii.
5. Barry Watts, "US Combat Training, Operational Art and Strategic Competence," Centre for Strategic and Budgetary Assessment (2008), p. 52.
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7. CDS Op Order – Op *Honour*, 14 August 2015, p. 4.

DND photo ET2015-5075-001 by Corporal Stuart MacNeil

Identifying the Essential Competencies of Tomorrow's Canadian Armed Forces: Overcoming the Unique Challenges of Future-oriented Personnel Selection Research

by Anna Ebel-Lam

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NOTE: The content of the current manuscript has been drawn from the following internal DRDC publication in condensed form:

EBEL-LAM, A. (2014). *A Framework for conducting a strategic job analysis in the CAF: guidelines and recommendations.* Director General Military Personnel Research and Analysis. DRDC-RDDC-SR-2014-Interim Approval. Ottawa, ON: Defence Research and Development Canada.

Introduction

Although capability development has always been integral to the Canadian Armed Forces (CAF), the early part of the 21st Century has been marked by a pronounced emphasis upon strategic planning, modernization, and change. At an organizational level, this shift is partially attributable to the initiation of the CAF transformation in 2005, which preceded a number of large-scale efforts by the Department of National Defence (DND) aimed at gaining a better understanding of the factors that might influence the CAF's operational environment over the upcoming decades.[1] Much of this work has entailed identifying trends that have the potential to impact the role of the CAF in the future (i.e., economic trends, technological advances). The value of this research lies in enabling the organization to adapt quickly to new challenges, rather than forecasting the exact conditions that the CAF is likely to face.[2] Such lines of research have been accompanied by efforts to gain an understanding of how the roles of CAF members across the organization will change over the upcoming decades, as well as the qualities that they will need to possess in order to perform their jobs effectively.

Due to ongoing changes in the operating environment, and the introduction of new capabilities, it is also necessary to reevaluate the personnel requirements of individual occupations in the CAF on a regular basis. This often results in minor changes to the selection standards associated with a given occupation and/or the training that candidates for that occupation receive. However, some changes are significant enough to completely alter the nature of an existing occupation, or to warrant the development of a new one.

Given the importance of such activities to the operational effectiveness of the CAF, there is clearly a need to adopt a rigorous approach to identifying the attributes that CAF personnel may require in the future. Drawing upon the academic literature, this article will describe the various techniques that have been used to identify the personnel attributes essential to effective work performance for jobs that are expected to emerge, or to change. Following this, some of the challenges inherent in applying these techniques in a military context are discussed, and a conservative, research-based approach to identifying future job qualifications and selection standards in the CAF is proposed.

Identifying Selection Criteria for Jobs: The Process of Job Analysis

Before deciding how selection criteria are best determined for future jobs, it is important to have a basic understanding of how analysts identify the personnel qualities that are necessary prerequisites for current jobs/occupations in the CAF. Simply put, these attributes are captured through a varied set of techniques that are collectively referred to as *job analysis*. Although specific approaches to conducting a job analysis may differ, the central objective of such activities is to solicit the help of experienced job incumbents to identify the outcomes associated with a given job, the tasks that must be completed to produce each one, and the knowledge, skills, abilities, and other characteristics (KSAOs) that are essential to performing those tasks effectively. After an initial list of tasks and qualifications has been compiled, individuals who are highly familiar with the occupation may also be asked to evaluate each task and KSAO on a number of dimensions (i.e., criticality) to determine its relevance to the job in question.[3]

To underscore the importance of this procedure, job analysis is commonly referred to as the cornerstone of all human resource activities, as it provides information that is critical to the development of job descriptions, recruiting strategies, compensation, performance appraisal, selection standards, and other ancillary aspects of jobs.[4] From the standpoint of identifying effective selection criteria for occupations in the CAF, job analyses are performed to ensure that the entrance standards associated with a given occupation or special employment role are defensible (i.e., they provide evidence that the attributes that candidates are being selected for are required to perform the job competently).[5]

Strategic Job Analysis for Future Occupations: Existing Methods and Challenges

Conventional forms of job analysis (i.e., those used to identify KSAOs for current jobs/occupations) are endorsed by both industrial organizational psychologists and legal experts, are straightforward to conduct, and are widely used to develop effective, defensible selection standards for existing

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CAF occupations. In contrast, trying to accurately identify the tasks and KSAOs associated with jobs/occupations that are expected to *emerge* or *evolve* in the future is considerably more challenging. To address these types of circumstances, researchers have developed variants of traditional job analysis that are widely referred to as strategic job analysis (SJA).[6] While there is little consensus in the academic literature on how SJA is best conducted, the approaches that analysts have adopted focus exclusively upon how existing jobs will evolve, and can be loosely grouped into three categories that vary in terms of both (a) the specificity of the future trends or developments that are being considered, and (b) the type of information that job incumbents and other subject matter experts are asked to provide. Briefly, they include:

Instances in which job incumbents are asked to speculate about broad future trends (i.e., changes in the political climate, demographic trends, and technological advances) that could have an impact upon their occupation. For a typical SJA of this nature, incumbents are asked to complete a traditional job analysis to establish the tasks and KSAOs that are currently associated with their occupation. Subsequently, they are asked to identify an emerging trend (i.e., technological advances, shifts in the economy) that could have an impact on their job at some point in the future. After this, they re-evaluate the importance of the tasks and KSAOs that they originally generated and make any necessary changes in light of the hypothetical development.[7]

Such approaches to strategic job analysis may initially appear to offer a rich, varied breadth of information about the future of an occupation by drawing on the insights of incumbents, who are arguably more familiar with the job than anybody else. However, incumbents may not have the expertise required to accurately identify the factors that could influence their jobs in the future, or to speculate about the ways in which their job might change.[8] Furthermore, in certain circumstances (i.e., when an SJA is being conducted to develop a new job) incumbents may simply not be available to contribute to this portion of the analysis.

Instances in which analysts independently conduct research on emerging trends that are relevant to a particular job, and then ask incumbents to speculate about how those trends might influence the relative importance of the tasks and qualifications associated with their work. This variant of SJA is a multi-phase process in which analysts first do an extensive amount of background research to identify trends that could have an impact on an occupation in the future, and subsequently enlist incumbents or other subject matter experts to determine how these trends might shape the tasks and KSAOs required to perform the job.

Interestingly, this particular approach to strategic job analysis was adopted by analysts at the U.S. Army Research Institute to identify the tasks and KSAOs that might be relevant to the jobs of all first-tour U.S. Army soldiers and non-commissioned officers (NCOs) at two points in time: in the ten years immediately following the project, and in the period of time 10 to 25 years in the future. These analysts first conducted extensive background research to identify emerging trends that might have an impact upon this set of occupations. Afterward, they compiled a list of tasks and KSAOs that they felt would be applicable to incumbents in both groups, and asked a panel of sergeant-majors to evaluate the relevance of this information. To determine how these roles might change over time, the analysts then identified three occupations that they felt exemplified the nature of the work that all soldiers would be expected to perform in the future, namely military police, cavalry scouts, and signal support systems specialists. They reasoned that an in-depth examination of these occupations would enable them to extrapolate the tasks and KSAOs that would eventually be relevant to all U.S. Army personnel.

"To address these types of circumstances, researchers have developed variants of traditional job analysis that are widely referred to as strategic job analysis (SJA)."

Additionally, the analysts also interviewed a range of military personnel and civilians who held positions that made them knowledgeable about the type of work environment that Army personnel might encounter in the future to generate descriptions of probable working conditions for soldiers in both time periods. The accuracy of these descriptions was subsequently evaluated by three panels of subject matter experts, which were comprised of senior Army personnel, psychologists, and project staff. Additionally, each panel was asked to review the current KSAOs that had been established for first-tour soldiers and NCOs, make any additions that they felt were necessary, and rank them in terms of importance.[9]

At first blush, the broad applicability of the results associated with this approach to SJA make it an attractive option for analysts whose primary aim is to align *changing* (or *emerging*) jobs with the strategic goals of an organization. Furthermore, delineating the work behaviours and attributes that are relevant to a range of positions in the same organization may seem like a more efficient way to conduct SJA than attempting to identify the unique tasks and KSAOs associated with each one. However, the same features that make this variation of SJA appealing to organizations may also limit the utility of its results. Specifically, the KSAOs that are identified through such an analysis are often broad attributes that would be widely acknowledged as being important to virtually any job at any point in time, such as general cognitive ability or adaptability. Furthermore, although the types of KSAOs that surface through this type of SJA are unquestionably relevant to effective job performance, they often do not encompass the highly specialized knowledge and skills that incumbents may need to cultivate in order to handle emerging work demands (i.e., operating new technology).

Instances where specific, well-defined aspects of the future work environment will either alter the parameters of an existing job, or shape the development of a new one. Many SJA of this type stem from circumstances where a specific set of capabilities or organizational changes are being introduced to an existing job.

To illustrate, an independent research firm conducted an SJA for the Federal Aviation Administration (FAA) to determine how a range of new capabilities that were being developed would be likely to change the tasks and KSAOs required for commercial air traffic controllers 5-7 years in the future. The analysts also attempted to identify the potential risks that the implementation of these capabilities could introduce. The process

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was initiated by performing a conventional job analysis of the occupation. From there, extensive research was conducted to gain a better understanding of how ten job-specific technologies and procedures (referred to as "drivers") that were being developed might impact the parameters of the occupation. To that end, the analysts reviewed existing documents describing the capabilities and the corresponding implementation plans, and conducted semi-structured interviews with subject matter experts who were involved in developing the technology and/or determining *when* (and *how*) it would be implemented. Once this was done, the analysts independently assessed how the implementation of each new procedure or piece of technology might alter the existing tasks and KSAOs associated with the air traffic controller occupation. In the final step of the process, analysts subsequently met in order to reach consensus on the changes that they had proposed and update the job description.[10]

This type of approach arguably represents the most robust form of SJA. Specifically, it pertains to instances where jobs are being *designed* (or *altered*) to accommodate concrete, well-defined developments that are certain to occur in the future. As such, analysts are better able to identify the specific tasks and KSAOs associated with a given job, as well as the abstract attributes that are more broadly linked to job performance. Furthermore, as this form of strategic job analysis is generally precipitated by events or developments that are certain to occur, it is less vulnerable to the types of biases that people regularly exhibit when they make projections about the future. These biases and their relevance to SJA will be discussed in the next section, which will describe a number of caveats that analysts must consider in deciding how to employ this technique in a military context.

Applying Strategic Job Analysis in the Military: Unique Challenges and Considerations

Although all three variations of SJA that have been described in the literature could conceivably be adapted to suit the needs of the CAF, there are clearly varying degrees of rigour associated with each one. Furthermore, there are several additional factors that should be considered before SJA is applied in the context of the CAF, which are outlined briefly below.

Organizational Structure and Climate in Military and Civilian Contexts Differ

The type of organizational climate that originally fostered the development of SJA is very different from that of the CAF. Namely, many of the approaches to SJA that are described in the academic literature are best-suited to 'flat' organizations in rapidly changing industries. Moreover, these approaches are often geared toward delineating broad work behaviours and competencies that are widely applicable to many different positions within an organization.[11] While such an exercise could arguably be valuable to the CAF, occupations that are being *developed* (or *altered*) to accommodate a new capability or initiative are likely to involve highly specialized tasks and skill sets. Furthermore, the boundaries between different occupations within the CAF are comparatively well-defined and inflexible, and the organization has a *hierarchical* (versus *flat*) structure. In short, many variations of strategic job analysis (particularly those that require job incumbents and analysts to make projections about broad future trends) may not be well-suited to the unique needs of the CAF.

"Although all three variations of SJA that have been described in the literature could conceivably be adapted to suit the needs of the CAF, there are clearly varying degrees of rigour associated with each one."

Cognitive Biases May Undermine the Accuracy of Future Judgments

It is self-evident that people cannot anticipate distant future events with any degree of certainty. However, even when analysts have access to information about more imminent future developments, the process of determining how and when these will impact the functioning of a given occupation in the CAF (or the organization as a whole) may be very difficult. This is due to a number of well-documented biases that individuals (including experts) routinely exhibit when they attempt to make projections about the future. Several of these are described in greater detail below, along with the implications that they may have for strategic job analysis and other types of forecasting activities:

(a) In considering the impact of future events on the CAF, strategic planners and analysts may focus exclusively upon a relatively small number of salient future developments at the expense of a large number of less obvious (but equally impactful) ones, a phenomenon that is commonly referred to as "focalism."[12] As a result, they may over-estimate the impact that widely discussed trends will have on the CAF's future operational environment, while failing to appreciate the impact of less obvious developments.

(b) Individuals (particularly in Western cultures) tend to assume that trends will be linear, even if there is no logical reason to believe that this should be the case.[13] In practical terms, this reasoning style may result in an inability to anticipate variations in the rate or direction of a future trend. To illustrate, as the use of technology in the workplace has increased over the past two decades, CAF personnel, decision-makers and analysts may automatically anticipate a similar rate of increase over subsequent decades, even if it is equally plausible that the rate of technological advancement that has typified the early part of the 21st Century will gradually plateau and stabilize.

(c) When people speculate about objects or events as they might exist in the distant future, they tend to think about them abstractly and focus on their central, primary features. At close range, however, people construe objects and events in considerably more detailed, concrete terms.[14] This particular bias could influence the way in which individuals conceptualize their jobs on several fronts, thereby undermining the accuracy of strategic job analyses. For instance:

  (i) Simply prompting CAF personnel to consider their jobs in the future may cause them to over-emphasize the importance of broad, high-level work behaviours, while under-emphasizing the importance of more concrete, job-specific tasks.

  (ii) Relatedly, personnel in a given occupation who are asked to consider the types of attributes and personal qualities that might be associated with effective job performance in the future might be inclined to overestimate the relative importance of widely applicable, abstract characteristics (i.e., leadership ability, motivation). Conversely, they may underestimate the importance of more concrete traits, abilities, and skill sets that are critical to job performance within the occupation.

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(iii) At a more immediate level, a substantial amount of research (and anecdotal evidence) indicates that people routinely underestimate the length of time it will take to complete a task or project, a phenomenon that is formally known as the planning fallacy.[15]

The negative implications that these biases may have for forecasting activities and for strategic job analysis are obvious. To summarize, timelines and implementation schedules may be too optimistic, and even knowledgeable subject matter experts may grossly misjudge the effect that future developments will have on the nature of a job. Furthermore, analysts and CAF personnel may place an inordinate amount of importance on broad, abstract work behaviours and personal attributes associated with general performance at the expense of the more specific, concrete tasks and qualifications that are essential to doing a given job correctly.

"To summarize, timelines and implementation schedules may be too optimistic, and even knowledgeable subject matter experts may grossly misjudge the effect that future developments will have on the nature of the job."

Uncertainty about when Selection Standards Derived from SJA Should be Implemented

When a job is conceptualized or altered to accommodate a well-defined organizational change or capability that will be introduced at a pre-determined point in time, determining when new selection standards should be introduced may be less of an issue. However, when the objective of an SJA is to determine how the tasks and KSAOs of a job may need to change in response to future trends or developments that are less clearly defined, it may be challenging to determine when the selection standards that are derived from such a project should be implemented. More to the point, while forecasting studies and other attempts to identify the impact of future trends inarguably play a vital role in challenging individuals' assumptions about the future and enabling the CAF to prepare for a variety of possible challenges, analysts and strategic planners should be cautious with respect to implementing changes to the parameters of a job (or the training and selection systems that are associated with it) to accommodate hypothetical future events and developments that may not materialize. Even in instances where jobs and selection systems need to be altered to accommodate concrete developments and capabilities, it may still be difficult to determine exactly when newly identified KSAOs need to be integrated into a selection and/or training system, given that most people are notoriously poor judges of how long it will take for future events to unfold.

It is worth emphasizing that the discussion of these issues is not meant to discourage CAF/DND analysts from using SJA in instances where this technique could be helpful (i.e., to determine how job parameters might evolve in response to the introduction of new capabilities or organizational re-structuring). Nor is the purpose to undermine the utility of forecasting studies or other endeavours that are directed at helping the CAF to prepare for the future. However, a healthy appreciation of some of the limitations and biases associated with SJA may ultimately help analysts to use this technique more effectively, and may reduce the likelihood of developing a skewed perspective of future jobs.

How Can the Challenges Associated with SJA be Mitigated?

To a certain degree, even the most conservative, carefully-researched projections about the future are tenuous, and the judgments that incumbents and subject matter experts make when they participate in an SJA are no exception. That said, there are several measures that analysts can adopt to mitigate the types of biases that people tend to exhibit, and to ensure that the results of their SJA are comparatively accurate and useful.

(a) Establish an Understanding of the Current Job (if Applicable)

Many proponents of SJA maintain that performing a traditional job analysis is a critical first step to determining how the parameters of an existing occupation might change over time.[16] Analysts who have been tasked to complete an SJA may shorten this process by simply reviewing existing job materials and job analyses for similar positions.

(b) Use SJA to Determine How Jobs will Change in Response to Future Developments that are Imminent, Specific and Concrete

It is strongly suggested that SJA should only be performed to determine how occupations will be created or modified in response to capabilities and initiatives that are well-defined and likely to be implemented in the near future (i.e., within the next five years). This form of SJA will be more likely to yield specific, accurate information that can be used to inform selection standards and training programs for emerging or evolving occupations.

(c) Select the Appropriate Subject Matter Experts

Conventional forms of job analysis that are used in the CAF rely almost exclusively on job incumbents to identify the tasks and qualifications required to work effectively in a given occupation. In contrast, the subject matter experts for a well-conducted SJA are typically drawn from a comparatively broad range of backgrounds.[17]

An overview of the academic literature suggests that the subject matter experts who are selected for SJA can generally be grouped into two broad categories: (1) individuals who are knowledgeable about the factors that precipitated the SJA (i.e., shifts in organizational strategies or the introduction of new technology/capabilities); and (2) individuals who are likely to be directly involved with the future job, or who are performing tasks that are similar to what the job will entail.

