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# The Learning Organization: Improving the Canadian Armed Forces' Orientation Towards Change

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# THE LEARNING ORGANIZATION: IMPROVING THE CANADIAN ARMED FORCES' ORIENTATION TOWARDS CHANGE

By Major Jordan Beatty

## ABSTRACT

The modern military is challenged by managing a high tempo of both operational and institutional change. Learning organization theory has in recent decades sought organizational solutions to adapt to a constantly changing environment. This research examines how the Canadian Armed Forces (CAF) can stand to benefit from becoming more like a learning organization. Through the comparison of CAF organizational concepts and Peter Senge's five disciplines of a learning organization, three major findings emerge. The CAF can most benefit from a focus on the disciplines of systems thinking, shared vision, and personal mastery. Recommendations to improve these areas of focus include: educating systems thinking early in the training process, creating a genuinely shared CAF vision, and promoting more personal vice professional development during a member's career. These findings represent significant benefits to the CAF's ability to operationally succeed in an uncertain environment without risking an ignorance to the parallel change required in its foundational structure.

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# INTRODUCTION

Competition, on a philosophical scale, creates an environment of constant change. A friend attempts to outwit, out-manoeuver, and outplay a foe, while the foe endeavours to do the same. The nature of competition demands flexibility and adaptation to opposing tactics in real-time. However, success in adapting is not constrained to one battle alone. Victory in one competition rarely implies victory in the next. In today's competitive environments, whether market, political, or technological, the ability to constantly adapt is what is valued most. Several segments of society are subject to the competitive environment, but none are as high stakes as warfare. When a military loses in competition, loss of life occurs, and national interests and sovereignty can be at stake. This is why the ability for a military to *learn* is central to its being.

In 1914 an inexperienced and relatively small Canadian military began a transformation into a professional multi-Division Canadian Corps that would seize Vimy Ridge and become a force of choice for the British High Command near the end of the Great War.[1] Along the path of amateur to professional, the Canadian military paid a high price for learning, in blood, with thousands of Canadian lives. In retrospect, and supported by the theory of learning organizations, Canadian success in the Great War can ultimately be attributed to its ability as an organization to behave in a manner that adapted to a changing environment, harnessing and distributing knowledge where needed to consistently maintain an advantage over the enemy.[2]

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[1] David Fearon, "The Canadian Corps in the Great War: A Learning Organizations in Action," *Journal of Military and Strategic Studies* 18, no.2 (2017), 7.
[2] *Ibid.*

Today's warfare environment has not simplified. The inverse has occurred with the rise of technology, precision weapons, and sizeable multi-domain forces expected to synchronize their effects. Further, the intricacies of a society that is globalized, in constant communication, and evolving socially has presented a complex environment for militaries to not only operate in, but also sustain and generate their force.[3] Similar challenges have been presented to private and public organizations that seek to stay relevant and build a capacity to change and adapt to an unknown future. Modern study of the learning organization was popularized around the organizational need to evolve. Organizations spend an "inordinate amount of time" managing the failure of change, and the field of organizational management has long been focused on how to cure the high rate of failure in change efforts.[4] Increasingly, executives and leaders question whether traditional methods of organizational management will stand the test of time, and search for the secret to corporate survival in an extremely competitive environment. The military can benefit from the modern organization's increased study of change management.

This research compares and contrasts the study of learning organizations to the military problem of adaptation to future warfare. Specifically, the paper contends that the Canadian Armed Forces (CAF) can benefit from becoming more like a learning organization. Through an examination of both learning organization theory and the organizational characteristics of the CAF, the research presents three major findings indicating areas for improvement: systems thinking, shared vision, and personal mastery. These findings are based on Peter Senge's definition and study of learning organizations

[3] Department of National Defence, *Pan-Domain Force Employment Concept: Prevailing in an Uncertain World* (Ottawa: Canadian Joint Operations Command, 2020).

[4] Gavin Schwarz, Dave Bouckenooghe, and Maria Vakola, "Organizational Change Failure: Framing the Process of Failing," *Human Relations* 74, no.2 (2021), 160.

presented in his work *The Fifth Discipline: The Art & Practice of the Learning Organization*. The research contributes to the CAF understanding of how learning organization concepts can support the CAF's ability to remain both operationally and institutionally relevant.

The paper is divided into two parts. Part one expands upon how the study of learning organizations is of particular interest to militaries, and delves into the literature on learning organizations. Senge's five disciplines of a learning organization are examined in detail. To support analysis of the CAF, the last chapter of part one uses metaphorical analysis of the CAF to create an understanding of the organization as a whole.

Part two of the paper focuses on analyzing the CAF as a learning organization. Here, a framework based on the five disciplines of a learning organization is used to analyze the CAF, followed by major findings and recommendations. A qualitative comparison of concepts is used in analysis and recommendations are focused on how the CAF can improve its behaviour as a learning organization. Finally, the last sections addresse limitations of the research and conclusion. The research overall, aims to take another step forward to improve the CAF's ability to adapt in a modern, socially complex, and uncertain military environment.

# PART I – LEARNING ORGANIZATIONS AND THE CAF

## CHAPTER 1: THE MILITARY AS A LEARNING ORGANIZATION

> *Our linear mental models of the contested spaces in which our nation competes no longer capture the complexities that change has wrought.*
>
> – CAF Pan-Domain Force Employment Concept

Why should the CAF be interested in the concepts of learning organizations? At first glance, the CAF is a bureaucratic organization structured with institutional training and educational elements that promote a culture of learning throughout a member's career. Upon entry, new members of the CAF begin learning basic military skills before dividing into trade specific training regimes that span land, sea, and air warfare. As their careers continue, CAF members are taught how operational and strategic levels of the military function and how they have a responsibility in the stewardship of the institution. Further, the CAF seeks development of a lessons learned program to increase military effectiveness.[5] This learning process is critical to adapting tactics to new environments. The recent 2020 conflict between Armenia and Azerbaijan highlights the importance of this learning process. A century old conflict begins to show clear victory to Azerbaijan's adaptation of drone warfare and integration of long range fires.[6] A focus on learning is organizationally understood in the CAF, and realized as necessary to future success in operations.

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[5] Emily Robinson, "Lessons Learned Performance Measurement," *DRDC Centre for Operational Research and Analysis*, August 2017.

[6] Shaan Shaikh and Wes Rumbaugh, "The Air and Missile War in Nagorno-Karabakh: Lessons for the Future of Strike and Defense," *Center for Strategic & International Studies* (2020), last accessed 18 March 2021, https://www.csis.org/analysis/air-and-missile-war-nagorno-karabakh-lessons-future-strike-and-defense.

There are however, different degrees of learning, and the effectiveness unto which knowledge is absorbed and used within an organization is not guaranteed by structure and programs alone. This chapter examines why research into learning organizations is well worth the military's time.

The learning organization promotes a systems thinking perspective to learning, building away from traditional linear models employed by bureaucratic organizations. Militaries are tied historically to the birth of bureaucracy. In the development of early bureaucratic theory, renowned sociologist Max Weber noted the rational standardization, hierarchies, and specialization that militaries employed to efficiently conduct warfare.[7] Unlike innovative organizations who found their beginnings in the 21st century, militaries are tied to cultural roots dating long before theories of organizational learning. In this sense, organizational science in recent years, has ignored military organizations.[8] This has contributed to placing militaries at a disadvantage in keeping pace with innovation and the necessary organizational creativity to embrace constant change.

The learning organization and its supporting concepts are directed towards private industry and the types of organizations that need to change to survive, or else face bankruptcy. Several recent examples highlight organizations that could have benefitted from the concepts of a learning organization, but instead met their demise. Blockbuster and Sears represent well-established organizations that failed in their abilities to adapt to a changing market. Conversely, in the public sector, few organizations face the threat of complete dissolve. Although a failure of the CAF to adapt and therefore be defeated on

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[7] Max Weber, *Economy and Society: An outline of interpretive sociology* (Berkeley: University of California Press, 1922/1968), 1148-1155.

[8] Max Visser, "Organizational learning capability and battlefield performance," *International Journal of Organizational Analysis* 24, no. 4 (2016), 575.

the battlefield would have large consequences for the institution, it would not likely result in its complete dismissal. This places the CAF in what some researchers call a "learning paradox."[9] On one hand, the CAF faces the most complex of organizational challenges: conducting warfare, but on the other hand, failure to efficiently do so does not result in a sacking of the entire organization. Further, and to the point of the learning organization as beneficial to the CAF, the necessary processes and structures that are widely understood as required to succeed within a dynamic and complex environment are not native to military bureaucracies.[10]

This challenge to organizational learning in the CAF and the necessity to overcome it is described well in the following quote from Swedish business professor Hans Hasselbladh:

> Military organizations are assumed to be able to acquire the traits of a "learning organization" and, it is held, should do so in order to improve their effectiveness in dealing with new challenges. Learning—based on true knowledge and relevant experiences, freed from the yoke of cognitive limitations, low aspirations, and political infighting—is seen as a remedy to overcome both the frictions of war and the inherent limitations of large-scale, centralized, and formalized bureaucracies.[11]

The need for the CAF to consider the benefits of true and deeper learning can be directly related to the CAFs need to perform in a daily dynamic and challenging environment of competition. Solutions to active problems need to be quick but sustainable and approached with a flexible mindset that acknowledges the uncertainty of the future. In a succinct statement, becoming more like a learning organization allows the

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[9] *Ibid*.
[10] *Ibid*., 574
[11] Hans Hasselbladh, "Why Military Organizations Are Cautious About Learning?" *Armed Forces & Society* 46, no. 3 (2020), 476.

CAF to function at the "speed of operational relevance."[12] Traditional barriers born from bureaucratic roots need to be examined and eliminated where necessary. Although the CAF is not interested in organizational agility for market survival, the same principles of organizational learning can be applied to achieve a consistent competitive edge against adversaries. In theory, this can be accomplished, but several very human obstacles lie in the path to becoming a learning organization. To truly understand why the CAF should invest in the study of learning organizations, the next sections describe organizational "learning disabilities" and how they relate to the operational effectiveness of the CAF. These concepts represent some of the obstacles learning organizations seek to overcome and demonstrate why the CAF has a lot to learn from the concept of learning organizations.

