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TRAINING CAF OFFICERS TO DOMINATE THE HUMAN DOMAIN

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Exercise Solo Flight

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TRAINING CAF OFFICERS TO DOMINATE THE HUMAN DOMAIN

INTRODUCTION

Lieutenant-General Mike Rouleau issued a tough piece titled *How we Fight: Commander CJOC's Thoughts* on 10 February 2019. In it he laid out the current friendly and enemy situations faced by the Canadian Armed Forces (CAF) and he proposed that based on our situation, the CAF is at an inflection point which “demanded a foundational re-think of how we fight.”¹ The purpose of the thought piece was to provide “more context, detail, and substance into mapping what types of things we need to adopt to prevail in tomorrow’s environment.”² He proposed we need to re-imagine how we fight in the context of the United States (US) Third Offset Strategy (3OS).^{3 4}

The 3OS was initiated by Secretary of Defense Hagel in 2014 and it acknowledges that the US and its allies have lost the technological advantages which they have benefitted from since the 1950’s. The 3OS seeks to initiate the research and development required to re-establish that technological advantage in order to ensure the future security of the US and its allies.^{5 6} This is a logical approach to follow, but this paper will work under the assumption that due to the current speed of technological advancement, the humans employing the technology will be the source of allied competitive advantage and therefore, in the context of multi-domain warfare, it is the human domain that will be the decisive one.

¹ Lieutenant-General Mike Rouleau CMM, MSC, CD. “How We Fight”: Commander CJOC's Thoughts." Ottawa, ON, 10 Feb 2019, 5.

² *Ibid.*, 1.

³ *Ibid.*, 5.

⁴ The Third Offset Strategy is officially known as the Defence Innovation Initiative. Hagel, Chuck. The Defense Innovation Initiative. Washington, DC: Secretary of Defense, 2014.

⁵ *Ibid.*, 1.

⁶ Time horizon of 10 - 20 years. Biggs, Adam, and Rees Lee. "The Role of the Human Operator in the Third Offset Strategy." U.S. Naval War College Digital Commons, 2018: 103-125., 103.

This paper will prove that the CAF will achieve its competitive advantage through the prioritization of human skills in officer development.⁷ First it will provide a background to explain the CAF's current situation and the importance of the human domain. Second it will show that the human skills of cognitive ability and social sensitivity are crucial to produce the best solutions for complex problems. Finally it will provide a recommendation for the CAF to adopt in order to achieve a competitive advantage in the human domain.

BACKGROUND

The current state of global security can be attributed to the power projection of the US and its allies since the end of the Second World War. The US was able to achieve this in large part because of the technological advantage it possessed over its adversaries. This advantage began in 1953 with Eisenhower's *New Look* plan which leveraged the US's nuclear arsenal to offset the Soviet's numerical advantage.⁸ The plan was effective until the 1970's when the nuclear advantage was equalized and the Warsaw Pact forces presented a credible threat to a post-Vietnam US. So US Secretary of Defense Brown adopted an *Offset Strategy* using technology as a force multiplier.⁹ It was this technology that led to the *Air-Land Battle* doctrine and made the 1991 invasion of Iraq so successful.¹⁰ It is also that advantage which is currently being equalized.

⁷ CAF officer training is only one small section of the changes required to achieve dominance in the human domain, but it is a central piece in any long-term changes to how the CAF fights.

⁸ It was effective because the US had more nuclear weapons, which were more capable, could be produced faster, and delivered from a longer range. Martinage, Robert. *Toward a New Offset Strategy: Exploiting U.S. Long-Term Advantages to Restore U.S. Global Power Projection Capability*. Center for Strategic and Budgetary Assessment, 2014, 6-13.

⁹ This strategy focused on four areas: intelligence, surveillance, and reconnaissance (ISR) platforms, precision-strike weapons, stealth technology, and tactical exploitation of space. *Ibid.*, 13-14.

¹⁰ Martinage, *Toward a New Offset Strategy*, 16.

Strong, Secure, Engaged sets the global context based on “three key security trends: the evolving balance of power, the changing nature of conflict, and the rapid evolution of technology.”¹¹ Within this complex context LGen Rouleau focuses on the *duality* of the state and non-state threat, both above and below the threshold of visible conflict.¹² It is against this dual threat and the proliferation of anti-access aerial denial (A2AD) weapons that the 3OS attempts to regain the US competitive advantage through a balance of cost and capability.¹³ It assumes a reduction in personnel and plans to multiply the overall effectiveness of a smaller joint force by placing emphasis on deterrence by denial and punishment.¹⁴

The 3OS will create armed forces that will have fewer humans using more complicated systems of systems to defeat a complex set of adversaries who operate in all domains.¹⁵ Those adversaries will at times have equal or superior technology so success in this environment requires personnel who are as capable as possible to identify and solve the problems their nations will face. It will be the human skills of the operational commander that will provide the competitive advantage in the human domain of modern warfare.