It is worth noting that the appropriate subject matter experts for an SJA may not always be available through the CAF. In such instances, analysts may have to identify similar jobs that are performed in civilian organizations and other militaries and arrange to gather information from those incumbents.

(d) Consider the Use of Frame of Reference Training to Educate Subject Matter Experts about Future Biases

Research has indicated that frame of reference training effectively reduces some of the biases that compromise the accuracy of more traditional forms of job analysis.[18] In the context of SJA, analysts employ frame of reference training with their subject matter experts at the outset of the project in order to mitigate the effects of the biases that influence peoples' judgments about the future.

Given the uncertainties inherent in any projections about the future, these measures will not completely eliminate the possibility of error. However, adhering to these precautions may significantly enhance the accuracy and utility of the results derived from SJA.

The CAF Context: Capability Development and Emerging Occupations

Within the CAF, the Director Personnel Generation Requirements (DPGR) is responsible for maintaining the Military Employment Structure (MES), and for performing the initial work of determining how new capabilities will shape emerging (or evolving) occupations. Specifically, such changes to the MES involve an eight phase process[19]:

Phase 1: Problem Definition

During the initial phase of the MES change management process, a sponsor (i.e., one of the CAF elements, the branch advisor for an occupation, the assistant Chief of Military Personnel) identifies an issue or deficiency associated with the current occupational structure in the CAF, which often involves the introduction of a new capability that must be integrated into a current occupation or that requires the development of a new occupation. DPGR subsequently performs a problem analysis to better understand the issue and generate possible solutions.

"Given the uncertainties inherent in any projections about the future, these measures will not completely eliminate the possibility of error."

Phase 2: Occupation Analysis

DPGR analysts then review information pertaining to similar roles (both from within the CAF and from other organizations). Subsequently, they conduct multiple interviews and focus groups with subject matter experts to identify the main areas of work and tasks associated with each rank level that is to be represented within the occupation. The output of this process is a master task list and preliminary job descriptions. DPGR also informally begins to assess different ways in which the occupation could be structured at this time (for instance, they might determine whether the occupation should be split into multiple occupations, or whether it should exist as one occupation with several distinct areas of specialization), as well as the qualification requirements that might be associated with different jobs within the occupation.

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Phase 3: Structure Analysis

The aim of Phase 3 is to formally explore feasible ways to structure the occupation, and to decide on an option that maximizes the operational effectiveness of the CAF. Specifically, for each structure option that is being considered for the occupation, analysts systematically identify the requisite rank qualifications, entrance qualifications, experience qualifications and unique (i.e., specialized) qualifications that would be required to perform the job at each level (starting with the entry-level jobs in the occupation, and working upwards). The preferred structure option for the occupation is identified during this time, and the workforce modelling team in DGMPRA is tasked to model the proposed option in order to determine its viability and sustainability in terms of the number of personnel required by rank or job, CAF entrance and attrition rates, and promotion rates.

Phase 4: Sponsor Decision

During Phase 4, the sponsor selects their preferred structure option for the occupation, and DPGR initiates discussions with the units across DND and the CAF that are responsible for different aspects of the change implementation (recruiting, training and development, etc.).

Phase 5: Implementation Planning

Phase 5 entails the development of a detailed implementation plan for the MES change. Specifically, the plan includes "…job based specification and details, at a minimum, the following MES topics: structure; employment qualifications; occupation groups; establishment; career management; training; compensation; entry standards; recruiting support products; medical category and task statements; security requirement; occupation affiliations; Distinct Environmental Uniform (DEU) assignment; changes to personnel records; implementation costs; changes to publications, etc."[20]

Phase 6: Implementation

During this phase, DPGR coordinates and monitors the execution of the implementation plan by the units in the CAF that are responsible for different parts of the process.

Phase 7: Verification

During Phase 7, DPGR is responsible for confirming that each task in the preceding phase has been completed, and for finding appropriate solutions in instances where part of the implementation plan has been delayed or cannot be completed.

Phase 8: Validation

Phase 8 involves an assessment of whether the preceding phases of the MES change management process resulted in the creation of a new or refined occupation that effectively meets the organizational needs of the CAF. If substantial deficiencies or challenges are identified, a new iteration of the process may be initiated.[21]

Conducting SJA to Delineate KSAOs and Selection Criteria

While DPGR is primarily responsible for establishing the parameters of occupations in the CAF and identifying the tasks and basic entrance qualifications associated with each one, the identification of personnel requirements (i.e., KSAOs) for these occupations for selection purposes is typically the task of the military personnel research unit, DGMPRA.

After DPGR has completed the initial groundwork associated with determining how a new capability will influence the structure and work outputs of an occupation, the specific type of SJA that is required to identify the KSAOs and competencies associated with the new or evolving occupation can be initiated. This activity is intended to supplement the broader efforts to establish the parameters of an occupation, and capitalizes on the output of the occupation analysis that is conducted by DPGR. The following steps should aid this process.

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Identify the Appropriate SMEs and Synthesize Background Information about the Job

Subject matter experts should consist of individuals who are involved in the development and implementation of the capability, individuals who perform similar lines of work (within the CAF, if possible, or in other military or civilian organizations), and individuals who will be involved in the selection and supervision of job incumbents in the emerging occupation.

If necessary, the background research about the occupation and its corresponding tasks collected during the occupation analysis could be supplemented with additional information on the tasks and KSAOs that have been identified for similar occupations in other organizations.

Individual Exercises and Focus Group Discussions with SMEs

Subject matter experts should be provided with a description of the new capability, as well as a summary of the tasks and work outputs identified through the occupation analysis performed by DPGR, and any other tasks and KSAOs that were obtained from previous job analyses.

They should then independently review the existing KSAOs and make any modifications that they feel are necessary in light of the new capability and associated tasks.[22] Once the subject matter experts have completed an independent assessment of these attributes, a focus group should be convened to reach consensus on how the tasks and work outputs associated with the *new* (or *modified*) occupation shape the KSAOs required to perform it effectively.

The subject matter experts should also be asked to evaluate the difficulty and criticality of the tasks associated with the future job, as well as the importance of the KSAOs and the feasibility of screening for them in the applicant pool. They should also be asked to make judgements about the KSAOs that it would be reasonable to expect in the applicant population, the specific amount of knowledge that the job will require, and the level of proficiency incumbents should possess with respect to each ability deemed necessary for the job.[23]

The results of these activities should be synthesized in a report and relayed to the occupational authority for approval and DPGR for implementation purposes.

Develop an interim selection procedure

After the strategic job analysis is complete, an interim selection procedure based on the KSAOs that were identified as being important to training and job performance should be developed.

Update Job Analysis and Validate Selection Decisions as Data Becomes Available

As a sufficient amount of training and performance data become available for the new occupation, research should be directed toward (a) updating the job analysis using high-performing incumbents and their supervisors as subject matter experts, and (b) conducting empirical studies to determine whether the selection standards that were originally derived from the strategic job analysis are appropriate for the occupation.

Conclusions

The current article serves several purposes. First, it provides an overview and critique of the existing literature on strategic job analysis. It is also raises awareness about the possible challenges associated with applying this technique, and discusses ways in which the accuracy of an SJA could be enhanced. Finally, it outlines a proposed approach based on best practices observed in the literature, which highlights how this technique could be employed in the CAF for new occupations arising out of emerging capabilities. In sum, it is maintained that a carefully conducted strategic job analysis may be an invaluable part of the capability development process, but that analysts should adopt a balanced, conservative approach to employing this technique in the CAF.

CMJ

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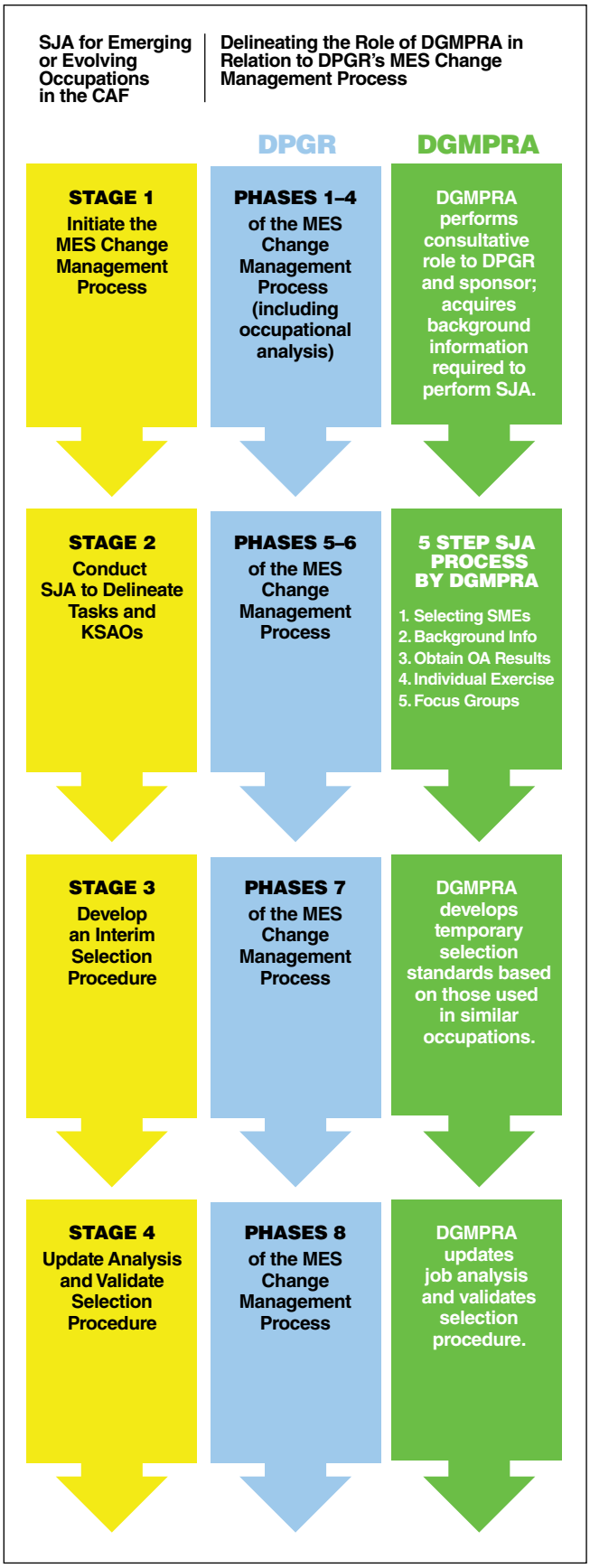

Figure 1: Visual Model of SJA in the CAF

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DND/CFJIC photo IS2005-1171d

Captain Bruce Cleveland, a Social Worker with the Canadian Forces Disaster Assistance Response Team, shares a laugh with local children in Pottuvil, Sri Lanka, during the DART team's deployment there in 2005.

Social Work in the Military ~ Considering a Renewed Scope of Practice

by Dave Blackburn

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Introduction

The social work scope of practice is broad, which makes it difficult to establish a clear overall picture of it.[1] The way that the social work profession is practised within the Canadian Armed Forces (CAF) is specific, unique and guided by directives that are different from those of civilian organizations. Given that social work practice must "[trans] [...] take into consideration the places where it is being practised and the types of problems that it is trying to resolve,"[2] social work in a military context presents unique challenges.

Currently, social work is formally practised at CAF Health Services Centres. It is focused on the provision of psychosocial and mental health services that include clinical activities such as evaluation, psychotherapy and support. Social workers practise their profession as members of multidisciplinary teams. Those conditions of the practice are fundamental to the profession, which is aimed at helping people in order to improve their well-being.[3] However, by offering services only to CAF members,[4] the "formal" practice of social work in a military context is restrictive and limits the inclusion of family, social and community components.

With that in mind, how is it possible for social work in a military context to fully meet the current needs of soldiers and their families and offer solutions to social problems in the community?

For military authorities, establishing two separate groups of social workers committed to improving the well-being of soldiers and families appears to be the answer. In addition to the 45 military social workers and 118 civilian social workers working in the 26 mental health services clinics in Canada and Europe,[5,6] there is also another group of social workers working in the military family resource centres. That second group offers community and individual social intervention services to

DND/Library and Archives Canada PA-003085

Wounded at Chaplain Service free coffee stall during the advance east of Arras, September, 1918.

soldiers and their families. However, it does not report to the CAF national social work practice lead in matters of professional and technical guidance. It is managed independently and locally through an administrative structure (director and board of directors) that is specific to each of the centres and must follow the administrative directives of the Directorate Quality of Life/CAF Military Family Services, which is in charge of the Military Family Services Program. That directorate is not part of CAF Health Services.

To understand the rationale behind the social work scope of practice in a military context and its current directions, a historical review of the profession is in order. That historical review will lead to an analysis and discussion of how social work is practised in the CAF, highlighting the main points of tension that justify practice renewal.

DND/Library and Archives Canada PA-189883

The Right Honourable William Lyon Mackenzie King speaking with troops in August, 1941.

DND photo, 1944

Social Work officers in 1944 with Lieutenant Colonel Sutton.

Lieutenant W.J. Hynes/DND/Library and Archives Canada PA-147114

War brides and their children enroute to Canada from England, 17 April 1944.

History of social work in the Canadian Armed Forces

The social work profession has existed in the CAF for more than 60 years.[7] The profession has undergone a number of major changes over the years, but it has always endured and been able to redefine itself to ensure that some of its fields of expertise continue to be applied within the Canadian military.

New realities, new needs

Throughout the First World War, the support offered to Canadian Army soldiers was provided by chaplains and troop officers.

In the first months of 1939, a social worker named Stewart Sutton sent a letter to the Prime Minister of Canada, W. L. Mackenzie King, to raise awareness of potential morale issues among Canadian soldiers.[8] He pointed out that the biggest morale problem lay in the fact that Canadian soldiers would be serving in a theatre very far away from their families, and they were very concerned with how they would deal with problems at home.[9] He suggested that some form of social service be put in place to support the soldier's personal problem-solving networks, enabling them to communicate family-related problems in complete confidence and obtain help resolving those issues.[10]

It was only in 1942 that Stewart Sutton, who had by then become director of the Children's Aid Society of the City of Kingston, received a visit from a lieutenant-colonel who wished to discuss the letter that he had sent to the prime minister and inquire as to whether he would be interested in joining the Canadian Army in order to develop a professional services division to help soldiers and their families.[11]

In May 1942, the Department of National Defence officially authorized the creation of a Division on Special Services with the mandate of collecting information on factors affecting troop morale and the circumstances of families in Canada and of resolving issues that were negatively affecting troop morale.[12]

Emergence of social work within a military context during the Second World War

During the Second World War, Canada had a shortage of professional social workers. Some authors estimate that, at the time, the country as a whole had only slightly more than 1,000 qualified social workers.[13] As Denault said, "[trans] The family social services agencies were called upon to contribute their 'war effort' by working with the Department of National Defence and the Department of Veterans Affairs to administer allowances and pensions to soldiers' families while at the same time practicing professional social work."[14]

In 1943, social workers were authorized to join the ranks of the Canadian Army[15] and were assigned to the rallying/recruiting centres. In addition to performing social and medical background checks during medical evaluations, they also had to identify people with psychopathologies. They played an important role in deciding who would be deemed unfit for military service based on mental health and criminal background checks. It should be noted that "[trans] those early social workers were viewed as technical assistants or advisors to doctors and psychiatrists during recruitment screening."[16,17]

After Sutton was commissioned as an officer, he became the Director of Social Science, and he had to create a social services program for the Canadian Army. His challenging task involved developing administrative guidelines and defining the role of social workers, particularly with the commanders. He also needed to conduct hiring, devise training that was tailored to the military environment, and ensure that the social workers were supervised. In addition, Sutton had to invest time and energy in making social work relevant in the Canadian Army and helping it gain acceptance at all levels of the military hierarchy. The Social Sciences directorate became official and operational on 17 July 1944.[18] The benefits of being able to rely on professional social workers in the Canadian Army were unquestionably recognized by commanders, who could obtain advice on social and family-related problems, and by civilian social service agencies, which could work with professionals with university-level training in social work. The Social Science directorate helped to manage two significant situations that resulted from the Second World War, ie, those involving children born out of wedlock and war brides.[19]

Towards the end of the Second World War, "the Canadian Army employed professional social workers at headquarters and certain large camps; the Royal Canadian Air Force had such personnel at Headquarters and in Commands; and the Royal Canadian Navy had an office in Halifax to deal with personal social problems."[20] The Social Science directorate was disbanded in 1945 and ceased activities. A number of social workers were then assigned to the Canadian Department of Veterans Affairs for a short period of time before being released. In spite of the disbanding, it was acknowledged that social work should continue to be a part of the structure of the Canadian Armed Forces.[21]

The Royal Canadian Air Force revives social work within the military

In 1947, Professor Charles Eric Hendry of the University of Toronto's Faculty of Social Work was given the task of studying what CAF recreation and social service needs were by the Personnel Members' Committee, which included soldiers from all three elements (Army, Navy and Air Force). After two years of research and analysis, he published his report. Professor Hendry was of the opinion that the needs of CAF members and their families were similar to those of civilian families. In addition, for Hendry, hiring professional social workers during the Second World War was the step that had had the greatest impact on helping to resolve soldiers' personal problems.[22] He made several recommendations in concluding his analysis, including that the CAF employ social workers who had been professionally trained to respond to issues involving social welfare. Hendry added that each element "[trans] should have a social worker at its headquarters, as well as professional social workers at the formation level […]."[23]

After Hendry's report was published, it did not produce the desired effect because there were differences of opinion within the Personnel Members' Committee.[24] It was only in 1952 that the RCAF made the decision to move forward, without the other two elements, with the report's main recommendation and seek help from social workers by creating its own social welfare and recreation branch. Because it was limited in the number of social workers it could hire, the RCAF was only able to recruit 12 military social workers.[25] The twelve positions were distributed

strategically and geographically within the RCAF while remaining under the direction of the Director of Welfare Services. By 1958, the positive contribution of military social workers appeared to be well established. In a document entitled "Personnel Personal Problems," the air officers command recommended that social workers from the region be used to help training and section officers resolve young aviators' adaptation issues.[26]

After advances were made by the RCAF, the two other elements followed suit in the 1960s. In 1961, the Royal Canadian Navy called on two civilian social workers to work at its two naval bases (Halifax and Esquimalt). As for the Canadian Army, the unification of the three elements brought an end to the establishment of a social welfare branch. "By 1966, the RCAF social welfare branch had slowly grown to 16 officers."[27]

The unification of the three elements restructures how social work is practised

An important event in Canada's military history occurred on 1 February 1968 when an act abolishing the Royal Canadian Navy, the Royal Canadian Air Force and the Canadian Army came into effect.[28] The unification of the three elements led to the creation of the Canadian Forces Social Work Service. Built from the RCAF's Social Welfare Branch and the two civilian social workers from the Royal Canadian Navy, the Social Work Service was now offered to the three elements.[29] The head of the Social Work Service would from then on have the rank of lieutenant-colonel and report to the Director General Personnel Services. Following the unification, there was a gradual increase in the number of social workers. In 1971, the service was decentralized, and all of the social workers except for those working in Ottawa were assigned to regional support positions.