The military approach to dealing with change can be generalized as imposing a series of rigorous processes and procedures in reaction to new problems.[13] Often, "time available" is blamed for less planning and thought. This is because traditional military training supports the ability to make effective and timely decisions. This method of quick planning and focus on execution can be very effective in supporting several principles of war at the tactical level: surprise, offensive action, and flexibility. As officers transition from the tactical to the operational and strategic levels of the military, the execution-focused planning concepts become less effective. The unintentional carry-over of these skills across organizational levels makes the military more likely to try and fix a specific problem immediately than to plan for a sustainable solution to it. This mindset of a

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[12] Department of National Defence, *Pan-Domain Force Employment Concept…*25; Department of National Defence, A-PP-106-000/AF-001, *Advancing with Purpose: The Canadian Army Modernization Strategy* (Ottawa: Canadian Army HQ, 2020), 46.

[13] Hans Hasselbladh, "Why Military Organizations…

problem space highlighted by a short decision-action timeframe, challenges the capacity of an organization to learn for several reasons.

**Learning from Experience**

First, is the "delusion of learning from experience".[14] At the tactical level, decisions result in immediate effects that are experienced and learned from. Often, experiences trigger an adaptation of new tactics. This type of informal learning creates flexibility at the lowest level, but processes of knowledge sharing are required to formally learn from experiences throughout an organization. The military uses lessons-learned processes to share experiences across the organization. There are however inherent issues with the lessons-learned process. One concern is that the process often ends at the collection of lessons, and never continues to analysis and implementation of changes based on the lessons-learned. Another challenge is that the lessons-learned process is not well adapted for learning from organizational level decisions. It is largely focused on tactical level techniques and procedures.

A lessons-learned system needs to provide key feedback to the organization and maintain an organizational database of knowledge for use in decision making.[15] Analysis of specific experiences is essential to formalizing knowledge and making it useful across time and space. Lessons-learned in one instance are not directly useful in another. In addition, at the organizational level, several decisions do not have immediately understood effects.[16] The results of decisions can span years or decades. What occurs in

[14] Peter M. Senge, *The Fifth Discipline: The Art and Practice of the Learning Organization*, Rev. and updated (New York: Doubleday/Currency, 2006), 23.

[15] Emily Robinson, "Lessons Learned Performance Measurement…

[16] Peter M. Senge, *The Fifth Discipline*…, 25.

the wake of these learning challenges is a misconception that organizational learning is occurring when in reality only the processes exist.

Complex Adaptive Systems

This "delusion" of concrete learning is closely related to the pitfalls a military experiences operating in complex adaptive systems (CAS). CAS theory notes the difficulty to observe and assess a problem as a whole.[17] Militaries are drawn towards the simplicity of linear processes and steps to success. The result is decision making based on only a small portion of a problem, with the belief that the narrow dataset represents a larger organizational experience. The ability to effectively learn from experience and assess a theater of operations over a long duration is critical to achieving mission success.

As an example, the effects-based approach to Operation *Iraqi Freedom* fueled fallacies of success. Measures of the effectiveness of operations were perceived as effective and used to plan further stability operations in Iraq. In truth, several metrics were too difficult to accurately assess, and the narrow focus of each metric did not assess the complex environment as a whole.[18] The result was a false sense of learning. After several years of campaigning with the delusion that experiences were driving positive change, militaries look back and wonder how Iraq evaded peace and how Daesh emerged from the threat of al-Qaeda.[19] Without a deeper understanding and culture of learning, the processes that attempt to learn from experience are susceptible to failure.[20] Militaries

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[17] Jan Frelin, "Dealing with Complexity and Chaos- The Military Experience," in *Operations Assessment in Complex Environments: Theory and Practice* (France: NATO, 2019), 12.5.

[18] *Ibid.*, 12.4.

[19] Walter Perry et al., *Operation Iraqi Freedom: Decisive War, Elusive Peace* (RAND Corporation, 2015).

[20] Neil Chuka, "Learning From (Recent) History? An Assessment of CF Joint-level Learning, Innovation, and Adaptation Activities," *DRDC Centre for Operational Research and Analysis*, March 2012, 4.

often trust that their collective experiences are both good lessons, and being absorbed throughout the institution. This is not necessarily the case, and a delusion of learning from experience occurs. Consequently, lessons learned are assumed to be applicable in the next conflict and the institution portrays a false sense of readiness. Learning organization theory strives to mitigate this false sense of learning.

**Deflecting Responsibility**

The second learning disability the CAF can become prey to is the blaming of external forces for organizational failure. This organizational tendency is also described as the attribution bias.[21] When an organization faces a failure, it is more likely to attribute the responsibility of that failure to an external agency or the system as a whole. An example of this tendency is prominent in the popular military phrase "everyone always hates their higher headquarters." Sub-organizations have a habit of blaming each other for overall organizational failures which creates a barrier to learning the true nature of the problem. This inclination to blame the system combined with a substantial amount of pressure on militaries to perform causes a fear of failure.[22] Learning organization and systems theory in particular teaches that blaming failure on the system or a part of the system is short-sighted, as each element is interconnected.

The aversion to failure creates a cultural barrier to a military's ability to innovate and creatively experiment solutions for the future. These innovative organizational traits are exactly what the CAF proposes is needed for success in the pan-domain operating

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[21] Francesca Gino and Bradley Staats, "Why Organizations Don't Learn," *Harvard Business Review* (November 2015). https://hbr.org/2015/11/why-organizations-dont-learn#:~:text=Why%20do%20companies%20struggle%20to,depend%20too%20much%20on%20experts.

[22] Hans Hasselbladh, "Why Military Organizations…

environment.[23] The study of learning organizations explores how traditionally bureaucratic and over-standardized organizations can become growth oriented and more flexible to changing operating environments.

**Proactive vs. Reactive**

The ability to change is often linked with the ability to remain proactive and ahead of the change curve. In the military, this translates into a bias for action, which threatens the organizational capacity to learn as well. The bias for action trait is promoted among mentors in the growth of individual leaders. An instinct to take the initiative and win the battle is looked favourably upon by CAF leaders in contrast to becoming paralyzed with indecisiveness amid a complex situation.

The bias for action trait, however, has its limits at the organizational level. Proactive behaviour can be used as a disguise for reaction to a situation, and a bias for action under the wrong circumstances has adverse long term consequences for the institution. This is not to say that proactive behavior and boldness in operations should not be preached in military leadership, but that an understanding of the distinction between reacting and taking the initiative is important. The misunderstanding of proactive behaviour at the organizational level creates a barrier to learning. Instead of exercising patience, and understanding the dynamic effects of a decision, an action that is "bold" becomes an automatic reaction that does not benefit from the knowledge and experience of the organization. Because of the military disposition to act first, and label it as taking the initiative, opportunities to tap into the large breadth of organizational

[23] Department of National Defence, *Pan-Domain Force Employment Concept…*, 45.

knowledge and make decisions that have more leverage in change and longer lasting effects are placed at risk.

The negative operational effects of disguising reactive military operations as proactive are enduring and extremely damaging. These operations are commonly dubbed tactical successes, but strategical failures. In Vietnam, U.S. forces reacted to a developing counterinsurgency operation with continued conventional operations. The U.S. bias for action in this case led to rising casualties, and loss of democratic support for the conflict.[24] Several military campaigns based on the need to act swiftly have successively failed to learn from the preceding campaign. Operation *Enduring Freedom* did little to plan for the rebuilding of Afghanistan. The reactive nature of this campaign justified by U.S. emotions surrounding the 9/11 attacks, was planned as such. Ultimately, the campaign by the U.S. in the Middle East lasted much longer than expected in an attempt to repair the damage of the initial reaction.[25] Learning organization theory promotes a balanced distinction between what is truly a proactive decision, and one that is reactive in nature.

**Institutional Benefits**

The learning disabilities that military organizations face represent deeply rooted symptoms to everyday issues and complex problems that arise in the future. These hidden causes of frustration are not recognized by surface examination of problems. Overcoming these obstacles means working towards the recognized CAF goals in the future operating environment. The characteristics of learning organizations support the ability to adapt in

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[24] Gordan Van Hook, "Tactical Victory Leading to Strategic Defeat: Historic Examples of Hidden Failures in Operational Art," (Operations Department Paper, U.S. Naval War College, 1993), 12.

[25] James Dobbins, "The Costs of Overreaction," in *The Long Shadow of 9/11* (Santa Monica: RAND Corporation, 2011), 16-17.

a volatile environment, but unfortunately these characteristics have been understudied in a military context.[26] In addition to success in operations, the military learning organization boasts several benefits to core institutional capacities such as leadership and wellbeing of personnel.

Leadership doctrine in the CAF is predominantly focused on psychologist Bernard Bass' transformational leadership theory.[27] This theory focused on inspiring others to perform beyond their abilities, is supported by learning organizations. When individuals feel or perceive the support of the organization behind their short and long term goals, their leadership characteristics are positively influenced.[28] The transformational leadership style is also very compatible with learning organization characteristics. Through application of the Multifactor Leadership Questionnaire (MLQ) and the Dimensions of the Learning Organization Questionnaire (DLOQ), systems engineer, Heather Keathley found that all "dimensions of transformational leadership" are associated with learning organizations.[29]

As new leadership methods such as adaptive leadership emerge to improve performance in a complex environment, learning organizations further provide support. CAS and systems theory make up the foundation of adaptive leadership theory: these concepts are harmonious with the concepts rooted in learning organizations.[30]

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[26] Heather Keathley, Eileen Van Aken, and Geert Letens, "Learning Organization Characteristics in Deployed Military Units," *American Society for Engineering Management* (2015).

[27] Department of National Defence, *Leadership in the Canadian Forces: Conceptual Foundations* (Ottawa: Canadian Defence Academy, Canadian Forces Leadership Institute, 2005).

