

Canadian  
Forces  
College

Collège  
des  
Forces  
Canadiennes



## RETHINKING INNOVATION: EXAMINING POSSIBILITIES BEYOND SSE

Lieutenant-Commander Clark Northey

### JCSP 45

#### Service Paper

##### Disclaimer

Opinions expressed remain those of the author and do not represent Department of National Defence or Canadian Forces policy. This paper may not be used without written permission.

© Her Majesty the Queen in Right of Canada, as represented by the Minister of National Defence, 2019.

### PCEMI 45

#### Étude militaire

##### Avertissement

Les opinions exprimées n'engagent que leurs auteurs et ne reflètent aucunement des politiques du Ministère de la Défense nationale ou des Forces canadiennes. Ce papier ne peut être reproduit sans autorisation écrite

© Sa Majesté la Reine du Chef du Canada, représentée par le ministre de la Défense nationale, 2019.

CANADIAN FORCES COLLEGE – COLLÈGE DES FORCES CANADIENNES  
JCSP 45 – PCEMI 45  
15 OCT 18

SERVICE PAPER – ÉTUDE MILITAIRE

**RETHINKING INNOVATION:  
EXAMINING POSSIBILITIES BEYOND SSE**

LCdr Clark Northey

*“This paper was written by a candidate attending the Canadian Forces College in fulfilment of one of the requirements of the Course of Studies. The paper is a scholastic document, and thus contains facts and opinions, which the author alone considered appropriate and correct for the subject. It does not necessarily reflect the policy or the opinion of any agency, including the Government of Canada and the Canadian Department of National Defence. This paper may not be released, quoted or copied, except with the express permission of the Canadian Department of National Defence.”*

Word Count: 2,676

*“La présente étude a été rédigée par un stagiaire du Collège des Forces canadiennes pour satisfaire à l'une des exigences du cours. L'étude est un document qui se rapporte au cours et contient donc des faits et des opinions que seul l'auteur considère appropriés et convenables au sujet. Elle ne reflète pas nécessairement la politique ou l'opinion d'un organisme quelconque, y compris le gouvernement du Canada et le ministère de la Défense nationale du Canada. Il est défendu de diffuser, de citer ou de reproduire cette étude sans la permission expresse du ministère de la Défense nationale.”*

Nombre de mots: 2,676

## RETHINKING INNOVATION: EXAMINING POSSIBILITIES BEYOND SSE

### AIM

1. The purpose of this service paper is to provide a meta-analysis of defence innovation and its prospective applications in the Future Security Environment (FSE). While a more detailed investigation is required to determine the mechanisms, parameters, processes and organizational requirements towards the formalization of internal innovation, the following text aims to provide the necessary context to encourage future ideas and generate debate on the subject. The anticipation of future strategic and operational threats

### INTRODUCTION

2. The FSE poses a significant challenge for the Canadian Armed Forces (CAF). Attempting to predict the emergence of future threats within space and time remains an elusive task, requiring the CAF to remain flexible, adaptable and reactive to conventional and asymmetric pressures across a multitude of domains. The advent of cyber, space and advanced influence activities further complicate this intricately dense environment, demanding new, creative and expedient solutions to complex problems. Anticipating potential responses to FSE proves to be a costly endeavour as procurement initiatives, coupled with defence research and development (R&D), are heavily tech-driven. Despite the price tag, it is a necessity for the CAF to maintain and expand its commitments to citizens and allies. This paper demonstrates in part that, by effectively generating and employing innovation within the institution, the CAF and DND could leverage the innate capabilities of its current and prospective members towards the ideation of novel, creative solutions to emergent issues as they become better defined.

3. Historically, the relationship between militaries and innovation has been highly varied. Often, wartime will invigorate the institution, forcing the rate of R&D to accelerate and ultimately produce advances that generate decisive advantage over the enemy. During periods of prolonged peace, militaries will often suffer from a prolonged senescence wherein innovative capacity slows as competitive advantage becomes less important. “Strong, Secure and Engaged: Canada’s Defence Policy” attempts to break through this period of dormancy by allocating significant investment for R&D through the engagement of academics and industry partners, tandem with recruiting and retention of serving CAF members. To fully invigorate the new approach to defence, namely *Anticipate. Adapt. Act.*<sup>1</sup> CAF leadership is encouraged to better identify and employ their innately strategic, creative and innovative thinkers in tackling the ever-increasing complexity of warfare. As the source of innovation is the individual, not the technology or process, special attention should be paid to how the CAF recruits and retains their so-styled *Champions* and *Mavericks*<sup>2</sup>.