Social work as a speciality within Health Services

In January 1979, social work moved from under the Director General Personnel Services to CAF Health Services, under the Surgeon General Branch.[30] At the time, military authorities justified this change by saying that soldiers needed to receive medical care in a multi-disciplinary environment that took into account physical, mental as well as social factors. Thus, by bringing together military social workers with military doctors, there would be better continuity of care using a more integrated approach. "[trans] At the base level, that principle is formalized in the enduring relationship between medical personnel and social workers, who now work together in medical units."[31] As for the practice of social work, the service offering continued to be made using the regional model, but it fell under the direction of the surgeons from the bases and regions. By gradually taking their place within CAF Health Services, military social workers saw their roles become more multifaceted over the years. Some of them taught in military colleges while others were assigned to health promotion or drug and alcohol abuse prevention, while still others went on to be rehabilitation-program advisors and administrators.[32]

Operation **Phoenix** *and the end of social work in a military context*

The year 1994 was significant for the CAF because a review process was introduced that led to major restructuring within the military. For CAF Health Services, it was Operation *Phoenix*, the ultimate goal of which was to "rationalize health care services in the CF with the view to developing a viable, operationally orientated, cost effective medical support system."[33] After an in-depth study of all Health Services occupational groups was conducted, the social worker profession was set aside. As it was not considered to be essential to operational deployments, a notice was drafted to abolish it, despite the fact that the utility of social workers was well recognized. People, particularly commanding officers, reacted quickly, coming out strongly against the decision and reaffirming the important role that social workers played in understanding the military way of life and deployment-related problems. Social workers as an occupational group were saved a great deal of pain and misery in 1997 when they were recognized as being essential but non-operational. They were thus deemed to be non-deployable and "the role of the military social worker has become more focused in terms of assessment, consultation, collaboration and intervention in an operational environment."[34]

Rx2000 and the redefining of Health Services

In 1999, the Chief of the Defence Staff ordered that a comprehensive study be done of the CAF health system. That study involved a detailed and independent analysis of the quality and continuity of care provided to CAF members while evaluating the system's ability to provide services and determining which areas could be improved.[35]

The result was Rx2000, an initiative aimed at establishing the best health care possible for CAF members in accordance with high standards and best practices. "It is a proactive, multi-faceted reform that aims at making the Canadian Forces health care system patient-focused, accessible, and capable of meeting the needs of the member and operational chains-of-command at home and abroad while respecting the principles of the *Canada Health Act*."[36] Rx2000 redefined mental health services, which are now based on best practices. As a result, the role of social workers once again changed with this new reform.

Social workers work with other health professionals, and their main task is to support the morale, effectiveness and mental health of Canadian soldiers, sailors and airmen and women in the three mental health programs offered in the Health Services Centres[37]:

- **Psychosocial services program –** Social workers provide brief interventions, crisis interventions, alcohol/drug/gambling addiction counselling and information services, as well as handle administrative requests (eg, involving unexpected moves, compassionate status and postings, assessments for OUTCAN postings) and pre-deployment and post-deployment screenings.
- **General mental health program –** As part of this program, social workers provide assessment and individual and group treatment for people suffering from a broad range of mental health problems, including depression, anxiety, excessive worry, insomnia, etc.
- **Operational trauma and stress support program –** Social workers provide assessment and individual and group treatment for members suffering from an operational stress injury, as well as assistance to members on

DND photo DSC00064 by Captain Edward Stewart

Patrol Commander Sergeant Fergus McGee (left), A Flight 2nd Royal Air Force Regiment, confers with Master Warrant Officer Tim Ralph, Company Sergeant Major Health Service Support Company, 1 Royal Canadian Regiment Battle Group, Kandahar, Afghanistan, 19 November 2006. The HSS Company was providing village medical outreach and the RAF Regiment was providing for their security.

active service and their families dealing with stresses arising from military operations.

The contribution of social workers in Afghanistan and Haiti

During operational missions such as those in Afghanistan and Haiti, social workers form an integral part of a multidisciplinary team of mental health professionals. The services provided are designed to support CAF members exposed to operational stress or to help deployed members deal with difficult situations faced by loved ones at home. In situations like this, where stress and anxiety are all too real, the services are designed to be flexible so as to reach members in need.[38]

Between 2006 and 2014, civilian and military social workers formed the core of the mental health team for third-location decompression, which took place

DND photo IS2009-1011-052 by Sergeant Paz Quillé

Incoming members going through administration procedures at the Azia resort and spa Hotel as they commence decompression in Paphos, Cyprus, prior to returning to Canada.

primarily in Cyprus and Germany. In addition to offering sessions from the mental health education and training program *Road to Mental Readiness*, they offered counselling services for members deploying back to Canada.[39]

Reflecting on a practice that should be renewed

Social work under Health Services: a stunted profession?

Since 1979, the social work practice has officially been under the direction of CAF Health Services. That integration accelerated the medicalization of social work and, consequently, of the social problems experienced by soldiers and their families. That medicalization is evidenced in the way that phenomena that previously were not viewed through a medical lens now are.[40] It is therefore unsurprising that, in 2015, the main role of social workers is to provide psychosocial and mental health services.

Social work, however, "is a practice-based profession and an academic discipline that promotes social change and development, social cohesion, and the empowerment and liberation of people. Principles of social justice, human rights, collective responsibility and respect for diversities are central to social work. [...] social work engages people and structures to address life challenges and enhance wellbeing."[41] The way that social work is currently practised in a military context does not enable it to fulfill its fundamental role as an interdisciplinary and transdisciplinary profession.

The domination and influence of the medical domain within CAF Health

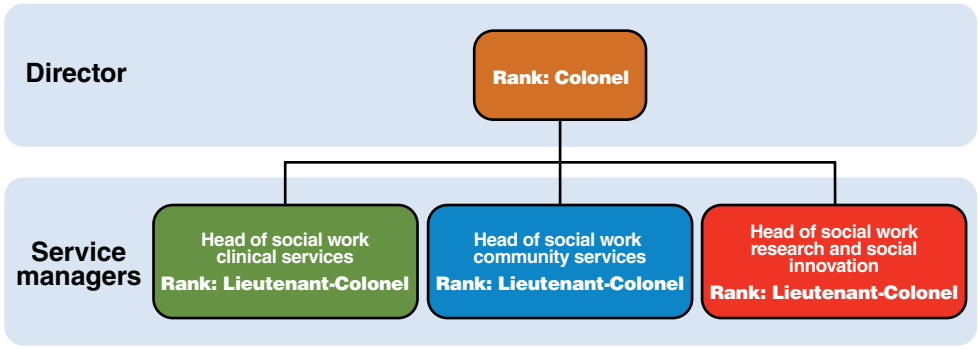

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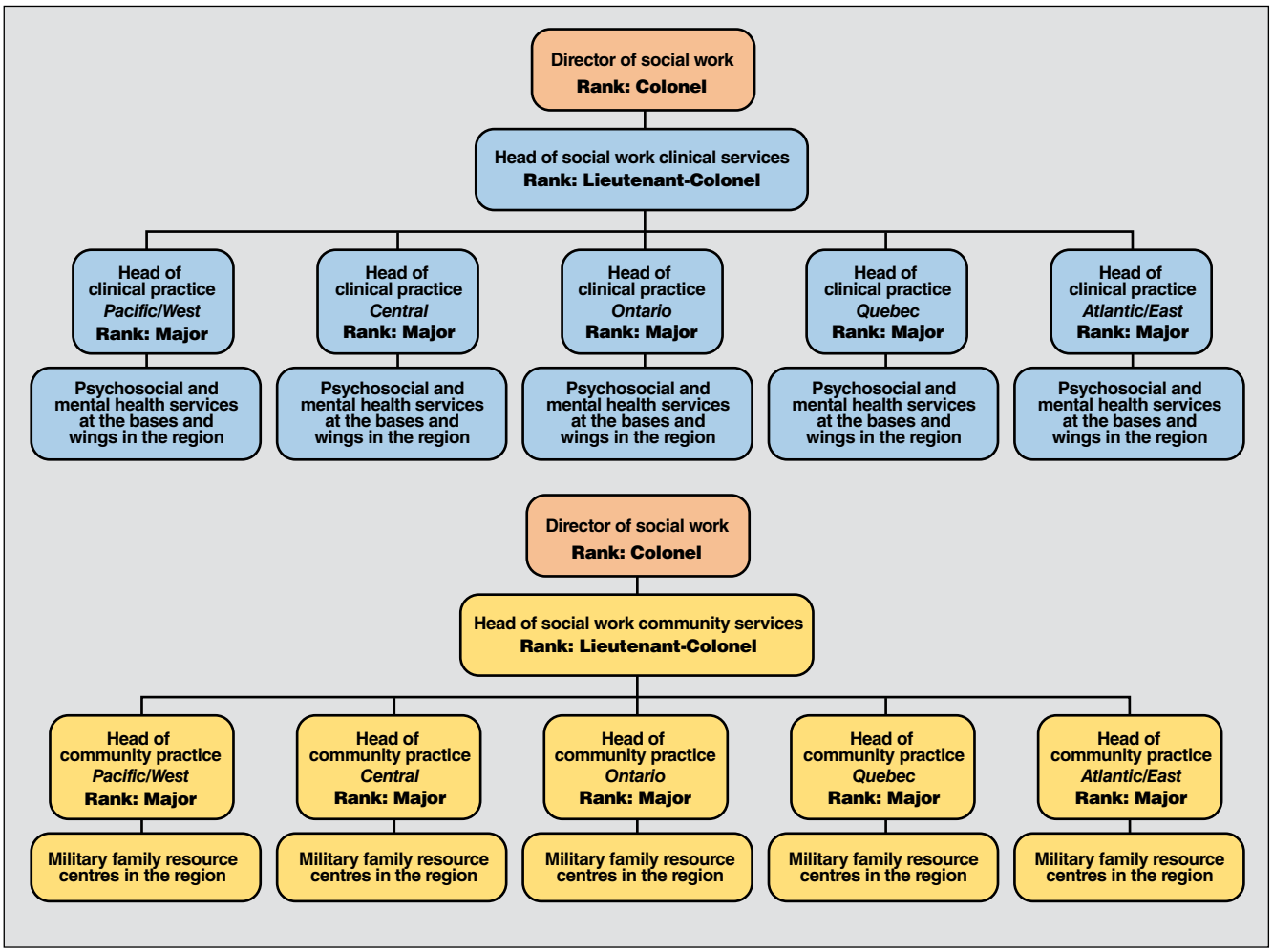
Figure 1: The Directorate of Social Work



Author

Figure 2: The Directorate of Social Work ~ Clinical Services and Community Services

Services has had an enormous impact on the directions that social work has taken. One of the consequences has been the near disappearance of the community, social and family aspects essential to the social work field. It is deemed preferable to treat soldiers by focusing on their biology and psychology while failing to accord the same importance to social factors.

The social work practice lead is a lieutenant-colonel (the highest ranked social worker) who reports to the director of mental health (a position reserved for military doctors of the rank of colonel). The social work practice lead is a senior staff officer, in the same way as a health care administration officer. The power of the social work practice lead is therefore extremely limited. He/she must take cues from the director of mental health in the directions that social work will take as a component of mental health. That organizational structure raises a number of questions. Why is a doctor in charge of the mental health directorate? Why must the social work practice lead report to the director of mental health? Why can he/she not report directly to the Surgeon General, the Chief of Military Personnel or the Chief of the Defence Staff? Should the social work profession be part of the mental health directorate and, ultimately, CAF Health Services? Should not the social work profession have its own directorate? After all, it is a professional field that was established over 60 years ago in the CAF, and it offers special expertise to deal with the psychosocial problems that are specific to the military community.[42]

"Unfortunately, one area where CAF Mental Health Services fall short is the way in which suicidal behavior is handled."

There are a number of reasons that we believe that the social work practice would have greater influence and its services would have a broader reach if it was separate from Health Services (as was the case before 1979) or it had its own directorate within CAF Health Services.

A social work directorate would bring all of the civilian and military social workers working in CAF Health Services Centres and military family resource centres under one organization. The social worker workforce is a large one. It has the largest number of professionals within CAF Mental Health Services.[43] Grouping members of the profession together that way would make it possible to integrate community, social and family aspects into the practice and create a separate directorate for all social workers that would be led by a military social worker holding the rank of colonel. That officer would need to have significant community, clinical and operational experience to successfully lead both clinical and community social work services. In addition to adhering to the fundamentals of the social work practice and adopting an ecological perspective, the provision of military social services would also be improved from a technical and professional standpoint. The ecological perspective developed in the field of social sciences from the 1980s to the 1990s applies to the practice of social work in a military context. That perspective focuses on how individuals interact with their immediate and extended social environment.[44] "[trans] The ecological approach therefore all at once takes into account social, community, family, and individual aspects.[45]" That approach is useful for dealing with the military community's psychosocial problems. In addition to having a clinical section and a community section, the directorate of social work would need to have a social research and innovation section for studying the current problems and social issues that soldiers and their families face and proposing innovative solutions that are specifically tailored to the military community and that can be put into practice by social workers. Figure 1 shows the organizational structure that the directorate of social work could take and Figure 2 shows the possible distribution of clinical and community services.

Unfortunately, one area where CAF Mental Health Services fall short is the way in which suicidal behaviour is handled. Because the CAF health system focuses on soldier biology and psychology, the social, family and community factors are not taken into account. Suicidal behaviour is an area of intervention in the social work field that is approached from both an ecosystem and multidisciplinary perspective. "[trans] Social work is, without a doubt, one of the professions that is most concerned with suicide […]."[46] Although the *Surgeon General's Mental Health Strategy* tries to cement the various components related to mental health, it is still a local initiative that is internal to the CAF. That approach to mental health, and to suicide in particular, can only result in limited or partial success. By working with communities and using an ecosystem approach "[trans] that always situates the individual within his or her own context and environment, social services bring together, to some extent, the contributions of those other disciplines in order to obtain a holistic view of the situation with the aim of responding effectively both to the person who is suicidal and to his/her network."[47] Social workers are therefore able to develop integrated, concerted approaches. The Canadian Mental Health Association and the Canadian Association for Suicide Prevention unequivocally express their concerns regarding soldier suicides by stating the following: "Members of the armed forces and their families live in and contribute to all of our communities. We need to work together to finalize an integrated and collaborative strategy on suicide prevention for all Canadians, including members of the Forces, their families and veterans."[48] Over time, social workers have developed in-depth clinical and community expertise while offering an analytical framework that makes it possible to gain an even deeper understanding of suicide as a social issue.[49]

Currently, the only military social worker in the CAF who truly practices social work as an interdisciplinary and transdisciplinary profession is the person working in Geilenkirchen, Germany. He offers services to soldiers and families and works to prevent social problems in direct cooperation with the military family resource centres and the Health Promotion Branch; he also works with the local community organizations in the countries where soldiers are stationed and with professional services from the CAF and NATO countries.[50]

Social workers and chaplains: two professions with different realities

Military chaplains have long maintained an independent status and a branch dedicated to their field of practice that is led by a chaplain general of the rank of brigadier-general. That person advises the Chief of the Defence Staff directly. The role of the military chaplains is to attend to "the moral and spiritual well-being of military personnel and

their families in all aspects of their lives, during conflict and peacetime."[51] Bergeron points out that "[trans] military chaplains are therefore not social workers who are concerned only with the social side of [soldiers]."[52] It should be noted that, in the current CAF Health Services system, social workers attend to the psychosocial side of soldiers, with the emphasis being more on the psychological than the social. What reason is there that social workers, who are just as important as chaplains, cannot have their own structure that is at once administrative and professional, technical and independent from CAF Health Services, just as chaplain do?

"Some people prefer to remain within the professional practice, while others are interested in the administrative components of health services."

A lack of career opportunity: challenges for the profession and attrition

Another consequence of the social work profession being under the direction of CAF Health Services is that there is a lack of career prospects. In its current state, the social work profession is not developing or offering career opportunities to soldiers, and the situation is even more dire for civilians. Social work in the military must grow, develop, and promise new career opportunities if we are to turn things around.

The attrition rate is very high among military social workers. A lack of variety in professional tasks is one of the reasons for that. In the past, a military social worker could teach in military colleges, serve as a social worker in a sector or region, work in an alcohol addiction rehabilitation centre, serve as a regional drug education coordinator or a drug and alcohol prevention program administrator, be a social service director at the National Defence Medical Centre and, ultimately, be the director of social affairs.[53] Today, a social worker's career path is a straight line. After undergoing a period of training in the field, he/she becomes the head of psychosocial services at a base. The person stays in that role (which is similar from one base to another) until being promoted to the rank of major. After being promoted to major, a social worker's climb up the ranks is probably over, as there is currently only one lieutenant-colonel position. As a major from then on, he or she is posted to one of the "big bases" to be, once again and for the rest of his or her career, the head of the psychosocial services program and, possibly, the professional practice lead for a region (which is more of a symbolic role than a practical one). The roles and responsibilities of a major at Halifax, Valcartier or Edmonton are essentially the same. The individual can also hold one of the few staff officer positions for majors in Ottawa, specifically at the Directorate of Mental Health. A headquarters position also brings its share of challenges. Those are only a few of the reasons that some social workers get worn out and decide to continue their careers with a civilian organization or change professions.