[28] Endang Pitaloka, Widiya Avianti, and Ernie Sule, "Do Perceived Organizational Supoprt, Learning Organization and Knowledge Management Shape Leaders' Characterisitcs?," *Journal of Economics & Management Perspectives* 12, no. 1 (2018), 219-227.

[29] Heather Keathley et al., "Learning Organization Characteristics…"

[30] Bill Bentley and Dave Buchanan, "Leading in Uncertainty, Unpredictability and Volatility," in *Adaptive Leadership in the Military Context: International Perspectives* (Kingston: Canadian Defence Academy Press, 2014), 101-111.

A cornerstone of the defence policy *Strong, Secure, Engaged*, and emphasis in CAF doctrine, is the wellbeing of "people" within the organization.[31] At the heart of learning organizations is a focus on people as well. Humans have created the systems they interact with and can leverage their change.[32] Research into the wellness of employees, including work-life balance, stresses the importance of taking care of people as a strategy for organizational sustainability.[33]

In a study of Canadian public servant wellness and health, industry relations professor Nancy Beauregard found that her Healthy Learning Organization (HLO) model was positively correlated with the mental wellbeing of government executives.[34] The HLO model found existing pathways between organizational learning and the mental health of public servants and the need to create equal access of "transformative opportunity structures" to both individuals and the organization.[35] Learning organizations promote a thriving workforce that envisions creativity and innovation as both a possibility, and a contribution to personal wellbeing.

Examining learning organization concepts reveals not only the prospects of building a more resilient and adaptable military for future operations, but the strengthened foundation of human capital to support the force. These are promising objectives for the CAF, but a deeper understanding of the principles of learning organizations is required to make progress towards a CAF that looks and operates like a

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[31] Department of National Defence, *Strong Secure Engaged: Canada's Defence Policy* (Ottawa, 2017), 11-12; Department of National Defence, *Pan-Domain Force Employment Concept.…*, 30.

[32] Peter M. Senge, *The Fifth Discipline.…*, 349.

[33] Graham Lowe, "Creating Sustainable Organizations: How Flexible Work Improves Wellbeing and Performance," *FlexPaths White Paper* (2010).

[34] Nancy Beauregard, Louise Lymyre, and Jacques Barrette, "The Healthy Learning Organizations Model: Lessons Learned From the Canadian Federal Public Service," *Public Personnel Management* 49, no. 2 (2020), 234.

[35] *Ibid.*

learning organization. In the next chapter, we explore in depth the learning organization before analyzing where the CAF has and has not already made progress.

## CHAPTER 2: LEARNING ORGANIZATIONS

The term learning organization was defined and championed in 1990 by Peter Senge, an American systems scientist. Senge popularized the concept through his book *The Fifth Discipline: The Art and Practice of the Learning Organization*. This literary work not only disseminated new concepts across the organizational management field, but instilled the principles of systems thinking as well, which were not considered mainstream and only studied by small groups of academia.[36] The creation of the learning organization concept sparked criticism and research, but ultimately brought to the forefront several novel notions of how to manage change in the discipline of organizational management.[37] Senge's seminal work built upon the budding view during the 1970s and 80s that organizations were not as mechanical as was traditionally thought, requiring technological upgrades to remain relevant. Instead, a new metaphor of the organization as an interconnected organic system emerged, and the terms "interdependence", and "shared responsibility" became more emphasized in organizational research.[38]

Senge defines learning organizations as organizations that are able to "see the big picture," and where people learn together continuously, accepting and fostering new ways of thinking.[39] The learning organization is most simply put, an organization that fosters organizational learning at a higher level. This type of learning, based in systems theory, emphasizes a double-loop or a generative process of learning where assumptions

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[36] Robert L. Flood and Norma R. A. Romm, "A Systemic Approach to Processes of Power in Learning Organizations: Part I – Literature, Theory, and Methodology of Triple Loop Learning," *The Learning Organization* 25, no. 4 (2018), 261.

[37] *Ibid*.

[38] Roland K. Yeo, "Revisiting the Roots of Learning Organization: A Synthesis of the Learning Organization Literature," *The Learning Organization* 12, no. 4 (2005), 368-369.

[39] Peter M. Senge, *The Fifth Discipline…*, 26.

of systems and policies are investigated in resolution to a problem rather than the obvious symptoms (single-loop). In a learning organization, resolutions that seek to change individual behaviour are cast aside for resolutions that seek to change the values and norms underlying the behaviour.[40]

Further concepts of learning organizations were developed during the same timeframe as Senge.[41] Also from a U.S. point of view, business scholars Stanley Slater and John Narver advised that an organization can promote collective learning through a combination of the right culture and climate. For corporate organizations, the culture should espouse entrepreneurship and market orientation. The climate then operationalizes the culture through decentralized strategic planning, facilitative leadership, and an organic structure.[42] This framework shares similarities with Senge's model through a focus on building knowledge throughout the organization, and harnessing a collective strategy, rather than top down orders.

The European approach to learning organizations is best represented by British business professor Mike Pedler and colleagues, who define a learning organization as "an organisation which facilitates the learning of all of its members *and* continuously transforms itself in order to meet its strategic goals."[43] This model too, holds similar concepts with Senge's model through an emphasis on individual learning as the basis for effecting larger group learning.

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[40] Ayham A. M. Jaaron et al., "Operationalising "Double-Loop" Learning in Service Organisations: A Systems Approach for Creating Knowledge," *Systemic Practice and Action Research* 30, no. 4 (2017), 318.

[41] Thomas Garavan, "The Learning Organization: A Review and Evaluation," *The Learning Organization* 4, no. 1 (1997), 18-29.

[42] Stanley F. Slater and John C. Narver, "Market Orientation and the Learning Organization," *Journal of Marketing* 59, no. 3 (1995), 67.

[43] Mike Pedler, Tom Boydell, and John G. Burgoyne, "The Learning Company," *Studies in Continuing Education* 11, no. 2 (1989), 92.

In addition to varying concepts of Senge's learning organization, several criticisms of the theory emerged as the field of study grew. From a historical perspective, professors in business Kjell Gronhaug and Robert Stone questioned the novelty of Senge's learning organization, citing that a modern disconnect with history has ignored several instances of learning organizations in the past.[44] They argue a better appreciation of historical examples of learning organizations can help advance the study.[45]

Further criticisms aimed at the systems thinking approach to learning are noted by organizational change researcher Raymond Caldwell. Caldwell proposes that a "growing awareness" of the inability to develop practical change tools to support a systems approach indicates that the idea of a learning organization will never come to be the way Senge intended.[46] He also proposes that Senge's concept does not adequately theorize how learning organization practices cause organizational change, and that it is unsound in practical applications. [47]

Despite arguments against the practicality of learning organizations, researchers in organizational behaviour Hong Bui and Yehuda Baruch conducted an extensive review of learning organization literature resulting in the development of antecedents, outcomes and moderators that allow further research of Senge's theory.[48] Their work, decades later, continues to advance the practicality of the learning organization.

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[44] Kjell Gronhaug and Robert Stone, "The learning organization: An historical perspective, the learning process, and its influence on competitiveness," *Competitiveness Review: An International Business Journal* 22, no. 3 (2012), 261-275.

[45] *Ibid*, 263.

[46] Raymond Caldwell, "Systems Thinking, Organizational Change and Agency: A Practice Theory Critique of Senge's Learning Organization," *Journal of Change Management* 12, no.2 (2012), 145.

[47] *Ibid*.

[48] Hong Bui and Yehuda Baruch, "Creating Learning Organizations: A Systems Perspective," *The Learning Organization* 17, no. 3 (2010), 208-227.

In addition to Bui and Baruch's work, professor of business management David Garvin deliberately focused on the practicality of the learning organization concept in his book *Learning in Action: A Guide to Putting the Learning Organization to Work*. Here, Garvin is highly recognized for stating that "Learning organizations have been embraced in theory but are still surprisingly rare."[49] Garvin notes that Senge's model is paid "lip service" to by managers who note the benefits of organizational learning, but see the practice of learning as a time consuming process that is more suited to academia than a high-paced competitive workplace.[50] Garvin believes that effective learning within organizations is far from academic and very closely linked to the "bottom line" that so many modern managers seek to measure and improve.[51]

The most recent reviews of learning organizations further provide evidence that Senge's concept is a valid basis for study 31 years later. Professors of business and management Mike Pedler and John Burgoyne make arguments that the learning organization remains relevant. Although new terms like "dynamic capability" and "knowledge management" have emerged as organizational design concepts, these terms find their roots in the concepts of organizational learning and narrow the gap between the practical learning organization and theoretical organizational learning.[52]

Several themes characterize the learning organization today. The first is the relationship between performance metrics and learning. An organizational focus on metrics determining performance has generally reduced a focus on collective learning. In

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[49] David Garvin, *Learning in Action: A Guide to Putting the Learning Organization to Work* (Boston: Harvard Business School Press, 2003), ix.

[50] *Ibid*.

[51] *Ibid*., 6.

[52] Pedler and Burgoyne, "Is the Learning Organisation Still Alive?" *The Learning Organization* 24, no. 2 (2017), 120.

a survey, Pedler and Burgoyne reported that some respondents saw this relationship emerge because performance based cultures corrupted the learning process, and some viewed both performance and learning as able to reinforce each other.[53] Interestingly, Senge warns of this trumping of metrics over deeper learning due to its attractiveness to managers and ability to be understood by shareholders or investors. It is not surprising that several organizations favour an empirical manner in which they can measure and increase performance.