THE IMPORTANCE OF THE HUMAN DOMAIN

The human domain is not a new concept, US Army doctrine states “war is fundamentally a human endeavour” and humans have been the one constant in the history

¹¹ Department of National Defence. *Strong, Secure, Engaged - Canada's Defence Policy*. 2017, 49.

¹² Rouleau, *How We Fight*, 4.

¹³ Jackson, Van. "The Pentagon's Third Offset Strategy: What US Allies and Partners Need to Know." *The Diplomat*. 28 Apr 2015. <https://thediplomat.com/2015/04/the-pentagons-third-offset-strategy-what-us-allies-and-partners-need-to-know/> (accessed Mar 14, 2019), 1.

¹⁴ Martinage, *Toward a New Offset Strategy*, 39.

¹⁵ *Ibid.*, 17.

of war.¹⁶ Warfare has always had an essential element of human interaction within it; technology is currently increasing the velocity and reach of those interactions.¹⁷ Former US Secretary of Defense Carter explained his view on what winning wars would require by stating,

What will winning mean? Not maximum destruction. World War II was the apogee of the destructive war, where you won by destroying the enemy's productive capacity [...] In future wars, winning will mean having a victory that is widely accepted, including by the defeated. So you won't win by mowing down millions of people. You'll win by having people at the front edge who have human skills.¹⁸

Experiences in Iraq and Afghanistan showed that commanders expected their junior leaders at the front edge to be “experts at the many roles of social interaction” and true success in those theaters relied upon the civilian population.¹⁹

Iraq has provided another recent example of how the human domain can be used in warfare. The use of a narrative by the Islamic State of Iraq and Syria (ISIS) was a demonstration on how humans can find a specific overmatch of US capability (influence through social media) to create a security threat.²⁰ In a more conventional warfare capacity, the importance of the human domain will be realized when a conflict with an adversary possessing equal military-technical capacity. In such a conflict the competitive advantage will be with the humans who have superior cognitive abilities to solve the complex problems they are faced with.

¹⁶ United States Army. ADP 3.0 Operations. 2017, 2.

¹⁷ Colvin, Geoff. Humans are Underrated. New York: Penguin Random House, 2016, 52.

¹⁸ *Ibid.*, 52.

¹⁹ *Ibid.*, 53.

²⁰ *Ibid.*, 158.

The advancement in technology sought by the 3OS will provide the US and its allies more technological options for countering adversaries. As shown by Fig. 1 the first two offset strategies did this by removing human error and centralizing control.

| Offset Strategy | U.S. Personnel | Adversary Personnel |
|---|--|---|
| First Offset: nuclear Deterrence | Liability: The economic and logistical challenges of fielding U.S. personnel in the numbers necessary to win a conventional war made them a liability. | Tyranny of numbers: The Soviet Union and the Warsaw Pact could field an army in Europe substantially larger than NATO was willing to support. |
| Second Offset: precision conventional weapons | Source of error: The complexity of the modern battle space exceeded the capabilities of the human being to engage the enemy effectively and rapidly without unacceptable errors, requiring development of strategies to remove the human element to the extent possible. | Remote and hidden: Non-state actors strike from locations hidden in urban environments, while more-traditional state enemy forces hide behind a shield of overwhelming numbers of conventional weapons. Both scenarios create a tremendously complex battle space. |
| Third Offset: enhanced human performance | Strategy focus: Astonishing advances in information technologies allow presentation of an overwhelming array of data to human operators and their commanders. Enhancing the physical, cognitive, and decision-making capabilities of the human operator becomes central to successful military operations. | Flexible: Advances in cyber (Internet, mobile communications, etc.) and other technologies allow enemy personnel to operate without the limitation of state borders. Management and synthesis of complex data from multiple sources are required to track and target enemy personnel effectively. |

Fig 1. - The Human Impact on Offset Strategies Biggs / Lee 121.

For the 3OS to be successful it will need to enhance human performance, specifically through cognitive abilities and social capital.²¹

COGNITIVE ABILITIES

As technology advances technical skills will become more “commoditized and thus a diminishing source of competitive advantage.”²² As humans are relieved of these tasks their abilities should be focused on where they can best add value. This is summed up well by Biggs and Lee in their writing for the US Naval War College, “let the

²¹ Biggs, The Role of the Human Operator in the Third Offset Strategy, 125.