---

<sup>1</sup> Department of National Defence. *Strong, Secure, Engaged: Canada’s Defence Policy*, (Ottawa: Canada 2017), 63-65.

<sup>2</sup> Multiple models have been used to differentiate between distinct characteristics of innovative personalities. The *Champions and Mavericks* ideation is drawn directly from the proposed research question.

## DISCUSSION

### Innovation, Militaries and Resistance to Change

4. The term *innovation* is currently one of the most invasive buzzwords used by the public and private sectors; peppered seemingly everywhere to the extent that its appearance in a speech or presentation is anticipated by the target audience. However, unlike other trending “C-Suite” terminology it has not fallen out of fashion, perhaps due to its universal applicability or because it carries an incredible amount of cognitive weight.<sup>3</sup> Innovation is often conflated with *invention*, especially as it relates to technological initiatives, which is fundamentally incorrect<sup>4</sup> and potentially limiting for leaders wanting to leverage either concept to its fullest extent. While both are important pursuits and indeed complementary, they carry distinctive meanings. For the purposes of this exposition, the etymological root *innovationem* (n.) will be used to define the modern term, namely: “to renew”<sup>5</sup> or “to conceive and implement a novel idea.”<sup>6</sup>

5. It is generally accepted that the very concept of innovation poses significant challenges to well established organizations.<sup>7</sup> Significant research has delved into determining the causes and conditions for this phenomenon. While they vary in the specificity of their results, the common theme is reticence to change amongst the leadership tier of the large corporation, business or public entity.<sup>8</sup> Yet, the need for new technologies, structures, policies and modes of operation is almost universally recognized at the individual level, not to mention a must for continued organizational viability.<sup>9</sup> Why this odd dichotomy? Evidence suggests that the inherent gap is due to social factors pertaining to the accountability for risk, ownership of ideation and competence in experimentation. In short, innovation requires leadership to accept and learn from failure, persist, and leverage any resources at their disposal towards achieving future aims. When organizations fail to strategize and subsequently accept the degree of risk a change requires, they tend to lose competitive advantage.<sup>10</sup> To deviate from a path of complacency towards eventual irrelevance, leaders must favour challenging, vice championing, the status quo on a routine basis.

3. While most studies focus on innovation vis-a-vis resistance to change in the corporate world, they are certainly applicable to professional militaries as they demonstrate a similar resistance to embracing change, although likely for different reasons. Indeed, great military thinkers at all levels have found incredibly creative solutions to complex problems when

---

<sup>3</sup> Widespread, individual espousal of innovation is seemingly odd as it suggests in application a dynamic alteration of what is routine, expected, and ultimately comfortable.

<sup>4</sup> Jay Fraser, “Etymology of Innovation,” *Innovation Excellence*, Last accessed 13 October 2018. <https://www.innovationexcellence.com/blog/2014/04/29/etymology-of-innovation/>

<sup>5</sup> *Ibid.*

<sup>6</sup> *Ibid.*

<sup>7</sup> Marc de Jong, Marston N. and Roth E., “The Eight Essentials of Innovation,” *McKinsey Quarterly* (April 2015). <https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/the-eight-essentials-of-innovation>

<sup>8</sup> Glenn Llopis, “5 Reasons Leaders are Afraid to Challenge the Status Quo,” *Forbes*, Last modified 12 August 2017. <https://www.forbes.com/sites/glennllopis/2017/08/12/5-reasons-leaders-are-afraid-to-challenge-the-status-quo/#7acb224726fe>

<sup>9</sup> Ira Kalb, “Innovation Isn’t Just About Brainstorming New Ideas,” *Business Insider*. Last modified 8 July 2018. <https://www.businessinsider.com/innovate-or-die-a-mantra-for-every-business-2013-7>