The second theme of today's learning organization is that it is guised under several different names. "Agile," "adaptive," and "leading organizational capacity" have been used as new terms that seek to achieve very similar results of the learning organization – a collective and systems view of problems to allow for solutions that maintain a competitive edge.[54]

The shift from theoretical to practical study of the learning organization has encouraged a continued interest in the field of study. In 2016, professor of management Francis Tuggle reviewed 20 years of learning organization literature and noted it to be increasing in the number of published material.[55] This evolution has occurred in part because performance management techniques continue to produce mixed results in their overall effect on organizational performance.[56]

English professor of management, Elena Antonacopoulou, contributes to the evolution introducing the "New Learning Organization", focused on the stimuli and

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[53] *Ibid*., 122.
[54] *Ibid*.
[55] Francis D. Tuggle, "Gaps and Progress in our Knowledge of Learning Organizations," *The Learning Organization* 23, no. 6 (2016), 444-457.
[56] Ed Gerrish, "The Impact of Performance Management on Performance in Public Organizations: A Meta-Analysis," *Public Administration Review* 76, no. 1 (2016), 48-66.

responses involved in the learning process.[57] This model mentions "sensuous learning," where critique is fostered to align emotions with cognition, inciting sensations that promote action and freedom of choice. Antonacopoulou places an emphasis on organizations seeking the common good as a "mission" to operate in a modern day VUCA (Volatility, Uncertainty, Complexity and Ambiguity) environment.[58] She also uses New Zealand defense organizations as test beds for growing better military leaders in the new learning organization mindset.[59]

The study of learning organizations has certainly grown throughout the years, but basic concepts surrounding systems thinking remain a common denominator among studies. Evidence shows that it remains a relevant field of study for organizations who wish to understand why performance metrics have not continued to increase organizational performance. It is relevant for organizations that want to understand how to harness the motivations of individuals to reach a collective goal. Finally, it is relevant for those who want to understand how to remain relevant themselves and operate in an uncertain environment. Senge's work endures as a long standing reference to the study of learning organizations, causing criticism and tension in the field of study. Likely it is this tension itself that continues to create new methods of practicing organizational learning.

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[57] Elena P. Antonacopoulou et al., "The New Learning Organisation," *The Learning Organization* 26, no. 3 (2019), 304-318.

[58] *Ibid*., 305.

[59] *Ibid*., 306.

## CHAPTER 3: ORGANIZATIONAL LEARNING AND THE FIVE DISCIPLINES

While a number of contributing literary works surrounding learning organizations exist, the reason Senge's work is used as the central basis research in this paper is because it is widely referred to as the guiding theme of learning organizations in both academic and professional spaces.[60]

Senge predicates the idea of a learning organization on the fact that humans in their very nature seek and love to learn, and that an organization is an interconnected system where the cause and effect of actions are often invisible and delayed by time.[61] The members of a learning organization are motivated to work because they understand and see their contribution to a larger vision. The leaders of learning organizations understand that the present day pace of change is too fast for only senior executives to be responsible for organizational strategy and learning the newest techniques to guide the organization into the future. As an alternative, a learning organization taps into each level of the organization, harnessing the learning capacity of the entire membership.

The learning organization is said by Senge to be made possible through five disciplines:

1. Personal mastery;
2. Mental models;
3. Shared visions;
4. Team learning; and
5. Systems thinking.

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[60] Roland K. Yeo, "Revisiting the Roots of Learning Organization…, 370.
[61] *Ibid*., 27-28.

Through these five disciplines a systemic approach to learning is built within the organization. The fifth discipline, which refers to systems thinking, is the most important, representing a mental shift from viewing problems in a linear fashion, to understanding the interconnectedness of events and actions– a move from fixating on events to analyzing processes of change.[62]

The study of these five disciplines forms the foundation to building a framework in understanding how the CAF can become more like a learning organization. First, the distinction between organizational learning and a learning organization must be made. The remainder of this chapter looks first at this distinction, and then, sequentially reviews the five disciplines of the learning organization model as presented by Senge.

**Organizational Learning**

At first glance the distinction between organizational learning and learning organizations is not obvious. In fact, professors of management Mark Easterby-Smith and Luis Araujo dedicate an entire book to defining this distinction because the literature was unclear. In short, organizational learning represents the "detached observation and analysis of the processes involved in individual and collective learning inside organizations."[63] It is a more technical view of how an organization learns. The study of learning organizations contrasts as being more practical in nature, aimed at evaluating the quality of learning within an organization, and introducing methods to improve and promote collective learning.[64]

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[62] Peter M. Senge, *The Fifth Discipline*…

[63] Mark Easterby-Smith, Luis Araujo and John G. Burgoyne, *Organizational Learning and the Learning Organization: Developments in Theory and Practice* (London: SAGE Publications, 1999), 2.

[64] *Ibid*.

Organizational learning focuses on *how* individuals and groups learn. The study concentrates on how an organization's behaviour changes because of information it has acquired and determined to be useful.[65] The process of learning for an organization is generally characterized as the acquisition, dissemination, and implementation of information.[66] Two streams of study emerge from this process: technical aspects of learning and social aspects of learning.

A major technical learning concept is the processes of single and double-loop learning. Single-loop (sometimes referred to as adaptive learning) is defined by incremental change and quick reactions to feedback. Detection and correction of errors within an organization are made within a set of governing principles. Double-loop (also referred to as generative) is often related with longer-term change and the replacement or modification of whole processes. Detection of errors results in a change of the governing principles themselves.[67] Double-loop learning is often referred to as superior to single-loop because it demonstrates a deeper understanding of problem sets, but Easterby-Smith and Araujo warn that it is not always best to action change to processes. A misguided understanding of root issues can result in large catastrophic change. The Chernobyl engineers altering the process of refueling is a good example of disastrous process change.[68] Although double-loop learning can create great positive change, it can also create great negative change.

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[65] George P. Huber, "Organizational Learning: The Contributing Processes and the Literatures," *Organization Science (Providence, R.I.)* 2, no. 1 (1991), 88-115.

[66] James M. Sinkula, "Market Information Processing and Organizational Learning," *Journal of Marketing* 58, no. 1 (1994), 35.

[67] Mark Easterby-Smith, Luis Araujo and John G. Burgoyne, *Organizational Learning…*

[68] *Ibid*., 4.

Following the technical stream of organizational learning, the study of how data and information is processed within an organization is also of value. Organizational learning researchers study how technology is efficiently used to disseminate information. Technology allows for the automation of information transfer, but must balance the usefulness of information.[69] The impact of information is directly related to the quality of the information itself and the quality of the system that delivers it. This affects a person's satisfaction with the information and their intention to actually use it.[70] Organizational learning theorists research how individual behaviour is altered based on their interactions with information and information systems. This research forms a basis for understanding how information can be put towards learning actions. The relationship between behaviour and information, bridges into the social stream of organizational learning.

Easterby-Smith and Araujo note in their distinction of organizational learning that people learn from information as a community. The social interaction that occurs between employees in an organization affects how they interpret information, process it, and eventually use it. The central concept of the social perspective of organizational learning is that most information within an organization isn't held within written documents or even within individual thoughts. It is held within the community's understanding as a whole.[71] This social view of knowledge further implies that individuals will twist and alter interpretations of knowledge to suit their own needs. The action of modifying knowledge for gain forms the political processes of organizational

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[69] Edgardo R. Bravo, Martin Santana and Joan Rodon, "Automating and Informating: Roles to Examine Technology's Impact on Performance," *Behaviour & Information Technology* 35, no. 7 (2016), 586-604.

[70] William H. DeLone and Ephraim R. McLean, "Information Systems Success: The Quest for the Dependent Variable," *Information Systems Research* 3, no. 1 (1992), 60-95.

[71] Mark Easterby-Smith, Luis Araujo and John G. Burgoyne, *Organizational Learning…*,5.

learning. Easterby-Smith and Araujo suggest that it is naïve to think that this political dimension can be completely eliminated, and therefore should be embraced as part of how an organization learns.[72]

In summary, organizational learning is the process through which an organization manipulates knowledge towards learning new information. There are technical and social aspects to how an organization achieves learning. The field of study is distinct from that of learning organizations because it focuses on normative theories and processes rather than methods of implementation.

**Personal Mastery**

In building his framework on how to implement and practice organizational learning Senge defined five disciplines of a learning organization, the first of which is personal mastery. Personal mastery is the spiritual foundation of the learning organization.[73] It is the discipline that notes the importance of continual learning at the individual level. Personal mastery means having a well understood personal vision, remaining focused, and developing an ability to see your own reality through an objective lens.[74] Competencies and skills are a component of personal mastery but do not define it. The same can be said about spiritual growth. Senge describes personal mastery as "approaching one's life as a creative work, living life from a creative as opposed to reactive viewpoint."[75] It is further unpacked in the concepts of personal vision, creative tension, and commitment to truth.

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[72] *Ibid*., 6.

[73] Peter M. Senge, *The Fifth Discipline*…, 31.

[74] Steven H. Appelbaum and Lars Goransson, "Transformational and Adaptive Learning within the Learning Organization: A Framework for Research and Application," *The Learning Organization* 4, no. 3 (1997), 115.

[75] Peter M. Senge, *The Fifth Discipline*…, 198.

Those who practice personal mastery have a strong grasp of their purpose and vision for their future. They have the ability to "focus on ultimate intrinsic desires."[76] A vision is more concrete than a purpose, but without the latter a vision lacks the calling to attain it, and is just an idea.[77] For example, a purpose is "the CAF serves to protect Canadians," whereas a vision is "the CAF will have the capacity to respond to all domestic national security threats." Personal mastery demands a continual focusing and refocusing on a personal vision as a means of understanding the meaning of one's work in the bigger picture. It means asking the questions "Who am I? What am I doing here?"[78]

In defining the individual struggle towards achieving a personal vision, Senge introduces the term creative tension. Creative tension represents the gap between a vision and reality. This tension leads to feelings of hopelessness or worry and a pressure to lower the metrics of a vision closer to what can realistically be accomplished.[79] The solution of bringing the vision into reach because it is the easiest factor to control is often symptomatic in nature and is followed by a continued lowering of standards. This is an example of non-systems thinking, where a quick solution to the problem is sought, not recognizing the delay in further negative effects. True personal mastery realizes that the creative tension between vision and reality is what generates ideas and innovation for change. The vision creates the reason for new thought, and failure should be viewed as the delay of success within the system.