Not being able to access the health care administration officer occupational group (in the way that military nurses and pharmacists can) also closes the door on any ambition that some military social workers may have to become administrators. Some people prefer to remain within the professional practice while others are interested in the administrative components of health services. Why can a military nurse, a military pharmacist or a health care administration officer (ranked captain) become a health care administration officer (and have access to the strategic management positions within the Health Services Group) but military social workers, who all have a master's degree, cannot? It is merely a way of safeguarding the turf of "purely medical" professions—and social work has never been considered to be among those professions.

Psychotherapy regulations in Canada: What are the consequences?

The Canadian provinces are developing laws that will define and frame the psychotherapy field, which makes it necessary to review how social work has been practiced in the military in recent decades. In addition to all of the other reasons for re-examining the profession, that has placed pressure on military authorities to conduct an in-depth analysis of the practice, as a large number of social workers will no longer be authorized to practise psychotherapy without a licence under the new laws.

Conclusion

The history of military social work has been shaped over the years by military conflicts, internal changes to the military institution, the redefining of services for soldiers, budget cuts, and the tireless work of certain important individuals. It has not been an easy journey, but the aims of the profession are still just as noble: to help people overcome psychosocial problems. Unfortunately, the social work profession has lost ground and influence in recent decades, and it is soldiers and families who have paid the price. We hope that this article will help to create a climate of debate and lead to a re-examination of the social work profession and scope of practice in a military context. Such an analysis can only be constructive and directly benefit social workers, the CAF and, ultimately, men and women in uniform and their families.

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DND photo IS2009-0012-08 by Sergeant Paz Quillé

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US Army photo

The Modular Advanced Robotic System, one of four unmanned ground vehicles demonstrating lethal applications at Fort Benning, Georgia, 16 October 2013.

Lethal Autonomous Systems and the Future of Warfare

by Daniel Sukman

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"I'm sorry Dave, I'm afraid I can't do that" – Hal, 2001: A Space Odyssey

Introduction

War is fundamentally a human endeavor. It is a clash of wills involving political leaders, soldiers, and civilian populations of opposing states and non-state actors. Within this human endeavour, the U.S. has always sought a technological advantage, since technological advantages have assisted the U.S. in overcoming numerical advantages held by adversaries. *Maintaining* the technological advantage is paramount as the U.S. moves into a period of fiscal restraint and significantly reduced force size.

Today, the world is approaching a robotics revolution in military affairs that may be on par with the introduction of gunpowder, *levée en masse*, and the advent of nuclear weapons.[1] Unmanned and autonomous systems have the potential to fundamentally change the American way of war. This could change how policy makers posture and apply land forces to achieve strategic ends. Unmanned and autonomous systems may even change the roles and the missions of the Army itself. In order to capitalize on this, there is an overwhelming need to build more detail on top of existing guidance to allow the Services to develop new capabilities with both understanding and confidence.

It is clear that robotics and autonomous systems will have a place in society, and will play an increased role on the battlefield of the future. The question remains, what role will lethal autonomous systems play in the future? This article will examine the history, domestic and international policy trends, and the ethics of lethal autonomous systems on the battlefield of the future.

History of Autonomous Weapons Systems

Department of Defense Directive 3000.09 defines autonomous weapon systems as "…a weapon system that once activated, can select and engage targets without further intervention by a human operator. This includes human supervised autonomous weapons systems that are designed to allow human operators to override operation of the weapon system, but can select and engage targets without further human input after activation."

The U.S. military *does* and *has* employed various semi-autonomous lethal systems in conflicts. Land and sea mines present one example of lethal autonomous systems. The worldwide community-at-large has made attempts to limit and even eliminate the use of these weapons, as evidenced by the Mine Ban Treaty of 1997, and the Convention on Cluster Munitions of 2008.

The U.S. employs semi-autonomous systems as components of air and missile defence systems. It is generally accepted that the speed of jet bombers and ballistic missiles limits the decision space of humans, who must decide whether to employ a *Patriot* missile in defence. The U.S. has had much success in the employment of these systems; however, it has not been without deadly mistakes, such as the shooting down of an Iranian commercial airliner in 1988 by an *Aegis* Air Defense system, or the shooting down of a British *Tornado* aircraft in the opening stage of Operation *Iraqi Freedom* in 2003.

"Currently, neither the United States nor any other nations employ fully autonomous lethal robots."

Examples of other systems that employ a varying degree of autonomy include the US *Phalanx* system for Navy surface ships, the U.S. Counter Rocket, Artillery, and Mortar (C-RAM) system, and the Israeli *Harpy*, which detects, attacks, and destroys adversary radar emitters.

With the success of unmanned aerial systems, and the demand for unmanned ground vehicles in the recent conflicts in Iraq, Libya, and the current conflict in Afghanistan, the U.S. Department of Defense will most likely continue research and development funding to improve these systems, as well as to build new ones. The counter point to this success, however, is that much of the 'success' of unmanned ground systems (UGS) came in one of the most benign ADA/Counter-air operational environment the U.S. has seen since the Civil War. In a world where conflict with a 'near peer' competitor may be likely, will UGS be as successful and useful as in Operation *Enduring Freedom*/Operation *Iraqi Freedom*? If not, are the costs of near-and- mid-term science and technology worth the payback in such a world of technological parity?

Current U.S. Policy and Trends

Currently, neither the United States nor any other nations employ fully autonomous lethal robots. However, strategic science and technology trends do seem to indicate that in 2025 and beyond, with the rapid advancement of technology, lethal autonomous robots and other systems will be available for use by the U.S. military.

DVIDS photo 478841 by Staff Sergeant Maeson Elleman

A US Army *Patriot* battery during training at Kadena Air Base, Japan, 26 October 2011.

US Navy photo 150925-N-EH855-225 by Petty Officer 3rd Class Bryan Mai

The aircraft carrier USS *George Washington* conducts a live-fire exercise of its *Phalanx* close-in weapons system in the Pacific Ocean, 25 September 2015.

U.S. policy trends on lethal autonomous systems date back to when President Gerald Ford signed Executive Order 11905, which outlawed assassinations in 1976. President Jimmy Carter enhanced this order a year later with Executive Order 12036. These two orders banned political assassinations, both directly and indirectly. Four years later, on 4 December 1981, President Ronald Reagan signed Executive Order 12333, which stated, "No person employed by or acting on behalf of the U.S. Government shall engage in, or conspire to engage in, assassination."[2] On 3 November 2003, with the advent of the Global War on Terrorism, a *Predator* unmanned aircraft launched a *Hellfire* missile that killed Abu Ali al-Harithi in Yemen, turning the aforementioned executive orders 'on their heads.'[3]

With the publication of Department of Defense Directive 3000.09 in November 2012, the U.S. became the first nation to adopt an official public policy on autonomous systems. This policy placed a ten-year moratorium on the development of lethal autonomous systems, allowing only for the development of non-lethal autonomous systems.[4] The importance of this directive is that it recognizes the dangers to civilians on the battlefield, and requires a 'human in the loop' for the use of lethal force. This directive, however, is for a limited period, and it can be waived by senior DoD officials.

DoDD 3000.09 also addresses lethal autonomous systems used against non-human targets, such as aircraft and incoming ballistic missiles. Specifically, it states:

> Human-supervised autonomous weapon systems may be used to select and engage targets, with the exception of selecting humans as targets, for local defense to intercept attempted time-critical or saturation attacks for: Static defense of manned installations and onboard defense of manned platforms.

Although current U.S. policy does not allow for the development of lethal autonomous systems without a 'human in the loop,' there are a number of ways autonomous robotics can be employed on the battlefield. Unmanned autonomous systems can maintain line-of-sight communications in contested electromagnetic environments. Autonomous ISR, jamming, decoys, communications relay, and sustainment resupply are just a few of the many missions that autonomous systems can perform, freeing other human capabilities to concentrate upon lethality. These are some of many advantages applicable to these systems.[5]

International Policy Trends

International policy trends indicate that nations may prohibit the use of autonomous lethal weapons systems and robotics on the battlefield in the future. Currently, international protocols incur an obligation not to use weapons that have indiscriminate effects. Although U.S. unmanned systems and potential autonomous weapons systems are precise, they do not possess the ability to determine the second and third order effects of killing another human being.

In 1997, with the adoption of the Ottawa Treaty, the international community banned the use of land mines, one of the original forms of unmanned lethal systems. The United States has not signed the Mine Ban Treaty of 1997 due to the need, in conjunction with South Korea, to use mines to defend the inter-Korean border. However, the United States will fall out of international norms if we choose not to sign such treaties, especially if the signatories to the Law of Land Warfare decide to outlaw armed autonomous systems.

In 2010, the United Nations and the international community entered into force the Convention on Cluster Munitions. This treaty, similar to the Ottawa Treaty, prohibits the use and stockpiling of cluster munitions.[6]

If the international community bans weapons systems, be they mines, chemical, or biological weapons, the ban or restriction comes in six distinct parts. First, in the acquisition, retention, or stockpiling of these weapons, second, in basic or applied research and development, third, in testing, fourth, in their deployment, fifth in their transfer, and sixth, in the use of such weapons.[7]

The Laws of Land Warfare, written over a century ago, will still apply in the use of autonomous lethal systems now, and in all likelihood, in the future. The Hague Convention (IV) requires any combatant "to be commanded by a person." The Martens Clause, a binding rule of International Humanitarian Law, specifically demands the application of "the principle of humanity" in armed conflict. Without humans, there is no humanity.[8]

Recent examples of International policy trends can be attested to with the recent launch of the "Campaign to Stop Killer Robots"[9] formed by a coalition of non-governmental organizations, to include Human Rights Watch. The Secretary General of the United Nations called for international action to address the concerns over fully autonomous weapons or 'killer robots.' The remarks were the latest in a string of statements that United Nations (UN) officials have made on the topic during 2013 at the Human Rights Council, the Convention on Conventional Weapons, and elsewhere.[10]

Reuters RTR6JZ7

A South Korean soldier points a large calibre machine gun along the demilitarized zone, which separates the two Koreas, and is heavily mined.

In March 2013, during a debate in the British Parliament House of Lords, Lord Astor of Hever (Parliamentary Under Secretary of State, Defence; Conservative) stated: "Fully autonomous systems rely on a certain level of artificial intelligence for making high-level decisions from a very complex environmental input, the result of which might not be fully predictable at a very detailed level. However, let us be absolutely clear that the operation of weapons systems will always be under human control."[11] Article 36, a United Kingdom-based NGO, has praised this pledge, but still calls for further international agreements and treaties to strengthen commitment not to develop fully autonomous weapons and systems that could undertake attacks without meaningful human control.[12]

Reuters RTXU1A6 by Hyungwon Kang

A sign indicating the presence of landmines hangs from a barbed wire fence inside the demilitarized zone separating North and South Korea.

The group Article 36, derives its name from Article 36 of the 1977 Additional Protocol to the Geneva Conventions, which provides the framework for the legal review of new weapons. Specifically, it states: "In the study, development, acquisition or adoption of a new weapon, means or method of warfare," a party is "…under an obligation to determine whether its employment would, in some or all circumstances, be prohibited," either by Protocol I, or by "any other rule of international law applicable" to such party.[13]

Although some international organizations have called for a moratorium on the development of lethal autonomous systems, some other nations have continued with development. In 2006, the government of South Korea began installment of the Techwin SGR-A1 *Sentry* robots along the DMZ with North Korea. These systems are capable of fully autonomous tracking and targeting, although human approval is still required before firing.[14]

International policy trends are not the only risk or area of 'blowback' the United States may receive in the development of autonomous lethal systems. Our own doctrine and leadership is at risk when they take the human out of the loop.

Autonomous Weapons Systems Change the Operational Environment

Unmanned technologies will continue to improve, and the number of allies, partners and adversaries who possess these systems will continue to rise. Our competitors continue to catch up to the U.S. in unmanned technology. Enemy unmanned systems will complicate air, ground, and maritime operations by adding new low-altitude, ground, and amphibious threats to the force that the United States must be able to counter.[15]

Adversaries of the United States and our allies and partners will continue to acquire and develop sophisticated weapons systems, including precision guided munitions, ballistic missiles, stealth, and unmanned aerial systems. Advanced competitors, such as China, Russia, and Iran, as well as non-state actors such as Hezbollah, could possess sophisticated guided weapons, battle network technologies, and land-based reconnaissance strike capabilities.[16]

Although the United States maintains clear advantages over our adversaries today, one cannot accept these advantages as being permanent. Other states and non-state adversaries of the U.S. and our allies are likely to obtain lethal autonomous systems in the future. Some of these adversaries are less likely to follow international protocol on the use of lethal autonomous systems.

Unmanned and autonomous weapons systems add physical distance between U.S. soldiers and the battlefield. They remove humans from the kinetic action that occurs in warfare. These systems allow the U.S. military to strike our enemies from a greater distance. However, the use of unmanned and autonomous robots can remove the element of mutual respect between combatants on the battlefield which has persisted over time. Without the mutual respect, it becomes difficult, if not impossible, to conduct dialogue with our adversaries. Without dialogue, there is no method to achieve our end state, which, in turn, can lead to persistent conflict.

The largest, and arguably the most dangerous aspect of a changing operational environment will be the impact upon the homeland. Today, service members operate unmanned systems, such as *Predator* drones out of secure facilities safely inside the borders of the United States. Individuals making the decision to use lethal force are not physically present when using that lethal force. Operating lethal systems from the homeland on a daily basis opens the possibilities of lethal conflict within the borders of the U.S., the directly- opposite desired effect of the last thirteen years of conflict.

America's adversaries have learned that the most effective way of attacking the U.S. strategic centre of gravity (support of the American people), has been through attrition warfare. The more soldiers, airmen, sailors, and marines that appear on television, or 'come home in a body bag,' the lower support for action overseas becomes. Drone warfare, and the introduction of unmanned autonomous systems on the battlefield, be they supply trucks or tanks, will remove the danger to American service members on the battlefield. Adversaries will look for asymmetric ways to attack American service members, and probably the most effective way to do it will be in the United States.

US Air Force photo 385448-T-ITD28-717 by Technical Sergeant Effrain Lopez

An MQ-1 *Predator* in flight over Victorville, California.

DVIDS photo 1840730 by Petty Officer 1st Class Martin Wright

A *Tomahawk* land attack missile launches from the *Arleigh Burke*-Class guided-missile destroyer, USS *Lassem*.

America's adversaries, although they will continue to look for devastating terrorist-type attacks as we saw on 9/11, or even at the Boston Marathon, will look for 'legitimate targets' outside air bases in Nevada from where drones are being operated. They will also probably seek to target headquarters of relevant contracting companies. The attacks will not occur on the bases, but rather, when targets of opportunity present themselves. A drone operator stopping at the local 7-11 after shift is but one example. Arguably, one can view lethal UAS operators as legitimate targets, whether they are in a combat zone, or stopping at the local convenience store for milk on their way home from work.[17]

The targeting of individuals away from the battlefield is not new to warfare. In fact, it has been demonstrated in the past few years with the assassinations of nuclear scientists in Iran. There is no reason to think that our enemies would not adopt these types of tactics to target individuals in the homeland. This will be different from what we have seen from Al Qaida, in that states that the U.S. engages in hostilities with will look to conduct these asymmetric attacks. They will *not* be limited to non-state actors.

"Making the decision to go to war and kill other human beings easier is a significant risk in the decision to pursue lethal autonomous systems."

In most cases, while the UAS pilot and weapons systems operator are not in the area of the target, there is usually someone on the ground confirming the target and giving the command to 'shoot.' This is especially true for 'high value' human targets. However, attacking the operators of the UAS, no matter where they are located, either via cyber or kinetic means, is a 'game changer' in the operational environment, and must be appreciated by the DoD enterprise. It may be possible to cripple the UAS fleet with one or two control centres being taken 'off-line' via cyber or kinetic attack in the homeland.

Ethical Considerations

Soldiers, marines, and fighter pilots on the battlefield must often make instantaneous decisions with respect to the use lethal force. They consider not just whether the person seen through the scope is an enemy, but what taking his/her life will mean for the local populace, the tribal leaders in the area, the effects upon the individuals family, and if taking that individual's life will create more enemies in the future. It is difficult, if not impossible, to think that robots will consider all these factors, or at least, have the capability to sort the *relevant* factors from the *irrelevant*.

Making the decision to go to war and kill other human beings easier is a significant risk in the decision to pursue lethal autonomous systems. When U.S. service members are immune to the dangers of combat, and there is no friendly human cost to war, the implication is that there is less of a debate on the decision. The seeming ease of use of drones to kill Taliban in Pakistan and nations within the Horn of Africa, all of which are sovereign nations, was made without much debate, due to the lack of physical risk that U.S. service members face when these operations are conducted. Historical

evidence backs this up, as seen with the decision in 1998 to launch *Tomahawk* missiles towards Sudan and Afghanistan. This may change, however, *if* and *when* drone and other autonomous systems proliferate to other nations and non-state actors that may respond in kind to U.S. attacks.

In addition to easing the decision to go to war, lethal autonomous systems lack the human feelings of empathy and common sense. Soldiers working at an entry control point, or standing guard in a tower, can look at the face of a human approaching, or see a family of women and children in the back seat of a car, and make decisions with respect to whether to use lethal force, based upon the aforementioned common sense and empathy. A robotic system does not have this capability.[18] Robots and other autonomous systems can be compared somewhat to 'benign psychopaths,' lacking a frame of reference to understand or make moral or ethical decisions, based upon consequences.