<sup>10</sup> SOURCE: Losing competitive advantage without innovation

engaged in active conflict, often times against seemingly insurmountable odds. A cursory historical review of peacetime military innovation, however, is somewhat lacklustre and far less dynamic, specifically when this lull is not leveraged by defence establishments to anticipate and prepare for future threat environments.<sup>11</sup> Major Bryon Greenwald delivers a reasonable explanation for this occurrence through a detailed examination of internal and external restraints. Within militaries, change initiatives throughout this period can be stifled by conservative attitudes predicated on previous conflicts, risk aversion, fear of failure, loss of personal career momentum, and a lack of capacity to properly evaluate new ideas.<sup>12</sup> Looking beyond the institution, political support tandem with popular backing ultimately determine the will to fund the advances and adaptations deemed necessary for fulfillment of a given defence strategy. This is a crucial factor which often ebbs and flows based on public perception of threat.<sup>13</sup>

4. It can be surmised then that an institutional appetite for conceiving and implementing new ways of solving problems requires a holistic approach as it depends on population, elected officials, other government departments and armed forces members themselves. The current global operating environment, characterized by numerous competing priorities and limited resources at any given time, necessitates this type of cooperation to an unprecedented degree. Thinking strategically, creative problem-solving and applying new methods comprises serious growing pains for any large organization, especially an institution characterized by the use of violence, corresponding to extreme personal risk, in achieving national aims. Despite this, defence establishments must espouse, manage and employ a torrent of innovative thought, not only to maintain support or legitimacy but to continuously hold the advantage over a given adversary.

### **The Canadian Armed Forces Relationship with Innovation**

5. In 2017, the CAF challenged the practical and doctrinal status quo with the official publication of SSE. Canadian military leadership expressed a sincere and financially-backed interest in pushing peacetime innovation. This policy makes significant provision for innovation in defence, tandem with emerging trends in technology, to confront a predictably volatile FSE. Topically, special emphasis is placed on investment to enhance CAF capabilities and capacity, both joint and service specific, and initiates the creation of the Innovation for Defence Excellence and Security (IDEaS) program.<sup>14</sup> The envisioned future capabilities relayed herein focus internally on improving personnel, future processes and technology, while IDEaS seeks to engage academics, industry and other external partners in the private sector to undertake new R&D initiatives. In terms of innovative capacity, however, the policy favours external over internal<sup>15</sup> while the only type or facet being overtly explored is technological advancement. In considering these new enterprises more closely, the conflation of innovation with invention becomes apparent without manifestly expressing the importance of internal participation in structural, doctrinal or administrative innovation.

---

<sup>11</sup> Exceptions include.....

<sup>12</sup> Greenwald 22-24

<sup>13</sup> Greenwald 14-20

<sup>14</sup> IDEaS was officially launched in April 2018

<sup>15</sup> Department of National Defence. *Strong, Secure, Engaged: Canada's Defence Policy*, (Ottawa: Canada 2017), 77-78.

6. The nascent IDEaS program, while created to encourage innovation in defence, may in effect challenge the process by design. As such, there remain a few gaps to be considered. First of all, its focus on science and technology<sup>16</sup> significantly limits the domains of thought to be explored. This creates a niche for those businesses and academics that already reside professionally in these sectors, pre-emptively culling the advent of independent, creative solutions to problems the CAF or DND did not yet envision. Secondly, attracting businesses to participate may prove problematic, depending on which entity will eventually own the idea-made-reality. To remain competitive, R&D companies typically prefer to maintain their intellectual property rights, patents and trademarks even if the technology is sold to government for use in defence. Finally, extensive regulation of any creative or innovative process has proven somewhat problematic in the past as it often serves to hamper independent thought or results in rejection of novel solutions without further exploration.<sup>17</sup>

7. Both CAF capability development and IDEaS, despite some potential concerns in application and efficacy in their early stages, nevertheless open doors crucial to energizing the institution towards positive, unprecedented change. These SSE initiatives, as well as others not explicitly discussed in this paper, appear to be categorically aligned with incremental innovation.<sup>18</sup> This type of innovative process is exceedingly the dominant form due to its cost effectiveness and lower-risk requirement. As the name suggests, it involves envisioning and actualizing progressive changes to services, processes, organizations or methods that, over time, results in a renewal of the whole. It enables greater institutional accountability, lower risk, and depends less on the prediction of future events and trends. In a military context, this type of innovation enables the management of tangible future threats, political initiatives and diverse stakeholder engagement.