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[76] *Ibid*., 205.
[77] *Ibid*., 208.
[78] Satinder Dhiman, "Personal Mastery and Authentic Leadership," *Organization Development Journal* 29, no. 2 (2011), 74.
[79] Peter M. Senge, *The Fifth Discipline*…, 212.

The final major concept in defining personal mastery is a commitment to the truth. This represents an individual's ability to seek out the reasoning for their circumstances and continually questioning the underlying root causes of their behaviour.[80] This skill aids in identifying systemic issues and also guards against a loss of willpower and belief in ability to achieve visions.

The concepts of personal mastery are individual in nature, highlighting the importance of a learning organization's focus on people. The individuality of personal mastery also represents a significant challenge for organizations, as no one person can be forced to practice this discipline. Implementing mandatory training for personal growth will likely yield the opposite results because a compulsory program would conflict directly with personal choice. Instead, Senge suggests that the organization create a permissive climate for personal mastery. Organizations should allow personal visions, commit to the truth, and encourage a challenging of the status quo. Leaders can best promote personal mastery by modelling it themselves.[81]

Measuring the amount of personal mastery within an organization is challenging. The difficulty in quantifying it is a major reason why several organizations don't promote emotional growth. The organization can't empirically represent the investment as profitable to future success.

Personal mastery is the discipline in which an individual gains their own self-awareness and learning of systems-thinking. This discipline motivates member commitment to their own learning, and the shared learning of the organization.

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[80] *Ibid*., 222.
[81] *Ibid*., 239.

**Mental Models**

Building on an individual's capacity to understand vision, Senge introduces mental modelling, and the ability to truly understand the functioning of an organization, as the second discipline of learning organizations.

The co-founder of organizational development theory, Chris Argyris suggests that people are less likely to behave in harmony with how they say they will act, and more likely to behave in line with how they visualize and believe they should act.[82] The mental model or understanding of a theory or norm is what is more likely to determine behaviour than the actual written theory. A soldier that generalizes their unit as uncaring and unresponsive to the troops' needs will treat people in that unit accordingly. This is an example of a mental model formed about the atmosphere of the unit, and it will trump any verbal or written statement from unit leadership that contradicts it.

Senge describes mental models as "deeply ingrained assumptions, generalizations, or even pictures or images that influence how we understand the world and how we take action."[83] Theories of mental modeling date back to the early to mid-1900s. All theories hold the assumption that a person reasons a particular thought by matching possibilities with what they know or believe.[84] The importance of mental models as a discipline within learning organizations is heavily based on Argyris' theory of action which proposes that humans create mental traps by denying their true thoughts and beliefs (often unknowingly) and creating barriers to new thought or change.[85] Argyris further

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[82] Chris Argyris, *Reasoning, Learning and Action: Individual and Organizational* (San Francisco: Jossey-Bass, 1982).

[83] Peter M. Senge, *The Fifth Discipline*…, 31.

[84] P. N. Johnson-Laird, "Mental Models and Cognitive Change," *Journal of Cognitive Psychology (Hove, England)* 25, no. 2 (2013), 131-138.

[85] Chris Argyris, *Organizational Traps: Leadership, Culture, Organizational Design* (Oxford: Oxford University Press, 2010), 83.

proposes that people are so good at denying their views of denial that they develop a "skilled incompetence or skilled unawareness."[86] It is the unawareness of existing mental models impeding progress that is of vital study for the learning organization.

The principle practice that Senge offers as a counter to invisible defensive mental models is to promote reflection and sharing of mental models throughout the organization.[87] This practice of deepening an understanding of mental models is congruent to organizational cultural scientist Edgar Schein's method of comparing organizational cultural artifacts to espoused values in search for basic assumptions.[88] In sharing mental models, agreement is not required, as several can exist at once as long as they are well considered and honest.[89] The deeper understanding of assumptions allows for double loop learning to occur in response to specific organizational problems.

In addition to promoting learning, reflection also guards against false mental models made by "leaps of abstraction." Leaps of abstraction occur when someone makes a generalization from a direct observation without testing it.[90] A good example is stereotyping an individual's fitness level based on how they look. Good mental modeling based on reflection eliminates unnecessary leaps of abstraction.

The discipline of mental models ultimately supports systems thinking and the ability to visualize processes rather than events. It is important for learning organizations because it helps identify why good ideas and good learning don't happen in practice.[91]

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[86] *Ibid*., 78.
[87] Peter M. Senge, *The Fifth Discipline*…, 259.
[88] Edgar Schein, *The Corporate Culture Survival Guide* (San Francisco: Jossey-Bass, 1999).
[89] Peter M. Senge, *The Fifth Discipline*…, 276.
[90] *Ibid*., 264.
[91] Steven H. Appelbaum and Lars Goransson, "Transformational and Adaptive Learning…

Often a well-rooted mental model within the organization is blocking the desire for organizational innovation.

**Shared Vision**

A natural step to modeling how an organization functions, is creating a vision in which an organization can work towards. The third discipline of building a shared vision extends the individual level principles of personal mastery to the organizational level. Vision statements are commonplace in organizations, but Senge proposes that many of these statements lack genuine purpose or were created simply because organizational norms required a vision to exist on paper.[92] When a proper shared vision exists, people are motivated to contribute to its success not because they have been told to, but because they believe in the genuine purpose of the work.

The success of building a shared vision is directly dependent on the actions of organizational leaders. A vision cannot be enforced upon someone. A person must see their own personal vision within the collective organizational vision. Leaders must make the necessary efforts to collectively build a vision that is shared throughout the organization. Senge measures the effectiveness of a shared vision on a scale of possible attitudes. At the lower end of the scale is apathy and complete disinterest in the vision. Middle ground is represented by formal and genuine compliance, where the vision is viewed as beneficial, and the corresponding level of work applied towards it. The highest level of vision effectiveness is rated as enrollment and commitment. This attitude towards a vision sees people wanting the vision, doing whatever possible to achieve it, and creating structures needed to achieve it.[93]

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[92] Peter M. Senge, *The Fifth Discipline*…, 33.
[93] *Ibid*., 297.

Senge offers leadership advice on how to obtain commitment from people towards a vision. The advice is closely related to leadership theorist Bernard Bass's theory of transformational leadership, requiring a leader to use charisma and individualized consideration to harness the desires and needs of subordinates.[94] Senge also reintroduces to notion of creative tension and using the combined personal mastery skills of people to "hold" a vision rather than let it die.[95]

Finally, Senge proposes the reason for so many failed visions is the prominence of linear thinking. Managers do not see the direct effects of a vision and therefore blame the system as a whole for creating obstacles that impede a vision. A systems thinking approach creates the realization that the current policies and processes of an organization can be used to generate progress towards the vision. Again, an emphasis is placed on the fifth discipline and the importance of systems thinking.

**Team Learning**

The fourth discipline focuses directly on the group level of the organization and how this level harnesses and encourages the preceding three disciplines. Senge emphasizes team learning as a discipline because the team as a unit of the organization is a microcosm in which collective learning occurs.[96] In practice, if an organization's teams are learning then the behaviour of collective learning will permeate throughout the organization. The concept of team learning is founded on what Senge calls the phenomenon of "alignment," when the personal power of each individual is placed in a common direction, thus multiplying the efficiency of the team. This alignment is a

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[94] Bernard M. Bass, *A New Paradigm for Leadership: An Inquiry into Transformational Leadership* (Virginia: U.S. Army Research Institute, 1996).

[95] Peter M. Senge, *The Fifth Discipline*…, 309.

[96] *Ibid*.

precursor to the ability to empower individuals because if individuals are given too much autonomy before alignment, the total team effort is stretched in various directions.

Essential to the understanding of effective team learning is the difference between discussion and dialogue. Senge notes that discussion is the two sided exchange of thoughts and opinions where both sides intend on achieving a victory over the other. In contrast, a dialogue is an open communication between parties rooted in the Greek denotation of "a free flow of meaning between people, in the sense of a stream that flows between two banks."[97] The late physicist David Bohm theorized our own thoughts as active agents that participate in creating incoherent assumptions of reality.[98] Dialogue is, according to Bohm, the means in which people observe their own thinking and unravel their incoherent thoughts. The purpose of dialogue is to uncover the unwanted contradictions and confusion of individual thinking, and build a common meaning. To achieve dialogue, Bohm proposes three conditions: all participants must suspend assumptions, regard each other as colleagues, and respect a dialogue facilitator. Properly practicing dialogue is essential to the team learning discipline, something Senge says doesn't occur often enough in organizations.[99]

Argyris' concept of defensive routines describes a barrier to good dialogue. An individual's natural instinct to protect their deepest assumptions to defend against embarrassment or emotional pain stops them from learning about the causes of pain. Principally, people are afraid of exposing their reasoning because others will find errors in it. The defensive routines of individuals at different levels in an organization create

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[97] *Ibid*., 223
[98] David Bohm, *The Special Theory of Relativity* (New York: W.A. Benjamin, 1965).
[99] Peter M. Senge, *The Fifth Discipline*…, 226.

what Senge calls a "learning gap" between groups.[100] As an example, consider a manager that portrays a false sense of confidence in front of superiors because they do not want to appear unconfident, but in reality, they are in need of help. The superiors on the other hand want to offer help but do not want to be unsupportive of the manager's leadership. Both sides effectively cover up a problem. This denial and defensive reasoning blocks the organization's learning and discovery of root problems, which in turn leads to failed strategy even under the watch of talented individuals.

Although the discipline of team learning seems obvious as an element of a successful organization, Finnish pedagogical scholar Säde-Pirkko Nissilä notes that "team learning remains poorly understood."[101] Senge insists that the "missing link" in widespread implementation of team learning is practice.[102] Teams must engage in the practice of dialogue to learn how to align separate and individual thoughts towards a team goal that has addressed deep assumptions as barriers. Like every discipline, team learning is rooted in systems thinking and Senge goes as far as to say that systems thinking is the language that a team needs to learn and converse with.[103]

**Systems Thinking**

Systems thinking is what Senge denotes as the most important discipline and the "cornerstone" of the learning organization.[104] It represents a shift in mindset from linear modeling to systems modeling and unlocks the ability to be proficient in the other four disciplines.