²² Colvin, Humans are Underrated, 4.

computers do what they do best, and let the humans do what they do best.”²³ What humans will do best is identify the problems that need to be solved and combine data with creativity to produce better solutions.²⁴

In order to be ahead of the technology curve the CAF must prepare its officers to work with emerging technology. It is no longer viable to learn a technical skill once and apply it for a career. A system like that worked in the industrial age but the CAF needs leaders who “are comfortable with a permanently temporary mode of operating.”²⁵ ²⁶ This is a fundamental shift in the concept of having a well-trained force; the CAF requires a *trainable* force. A trainable CAF would be versatile and capable of adapting to modern warfare.²⁷ At the strategic and operational levels this means commanders and staffs who can decide where to best assign resources. Improved computing will provide the decision makers with better information, but it will remain a human task of deciding which problems to solve.²⁸

In order to better arm CAF officers for dominating the human domain their training needs to include psychology, theology, anthropology, sociology, and linguistics.²⁹ Skills in these areas will provide the competitive advantage required for success on the modern battlefield and will prepare the officer corps to understand the human domain. This understanding is crucial at all levels of war, but in modern warfare the gap between the tactical and strategic levels of war is compressing and the human

²³ Biggs, *The Role of the Human Operator in the Third Offset Strategy*, 104.

²⁴ Colvin, *Humans are Underrated*, 126.

²⁵ Biggs, *The Role of the Human Operator in the Third Offset Strategy*, 116.

²⁶ Colvin, *Humans are Underrated*, 186.

²⁷ Biggs, Adam Thomas, and Rees L Lee. "Sharper Minds, Sharper Sailors." *United States Naval Institute*, 2016, 2.

²⁸ Colvin, *Humans are Underrated*, 166.

²⁹ Tatham, Steve, and Keir Giles. "Training Humans for the Human Domain." *US Army War College*, 2015, 9.

interaction aspect of warfare has become more important.³⁰ Thus, human domain training must be provided for all CAF officers.

The other area of cognitive abilities where competitive advantage can be achieved is through creativity and innovation. Creativity and innovation come from diversity of experiences and human interaction.³¹ Current CAF training is weighted towards near transfer of knowledge and closed skills.^{32 33} These types of skills are easier to train and evaluate, but are less useful in modern warfare. They are also related to tasks that can be completed by technology. Competitive advantage will be gained when CAF members are trained with far transfer of knowledge and open skills.^{34 35} This level of training is more difficult, but is required for success in modern warfare.

At the strategic and operational levels military solutions to complex problems will come from small teams who are both intrinsically and extrinsically motivated to innovate.³⁶ Intrinsically motivated people must come from talent management; extrinsic motivation must be sourced from collaboration between all relevant stakeholders and fueled by leadership. In his book *Humans are Underrated* Geoff Colvin explains “creativity is done ultimately for humans [and] it’s in our deep nature to require that it be

³⁰ Rouleau, *How We Fight*, 6.

³¹ Colvin, *Humans are Underrated*, 175.

³² Near transfer of knowledge are applied the same way every time the skills and knowledge are used. Near transfer training usually involves tasks that are procedural in nature, that is, tasks which are always applied in the same order. Clark, Don. *Transfer of Learning*. 22 Oct 2011. <http://www.nwlink.com/~donclark/hrd/learning/transfer.html> (accessed Apr 25, 2019).

³³ Closed Skills take place in a stable, predictable environment and the performer knows exactly what to do and when. *Ibid.*

³⁴ Far transfer tasks involve skills and knowledge being applied in situations that change. Far transfer tasks require instruction where learners are trained to adapt guidelines to changing situations or environments. *Ibid.*

³⁵ With open skills the environment is constantly changing, and so movements have to be continually adapted. Open skills are predominantly perceptual and externally paced. MacKenzie, B. *Skill Classification Continuum*. 2001. <https://www.brianmac.co.uk/continuum.htm> (accessed Apr 25, 2019).

³⁶ Colvin, *Humans are Underrated*, 169.

done by and with other humans.”³⁷ The CAF will always be a human centric organization and for it to achieve a competitive advantage, its officer corps must be able to innovate.