8. These initiatives, however, focus primarily on engaging the defense industry and other government departments, not the minds of uniformed CAF members themselves. Assessing that the FSE will comprise a greater number of potentially adversarial entities due to diffusion in political, military and economic power<sup>19</sup>, means for leveraging the diverse innovative capacities of CAF personnel, experienced in warfighting and support, becomes evermore important. Fostering an innovative organizational culture internally is likely to generate unprecedented results in scope and application while better enabling the retention of talented individuals, all without duplicating fiscal implications of technological R&D. This effect could be achieved by creating a mechanism for disruptive thinking internal to the organization and complementary to the externally-based incremental initiatives.

## Disruptive Thought and its Military Applications

---

<sup>16</sup> Department of National Defence, “Understanding IDEaS,” *Innovation for Defence Excellence and Security*, Last accessed 14 October 18. <https://www.canada.ca/en/department-national-defence/programs/defence-ideas/understanding-ideas.html>

<sup>17</sup> Department of National Defence, “Future Opportunities,” *Innovation for Defence Excellence and Security*, Last accessed 14 October 18. <https://www.canada.ca/en/department-national-defence/programs/defence-ideas/future-opportunities.html>

<sup>18</sup> “Radical and Incremental Innovation,” *The Innovation Policy Platform*, Last accessed 13 October 2018. <https://www.innovationpolicyplatform.org/content/radical-and-incremental-innovation>

<sup>19</sup> Chief of Force Development, *The Future Security Environment 2013-2040*. (Ottawa: Canada 2014): 1-3.

9. Disruption is not a word commonly associated with speed, creativity and precision. Even so, what disruptive thought generates is fast, effective and often decisive. Clayton Christensen coined the phenomena as it pertains to business in 1995, defining it as "...an innovation so relevant and powerful that it renders old products and processes obsolete."<sup>20</sup> The advent of disruption in the business world has revolutionized the way competitive advantage is sought and maintained. In his article "Disrupt or be Disrupted" John Kotter postulates that in an ever changing external environment, the way to maintain advantage is by adapting internally.<sup>21</sup> To do this, an organization must change its speed of execution and enhance agility to seize opportunities that arise.<sup>22</sup> Applied in the context of defence, disruption theory potentially offers robust applications when approaching challenges presented by the FSE. At a glance, essential requirements to employ a disruption / counter-disruption team within the CAF would likely require a dedicated Intelligence, Surveillance and Reconnaissance (ISR) capability, analytical trendsetting and Indication & Warning, flexible and dynamic plans, and the ability to make decisions at a high speed.

10. Organizations that employ disruptive tactics and technologies currently exist within the realm of Special Operations. That being said, having individuals naturally adept at disruptive and creative thinking, drawn from diverse military backgrounds then trained and employed at the strategic level, would likely generate a conventional, problem-solving capability that comprises a fluid and unconventional approach while remaining bespoke to the will of military commanders. While maximizing the CAF's ability to leverage skills and talents of these individuals in solving a multitude of strategic and operational problems in a conducive setting, it would ensure continuous strategic alignment.<sup>23</sup>

11. When considering drivers of innovation, two types of personalities are often at the forefront: *champions* and *mavericks*. Although these terms emerged in the business world they have since been used to describe individual innovation typologies across most sectors. In the same vein as the leadership phenomenon, extensive academic study continues to be conducted to examine and define their specific traits and characteristics for identification or development.<sup>24</sup> Similar to leaders, they are highly sought due to the immensely disproportionate value they deliver to an organization. While descriptions vary depending on source and context, impressionistic definitions are offered for each:

- a. Champions: Individuals that don't necessarily innovate but guide and support the process, relentlessly promote it and are effective at

---

<sup>20</sup> "What is Disruption," *IdeaScale*, Last accessed 11 October 18. <https://ideascale.com/wp-content/uploads/2016/10/disruption.png>