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[100] Ibid., 235.

[101] Säde-Pirkko Nissilä, "Individual and Collective Reflection: How to Meet the Needs of Development in Teaching," *European Journal of Teacher Education* 28, no. 2 (2005), 209-219.

[102] Peter M. Senge, *The Fifth Discipline*…, 240.

[103] *Ibid*., 252.

[104] *Ibid*., 56.

Senge is not, nor does he claim to be, the father of systems theory. He is however responsible for popularizing the concept within the fields of organizational management. Systems theory draws its origins from several fields and has emerged as an inter-disciplinary study.[105] Biology, physics, mathematics, psychology, computer science, and management all developed practices of systems thinking in the 20th century. Due to this diverse heritage, systems thinking has an equally diverse set of utilities and applications from chaos theory to social network analysis. What remains common among applications of systems thinking is that it is used as a tool to analyze complexity and complex problems.

Managing Complexity

Complex systems are complex by definition because they have "multiple interacting agents," that change, learn, and do not conform to simple patterns.[106] Often when faced with complex systems, managers or leaders break the system into parts and try to manage each part separately. This simplification or reductionist approach often results in a loss in understanding of how each part interacts, which is usually the cause of either system failure or success.[107] Additionally, division of complex systems causes work in "silo" and limits the flexibility of the organization, as well as necessary interaction between divisions.[108] In a counterintuitive manner, the division of a complex system does not simplify its resolution. It is the "wholeness" approach to complex

[105] David H. Peters, "The Application of Systems Thinking in Health: Why use Systems Thinking?" *Health Research Policy and Systems* 12, no. 1 (2014), 2.
[106] *Ibid*.
[107] Jaaron et al., "Operationalising "Double-Loop" Learning…, 321.
[108] *Ibid*.

systems that Senge leverages as a method to allow organizations to "exceed the sum of [their] parts."[109]

Conceptions of Systems Thinking

Senge uses 11 laws to explain the importance of systems thinking and underline its applicability to organizations. These laws are based on his review of systems theory literature produced in the 1980s. The laws have several similarities and most laws seek to highlight how cause and effect are related within an interconnected system. Immediate positive effects misrepresent possible long term negative effects. Further, the delay between short and long term effects blinds the organization to where negative effects originated from. Senge's second law "the harder you push, the harder the system pushes back," introduces the concept of "compensating feedback." This is when solutions to a problem cause the system to offset the benefits of the solution. For example, food and agricultural assistance to developing countries increases food availability. The system compensates for this food availability with reduced deaths (the intended outcome) but offsets this benefit with higher population growth, which eventually creates more malnutrition.

In his tenth law describing how a whole is not necessarily the sum of its parts, Senge talks to the principle of system boundaries. This concept explains that each system and sub-system has some type of boundary that is a set of all its interlinking components with other systems.[110] Usually boundaries are thought of in geometric terms (smooth

[109] Steven H. Appelbaum and Lars Goransson, "Transformational and Adaptive Learning…

[110] Mario Bunge, "System Boundary," *International Journal of General Systems* 20, no. 3 (1990), 215-219.

lines and surfaces) rather than non-geometric expressions, which makes the concept difficult to understand.

To simplify this concept, consider the CAF and its three services the Royal Canadian Navy (RCN), Canadian Army (CA), and Royal Canadian Air Force (RCAF). From each service's point of view, the CAF as a whole is perceived differently. It is the points where the services interlink and their interaction that are important for developing an accurate view of the CAF (system) as a whole. The set of these interconnected factors represents a boundary within the system where interfacing occurs.

Finally, Senge concludes his laws with the concept of accountability and blame in a system. He proposes that a systems thinker realizes there is no one to blame in a complex system because the entity or person you blame is part of the same system as yourself, and it is your relationship that is to blame, not the single entity. Professors of Public Policy, Janet and Robert Denhardt make similar emphasis on the complexity of accountability in public organizations. Government has an overlapping and sometimes contradictory web of standards, norms, values, and laws that hold departments and elected officials accountable to citizens.[111] Non-systems thinking blames organizations for not meeting performance standards, but systems thinking realizes that a public organization's failure should not be based on a report card of performance alone, but instead on its relationships with other departments and interactions within the system.

[111] Janet V. Denhardt and Robert B. Denhardt, *The New Public Service: Serving, Not Steering*, 4th ed. (London; New York: Routledge, 2015), 123-143.

Reinforcing and Balancing Feedback

The last two applicable systems thinking concepts are reinforcing and balancing feedback loops. In systems theory, positive feedback does not always mean positive results, and it is recognized that the positive result cannot be sustained forever.[112] Reinforcing loops are often referred to in layman's terms as "snowball effect" or a "vicious cycle".[113] Reinforcing systems are characterized by occurring in multiple directions from a single event, and often taking people by surprise due to their acceleration in growth. A leader's preference of a specific subordinate reinforces motivation for that particular subordinate. Observing that the preferable treatment is increasing work performance, the leader continues to give special attention to the subordinate, creating a positive reinforcing loop. Meanwhile, a negative reinforcing loop occurs where other subordinates learn that their work goes increasingly unnoticed thus demotivating them.

When left unchecked, the reinforcing loop can accelerate growth at a surprising rate.[114] The analogy of weed growth best illustrates this concept. A family's yard has a few weeds growing in its corner. The weeds are ignored and begin to spread exponentially (doubling each day). While the yard is only partially covered, the family takes little notice or postpones weed treatment. Soon, the yard is half covered with weeds and the family is concerned, but it is too late, the next day the yard is completely covered in weeds. The reinforcing feedback loop teaches that growth can be unnoticed and continue out of control.

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[112] Katharine N. Suding, "A Leak in the Loop," *Nature (London)* 503, no. 7477 (2013), 472-473.
[113] *Ibid.*
[114] *Ibid.*, 83.

Reinforcing feedback loops, Senge notes, are rarely left unchecked and often the system regulates growth through balancing feedback. In a balancing system, "there is a self-correction that attempts to maintain some goal or target."[115] Senge relates this to the concept of homeostasis, which is the biological predisposition to maintain conditions necessary for survival in nature.[116] For example, when your body heat becomes too high, you start to sweat. Your body's balancing system maintains a target temperature range to maintain and will offset the increase in temperature through sweating or increasing blood flow away from internal organs to the skin.[117]

Senge notes the importance of recognizing the explicit and implicit goals of a balancing system. A manager may wish to incentivize reducing working hours, but employees will still work long hours because it is a customary measure of performance within the organization. In this example, the manager's goal is explicit, but the organizational culture has an implicit target in play within the system. This concealed characteristic of balancing systems highlights why systems thinking is focused on root processes and assumptions as an avenue for solutions.

Criticism of Senge's use of systems thinking notes that he improperly makes the assumption that reinforcing and balancing feedback loops can be generalized into a set of archetypes for managerial use in diagnosing change problems.[118] This argument proposes that in reality, systems theory is much more complex and that organizational processes can rarely be reduced to specific functions that can be leveraged to change behaviour.[119]

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[115] *Ibid.*, 84.
[116] *Ibid*.
[117] Eva Osilla, "Physiology, Temperature Regulation," in *StatPearls* (Treasure Island: Florida, 2021), last accessed 27 Februrary 2021, https://www.ncbi.nlm.nih.gov/books/NBK430685/
[118] Raymond Caldwell, "Systems Thinking, Organizational Change and Agency…, 154.
[119] *Ibid.*, 153.

Claims that Senge is overly optimistic in his use of systems thinking, however, remain unconvincing as the three decades study of learning organizations prove that the concept is not a utopian construct, but an evolving debate on how systems theory can be put to use in an organizational context.[120] Systems thinking is focused in a practical sense by a shift from focusing on individual parts, to seeing the whole. For Senge, the systems thinking discipline "is a framework for seeing interrelationships rather than things, for seeing patterns of change rather than static snapshot."[121] The concept of a learning organization is in its very sense an operationalization of systems thinking theory. A learning organization recognizes the complexity of organizational systems and uses elements of systems theory to thrive within the complexity, learning how to change to remain relevant and survive under demanding circumstances.

The five disciplines presented in Senge's work offer a basis for exploring how organizations can benefit from learning organization principles. Here, comparison of an organization's policies, processes, and overall identity can be made against the five disciplines to better understand where improvements can be made.

[120] Shih-Wi Hsu and Peter Lamb, "Still in search of learning organization?" *The Learning Organization* 27, no.1 (2020), 32.

[121] Peter M. Senge, *The Fifth Discipline*…, 68.

# CHAPTER 4: ORGANIZATIONAL DEFINITIONS OF THE CAF

For comparison to occur between learning organization theory and the CAF, an organizational definition of the CAF is required. Defining an organization requires an entire research study in itself. The structure, culture, and behaviour of an organization each present fields of study of their own with a variety of concepts and nuances. A multifaceted approach is required to avoid a narrow perspective of the achievements and malfunctions of an organization. One of the methods to achieve this is using metaphors. This chapter addresses the challenge of defining the CAF by using metaphors which will serve as a basis for comparison to learning organization concepts.