The concept of ethical and legal responsibility continually rears its head in the discussion of lethal autonomous systems. In addition to developing procedures for immediate responsibility when autonomous systems injure, maim, or kill the wrong person, or destroy the wrong facility, the Department of Defense will have to develop mechanisms to preclude humanitarian organizations from suing industry. Failure to consider these second and third order effects could produce a situation similar to 'Union Carbide and napalm' during the Vietnam era.

To ensure that the United States lives up to ethical concerns in the development of lethal autonomous systems, it should develop and publish emerging laws and ethics in parallel with each system. This means integrating legal and ethical frameworks into science and technology organizations.

'Error free war' will always be a myth. Keeping a 'human in the loop' is not a panacea to all the ethical risks of lethal autonomous systems. In fact, human judgment can prove to be less reliable than technical indicators in the heat of battle. For instance, during the 1994 friendly fire shoot down of two U.S. Army *Blackhawks* in the no-fly zone over northern Iraq, the U.S. Air Force F-15s involved made a close visual pass of the targets before engaging them.[19] Pilot error (and human error aboard the AWACS monitoring the situation) contributed to their misidentification as Iraqi military helicopters. Similarly, in 1988, the USS *Vincennes* engaged an Iranian airliner that it mistakenly believed was conducting an attack on the ship. The warship's computers accurately indicated that the aircraft was ascending. In this case, human error led the crew to believe it was descending in an attack profile, and, in order to defend the ship, they shot down the aircraft.[20] Finally, the bombing of the Chinese Embassy in Belgrade during Operation *Allied Force* involved precision weaponry, satellite photos, and an efficient planning process, the human error of misidentifying the embassy as something else led to the loss of innocent civilians on the battlefield.

Considering all the ethical considerations, it is important to look at what the risks are in regards to the development of lethal autonomous systems.

Reuters RTRUZOK

On 9 May 1999, Chinese people place flowers in front of the bombed Chinese Embassy building in Belgrade, Yugoslavia.

Ethical Questions

- Can the decision of life or death be left to a machine?
- Can autonomous systems evaluate proportionality?
- Can autonomous systems anticipate second or third order effects?
- Who is accountable or responsible when autonomous systems make the wrong decision?
- Can a legal system of accountability be devised to cover the use of autonomous systems?
- Does the use of autonomous systems increase the likelihood of a decision to use military force to resolve international affairs?
- Will the unavailability of a human military target increase the likelihood of attacks on civilians?
- Would the use of autonomous systems encourage retaliations, reprisals and terrorist attacks on the U.S. homeland?

Risk to Leader Development

The use of autonomous and semi-autonomous systems presents a challenge to the development of leaders throughout our nation's military. *ADRP 6.0: Mission Command* defines *Mission Command* as "…the exercise of authority and direction by the commander using mission orders to enable disciplined initiative within the commander's intent to empower agile and adaptive leaders in the conduct of unified land operations."[21] Moreover, according to Marine Corps doctrine, overcoming or reducing the impacts of fog, friction, and chance on the battlefield require trust in subordinates.[22]

Lethal autonomous systems risk losing experienced judgment in unified land operations, contradicting the concept of mission command. Over the past thirteen years of conflict, commanders have given junior officers and NCOs a level of trust and autonomy never experienced before in the U.S. military. What these junior leaders have learned over the past decade will influence them as they grow into senior leaders. In a world of autonomous and semi-autonomous systems, the need for lower- level operators who make life-and-death decisions shrinks. Removing a level of operators who live in the world of tactics may remove a cohort which needs that experience when they become operational and strategic leaders.[23] We cannot create twenty-seven-year-old captains with the "experience, maturity and wisdom" of forty-five-year-old colonels, if those captains have never made the decisions or experienced the combat that forms combat maturity and wisdom.

"Lethal autonomous systems risk losing experienced judgment in unified land operations, contradicting the concept of mission command."

The DoD Unmanned Systems Roadmap is very direct in the challenge posed by the continued automation of warfare and its impacts to leadership development:

> "The automating of actual operation/fighting of platforms will decrease the need for people to crew them, while the personnel needed to simply maintain the vehicles are likely to increase. This has the potential to radically alter the 'tooth to tail' ratio in combat forces to heavily favor support personnel vice combat personnel. At the same time, the need for middle-to-senior combatant leaders and decision makers will not change, since they will know the tactics and strategy necessary to operate and direct the autonomous systems. The challenge will be developing middle to senior combatant leaders needed in an environment allowing fewer junior leaders."[24]

If the United States is to adopt a wide range of lethal autonomous systems, the Army and the Joint Force will have to make deep, long-lasting changes across Doctrine, Organization, Training, Materiel, Leadership, and Education factors (DOTMLPF), and incorporate these systems throughout military culture. From the time that new soldiers enter initial training, they must be prepared to accept that autonomous and unmanned systems will be a part of their arsenal. The autonomous systems may be medical devices designed to assist in lifesaving on the battlefield, or lethal systems designed to kill an adversary that the human cannot *sense* on the battlefield. Whether *lethal* or *lifesaving*, autonomous systems will define the battlefield of the future. Despite the many risks we face in continuing the pursuit of lethal autonomous systems, there are a number of distinct advantages to the use of such systems.

Advantages of Lethal Autonomous Systems

There are clear advantages to the continued pursuit of lethal autonomous and unmanned systems. The ability to project power and lethality increases with the use of unmanned and autonomous systems. From a personnel management standpoint, unmanned and autonomous systems do not carry the same psychological baggage as humans. Robots do not return from deployments and suffer from PTSD. Severely damaged robots can be scrapped, rather than requiring care from the Veterans Administration. Unmanned and autonomous systems increase the range at which U.S. forces can operate, while at the same time the endurance of systems in use increases as well. Unmanned ISR systems can remain on station while pilots change out after eight hours of operational time. Lethal autonomous robots and other systems have clear, distinct advantages in the future of warfare. However, the United States must take ethical considerations into account as policies develop and acquisitions strategy moves forward.

USMC photo 150916-M-TE668-001 by Corporal Eric Keenan

Spot, a quadruped prototype robot walks down a hill during a demonstration at Marine Corps Base Quantico, Virginia, 16 September 2015.

In complex war, the objective is not just to win but to do so while minimizing our losses and minimizing collateral damage, in addition to other goals. Lethal autonomous systems allow us to achieve a *reduction*, or in the extreme, an *elimination* of losses, but at what cost? Autonomous systems may prove to be more adept at distinguishing between combatant and non-combatants on the battlefield, thereby enabling better and more precise targeting. Human decision making may be in error due to fear, anger, or fatigue, which narrows the differences with autonomous systems. However, as adept as they may become, robots and autonomous systems will still lack the capability to discern, decide, and understand beyond the engagement at hand.

The use of lethal autonomous systems in battlefield environments, in which there are few if any civilians, further reduces the risk and highlights the advantages of such systems. Autonomous systems to counter adversary submarines or anti-missile systems are examples of wherein the risk to civilians is slight-to-none. As stated earlier in this article, war is fundamentally a human endeavour. Commanders often have to make hard decisions involving life and death in war in achieving objectives. Lethal autonomous unmanned systems provide them with another series of options in situations where they must select from among the lesser of evils.

Conclusion

Countries around the world are continuing to invest in robotics and autonomous systems for a variety of reasons. In Japan, the use of autonomous robotics in the medical field has assisted with caring for an increasingly elderly population. In fact, 30 percent of all commercial robots in the world exist in Japan.[25] These robots are strictly non-lethal in nature and designed to assist the population as a whole, not just the Japanese military. By contrast, the United States has invested in both non-lethal and lethal autonomous systems.

"It will be prudent to continue investment in non-lethal autonomous systems, such as ISR, mine clearing, and CBRN reconnaissance."

If America's use of drones over the past thirteen years of conflict is any indication, this may become an irreversible trend. The international community, through the use of legal challenges, human rights conventions, and international treaties, will continue to restrict the development and use of lethal autonomous systems on the battlefield.

It will be prudent to continue investment in non-lethal autonomous systems, such as ISR, mine clearing, and CBRN reconnaissance. In addition to saving lives and lowering the risk to service members on the battlefield, having these types of systems unmanned will open positions where a human interface is paramount, such as with respect to civil affairs.

To presume that no one will eventually arm autonomous robots simply because the United States chooses not to do so is naïve, as is the belief that any international convention to prohibit their creation/use will have any binding effect upon those nations that routinely ignore or subvert such treaties. Unfortunately, even without autonomous lethal U.S. systems, non-U.S. made/controlled lethal autonomous robots will likely be a condition of the battlefield under which U.S. troops will operate. The U.S. military should anticipate that other cultures and threats will have no problem crossing this threshold, and we should plan how to counter them *now- not later.*

This article represents the author's views and not necessarily the views of the U.S. Army or Department of Defense.

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US DoD photo 735648-F-UHW96-158

Rescue robot, a non-lethal application. An all-terrain, search-and-rescue humanoid robot simulates how a soldier or item of up to 500 pounds can be lifted and carried, and how it can grasp fragile objects without damaging them.

DVIDS photo 913597 by Corporal Kyle N. Runnels

US marines and sailors conducting amphibious training aboard a landing craft air cushioned vessel, 20 April 2013.

Reducing Reliance and Enhancing Relationships: The Benefits of a Canadian Amphibious Capability

by Christopher Hartwick

"The fact that the future is uncertain is no excuse for failing to make adequate preparations."[1]

Introduction

Canada has the longest coastline on the planet and a proud maritime heritage. However, it is the only Group of 8 (G8) country without an amphibious capability.[2] In fact, despite participating in amphibious operations in the past, Canada has never had its own naval infantry or marine corps.[3] In order to project its military power across the seas and provide adequate coastal defence for Canada,[4] the Canadian Armed Forces (CAF) is dependent upon its many allies for assistance. In the early-2000s, the purchasing of amphibious assault ships was examined and lead to the establishment of the Standing Contingency Task Force (SCTF) Integrated Tactical Effects Experiment (ITEEX) project in 2005. The goal of the project was to identify the requirements for a potential Canadian expeditionary quick reaction force with an amphibious capability.[5] The SCTF was to be composed: "Of air, land and sea forces, to be available upon 10 days notice to deploy on expeditionary operations under a single commander."[6] The project was articulated in Ottawa's 2005 defence policy, and was even a priority for the then-Chief of Defence Staff, General Rick Hillier.[7] In November 2006, a large-scale experimental amphibious exercise was conducted at U.S. Marine Corps Base Camp Lejeune, North Carolina. The exercise cost the CAF 19 million dollars, and consisted of 1100 Canadian soldiers in conjunction with CAF helicopters, Light Armored Vehicles, and shipping on loan from the United States (US).[8] National Defence Headquarters, however, ordered a halt to the project in April of 2007 because of fiscal limitations.[9]

Discussion

An amphibious capability is not something that Canada *wants*, but is something that Canada *needs*. In today's chaotic and uncertain security environment, there will be situations which arise in regions of the world that will not be conducive to flying in conventional forces, and the requirement for Canada to possess an amphibious capability will be paramount. The metrics of a Canadian amphibious capability have already been examined during the SCTF ITEEX project and in previous journal articles,[10] so they will not be revisited within these pages. Instead, a more conceptual lens will be applied and aimed at highlighting how an amphibious capability would improve the CAF's ability to better enforce national security, enhance combined force interoperability, reduce its reliance upon allied nation forces, and become a more robust contributor to international operations.

Currently, the CAF is overextended when it comes to enforcing national security along Canada's three coastlines, and an amphibious capability would enhance its ability to fulfill this national interest. Canada's navy, while modern and highly responsive, is relatively small, lacks year-round icebreaking capabilities, and is dependent upon operational seaports, which some have argued makes it inadequate to defend Canada's coastline.[11] By placing rapid reaction amphibious forces on Canada's coasts, the CAF would be better prepared to deal with any natural disasters that might occur in littoral regions, even if Canadian airfields and seaports in the area are rendered non-operational. Once Canada's new Arctic Offshore Patrol Ships (AOPS) are brought into service,[12] the same concept could be applied to the arctic, where populations are scattered and infrastructure is limited. In terms of coastal defence, an amphibious force could be dispatched to the arctic to assist in defending from a threat to Canada's arctic sovereignty.

While the adoption of an amphibious capability will certainly enhance the joint interoperability between the CAF's air, land, and sea elements, the greater payoff will be the interoperability Canada will gain with its amphibious allies. The CAF has maintained a high degree of interoperability through combined operations under the North American Aerospace Defense Command,[13] North Atlantic Treaty Organization, and by contributing forces to numerous naval Multinational Interception Forces.[14] The CAF also participates in multinational exercises, such as Exercise *Rimpac*.[15] More recently, the CAF participated in Exercise *Bold Alligator*[16] and Exercise *Southern Katipo*,[17] where Canadian soldiers conducted amphibious warfare training with a number of different forces from around the world. Although the Royal Canadian Navy is viewed as "…the most interoperable medium-size navy in the world"[18] in 'blue water' operations, it absolutely requires its own amphibious ships and connectors to be relevant in operating with Canada's allies in 'green' and 'brown water' operations. Understandably, acquiring the required sea vessels and equipment will be difficult, but the brunt of the work will actually lie with the building of relationships and trust between allied forces.[19]

Training forces to conduct amphibious operations in permissive environments is a complex undertaking on its own,[20] and is not something that should be surged in an *ad hoc* fashion. Therefore, it would behoove Canada to develop and maintain an amphibious force *sooner* rather than *later*. That would result in Canada having a ready and interoperable amphibious capability that would enhance the CAF's ability to collaborate with its allies.

Canada currently relies upon its allies to assist with ship-to-shore movement in regions where functional infrastructure is unavailable. Having an amphibious capability would reduce the CAF's dependency upon its allies to move forces and supplies into an area of operations. As Canada has no troop transport ships, when operating independently, the CAF are restricted to airlift for moving land forces into expeditionary environments.[21] Ergo, when serviceable infrastructure is not available, the CAF's involvement in operations becomes limited. For instance, Operation *Unison* in 2005, tasked to assist the US after Hurricane *Katrina*, and Operation *Hestia* in 2010, tasked to assist Haiti, are two examples of where the CAF had to rely upon the capabilities of

DND photo HS2005-G002-04 by Master Corporal Colin Kelley

Canadian divers check out some of the damage from Hurricane *Katrina* in the New Orleans area, 14 September 2005.

DND photo HS2010-C010-028 by Corporal Johanie Maheu

Master Seaman Phil McMullin (left) and Warrant Officer John McBride of HMCS *Athabaskan* provide medical aid to a little boy at the Canadian camp in Leogane, Haiti, in support of Operation *Hestia*, 22 January 2010.

other nations. In both cases, functional infrastructure was not available, and assistance from the US Navy to move supplies and personnel off Canadian ships was required.[22] Had Canada possessed its own amphibious capability, it would have been able to project its forces ashore without assistance. Furthermore, in the case of Operation *Unison*, it would not have required the help of the nation it was there to assist.

An amphibious capability will make the CAF a more robust and reliable contributor to international operations. This capability would provide the advantage of operating from international waters, leading to fewer restrictions on operations. For example, during a Non-combative Evacuation Operation (NEO), any force which is at least 12 nautical miles offshore is not required to coordinate its actions with the country it is sending forces into until its forces are ashore. This would reduce the overall amount of coordination required for NEO-type operations, and would therefore allow forces to react more quickly. Furthermore, amphibious shipping can be an effective intermediate staging base and/or a temporary safe haven for evacuees during NEO operations, instead of having to coordinate with other nations to meet these requirements. The other advantage to having an amphibious capability is the capacity to economically move and deliver bulk supplies and heavy equipment into an area of operations; an extremely costly and limited option when conducted by air, and impossible without functioning airports. With all the advantages that an amphibious capability provides, it is a wonder why Canada has not adopted this capability like so many of its allies.

There are, most likely, those who would be opposed to developing an amphibious capability in Canada because it would constitute such a large institutional change. However, one can argue that the true reason Canada has not yet adopted an amphibious capability is due to fiscal constraints, and the fact that it is not specifically mentioned in Canada's defense policy. A growth in the force, the procurement of ships, connector vessels, amphibious vehicles, aircraft, training, and the research and development for it all comes with a price-tag which Canada currently cannot afford. In terms of capabilities, finances, and personnel, the CAF is already "over-stretched everywhere,"[23] and has invested a great amount of funds into AOPS and cyber warfare development.[24] In fact, the Canadian Government is continually cutting back the number of AOPSs that will be produced because of budgetary problems,[25] and the CAF are looking for creative ways to 'grow' Canada's cyber warfare capability without increasing the overall number of the force.

An amphibious capability would prove to be a sound investment, since it is something Canada *has* used in the past, *could* have used recently, and *will be required* to use in future operations. Canadian soldiers stormed the beaches of Dieppe in 1942, and from that raid, hard lessons were learned which led to success for the Allies when Canada again stormed Juno Beach on 6 June 1944.[26] More recently, between the years 1949 and 2005, nine Canadian NEOs occurred where ships were sailed; two of them involving the deployment of land forces.[27] As discussed earlier, an amphibious capability would have been beneficial during Operations *Hestia* and *Unison* to provide humanitarian assistance and disaster relief. Lastly, an amphibious capability is not specifically mentioned in Canada's 2008 defence policy, but it would certainly enhance the CAF's ability to complete the six core missions laid out in its pages.[28] This is especially true when it comes to Missions Three, Four, and Six: namely, to respond to a major terrorist attack, to support civilian authorities during a crisis in Canada, and to deploy forces in response to crises elsewhere in the world.[29]

Conclusion

Canada shares many of the same international interests as its allies, and regularly participates in international security and relief operations. However, by being the only G8 nation without an amphibious capability, Canada is diminishing its political significance on the world stage by limiting its military involvement to certain operations. The global security situation is ever-changing, and the human population is estimated to grow to 9.1 billion by the year 2025, of which 60 percent will be concentrated in littoral regions.[30] Therefore, one can imagine myriad situations where Canada will have to intervene in these regions, and in order to do so, an amphibious capability will be a necessity. Canada's amphibious capability would improve national security, interoperability between its allies, reduce Canada's reliance upon other nations, and allow for the projection of a more robust force into different theatres globally. There is no denying the current fiscal constraints, but there is also no denying the fact that so many of Canada's allies agree that an amphibious capability brings with it enhanced flexibility to conduct military operations and the ability to further collaborate with allied nations on matters of global importance.