<sup>21</sup> John Kotter, "Disrupt or Be Disrupted," *Forbes*, Last modified 3 April 2013. <https://www.forbes.com/sites/johnkotter/2013/04/03/how-to-lead-through-business-disruption/#429c9d592644>

<sup>22</sup> *Ibid.*

<sup>23</sup> Andrew Isherwood, Tassabehji, R. "A Case Analysis of Managing 'Maverick' Innovation Units," *International Journal of Information Management* 36, no. 5 (October 2016): 793-798 <https://www.sciencedirect.com/science/article/pii/S0268401216303061>

<sup>24</sup> Natalya Sergeeva, "What Makes an Innovation Champion?," *European Journal of Innovation Management* 19, no. 1 (2016): 72-89. [http://discovery.ucl.ac.uk/1473842/1/Sergeeva\\_What\\_makes\\_innovation\\_champion.pdf](http://discovery.ucl.ac.uk/1473842/1/Sergeeva_What_makes_innovation_champion.pdf)

encouraging it's espousal amongst coworkers and employees. Champions have vision<sup>25</sup> for the application of innovations in future markets. Often characterized by high self-confidence and self-esteem; extreme conviction<sup>26</sup>. Empirical findings<sup>27</sup> relay that colleagues often associate them with organizational, cultural and innovation leadership. Adept at networking<sup>28</sup> and willing to take extraordinary risks to bring ideas to fruition.

b. Mavericks: Outside-the-box, unconventional thinkers that are capable of generating creative solutions to complex problems<sup>29</sup>. Often multidisciplinary in approach and are able to automatically observe connections in seemingly unrelated ideas. Demonstrate mastery in multiple domains and adept at assimilating vast quantities of information, filtering it and producing an assessment in a short timespan. Mavericks often boast a degree of entrepreneurial spirit and thrive particularly in unstructured settings. Common traits include a penchant for questioning institutional norms, experimentation and diverse interests. Qualitative data concludes that they are more eager to communicate than others and are less apprehensive in a variety of settings.<sup>30</sup> Personality types are found to vary.<sup>31</sup>

12. Both *champions* and *mavericks* are undoubtedly found within the CAF and wider defence institution. Furthermore, the two types are not necessarily mutually exclusive as both have been associated in reference to a common individual. Within the current establishment, *champions* would include the General and Flag officers that communicate their vision for innovation, utilize extensive networks to enable the necessary resource-backing, and effectively communicate their vision for change to all tiers of the organization. Identifying *maverick*-types, due largely to their varied personalities, may prove to be vastly problematic across militaries in general without a formal test for key attributes. Many have attempted to explain the effect of military culture on strategic thinking, creative, innovative and eccentric individuals; some conclude that they do not enlist to begin with, while others suggest that their innate abilities are hampered. Simple postulation, but it most likely that they gravitate towards those occupations that best suit their individual interests in a fashion similar to any other Canadian recruit. Administration of a

---

<sup>25</sup> Chuck Fey, "Cultivating Innovation Champions," *InnovationManagement.se*. Last accessed 14 October 2018. <http://www.innovationmanagement.se/2013/01/30/cultivating-innovation-champions/>

<sup>26</sup> *Ibid.*

<sup>27</sup> Natalya Sergeeva, "What Makes an Innovation Champion?," *European Journal of Innovation Management* 19, no. 1 (2016): 72-89. [http://discovery.ucl.ac.uk/1473842/1/Sergeeva\\_What\\_makes\\_innovation\\_champion.pdf](http://discovery.ucl.ac.uk/1473842/1/Sergeeva_What_makes_innovation_champion.pdf)

<sup>28</sup> Chuck Fey, "Cultivating Innovation Champions," *InnovationManagement.se*. Last accessed 14 October 2018. <http://www.innovationmanagement.se/2013/01/30/cultivating-innovation-champions/>

<sup>29</sup> Gerard Tellis, "The Fastest Path To Innovation: Pamper Your Mavericks," *Fast Company*. Last modified 21 February 2013. <https://www.fastcompany.com/3006088/fastest-path-innovation-pamper-your-mavericks>

<sup>30</sup> R. Glenn Ray, Ugbah S.D., DeWine, S. et al. "Communication Behaviors, Innovation, and the Maverick Leader," *Journal of Leadership & Organizational Studies* 3, no. 3 (January 1997): 20-30. <http://journals.sagepub.com/doi/abs/10.1177/107179199700300304?journalCode=jloa>

<sup>31</sup> *Ibid.*



formalized examination, such as the Strategic Thinking Mindset Test (STMT),<sup>32</sup> may provide measures to appropriately identify personality types best suited to higher-level, innovative roles.