In 1986, organizational theorist Gareth Morgan published the influential work *Images of Organization*. Later translated into 14 different languages, his concepts on metaphors shaped the way organizational research examines, reflects upon, and views the development of organizations in theory and practice.[122] Morgan's work is based on using metaphors as a tool for examining organizations, which he sees as socially constructed phenomena in their own right.[123] In development of his theory, Morgan created eight organizational metaphors, but contends that these do not encompass all aspects of organizations, and new metaphors can be created during the critical study of organizations.[124] The original eight metaphors presented are machine, organism, brain, culture, political systems, psychic prisons, flux and transformation, and instrument of

[122] Lind Putman, Anders Ortenblad, and Kiran Trehan, "Introduction From Theory to Application of Metaphor in Organizational Analysis," in *Exploring Morgan's Metaphors: Theory, Research, and Practice in Organizational Studies* (Thousand Oaks SAGE, 2016), 2.
[123] *Ibid*, 3-4.
[124] *Ibid*.

domination.[125] Each metaphor has a unique focus on elements of an organization and "encompasses its own vocabulary of images."[126]

Critiques of Morgan's metaphors are rooted in arguments of the epistemology of his theory and questioning metaphor success in developing new ideas of organizations. Morgan claims that science is embedded with metaphorical understandings, such as Senge's use of homeostasis to understand balancing processes.[127] The epistemological argument counters this claim with the notion that a "description and explanation of physical reality" can be scientifically produced using "unambiguous language".[128] In addition, critics offer that the metaphors cause a "cherry picking" approach to organizational study, where bias can easily influence the choice of one metaphor to support an argument over another.[129]

In reflection of his theory, Morgan consistently addresses these critiques and admits that metaphors have strengths and limitations in their uses.[130] For Morgan, the metaphor's contribution to organizational study is how it focuses on the "interrelationship between the insight and distortion" of concepts. This is achieved by relating a well-recognized concept *A* to a lesser-defined one *B*.[131] *A* when applied to *B* reveals several truths about *B*, but simultaneously hides other truths. *A* distorts the perception of *B* but this distortion creates insight. Morgan acknowledges that metaphors paradoxically promote "seeing and not seeing," and therefore proposes a multidimensional approach

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[125] Gareth Morgan, *Images of Organization* (San Francisco: Berrett-Koehler, 1998), 10-11.
[126] Lind Putman et al., "Introduction From Theory to Application…, 4.
[127] Willy McCourt, "Discussion Note: Using Metaphors to Understand and to Change Organizations: A Critique of Gareth Morgan's Approach," *Organization Studies* 18, no.3 (1997), 514.
[128] *Ibid.*
[129] *Ibid*., 516.
[130] Gareth Morgan, "Reflections on *Images of Organization* and Its Implications for Organization and Environment," *Organization & Environment* 24, no.4 (2011), 460.
[131] *Ibid*., 462.

where the "dynamic interplay" between multiple metaphors develops deeper knowledge about the organization.[132] Negotiating the unknown through the use of known experiences and concepts is what Morgan views as a fundamentally human practice.

There is particular strength in using metaphors when studying learning organizations. Based on images of systems theory, metaphors not only help in defining the complexity of organizations but are a practical tool for problem solving, lending to the development of shared visions and team learning.

The use of metaphors has recognized limitations. They can be useful in creating descriptions that highlight key attributes of organizations, but they can never be completely true.[133] The effectiveness of a metaphor is "judged through and in the construed image that it evokes."[134] The selection of metaphors has a bearing on their effectiveness as well. In his research on the heuristics of metaphor use, management professor Joep Cornelissen presented two governing rules for selection of metaphors in research. The first rule is to ensure the metaphor is relational rather than attributive. This means the metaphor suggests "interconnected relations" between concepts vice only surface explanations of structure.[135] The second rule is that a metaphor is preferable, if it is at first glance, distantly relatable to the target organization. The "distance" between concepts creates deeper insight and potential for understanding an organization in a new way.[136]

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[132] Lind Putman et al., "Introduction From Theory to Application…, 3.

[133] Joep Cornelissen, Mario Kafouros, and Andrew Lock, "Metaphorical images of organization: How organizational researchers develop and select organizational metaphors," *Human Relations* 58, no.12 (2005), 1562-1563.

[134] *Ibid.*, 1562.

[135] *Ibid.*, 1571.

[136] *Ibid.*

In addition to the governing rules of metaphor utility, several approaches exist when applying selected metaphors. Given the goal of analyzing the CAF as a learning organization, a comprehensive perspective of the CAF best suits comparison to learning organization characteristics. A "diagnostic" approach using a set of metaphors is therefore appropriate.[137] This approach addresses different perspectives of the CAF from the points of view of efficiency, ability to change, and ability to manage knowledge. After reviewing Morgan's metaphors and understanding Cornelissen's study on the heuristics of metaphor use, the following set of metaphors were selected to analyze the CAF: machine, brain, and psychic prison. Each of these metaphors were chosen due to their individual abilities to create insight into how the CAF as an organization may or may not be well-suited to a learning organization construct.

**The CAF as a Machine**

The machine metaphor is dominated by the concept of achieving efficiency, and a lack of consideration towards human reaction in the endeavor for efficiency. Viewing an organization as a machine is focused on several characteristics: division of labour, specialization, procedures, standardization, command and control, and reliability. The military as a machine is a very relatable concept and often used as a root description of the machine metaphor.[138] The concepts of management by objective and creating flexibility through decentralization fall within the machine metaphor. Rooted in classic bureaucracy, the CAF of today is well suited for comparison to the machine metaphor.

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[137] Anders Ortenblad, "Approaches to Using Metaphors in organizational analysis Morgan's Metaphors and Beyond," in *Exploring Morgan's Metaphors: Theory, Research, and Practice in Organizational Studies* (Thousand Oaks SAGE, 2016), 62.

[138] Gareth Morgan, *Images of Organization…*, 22.

The CAF is often referred to as an "instrument" of government for use in national security and foreign policy. This image of the CAF is very mechanistic in nature. Order and discipline underline the nature of the CAF. These rigid concepts represent an automation of human behaviour towards achieving a specific goal. The CAF has several mechanical qualities. It is structured in a hierarchy with ranks, formal authorities, and merit based advancement policy. The organization is also performance driven. Review of the Department of National Defence's departmental results report shows a clear performance oriented management of the CAF.[139] Shortfalls in results are tasked to subordinate departments with deadlines and expectations. The CAF seeks to operate as efficiently as possible. Lists of administrative orders and standard procedures are published to manage the activities of CAF members. Although the various tasks that CAF members need to undertake are not simple, there is a desire to make reaction to orders automatic and results focused. All of these characteristics of the CAF show relatable features to the machine metaphor. Therefore, the strengths and weaknesses of an organization as a machine are applicable in describing the CAF.

There are two main strengths highlighted by the CAF as a machine. The organization strives for precision and efficiency as well as compliance of members. These are undeniable military necessities when addressing the challenges of modern warfare. The CAF formalizes the focus on operations in its doctrine (a very machine like quality in itself), using command and authorities to create efficiency.[140] To generate some

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[139] Department of National Defence, *Departmental Results Report (Canada. Canadian Armed Forces)* (Ottawa: DND Canada, 2020).

[140] Department of National Defence, D2-252/2009E, *CFJP 01 Canadian Military Doctrine* (Ottawa: Canadian Forces Experimentation Centre, 2009), 4-3.

flexibility in this rigid structure, the CAF utilizes mission command and delegated authorities to allow commanders to act appropriately in varying situations.

Although the CAF benefits from these machine like qualities in achieving efficiencies, it can be argued that it suffers from the other strengths a machine-like organization enjoys. Machine organizations are best equipped for "straightforward tasks" and operate optimally in predictable and stable environments where little change is expected.[141] These aspects of machines do not support the uncertainty of CAF employment. Further, the weaknesses of machine-like organizations present concerning challenges to the CAF. The machine metaphor is predominantly inflexible to change and does little to promote innovation and creative thought. Communication is also less effective because new problems are not immediately accompanied with new communication structures. This leads to a narrow and siloed view of the organization.

Overall the machine metaphor shares several commonalities with the CAF, highlighting the challenges of balancing structure and standardization with flexibility for change. The associations made between the CAF and a machine are strong enough that the concerns of little innovation and flexibility present serious considerations when expanding analysis to the characteristics of learning organizations.

**The CAF as a Brain**

The brain is considered the only entity that can truly learn and build intelligence.[142] Whereas machines and computers work through a logical chain of causes and effects, vulnerable to complete loss of effectiveness if the chain is broken, the brain develops knowledge through refining patterns, and remains surprisingly resilient when

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[141] Gareth Morgan, *Images of Organization…*, 31.
[142] *Ibid*., 70.

compromised.[143] The metaphor of the brain is apt for discussing the CAF as a learning organization because it focuses on the ability to develop and spread knowledge throughout a system. The brain metaphor is characterized by the paradox of simultaneous generalization and specialization, information processing, and organization naturally emerging from randomness.

The brain is commonly thought of as a very fast processing system, but it is more accurately defined as a robust distributed system that instead of imposing order on external inputs, allows "pattern and order [to] emerge".[144] The brain creates resiliency by maintaining generalized data of a system within all of its specialized parts. In this fashion, the brain can remain functional when a section of it is compromised. This paradox seems impossible to obtain within human organizations, however several aspects of modern organizations lend towards this metaphor and show potential for substantial improvement.[145] Distributed networks for computing and processing organizational data have a strong relation to the brain metaphor. Particularly the emergence of artificial intelligence (AI) indicates potential for organizations behaving more like the brain. AI is able to build intelligence by finding associations in large data sets through "deep learning techniques."[146] These systems can then make decisions based on intention of outcomes. AI can also adapt to changes by quickly altering algorithms based on new information. In the military context, AI offers the ability to enable integration and interoperability of

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[143] *Ibid.*
[144] *Ibid*., 71.
[145] *Ibid*., 93.
[146] Darrell West and John Allen, *Turning Point: Policymaking in the Era of Artificial Intelligence* (Washington: Brookings, 2020), 30.

policies and new technology at a pace that increases operational performance.[147] Modern organizations relate to the brain more than is usually considered.

Through the brain metaphor lens, the CAF achieves organizational resiliency through redundancy and overlap of individual skills combined with a set of minimum standards. If leadership or a section of the organization ceases to operate, it is likely others will step up and fill the gap with enough ability to steer the organization anew. Individuals are trained at a general level and then specialize within different services before returning to a more generalized training scheme at a senior rank. In the training sense the CAF is brain-like in its approach.