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CWM 19710261-2183, Beaverbrook Collection of War Art, Canadian War Museum

Dieppe Raid by Charles Comfort

DVIDS photo 2049274 by Petty Officer 2nd Class Daniel Young

US Marines practice an amphibious assault using assault amphibious vehicles during Exercise *Talisman Sabre* at Fog Bay, Australia, 8 July 2015.

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CPIPChapGen

Padres of various faiths.

Is there a Role for Canadian Armed Forces (CAF) Chaplains in Ethics?

by Padre Yvon Pichette and Padre Jon Derrick Marshall

Introduction

The traditional role for Canadian military chaplains has always involved two main responsibilities: the provision of support to military personnel and their families in religious, moral and spiritual matters; and the provision of advice to the Chain of Command on multiple matters in garrison or while on operations.

During the creation of the Defence Ethics Program (DEP) in 1994, for reasons that still remain unclear, it was decided that military chaplains would not take an active part in the delivery of the new program.

In this brief article, we will try to demonstrate that that decision was unfortunate and why chaplains must be involved in Canadian Armed Forces ethics training, even more now than ever before, particularly given the increasingly new and complex ethical issues that face our military. However, our role in ethics training is unique in that it involves ethics at a deeper level than is possible in the DEP alone.

To achieve our goal, we will begin with a short history of the role of Canadian military chaplains. Secondly, we will spend some time in discussion of the role chaplains play in the Canadian Armed Forces. Thirdly, we will discuss the contemporary situation regarding ethics and religion. We will then end this discussion by addressing some of the more salient questions that have been posed in the last 20 years with respect to whether CAF chaplains require their own specific ethics training, other than that offered by the DEP Program.

History[1]

The *name* 'chaplain' or *capellanus* has its origin in the cappella or cloak of St. Martin of Tours. The *term* 'chaplain' refers to specially trained religious leaders who are responsible for the religious and spiritual care of persons living in closed societies (i.e. hospitals, prisons, militaries, etc.) who are limited in their access to their particular faith communities and to the practice of their religious traditions. The term 'Padre' is still commonly used in the armed forces to refer to the chaplain. As far back as recorded history attests, warriors have relied upon the support of their deities when they went into battle.

DND/Library and Archives Canada PA-002539

Chaplain (left) of 72nd Canadian Battalion talking to a Canadian soldier 'up the line,' April, 1918.

First World War

In 1914, the Canadian Contingent was quickly assembled to go to France. Hundreds of clergy followed their soldiers to the assembly point in Valcartier, Quebec. Eventually, 33 clergymen were selected to go overseas to tend to the spiritual needs of their flocks.

Second World War ~ Padre John Foote, VC

It was not until D-Day that a steady stream of young chaplains was provided for front-line soldiers. However, Canada's most famous Padre POW of the Second World War was Major John Weir Foote, VC. Foote served with the Royal Hamilton Light Infantry and was captured on the beaches of Dieppe. He repeatedly refused offers to evacuate, and he carried wounded to landing craft and also chose to remain on the beach when he was given an opportunity to escape. At war's end, on 9 August 1945, the Governor General in Council authorized the establishment of the Canadian Chaplain Services, Protestant and Roman Catholic.

"It was not until D-Day that a steady stream of young chaplains was provided for front-line soldiers."

Operations under United Nations Chapters 6 and 7, and NATO Operations

As one of the architects of United Nations peacekeeping, Canada became one of the nations tasked to provide a contingent when the United Nations Emergency Force (UNEF) was dispatched to Egypt in 1956 to be a buffer between Israeli and Egyptian forces. Canadian peacekeepers subsequently served in the Congo, Cyprus, Golan Heights, Viet Nam, Sinai, the former Yugoslavia, Haiti, Rwanda, Somalia and Afghanistan. Chaplains have been continually present with their troops in all theatres of operations to provide pastoral care and spiritual support.

The Concept of Administrative Integration

This concept called for the integration of the administrative and command structure within the chaplaincy while maintaining the integrity of worshipping communities. In the meantime, a small committee was struck to draft a working constitution for what was, eventually, to become the Interfaith Committee on Canadian Military Chaplaincy (ICCMC). The Minister of National Defence approved this new constitution in December 1997.

Lieutenant Donald I. Grand/DND/Library and Archives Canada PA-190111

H/Captain Callum Thompson, a Canadian chaplain, conducting a funeral service in the Normandy bridgehead, France, 16 July 1944.

Canadian Forces Chaplain School and Centre

While the aforementioned process of integration was taking place, a new idea was being born in the mind of the Chaplain Branch – the establishment of our own training facility that would prepare civilian clergy and qualified laity to serve as chaplains in the Canadian Armed Forces. Since its inception in 1994, the Canadian Forces Chaplain School and Centre (CFChSC) has continued to develop courses and to provide for the professional development of Canadian chaplains and chaplains from other nations (i.e., Estonia, Korea, South Africa, the United States, and Cameroon).

Chaplains continue to be trained for service in a variety of military environments, and opportunities abound for them to grow, both personally and professionally, in their ministry. Ecumenical team ministry and inter-religious ministry are now a 'given' on most CAF bases.

In 1995, as the Chaplain School was now considered the training vessel *par excellence* for chaplains, one of its staff members was tasked with the drafting of a Postgraduate Qualification Requirement

Lieutenant H. Gordon Aikman/DND/Library and Archives Canada PA-140192

H/Major J.W. Forth, chaplain of the Cameron Highlanders of Ottawa, assisting the regimental aid party of the Cameron Highlanders in loading a wounded soldier onto a jeep near Caen, France, 15 July 1944.

(PGQR) in ethics.[2] This PGQR recognized the need to have chaplains especially trained in the area of ethics, so that they could be effective advisors, both to the chain of command and to the Office of the Chaplain General. The commitment of the Chaplain Branch to ethics training and formation was beginning to gather steam – so much so that one of the earlier graduates of the program now possesses a PhD in Ethics from a recognized Canadian university.

Not satisfied with the implementation of ethics training for chaplains both at the entry level and in the provision of a formal course at the Chaplain School, the Chaplain General inaugurated an Ethics Advisory Board, approved guidelines to be followed in the investigation of chaplains for professional misconduct, and implemented a "Code of Ethics for Canadian Forces Chaplains" approved by the *Interfaith Committee on Canadian Military Chaplaincy* at its meeting in April 1998.[3] The continued involvement of the Chaplain Branch in ethics training and development shows no signs of abating – in fact it is increasing.

Legal References ~ Chaplain Mandate

The various legal references which guide the mandate given to chaplains in the CAF are discussed below.

Amendment to QR&O 33.07[4] – Chaplains

QR&O 33.07 – CHAPLAINS

The duties and functions of a chaplain at a base, unit or other element include

(a) *advising the commanding officer of the base unit or other element on religious, spiritual, moral and ethical matters relating to the officers and non-commissioned members under that commanding officer's command;*

(b) *providing chaplain services to any officers, non-commissioned members and families of officers and non-commissioned members who desire those services, including to these who are sick or in service or civil custody, regardless of the religious or spiritual affiliation or beliefs of those officers, non-commissioned members and families; and*

(c) *being prepared to give advice, assistance and instruction on religious, spiritual, moral and ethical matters.*

QR&O 33.10 TRAINING

Officers and non-commissioned members undergoing instruction, training or professional development may be required to participate in training provided by chaplains on the subjects of ethics and moral or personal well-being.

DND photo IS05-2015-0018-002 by Corporal Eric Girard

A Padre of the Royal 22e Régiment preaches to members of the Canadian infantry in Tancos, Portugal, during NATO Exercise *Jointex* 15, 25 October 2015.

ChapSv.

Chaplains in field training.

Historically speaking, the role of religious care providers has always included religious support to any military operation, and advice to the chain of command on morale, as well as with respect to moral and ethical issues. Moreover, paragraph (c) of QR&O 33.07 further elucidates that chaplains must be prepared to give advice, assistance and instruction to military members, regardless of rank.

Whereas this legal document clearly stipulates the Chaplaincy's role and mandate in advising the Chain of Command on matters moral and spiritual, the teaching and training of chaplains in ethics and as ethical advisors is imperative.

Enclosed as Appendixes 1 and 2 are the Chaplain Based Specifications/Common Officer Based Specifications. In comparing and contrasting the Chaplain Job Based Specifications (JBS) with that of the Common Officer Job Based Specifications (JBS), it is evident that no other officer of the CAF is as responsible for providing ethical advice, or as in need of in-depth training in ethics as is the Chaplain.

Enclosed as Appendix 3 is DAOD 7023-0, Defence Ethics. The history of this DAOD is as follows:

(a) In February 1994, as a consequence of the Somalia Inquiry, the Commission on the Somalia Inquiry found that there were systemic issues within the Department of National Defence and the CAF that needed to be addressed. Questions were raised as to the preparation (physical, cultural and moral) that military personnel receive prior to deployment – training that should be initiated at the beginning of Recruit School and be carried on throughout their career. DND took action in 1994.

"Historically speaking, the role of religious care providers has always included religious support to any military operation, and advice to the chain of command on morale, as well as with respect to moral and ethical issues."

The rationale of the Defence Ethics Program (DEP) is as follows:

(a) The aim and primary focus of the DEP is to foster the practice of ethics in the workplace and in operations such that members of the CAF and employees of the DND will consistently perform their duties to the highest ethical standards;

(b) The DEP is a values-based program built upon the values that are constitutive of Political Liberal Democracy (see John Rawls' Political Liberalism). These values determine what Canadian society will accept as the institutionalization of its defence. These values include the following:

1) Canada's modern democratic society is characterized by a multiplicity of belief systems, some of which are philosophical, while others are religious or secular;

2) Such overlapping belief systems are considered to exhibit an overlapping consensus of values in a free and democratic society;

3) Within the kind of overlapping consensus found in a free and democratic society there exists a set of fundamental values that define what constitutes Defence. It is also reasonable to assume that within our system of democratic values, considered as an overlapping consensus of values, there exists a set of principles and values that applies specifically to the defence of the nation.

Although the CAF and the Department of National Defence are two separate legal entities, they share common ground as institutions. What is common ground can be found in the Statement of Defence Ethics. However, we can easily see the limits of this reasoning, in that they do not go far enough in addressing the complexities of contemporary ethical challenges, particularly regarding questions of spirituality, religion and the human person. Because of these limits and the fact that this program, a Public Ethics Program which is by necessity a reductionist program, it was perceived by these authors and others as inadequate (by itself) to meet the specific needs and practices of the Canadian Army.[5] Thus, the Canadian Army designed and adapted an ethics program specific to its own sphere of practice and ethos.

The DEP as a Public Ethics program is fine as far as it goes in addressing ethical problems or dilemmas common to Canadians living and working in the public sphere, but it is inadequate by itself to address the manifold ethical tasks and spheres of the average CAF chaplain, who is called upon to address both public and private ethical questions and concerns within the military.

What is more, from a military chaplain perspective, regarding the DEP as an ethical tool, many CAF chaplains may find that they have no interest or will to be involved in certain aspects of the public sphere ethics that one finds in the DEP (i.e., conflict of interest, donations and gifts, hospitality and benefits). CAF chaplains might well be advised of these ethical dilemmas. However, the chaplain is involved in only a limited capacity on such ethical issues by making a referral to the proper DEP ethical resource person.

Discussion

As is the case for all CAF and DND members, CAF chaplains are responsible to the values and content of the DEP. However, military chaplains are also uniquely and especially responsible for the religious and spiritual aspects of ethics and ethical training, a sphere of ethics which encompasses the content of the DEP, but which is also much deeper at the personal level.

It is the core argument of this article that CAF chaplains are the best placed (and, therefore, should also be the best trained) professionals to model, teach and implement ethical behaviour at the tactical and operational level in the CAF regarding the three universal principles: Respect the Dignity of all Persons; Serve Canada Before Self; and Obey and Support Lawful Authority, as well as its concomitant values and obligations.

DND photo GD2014-0542-067 by Master Corporal Johanie Maheu

Major Darren Persaud, a military chaplain with JTF North, gives communion to Canadian Rangers on Baffin Island, Nunavut, during Operation *Nanook*, 24 August 2014.

Chaplain Branch Manual[6] – The Chaplain Branch Manual, as a legal document governing the work of chaplains in the CAF, is clear in stipulating that chaplains are responsible for advising, training and teaching on matters ethical and moral and in a pluralistic environment.[7] Furthermore, the Branch Manual elucidates what is to be taught and trained to be effective as chaplains at the tactical, operational, and strategic levels.[8]

Called to Serve: A Strategy for the Canadian Forces Chaplaincy – In his Message in the Chaplaincy's Strategic Plan, General (Retired) Rick Hillier made plain the role of chaplains in ethical counselling of CAF leadership, "Chaplains also provide CF leadership with perspective and guidance on religious, spiritual and ethical matters in garrison and in the field."[9] It is also mentioned as part of Objective 3 – Advising Leadership, "The Chaplaincy needs the capability to advise and counsel senior DND/CAF leadership in areas of spiritual and religious practices and ethical decision-making in operational and non-operation environments."[10]

Questions and Answers

Observation 1: There are those who would argue that a Unit Ethics Coordinator (UEC), under the authority of a unit Commanding Officer, is already responsible for the ethics training of a unit on a yearly basis. The UEC and a unit chaplain may work together to provide such training. Knowing that ethics is ultimately the responsibility of a Unit Commanding Officer, he or she delegates the authority to advise, teach, and train ethics to a chaplain under his or her command. The strength of this reality is that the chaplain, because of his or her specific status, is one of the few military members whose career cannot be jeopardized when advising a unit Commanding Officer, since the chaplain's military career is chiefly driven by the Chaplain Branch. For example, if a CO behaves unethically, it would be very difficult for someone other than a chaplain to challenge the CO without fearing negative ramifications to his or her career prospects.

"Knowing that ethics is ultimately the responsibility of a Unit Commanding Officer, he or she delegates the authority to advise, teach, and train ethics to a chaplain under his or her command."

Observation 2: There are some critics who question the unique role the chaplain plays in advising the chain of command. They would argue that every officer is responsible for this role. The chaplain is a valuable resource in advising the chain of command, individual commanders and their subordinates in matters pertaining to the spiritual, moral, and ethical issues that affect the lives of individuals and the unit. Only the chaplain is competent to advise on interfaith issues, holistic care, pluralistic and secular matters, and intervention for those suffering from loss, sickness, or in mourning regarding the higher existential questions of meaning due to death. Also, the chaplain is the one officer who is uniquely positioned in the Unit, Brigade or even Divisional level – including the strategic level – to inform the chain of command on important issues through ministry of presence. This happens through informal discussions, unit functions, individual counselling, chaplain sessions, managing workplace friction and misunderstandings, and working in multidisciplinary contexts. The Army has agreed that the chaplain within operations now has the added role and responsibility of Religious Area Awareness (RAA) and Religious Area Engagement (RAE),[11] which formalizes these capacities.

Observation 3: Since the chaplain is delegated the responsibility to advise, train and educate on matters of ethics, some would argue that there is a danger that ethics programs will become religious in focus. In fact, this is no longer a possibility. Chaplains are not mandated to design the DEP or the Army Ethics program. Secondly, the CAF Chaplaincy is better equipped to serve in the public sphere, since it now ministers to its own, facilitates the worship of others, and cares for all.

Observation 4: There are also those who would question the chaplain's role in matters of religious accommodation, according to the latest CANFORGEN Interim Policy – Religious Accommodation. It is true that legal officers must arbitrate on the legality of a religious accommodation request; chaplains are a fundamental resource to commanding officers and help them make informed ethical decisions, based upon the context of the

DND photo IS2014-1030-03 by Sergeant Matthew McGregor

RCN Command Chaplain, Lieutenant-Colonel Michelle Staples, speaks with sailors aboard HMCS *Calgary* during Exercise *Rim of the Pacific (RIMPAC)* off the coast of Hawaii, 13 July 2014.

religious accommodation request especially on operations as to whether to accommodate. This has to do with matters of morale, safety, unit cohesiveness, operational effectiveness, costs, etc. Therefore, chaplains help to facilitate the CO's decision-making process by interviewing the member making the request, religious experts, and also by conducting any other task within their mandate.

Conclusion

We must recognize that the military chaplain has a crucial role to play in the development of ethical behaviour from the chain of command and from their subordinates. As previously mentioned, the special status of the military chaplain allows fullest objectivity when advising, training, and educating on matters moral and ethical in all aspects of military life. Military chaplains are professionally trained to serve in an ecumenical, inter-faith and pluralistic (including secularism) environment, ensuring that all military personnel and their families are well supported and cared for in contemporary military life. In the past several years, the Chaplaincy has developed an expertise in the operational and non-operational milieu that has enabled the Chaplain Branch to be a Centre of Excellence regarding ethics at both the tactical and operational level.

Whereas the Defence Ethics Program (DEP) deals specifically with a public (institutional) approach to ethics, the CAF Chaplain Services has a mandate to look after individual, personal ethics, and does so from a holistic approach.

For all these reasons, and assuming that the Chaplaincy Ethics courses are regularly updated and reflect state-of-the- art in matters moral and ethical, should chaplain-specific training at the highest level ever be lost, the members of the CAF and their families will lose this precious capacity, which could negatively impact operational success.