## CONCLUSION

13. SSE provides for an engaging focus on R&D to renew and develop the CAF's critical warfighting capabilities in cooperation with academic and industry partners. While this remains paramount and comes with significant investment, it ought not to overlook engagement of the CAF internally to provide unique, innovative capacity. Current conceptions of the FSE are predicated on the potential for multiple threats of varying types, the competing confluence of state and non-state actors, new warfare domains and constraints in resource availability. Exploring new modes of thought in innovation, such as use of a disruption mindset at the strategic level, may lead to viable options in predicting and countering threats effectively. SSE relays that the "interrelated nature of global security challenges puts a premium on deep knowledge and understanding."<sup>33</sup> To this effect, the identification of serving members and prospective recruits that are both unconventional and innovative by nature would fulfill this aim and deliver a degree of human capital previously unharnessed by the CAF.

## RECOMMENDATION

14. To better investigate applications of innovation in the CAF, the following items are recommended for consideration:

- a. For CFD to determine the specific roles and applications in which innovative thinkers, potentially drawn from diverse backgrounds within the CAF, could best fulfill in context of FSE determination. Development of subsequent Concept of Employment.
- b. Explore viability of creating or acquiring a testing application to identify personnel capable of innovative, creative and strategic thought.
- c. Investigate utility in employing alternate methods of recruit appraisal to better screen academics, skills and experience for special skills and abilities that may prove useful in the near-term at the higher operational and strategic levels of the CAF.
- d. Query CAF Senior Leadership for intention and expectation regarding gaps in internal innovation and extant efforts to fulfill requirements.

---

<sup>32</sup> William Weyhrauch, "User's Guide for the Strategic Thinking Mindset Test," *United States Army Research Institute for the Behavioural and Social Sciences* (June 2017). <http://www.dtic.mil/dtic/tr/fulltext/u2/1044575.pdf>

<sup>33</sup> Department of National Defence. *Strong, Secure, Engaged: Canada's Defence Policy*, (Ottawa: Canada 2017), 52.

## BIBLIOGRAPHY

Canada. Department of National Defence. *Strong, Secure, Engaged: Canada's Defence Policy*. Ottawa: Canada 2017.

Canada. Chief of Force Development. *The Future Security Environment 2013-2040*. Ottawa: Canada 2014.

de Jong, Mark., Marston N. and Roth E., "The Eight Essentials of Innovation," *McKinsey Quarterly* (April 2015). <https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/the-eight-essentials-of-innovation>

Fraser, J. "Etymology of Innovation." *Innovation Excellence*. Last accessed 13 October 2018. <https://www.innovationexcellence.com/blog/2014/04/29/etymology-of-innovation/>

Isherwood, A., Tassabehji, R. "A Case Analysis of Managing 'Maverick' Innovation Units." *International Journal of Information Management* 36, no. 5 (October 2016): 793-798. <https://www.sciencedirect.com/science/article/pii/S0268401216303061>

Laksmna, Evan A. "Threats and civil-military relations: explaining Singapore's 'trickle down' military innovation." *Defense & Security Analysis* 33, no. 4 (November 2017): 347-365.

Ray, G.R., Ugbah S.D., DeWine, S. et al. "Communication Behaviors, Innovation, and the Maverick Leader," *Journal of Leadership & Organizational Studies* 3, no. 3 (January 1997): 20-30. <http://journals.sagepub.com/doi/abs/10.1177/107179199700300304?journalCode=jloa>

Scales, Major General Robert H. "Are You a Strategic Genius? Not Likely, Given Army's System for Selecting, Educating Leaders." *Association of the United States Army*. Last modified 13 October 2016,