Similar to special operators, cognitive skills cannot be mass produced nor created in emergencies.^{38 39} The human domain is complex and volatile so to operate in it successfully the CAF must be prepared to study it. Technology will help in this endeavour, but the creativity and innovation of humans is required to identify and decide on the problems to solve and the best solution available. This will mostly be done at the strategic and operational levels of war, but must be informed by the tactical.⁴⁰

SOCIAL CAPITAL

In a connected and crowded world the ability for CAF officers to interact with humans - friendly, neutral, and adversary - will be a deciding factor in their success. Gen Vance stated that when called upon “the CAF must be the right instrument in preventing, mitigating, and terminating conflict all while reducing harm to everyone involved.”⁴¹ To do this CAF officers must have the social capital to understand, communicate with, and lead humans. Michael Gazzaniga, a leading neuroscientist and psychologist, stated “our brains are primarily to deal with social matters” and an organizational design research experiment concluded “there is no substitute for face-to-face interaction to build up trust.”^{42 43}

³⁷ Colvin, *Humans are Underrated*, 176.

³⁸ Biggs, *The Role of the Human Operator in the Third Offset Strategy*, 110.

³⁹ United States Army Special Operations Command. *SOF Truths*. n.d. <https://www.soc.mil/USASOCHQ/SOFTruths.html> (accessed Apr 25, 2019).

⁴⁰ Rouleau, *How We Fight*, 7.

⁴¹ Canadian Joint Operations Command. "Joint Operations Symposium Summary." 2019.

⁴² Colvin, *Humans are Underrated*, 37.

⁴³ *Ibid.*, 170.

Trust is something that is truly human, and to establish it with people takes time, effort, and emotional intelligence.⁴⁴ Two key components of emotional intelligence are empathy and social skills and CAF officers must be motivated to develop theirs. The US Joint Concept for Human Aspects of Military Operations “recognizes the centrality of human will in war and provides a framework that integrates with the commander’s decision cycle, enabling the joint force to influence a range of relevant actors.”⁴⁵ However to implement this framework an operator must possess the empathy to understand the relevant actors.

On empathy, Colvin states it is “comprise[d] of two parts: discerning the thoughts and feelings of others, and responding appropriately”⁴⁶ The ability to apply empathy is crucial in warfare from intelligence gathering to leading soldiers. The CAF is well prepared to train members to apply violence, but it needs to improve training to apply empathy. The operationalization or weaponizing of empathy will improve the understanding of the human domain and will give CAF officers options to prevent escalation, limit the amount of violence required to mitigate/terminate, and reduce the overall impact of conflict.

With empathy an officer can read a situation better, with social skills, they are armed to act. A solution ineffectively communicated will not add value to CAF operations. One way that social skills are impacting the human domain is narratives. A compelling narrative or story can motivate soldiers to immediately and effectively apply

⁴⁴ Emotional intelligence includes Self-awareness, Self-regulation, Motivation, Empathy, and Social skills. Mind Tools. Emotional Intelligence in Leadership - Learning How to be More Aware. n.d. https://www.mindtools.com/pages/article/newLDR_45.htm (accessed Apr 25, 2019).

⁴⁵ The framework is identify, evaluate, anticipate, and influence. Joint Chiefs of Staff. Joint Concept for Human Aspects of Military Operations. 2016, 14.

⁴⁶ Colvin, Humans are Underrated, 89.

a commander's direction. They can also influence people to join an organization like ISIS. The power of a narrative cannot be dismissed when operating in the human domain. As proof, Defence Advanced Research Projects Agency (DARPA) initiated a narrative networks study to "understand how narratives influence human cognition and behavior, and apply those findings in international security contexts."⁴⁷ This study concluded that "narrative should and must be integrated as an important tool in the military toolkit."⁴⁸ At the strategic level narratives can lead to achieving better military outcomes to conflict, but if not they can be detrimental to CAF operations.⁴⁹ From a training perspective narratives can be applied to aid learning new material and interpreting an alternative perspective.⁵⁰

Narratives are important for organizations, commanders, and instructors to convey a message and if unchecked, can be used by adversaries to create security threats, but social capital is more than story telling. Creativity and innovation originate from groups with cognitive diversity, and those groups are most productive when their members have good interpersonal skills.⁵¹ As technology completes more of our technical tasks, the group member that will add value will be "those who can build relationships, brainstorm, collaborate, and lead."⁵² Human dynamics expert Sandy Pentland studies what made groups more successful and he determined it was the "socially intelligent participants [...] guiding the group toward briefer presentations of more ideas,

⁴⁷ DARPA. "Narrative Networks." 1.

⁴⁸ Finlayson, Mark, and Steven Corman. "The Military Interest in Narrative." *Sprache und Datenverarbeitung*, 2013, 180.

⁴⁹ *Ibid.*, 180.

⁵⁰ *Ibid.*, 179.

⁵¹ Colvin, Humans are Underrated, 194.

⁵² *Ibid.*, 49.

encouraging responses, and ensuring that everyone contributed equally.”⁵³ He deduced that social skills were more important than technical skills, leadership, and motivation.