Padre (Lieutenant-Colonel) Yvon Pichette, CD, PhD, *recently retired from the Canadian Armed forces after a long and distinguished career as Canadian Armed Forces chaplain. In his last posting, he served as the Senior Chaplain to the commander of the 2nd Division of Canada.*

Padre (Major) Jon Derrick Marshall, CD, PhD, *was first ordained as a Baptist Minister in 1991. He joined the Canadian Forces as a Protestant Chaplain in 1997 and has served extensively at home and abroad in a variety of operational postings. Padre Marshall currently serves in the Chaplain General's Office as a Policy, International Communications, and Media Relations Officer for the Canadian Forces Chaplain Branch.*

DND photo

The Primary Chaplain Branch crest

NOTES

1. The Ecumenical Model of Ministry in the Canadian Forces Chaplain Branch, Historic Foundations – A Précis of Canadian Military Chaplaincy, pp. 11-17.
2. Eric Reynolds, "A Paradigmatic Approach to Values and Ethics: The Role of the Military Chaplain in Canadian Defence Ethics," pp. 13-16. The PGQR process recognizes that various Military Occupation Classifications (MOCs) require certain qualified individuals to be trained, at government expense, beyond the mere minimal standards in a specific subject area that is of concern to the military occupation. Once justified and approval by the competent military authorities, a selection process is then initiated to choose suitable candidates for further training. It should be noted that a similar PGQR was drafted and approved for graduate training in pastoral counselling at the same time.
3. This Code of Ethics can be found as Annex A to this chapter.
4. Amendments to the Queen's Regulations and Orders 33 (Chaplain Services) for the Canadian Armed Forces are presently awaiting final approval of MND.
5. At the time of production, the authors of this article could not find an ethics program specific to the Royal Canadian Navy (RCN) and the Royal Canadian Air Force (RCAF).
6. There will soon be a new version of the Chaplain Branch Manual. Both the old (2003) and the new (Vol 1) versions agree that the Chaplain's role is to advise, train and educate in the field of ethics.
7. Branch Manual (2003), 6-4, 7-4, 10-2, 10-10 and 10-11.
8. Branch Manual (2003), 5-2.
9. *Called to Serve*, p.1.
10. *Called to Serve*, 3.3, p. 9.
11. CANARMYGEN RLE Doctrine dated 21 February 2014. This should help to institutionalize the new chaplain capability in this role.

The Canadian Press/Adrian Wyld

Prime Minister Justin Trudeau

Defence and the 2015 Election

by Martin Shadwick

The federal election campaign of 2015—truly one of the most entertaining and stimulating in Canadian political history—secured a solid majority government for Justin Trudeau's resurgent Liberals, reduced the now 'Stephen Harper-less' Conservatives to Official Opposition status (albeit with a not-unimpressive complement of 99 Members of Parliament) and returned the New Democratic Party of Thomas Mulcair (which had, to its own astonishment, vaulted to Official Opposition status during the tenure of Jack Layton in the 2011 election) to third party status. If the campaign witnessed an unusually eclectic range of issues—from leadership styles and Senate scandals, to Bill C-51, the Middle Eastern refugee crisis, and the debate over the niqab—it also marked a campaign shaped, as Michael Coates of Hill & Knowlton Strategies noted in the *Globe and Mail*, by an equally eclectic range of campaign "… mistakes by the Conservatives: ads that lowered expectations about Justin Trudeau's readiness to govern; a historically long campaign, part of which was conducted during the [Senator] Duffy trial; a debate strategy designed to show Mr. Trudeau as weak and ineffectual; and using the niqab as a wedge issue. They all appear to have failed."

Although by no means a determining factor in the decision-making of Canadian voters, it was heartening to note the enhanced visibility of foreign policy—over trade issues, over Canadian participation in the anti-ISIS coalition in Iraq and Syria, over refugee admissions from the Middle East, and over Liberal and NDP criticism that the Conservatives had strayed mightily (and most imprudently) from the post-Second World War foundations of Canadian foreign policy—in the 2015 campaign. An excellent Munk Debate on foreign affairs made an important contribution in this regard. Defence policy *per se* did not fair quite so well in terms of overall visibility—hardly surprising, given the plethora of domestic and other issues—but did manage to rise somewhat above the cameo appearance level of recent federal election campaigns.

In the 2015 campaign, the projected Liberal defence policy flowed from a broader conviction that Canada's "influence and presence on the world stage" had "steadily diminished" during the Harper era: "Instead of working with other countries constructively at the United Nations, the Harper Conservatives have turned their backs on the UN and other multilateral institutions, while also weakening Canada's military, our diplomatic service, and our development programs." Whether "confronting climate change, terrorism and radicalization, or international conflicts,

the need for effective Canadian diplomacy has never been greater than it is today. Our plan will restore Canada as a leader in the world. Not only to provide greater security and economic growth for Canadians, but because Canada can make a real and valuable contribution to a more peaceful and prosperous world."

"As the world grows more complex and interconnected, what happens outside our borders has become increasingly important in the lives of Canadians," posited the Liberal campaign platform. "Our security, prosperity, and well-being will depend on how we navigate this period of global change. An important element of Canada's history—and our continued engagement with the world—is our military capabilities and contributions: to the defence of Canada, to the defence of North America, to United Nations peace operations, to disaster relief, and when necessary, to combat missions." "Years of neglect by Stephen Harper," however, have left "the Forces…in a state of stagnation. After a heroic, ten-year engagement in Afghanistan, very little has been done to prepare the Forces for its post-Afghanistan future. The…Conservatives have provided little vision, plan, or needed cultural changes. Funding has been erratic, promised increases to the military have been scaled back, and over $10 billion of funding—allocated by Parliament—has been left unspent." Defence procurement has become "paralyzed", leading to repeated delays, equipment breakdowns, greater risks to military personnel, and "a failure to create jobs and economic growth" in Canadian industry. In addition, "training and readiness have been dramatically reduced across all lines of service, spare parts are lacking, and little has happened on transformation initiatives to reduce overhead so that new investments can be made in readiness." A Liberal government would "immediately begin an open and transparent review process" to create a new white paper on defence and "maintain current National Defence spending levels, including current planned increases."

Key priorities of a Liberal government would include: (a) "developing the Canadian Armed Forces into an effective, agile, responsive, and well-equipped military force that can appropriately respond to a spectrum of operations within a whole of government context," including defence of Canada, defence of North America, support during natural disasters, international deterrence, humanitarian support missions, peace operations, and combat capability;" (b) "collaborating with the United States in the defence of North America under NORAD and contributing to regional defence within the North Atlantic Treaty Organization;" (c) "ensuring that all equipment acquisitions operate with vastly improved timelines and vigorous Parliamentary oversight while providing "decisive" and "accountable" Cabinet "leadership to drive major programs to a timely and successful conclusion;' (d) "renewing" the "focus on surveillance and control of Canadian territory and approaches, particularly our Arctic regions, including an increase in the size of the Canadian Rangers; and (e) "supporting international peace and security operations, as well as humanitarian support missions with the United Nations or regional partners…" The *Promoting International Peace and Security* component of the Liberal platform added that "we will recommit to supporting international peace operations with the United Nations, and will make our *specialized* [emphasis added] capabilities—from mobile medical teams to engineering support to aircraft that can carry supplies and personnel—available on a case-by-case basis," "provide well-trained personnel that can be quickly deployed, including mission commanders, staff officers, and headquarters units," and "lead an international effort to improve and expand the training of military and civilian personnel deployed on peace operations."

DND photo GD2015-0100-04

RCAF members of air Task Force-Iraq and several members of the coalition participate in the *Shamal Serials*, a combat search-and-rescue exercise held for personnel of the Middle East Stabilization Force, then-conducting operations against the Islamic State of Iraq and the Levant (ISIL) in a training area in Kuwait, 16 March 2015.

Other priorities including "assisting in domestic security and natural disaster responses, both national and international," "increasing the capacities of regional and local partners to prevent the spread of terrorism and radicalization by vastly increased training assistance missions," and conducting a "thorough review" of existing measures to protect Canadians and critical infrastructure elements from cyber-threats." To address the need for "more teeth and less tail," the Liberals also pledged to implement the recommendations made in the Canadian Forces' report on transformation.

As a "key procurement priority" the Liberals would "fast track and expand the capital renewal of the Royal Canadian Navy." "Additional ship requirements identified through our review will be funded by choosing to replace the existing CF-18 [fighter aircraft] with a more affordable aircraft than the [F-35]." This commitment to naval revitalization—which included surface combatants, supply ships and Arctic and offshore patrol ships (construction of a sixth AOPS was also pledged during the campaign)—would "ensure that the [RCN] is able to operate as a blue water fleet well into the future." Other procurement priorities included new search and rescue aircraft, long-range surveillance UAVs, and a "variety" of Army projects. A Liberal government would "not purchase the F-35 stealth fighter-bomber. The primary mission of our fighter aircraft will remain the defence of North America. We will immediately launch an open and transparent competition to replace the CF-18 that will exclude requirements that do not reflect Canada's interests, such as first-strike stealth capabilities. We will reduce the financial procurement envelope for replacing the CF-18s. Instead of budgeting for the acquisition of 65 F-35s, we will plan to purchase an equal or greater number of lower priced, but equally effective, replacement aircraft." In a move that placed the Liberals firmly in the middle of the Conservative and New Democratic Party positions on the issue, the campaign document reaffirmed an earlier decision to end Canada's "combat mission in Iraq" and refocus "Canada's military contribution in the region on the training of local forces."

Like the Liberals, the New Democrats lamented the direction of Canadian foreign policy during the Harper era. "The country that the Conservatives are projecting onto the world stage is no longer recognizable to many of the countries we have worked with closely over the decades, and it's no longer recognizable to us as Canadians." Canada's role in the world in the past [ten] years, suggested the NDP, "has become one where we lecture foreign governments at the United Nations and stymie progress to tackle climate change." An "NDP government would work as an even-handed, fair arbiter abroad with a renewed focus on the UN and other international institutions." Consistent with that observation was a pledge to "get us back to being [number one] in peacekeeping again. The NDP will work to increase our contribution to UN peacekeeping missions every year so Canada can become the top western contributor to peacekeeping. The NDP will also seek to contribute personnel who can play a leadership role and prioritize the contribution of personnel to situations requiring advanced linguistic, logistical and intercultural expertise."

"After almost a decade in government," suggested the NDP, "the Conservatives have failed to effectively manage the Department of National Defence, and have left the Canadian Armed Forces with a legacy of outdated equipment, bungled procurements, and a shameful disregard for CAF members when they need help." A "new vision" was consequently required "to ensure that our military can defend Canada, protect Canadians, and contribute to international peace and security with an agile, well-equipped first-class force." As a result of Conservative cuts, "already long overdue new equipment purchases are being delayed for years. The attempt to sole-source the F-35…while hiding the full costs was just one of several major procurement failures on the Conservatives' watch." To redress these and other deficiencies, the New Democrats pledged to: (a) draft a new "Defence White Paper by 2016 to articulate a clear strategic vision for the Canadian Armed Forces and Canada's defence policy in the 21st Century"; (b) provide Canada's armed forces with "the personnel, equipment and training they need to defend Canada and protect Canadians"; and (c) "meet our military commitments by maintaining Department of National Defence budget allocations."

The NDP also pledged to "launch a comprehensive review", as part of the projected white paper, "to determine how best to meet Canada's needs in the replacement of our aging fleet of [CF-18s], and ensure that any new program is subject to a competitive process," implement a "fair and open process for military purchasing, ensuring that Canadians get the most competitive price and that military personnel get what they need," improve our search and rescue systems "to meet international standards with respect to response times, and ensure our capabilities are sufficient to meet the needs of the North," and "increase transparency within the Department of National Defence through the creation of the Office of the Inspector General." The New Democrats also reaffirmed their intention to "end the ineffective combat mission in Iraq and Syria and redirect Canada's resources to saving the lives of civilians displaced by the conflict."

Royal Canadian Navy Public Affairs

The most up-to-date rendering of the Arctic Offshore Patrol Ship (AOPS).

The Conservatives—as is usually the case with incumbents—fashioned much of their foreign and defence policy campaign planks around staunch reaffirmations of existing policy, including the retention of the combat and training missions in Iraq and the rebuilding of the "core combat capabilities" of the Canadian Armed Forces following "a decade of darkness under the Liberals." Canada's military air transport, sovereignty surveillance and army combat capacities, states the Conservative platform, "have all been strengthened." The document also notes that the Harper government has "taken the steps needed to rebuild the Royal Canadian Navy and the Canadian Coast Guard through the comprehensive National Shipbuilding Procurement Strategy worth some $35 billion." It adds that the Harper government's support for defence also includes an "$11.8 billion, ten-year increase to the Department of National Defence's budget to ensure that Canada can continue to field a combat-ready military to serve at home and abroad."

The defence plank contained pledges to increase the size of Canada's Special Operations Forces by almost 35 percent by 2022, to increase the number of reservists by 15 percent—thereby "bringing the Reserves' total strength to 30,000 in the next four years"—and to re-establish the College militaire royal de Saint-Jean as "a full, degree-granting post-secondary institution similar to RMC in Kingston." It also pledged to build on recent decisions to expand "the Navy and the Coast Guard's capacity to conduct [search and rescue] operations as well as oversee response to marine pollution incidents in the Vancouver Harbour area" by "rebuilding and expanding Royal Canadian Navy reserve division base HMCS *Discovery* in Vancouver, positioning it to become a major [maritime] joint operations centre for the Royal Canadian Navy and the Canadian Coast Guard." In an unorthodox move, the Conservative defence plank devoted attention to the Great Lakes and the Saint Lawrence Seaway System, arguing that it was "imperative" that the RCN "have a presence on these waters" given "the vital importance of this system to our national economy, and the access that it provides to our most populated areas as well as Canada's industrial heartland…" A re-elected Conservative government would consequently "build on our commitment to national security by commissioning four [RCN] patrol vessels to be dedicated to the Great Lakes and the Saint Lawrence Seaway." The vessels would also be available for Naval Reserve training.

The defence component of the Liberal platform offered some most intriguing initiatives, not least the pledge to redirect some monies from fighter aircraft procurement to naval rejuvenation, but overall spending on national defence will continue to face tough (and understandable) competition with other Liberal pledges and priorities at a time when the Canadian economy is less than healthy. The decision to eschew the F-35 in favour of a lower-cost alternative will generate no little controversy for the Trudeau government, in part because informed people of goodwill differ over questions of cost (both acquisition and operating), the utility, viability and cost-effectiveness of stealth technologies (there is a view in some RCAF and DND quarters that stealth will in due course be required for domestic air defence and air sovereignty applications, let alone for expeditionary operations), the overall performance of the F-35, the lack of a second engine in the Arctic and maritime operating environments faced by Canadian fighter pilots, the degree of required interoperability with allies, and over short, medium, and long-term industrial and regional benefits

DND photo CPA02-2015-0213-069

Canadian Army reservists from 4th Canadian Division medical units unload a simulated casualty from a CH-146 *Griffon* helicopter during Exercise *Stalwart Guardian*, 21 August 2015.

An artist's depiction of the Boeing *Advanced Super Hornet*, the F/A-18F *Super Hornet*, and the EA-18G *Growler* in formation flight.

(i.e., those that could be lost in the absence of a Canadian F-35 order and those that could be gained through the acquisition of another fighter aircraft). It is also relevant to note that the F-35 will be in production well into the future, thereby spreading deliveries and procurement costs over an extended period of time. Putative contenders, such as the *Super Hornet*, *Typhoon* and *Rafale* will leave production much sooner, thereby necessitating a comparatively prompt decision by Canada and an early injection of substantial funding. The degree to which upgraded versions of the less expensive—but still far from inexpensive—competitors should figure in Canadian calculations could also prove vexing. Should Canada, for example, opt for an essentially stock F/A-18E/F *Super Hornet* or pursue the upgraded, but somewhat more expensive, *Advanced Super Hornet*? Similarly, would a parallel purchase of a modest number of EA-18G *Growlers* be prudent?

The broader defence policy implications of foregoing the F-35 are no less intriguing. Some analysts, such as James Drew of Flightglobal, have interpreted the Liberal plans to jettison the F-35, withdraw the CF-18 from combat operations in Iraq and Syria, stress the defence of North America as the "primary mission" of Canadian fighter aircraft, and in general renew the focus on surveillance and control of Canadian territory and approaches, particularly in the Arctic, as part of a deliberate "de-emphasizing" of the RCAF's "expeditionary combat role" in favour of homeland defence. This, he suggests, could generate concomitant requirements for an AWACS-type capability (i.e., the Boeing E-7), long-range UAVs, new tankers, and a replacement for the CP-140 *Aurora*.

Also awaited with particular interest will be the forthcoming white paper's analysis of "international peace and security operations," "international peace operations," "humanitarian support missions," and disaster relief, as well as the place of "specialization" in these fields of endeavour. The white paper's analyses and definitions will have obvious and potentially far-reaching implications for Canadian defence policy as a whole, but they will also have ramifications for defence procurement. The new government might, for example, find it prudent to examine the utility—and potential enhancements to improve the utility—of the projected *Queenston*-class joint support ships in these areas. Also worthy of exploration in this regard would be the long-term retention of the ex-*Asterix* or the acquisition for the RCN of a true joint support ship.

Martin Shadwick *has taught Canadian defence policy at York University in Toronto for many years. He is a former editor of* Canadian Defence Quarterly*, and he is the resident Defence Commentator for the* Canadian Military Journal.

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Artist rendering of *Resolve*-Class AOR.

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Waterloo – The History of Four Days, Three Armies, and Three Battles

by Bernard Cornwell

London: William Collins, 2014

352 pages, $24.99

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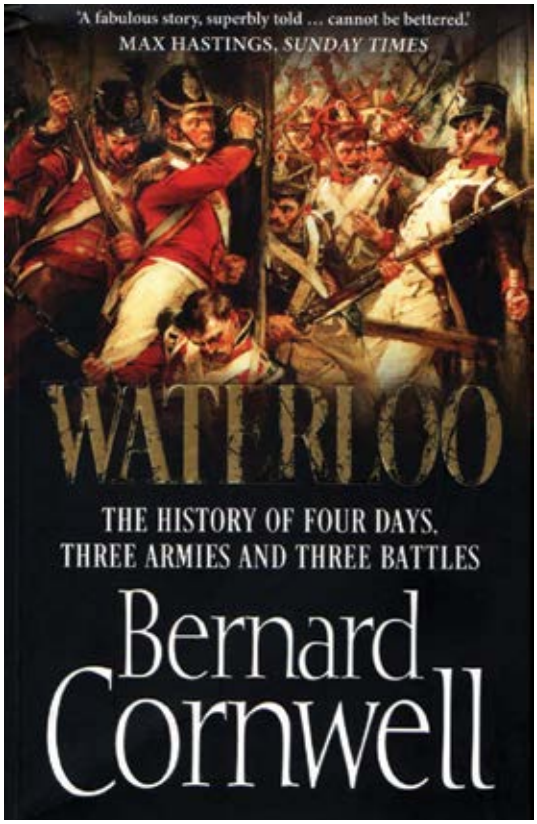
Reviewed by Mark Tunnicliffe



The battle of Waterloo is famous for a lot of things – not least of which are a series of (usually misquoted) Wellington *bons mots.* One of these, in a letter the Duke wrote a month after the battle, noted that "The history of a battle is not unlike the history of a ball. Some individuals may recollect all the little events of which the great result is the battle won or lost, but no individual can recollect the order in which, or the exact moment at which, they occurred, which makes all the difference as to their value or importance." Putting together these recollections into some kind of coherent account of the seminal event of the early-19th Century has presented a challenge to historians and soldiers over the past two hundred years. Certainly, a narrative of the event, at all levels, from the personal to the strategic, has all the makings of a great plot line – portent, drama, personalities, mistakes, and recovery, and perhaps most tellingly, a race against time (or for it?). Perhaps then, on the bicentennial of the Battle of Waterloo, it is fitting that a novelist should try his hand at making sense of this particular 'ball.'

Bernard Cornwell is probably one of the best choices for the task. Famed for novels following his character Richard Sharpe in the Peninsular War, as well as other historical series covering the Hundred Years War and the campaigns of Alfred the Great, Cornwell has gained a large following of devoted readers. His meticulous research into the major players, the social mores, weapons systems and tactics, and perhaps most importantly, his personal explorations of the battle sites which are the focus of his novels, make them convincing reading. Cornwell has preceded his history of the Waterloo battle with a novel in the Sharpe series (*Sharpe's Waterloo* – London: HarperCollins 1990), the research for which has provided him with an excellent basis for his first essay at branching out from fiction to fact. The question for the reviewer largely becomes: How well does he manage this transition, and what does Cornwell add to the already voluminous history of the events of 15-18 June 1815?

Cornwell's account quickly betrays his penchant for personally studying the battlegrounds that are a focus of his writing, as well as his pro-British sympathies. Indeed, the frontispiece of this well-illustrated book consists of a Turner painting (1833) of the battlefield, which exaggerates the depth of the valley separating the French and Allied armies, but does underline the potential for Wellington's favourite defensive strategy of shielding his troops on a reverse slope. Cornwell beats this point home repeatedly, not only in describing the tactic, but in pointing out Blucher's failure to use it, contrary to Wellington's advice and Napoleon's disparaging remarks about that "tired old tactic." Cornwell also highlights Wellington's strongpoints (the farms of Hougoumont and La Haie Sainte), and the critical positions they occupied in anchoring Wellingtons right and centre positions, although in his somewhat hagiographic description of Wellington's generalship, Cornwell does not make much of the Englishman's failure to properly prepare La Haie Sainte as a fortified redoubt.

Cornwell's account of the battles of 16-18 June 1815 comes across as a rather English affair, leaving a reader familiar with both his books on the subject to wonder to what extent this history has been influenced by his earlier novel. The missteps of the Prince of Orange (Commander of Wellington's I Corps, and referred to by Cornwell as 'Slender Billy') receive a greater emphasis in Cornwell's historical account than other writers provide. The prince's exposure of his infantry to decimation by cavalry by disposing them in line on at least two occasions was certainly damaging, but while this event was central to the story line in *Sharpe's Waterloo,* it probably was not as significant as Cornwell makes it out to be. Indeed, another Dutchman's disobedience probably retrieved Wellington's situation prior to Quatre Bras. 'Slender Billy's' experienced Chief of Staff, Major General Rebeque, and his second (Dutch) division commander, Lieutenant General Perponcher-Sedlinkitsky, determined that the order to abandon the critical Quatre Bras crossroads was a mistake, and held the position long enough to permit Wellington to reverse himself and stabilize the situation – a decision briefly acknowledged by Cornwell.

Similarly, the Prussians, largely in the form of Prussian army commander Blucher's chief of staff General Augustus von Gneisenau, come in for criticism for the latter's mistrust of Wellington and an impression of duplicity on the part of the British that, according to Cornwell, "defies imagination." However, given that the British, in the person of their rather-erratic Foreign Secretary Castlereagh, had been undermining Prussian ambitions at the Congress of Vienna, and had signed a secret treaty with France to oppose Prussia, such suspicions are not at all surprising. Indeed, as Gneisenau had obtained a copy of the treaty from an arrested French official, and had written to Wellington, who was to replace Castlereagh, for an explanation only a few months before the two nations found themselves allies against the French,

Blucher's *trust* in Wellington is probably more surprising than Gneisenau's *mistrust*. The political aspects of this campaign are not really explored in Cornwell's account.

That said, the narrative of the battles, and Waterloo in particular, demonstrate Cornwell's mastery of storytelling. His prose is that of the novelist, and his habit of mixing the present and past tenses in a single paragraph serves to bring immediacy to the account, or to irritate the reader, depending upon the latter's preferences. His character development is that of a polished novelist, and it also adds to the flavour of his narrative and to the rationale for the various decisions made during the press of battle. Cornwell's management of the battle timeline is also both pragmatic and a useful storyteller's device. Instead of describing the siege at Hougoumont, the attack on Wellington's centre, and the progress of the Prussian army from Wavre as sequentially-separate events, as is often done, Cornwell narrates them in temporal order as the day progresses. This is both a natural sequencing of events, and a compelling device for heightening the tension of the narrative.

The book is also very well supported with period illustrations of the major events and principal actors, which blend well with Cornwell's narrative. Even more useful to the reader are the well laid-out maps and diagrams which preface most of the chapters to aid the reader in understanding the spatial development of events. It is not, however a 'history' written with copious footnotes and dry prose. Instead, individual accounts are embedded in the text as a device for bringing out the human side of a very cataclysmic event. Academic analysis is largely absent, perhaps leading to some of the omissions noted above – the reasons for commanders' prejudices, the necessities of allied diplomacy, and alternative post-battle strategies – but this is probably not the intent of Cornwell's undertaking.

He brings the novelist's approach to the battle, and this is perhaps something by which the extensive literature on the battle could indeed profit. As Cornwell noted in his preface to *Sharpe's Waterloo,* there is enough 'cliff-hanging' drama in the reality of the events of 18 June 1815 that no novelist's plot line needed any competing embellishment. For those readers wanting an academic, analytic account of the history of one of the Western world's most famous battles, there are plenty of better references. For those, however, who desire a clear, dramatic telling of the day's events, Cornwell's *Waterloo* is well-recommended. Indeed, one might pose a minor quibble: the subtitle to his account might more accurately be stated as 'the story of four days…' rather than as their 'history.' And if his account may appear to some readers as rather English-centric – this perspective is perhaps no less valid than any other view of that rather confusing 'ball' at Waterloo…

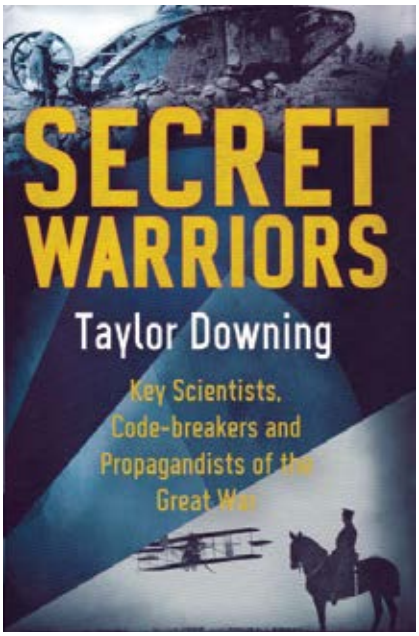
Mark Tunnicliffe *served for 35 years in the Canadian Navy, and another five with Defence Research and Development Canada, before retiring in 2013. He now serves as a volunteer interpreter and researcher at the Canadian War Museum in Ottawa.*

Secret Warriors
Key Scientists, Code-breakers and Propagandists of the Great War

by Taylor Downing

London: Little, Brown Book Group, 2014
357 pages, £20 (cloth)
ISBN: 978-1-4087-0421-9

Reviewed by Douglas Agnew



The title of Taylor Downing's latest book, *Secret Warriors*, is slightly misleading. It is not about intelligence officers and other scoundrels playing 'sneaky-peaky.' Rather, it is about the mostly-British doctors, engineers, soldiers, and the occasional madman, whose research and experimentation had a dramatic effect upon how the war was waged, upon the men who fought it, and upon the Home Front. It is also a history of the politicians and institutions which either made their work possible, or did their best to obstruct it.

Downing sets the historical stage. Pre-War Edwardian England was not the end of the 'long' 19th Century, not a time of languid summers and imperial pomp. It was, in fact, a time of great optimism, when people believed the future held exciting new possibilities. But optimism was not enough. Britain was falling behind its industrial rivals, Germany and the United States. The Army and the Royal Navy were loath to embrace technological advances. Senior officers were educated, almost without exception, in the public schools, and shared their social class's distain for industry and science. They considered themselves professionals, and most saw little reason to change how they did business. Downing also puts wartime research and development in a post-War historical perspective. While industrial-scientific war resulted in slaughter on an unprecedented scale, it also laid the foundations for much of the scientific progress that would be achieved over the next two decades.

Downing covers some familiar territory. He writes of Lord Richard Haldane, Secretary of State for War from 1905 to 1912. A military reformer, Haldane won government support, overcame the skepticism of the military, and brought scientific rigor to the study of aviation. Downing recounts how Royal Flying Corps reconnaissance flights were providing invaluable information by the third week of August 1914, how such flights were initially considered an invasion of the enemy's privacy by some officers in the Army, and how, much later in the war, they detected the movement of large numbers of troops before the German offensive of March 1918. He also speaks to Winston Churchill's pre-occupation with total secrecy, and his failure to realize Room 40 intercepts had to be systematically analyzed, and those analyses disseminated. Downing is highly *critical* of Churchill, but does not allow himself to *condemn* the man.

He devotes much of his book to doctors and surgeons. After the death of maneuver warfare in September 1914, armies on both sides were able to develop methods of moving wounded men away from the front line for medical attention. In the British Army, Casualty Clearing Stations came to include laboratories, X-ray machines, and operating theaters, and eventually specialized in particular treatments, such as head injuries or abdominal wounds. It was here that a 'cruel arithmetic' [triage] was applied and men who were thought to be too far gone received minimal attention. Medical scientists and doctors increasingly understood the need to keep wounds clean, and cases of infections, such as gas gangrene dropped by 90 percent from 1914 to 1918. Australian and Canadian army units began to use transfusions more frequently, and methods to refrigerate blood were slowly improved. Captain Harold Delf Gillies became one of the pioneers of reconstructive surgery, developing techniques to rebuild faces, and to graft bones and skin. These techniques enabled many horribly disfigured soldiers to face the world again.

By the end of 1914, the British Army was noting an increasing number of men with either no physical injuries, or with very minor ones, but they were suffering from paralysis, the shakes, and stupor, among many other symptoms. Enter Charles Samuel Myers, a physician teaching psychology at Cambridge when the war broke out. Myers secured a position at a private hospital in Paris attached to the British Army. It was here that he theorized that 'shell shock' was a physical concussion caused by close proximity to exploding shells, challenging the widely-held belief that 'hysteria' was an indication of weakness. Myers later came to reject his own theory, concluding that the vast majority of cases of shell shock had psychological causes. He also came to reject the term shell shock as an inadequate descriptor of a wide range of symptoms. Myers established the principle of treating cases as close to the front as possible, which is, to this day, fundamental to all military psychology. The Army ultimately rejected the humane approach to curing shell shock advocated by Myers and his colleagues, preferring instead to see it as a disciplinary issue. Records released in the 1990s showed that men who had broken down under the strain of the most brutal war to date had, in fact, been executed as examples, contrary to repeated assertions by the British government.

Downing also covers the dark art of propaganda, a subject given short shrift if not completely ignored in most histories of conflict. The bureaucracy of propaganda under British Prime Minister Lloyd George was dysfunctional, but British propagandists nevertheless had notable successes, weakening the Austro-Hungarian war effort by fanning the flames of independence among the many nationalities making up the Empire. They also convinced many Germans that the Allies had nothing against the German people, but were determined to defeat their militaristic leadership.

Secret Warriors suffers from a few problems. There are places where Downing goes back and forth in time. It can take a while to grasp whatever point he is making when doing so. As a specific example, Part Four, *Doctors and Surgeons*, comes to mind. The author also spends a lot of time in Part Five, *Propagandists*, dealing with wrangling in the propaganda bureaucracy, which is all very interesting, but it would be nice to know more about how the art of propaganda was *practiced*.

Nonetheless, Taylor Downing is an accomplished historian. *Secret Warriors* is well-researched, with some interesting and unusual primary sources, the controversial Brigadier General John Charteris's *At G.H.Q.* being among them. *Secret Warriors* is an informative, worthwhile read, covering as it does subjects often overlooked by amateur and professional historians and soldiers alike.

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Missoula: Rape and the Justice System in a College Town

by Jon Krakauer
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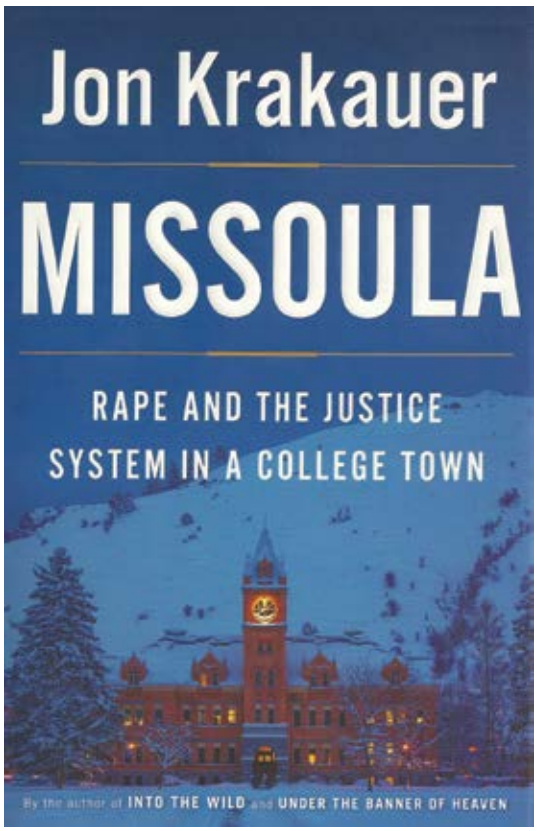
Reviewed by Michael Wickson



Jon Krakauer is an excellent storyteller who has authored several great books, including *Into Thin Air* (1997), and *Where Men Win Glory: The Odyssey of Pat Tillman* (2009). His latest publication is named *Missoula*, and it has absolutely nothing to do with the military. However, it explores several incidents in a small college town where the male dominance of the local football team created a rape culture that rapidly grew out of control, and the justice system was unable to properly address the issue. With the recent release of the Deschamps report and the commitment of the CDS to reforming the culture of the Canadian Armed Forces (CAF), this volume addresses a 'worst-case scenario,' and all military leaders should read it in order to understand how the underlying cultural nuances of a male dominated society can progress to an unacceptable level of sexual misconduct. This book is not intended *primarily* for women. Rather, it is largely meant for men to try to get them to understand the nature of how sexual deviance *can* and *does* occur in society, and how it needs to be addressed to prevent such crimes from being perpetuated.

Krakauer intertwines several case studies with other relevant interviews to present a cohesive understanding of rape culturally, and how the greater society in Missoula was hesitant to address the issue. The focus of the case studies is based upon incidents that transpired in Missoula, and they largely involved students from the University of Montana campus and the local college football team. These case studies progress in complexity, based upon whether they were prosecuted by the college administrative system and/or the local criminal justice system. They demonstrate the importance of removing preconceptions regarding sexual assault when processing disciplinary or criminal investigations, as well as the relevance of administrative punishments, despite any inactivity by the criminal justice system. All Military Police and Commanding Officers will see value in these case studies.

The author is truly a gifted writer who uses powerful and hauntingly graphic language throughout the book. There were times while reading it when I felt truly sick to my stomach and had difficulty believing the situations that were being described. However, the graphic language was necessary, and disbelief is exactly how rape culture survives. It is largely ignored by society, as most people want to believe the men they know would never do such things. Unfortunately, these types of crimes do occur, and rape and sexual violence need to be understood and addressed. It is made quite clear throughout the book that the author's view is clearly sympathetic toward the victims, and he is critical of many of the investigating police officers. However, he saves his greatest criticisms for the local prosecutor, who repeatedly refused to pursue cases despite clear evidence, appeared at a college administrative hearing in defence of an alleged perpetrator, and eagerly defended another in court.

Despite the absence of pure military content, the book is of great value for military leaders attempting to understand the nature of rape culture and sexual violence. As the situations described in the book are a 'worst-case scenario,' we would all like to believe this not representative of the CAF. However, as the CAF reflects greater society, and is undeniably a male-dominated organization, it would be naïve to think that the CAF is immune to the underlying culture that allows rape and sexual misconduct to exist. With the recent commitments by the CDS to address these issues in the CAF, I highly recommend this book to all members.

Captain Michael Wickson, *an infantry officer, has a BSc. from the University of Calgary, and is completing a BMASc. from the Royal Military College of Canada. He is currently serving as the Operations Officer for the Third Battalion Princess Patricia's Canadian Light Infantry.*