Social capital is becoming both more important and less available due to the impacts of technology on society.⁵⁴ The CAF has everything in place to be able to train its members to be emotionally intelligent and must prioritize this training over technical skills.

WAY FORWARD

Improving the CAF’s cognitive abilities and social capital can be done with high end technology and changes to processes and culture. High end synthetic simulators using augmented reality can be leveraged to multiply the training opportunities for technical skills and go / no go decisions.⁵⁵ Force on force training like that done at the US Navy Fighter Weapons School and US Army National Training Center has been proven to improve soldiers in combat during Vietnam and Operation Desert Storm.⁵⁶ However, synthetic simulators will take time to acquire and force on force exercises will be limited to large scale collective training events, thus restricting their utility in individual training.

Understanding those realities means the CAF must look at changes to its processes and culture to improve. One place to start is with officer individual training. Since the 1990’s officers entering the CAF required a university degree to be commissioned, and thus it can be deduced that the education level of officers undergoing individual training has been elevated. Despite that change to the situation, the training plans for officers have seen little to continue the officer’s education. It is not acceptable

⁵³ Colvin, *Humans are Underrated*, 127.

⁵⁴ *Ibid.*, 58.

⁵⁵ Biggs, *The Role of the Human Operator in the Third Offset Strategy*, 108.

⁵⁶ Colvin, *Humans are Underrated*, 107.

to wait until an officer is attending the Joint Command and Staff Program (JCSP), which is likely to occur after fifteen years of service, for them to be challenged academically. While a culture change for a few in the training establishments could change this, it will take a change across the CAF to foster the academic environment needed to improve the collective cognitive abilities of the CAF's officer corps. In order to improve social capital those studies should be conducted in psychology, theology, anthropology, sociology, and linguistics and individual training can be augmented to include events designed to test an officer's emotional intelligence. Time on individual training should not be wasted and the training of technical skills can be downloaded to electronic sources where individuals can learn at their own pace.

One method currently employed with success is achieving diversity of experience through employment in different environments within the CAF. This certainly adds to the cognitive diversity of members, but not to the same extent as drawing from other government departments, private business, and civilian universities. For that reason the JCSP should leverage the internship option to a greater extent.

LIMITATIONS TO IMPROVEMENT

The concept of shifting priorities from technical training to cognitive and social disciplines is premised on trust in the technology. There is a natural human mistrust of technology; this can be seen with the world's reaction to self-driving cars, and this will be no different for the CAF.⁵⁷ If the 3OS delivers on the technology that it promises the human operators must have enough trust in the equipment or the competitive advantage will not be realized. Building this trust will have a training bill of its own, but that is difficult to estimate at this time. However, this trust will be driven by necessity as it is

Biggs, *The Role of the Human Operator in the Third Offset Strategy*, 109.

expected that the CAF's adversaries will be employing a similar technological capability at the same time. This still leaves the operator in need of superior cognitive abilities and social capital to derive the best solutions to the problems they are presented and dominate in the human domain.

The human domain is not a new concept, and armed forces have always been attempting to dominate it. A recent example was the Human Terrain Teams that the US Army used in Afghanistan and Iraq. This was an attempt to put an immediate boost to the social capital (specifically cultural awareness) of front line troops. While it is difficult to measure the program's effectiveness it was certainly opposed by large portions of the academic community.⁵⁸ This shows that cognitive abilities and social capital cannot be created in an emergency.

CONCLUSION

One of LGen Rouleau's aims in his tough piece was to "inform a [professional military education] reform ... [in order to] train people not how to fight, but how to think about how to fight."⁵⁹ This paper has outlined a way forward for this PME reform through the training of CAF officers in the human domain. The cognitive abilities and social capital of the CAF officer corps will be crucial for CAF success in the future operating environment. Rapidly advancing technology will drastically change what skills add to the CAF's competitive advantage. The CAF strategic and operational level leaders will face complex problems which require innovative and creative minds to produce solutions.

⁵⁸ Jaschik, Scott. Embedded Conflicts. 07 Jul 2017. <https://www.insidehighered.com/news/2015/07/07/army-shuts-down-controversial-human-terrain-system-criticized-many-anthropologists> (accessed Apr 25, 2019).

⁵⁹ Rouleau, How We Fight, 8.

Cognitive abilities and social capital are life-long skills that need to be trained, encouraged, and refreshed throughout the career of a CAF officer. The time and effort invested into the development of these skills will pay dividends immediately and consistently through the duration of a career. LGen Rouleau states that “the cognitive leader will carry the day” and it is the responsibility of the CAF training system to produce those cognitive leaders.⁶⁰

⁶⁰ Rouleau, *How We Fight*, 8.

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