However, if we compare the CAF information systems structure to the brain, flaws become apparent. For example, the Ammunition Information and Maintenance System (AIMS) of the CAF and the Defence Resource Management Information System (DRMIS) are used in parallel to manage ammunition and explosives. The two systems do not fully integrate with each other and therefore create discrepancies and errors in reporting, resulting in further decision errors.[148] The AIMS and DRMIS case presents an example of poor distributed management through technology. Imagine if AI was leveraged to both reconcile the logistical aspect of ammunition and optimize (or enable) ammunition purchasing decisions based on the CAF's intention of remaining ready for a set of operational deployments. This is an area of potential within the CAF and would more closely resemble a brain structure. The CAF's information systems in general do not share generalized data between each other, nor do they efficiently manage specialized

[147] *Ibid*., 171.

[148] Department of National Defence, 1259-3-008, *Audit of Ammunition and Explosives Management* (Ottawa: ADM (RS), 2018), iii-iv.

data. Limited by human-only methods of networking, the CAF does not operate in the information domain as a brain would.

Another key attribute of the brain metaphor is the ability to organize seemingly random data or chaos. Through the brain's distributed and resilient network, it does not depend on a central decision node for decision making, thus, the organization of data *emerges* from patterns. In an organization such as the CAF this relates to bottom-up learning. Two aspects make the CAF weak in bottom-up learning within the brain metaphor. First, the CAF does not have the processes that allow ideas and knowledge to flow from the lower levels of the organization. Second, the CAF hierarchy lends to imposed order rather than natural order. These aspects of the CAF are closely related to a limitation of the brain metaphor: the conflict between organizational learning and command and control of the system.[149] This limit of the brain metaphor highlights how the CAF struggles with organizational learning. Command and control (a foundational piece of CAF doctrine) is itself in the way of harnessing the ideas and lessons learned of the individual parts of the organization. The desire to gain more collective knowledge from lessons learned and tap into the greater knowledge of each of their parts is noted in each service's doctrine.[150] From this perspective, the CAF can be viewed as striving to learn, but limited by command and control structures.

The brain metaphor stresses several organizational realities of the CAF. The CAF is constrained by its ability to process information quickly and accurately in a distributed manner. This weakness reduces the resiliency of CAF shared knowledge. The CAF

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[149] Gareth Morgan, *Images of Organization…*, 108.

[150] Department of National Defence, *Leadmark 2050: Canada in a New Maritime World* (Ottawa: 2016), 33; Department of National Defence, A-PP-106-000/AF-001, *Advancing with Purpose…*, 33-34; Department of National Defence, B-GA-400-000, *Royal Canadian Air Force Doctrine* (Ottawa: 2016), 11.

however holds resiliency in the mix of general and specialized training it conducts for its members. Finally, the CAF's balance between learning from sub-organizations and control of sub-organizations is in question, threatening the ability to harness the individual knowledge sets within the organization.

**The CAF as a Psychic Prison**

The psychic prison metaphor directly targets the CAF's flexibility in thought and ability to change. For Morgan, this metaphor represents an organization's ability to trap itself into a specific way of thinking and doing.[151] The psychic prison metaphor is characterized by defensive mechanisms towards change and unconscious forces at play in the organization's view of reality. In exploring these concepts, we find ways that the CAF both resists and embraces change.

Why do organizations choose failure over changing their mindset? Several answers to this question find their roots in the study of organizational culture. The psychic prison metaphor represents a smaller portion of the larger culture metaphor focused on how culture can resist change. Norms, values, and the tacit assumptions that define everyday life in an organization have a significant effect on an organization's will to change.[152] Often these values become the only way of viewing a problem, thus reducing the variety of solutions explored. The psychic prison metaphor describes how an organization can develop implicit biases often hidden during decision making. The result is an organization that believes it is progressing but is unconsciously strengthening its position in the status quo. Morgan notes that rigidly managed bureaucracies traditionally

[151] Gareth Morgan, *Images of Organization…*, 183.

[152] Alan Gutterman, "Challenges for Leaders: Assessing and Changing Organizational Culture," *International Journal on Leadership* 1, no.1 (2013).

fall into the trap of the psychic prison because they inherently demand discipline and obedience to create productivity.[153]

The standardized and top-down nature of the CAF is one manner in which the organization lends itself to an implied and narrow approach to action. Another outlook on one-way thinking in the CAF is to examine the male dominance of the organization. In 2018, the CAF reported that 84.3% of the force was comprised of men.[154] Morgan notes that masculinities are more compatible with the firm, well-founded characteristics of bureaucracies.[155] Research on gender in the CAF also suggests that male dominance favours further male dominance, and that the qualities that make "an effective soldier, aviator or sailor," predominantly mirror masculine qualities: aggression, competitiveness, and strength.[156] Moreover, the success of females in the military has not been attributed to the integration of both male and female genders, but an acquiescence of femininities to the dominant male gender within the organization.[157] Not only does the male gender govern the CAF, it is a very specific "militarized" narrow version of the male gender that shapes the culture.[158] These factors surrounding male thinking cause the convergence of thought in the CAF instead of an acceptance towards diversity in thought. Morgan notes that critics of the male bureaucracy argue that more feminine qualities of creativeness and tolerance to diversity have the potential to free organizations from the prison of male-

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[153] Gareth Morgan, *Images of Organization…*, 191.

[154] Stephen Fuhr, *Improving Diversity and Inclusion in the Canadian Armed Forces* (Ottawa: House of Commons, 2019), 65.

[155] Gareth Morgan, *Images of Organization…*, 193.

[156] Vanessa Brown and Alan Okros, "New Leaders, 'New Wars': A Reflective Approach to Applying Gender and Cultural Perspectives," in *From Knowing to Doing* (Kingston: Canadian Defence Academy Press, 2018), 261.

[157] Andrea Lane, "Special Men: The Gendered Militarization of the Canadian Armed Forces," *International Journal* 72, no. 4 (2017), 471.

[158] *Ibid*.

only perspectives.[159] Unfortunately, evidence points towards the CAF suffering from the prison of male dominant thought.

Organizations knowingly trapped in a psychic prison do not always accept the doom of narrow thought. Many try to diversify and expand. In these attempts, the defensive mechanisms associated with a psychic prison become a key challenge. Projecting fear and anxiety externally, or extreme competitive attitudes are examples of defensive mechanisms that contribute to maintaining the status quo.[160] When the principal mindset of the organization in the psychic prison is challenged, defensive forces engage.

Searching for examples of the CAF acting in a defensive manner to change is difficult to pinpoint in time due to the enduring nature of transformation. Several external pressures are placed on militaries to transform. The use of new technology, for example, is persistently demanding change, yet the defence community remains entrenched in expensive competitive bids to procure new systems.[161] Often these processes at the CAF level result in the three services competing with each other over funds and priorities ignoring what may be best for the CAF overall. New types of missions place pressure on the CAF to change. The Canadian Joint Operations Command (CJOC) has noted a marked increase in the use of the CAF domestically in response to climate events (floods and fires).[162] During the COVID-19 pandemic the CAF found itself supporting long-term

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[159] Gareth Morgan, *Images of Organization…,* 193.

[160] *Ibid.*¸196-199.

[161] Charles Davies, "Competition in Defence Procurement: The Popular Choice, But Not Always The Right One," *Vimy Paper* no.26 (2015).

[162] Erin Gibbs Van Brunschot, "Climate Change and Its Impact on National and Human Security," (Symposium hosted by the Canadian Forces College, 2020), 18.

care facilities, a first for CAF forces domestically.[163] In these cases, the CAF displayed flexibility in requests for employment outside the conventional.

Although the CAF exhibits flexibility in employment, other pressures such as the change demanded in sexual misconduct reporting appear more challenging. In 2015, the CAF issued the orders for Operation *Honour* in response to external review noting an "underlying sexualized culture in the CAF."[164] Significant resources were injected into the CAF to improve reporting and tracking of sexual misconduct incidents as well as educating the force on the problem.[165] Yet, to this date the CAF continues to report overall negative experiences towards sexual misconduct reporting.[166] The credibility of progress is further questioned as several senior CAF officers are investigated for sexual misconduct.[167] The failed progress of Op *Honour* demonstrates the existence of unconscious defensive mechanisms at play within the CAF. Research on this subject continues to investigate why the CAF shows signs of resisting what seems to be an obviously needed social change.

In general, the psychic prison metaphor reveals two aspects of CAF change behaviour. The first is the CAF is flexible in operations. As a primary output of the organization, the ability to adapt to new missions and react to government requests for employment domestically and abroad, is unsurprising. The standardized and disciplined

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[163] Canada, "Military response to COVID-19," last accessed 27 Februrary 2021, https://www.canada.ca/en/department-national-defence/campaigns/covid-19-military-response.html

[164] Department of National Defence, *CDS Op Order- Op HONOUR* (Ottawa: Chief of Defence Staff, 2015).

[165] Department of National Defence, *CAF Progress Report Addressing Sexual Misconduct* (Ottawa, 2019), Annex B.

[166] Stacey Silins and Manon Leblanc, "Experiences of CAF members affected by sexual misconduct: Perceptions of support," (Ottawa: DRDC, 2020), 2-3.

[167] Ashley Burke and Kristen Everson, "Canada's new defence chief Admiral Art McDonald steps aside amid investigation," *CBC News*, 25 February 2021, https://www.cbc.ca/news/politics/cds-art-mcdonald-wayne-eyre-1.5927355

nature of the CAF does not trap the organization in how it views its own employment. The second aspect is that the CAF is more resistant to culture change, even when rationally, it is necessary to do so. The exact reasons of this resistance require further research and investigation. When we examine the interplay between this resistance to culture change but willingness of change in operations, one deduction that arises is that the CAF doesn't *see* a causal link between changing its culture and performance on operations. This indication strays from the characteristics of learning organizations, who strive for more leverage in change using deeper systemic issues. The irony in this resistance to change is that research suggests increased operational capability when the military culture is healthy and more diverse. The CAF is not blind to this potential, but it does struggle to realize the implementation of necessary change.

Through the use of metaphor, multiple definitions of the CAF as an organization emerge. The CAF is clearly an organization that seeks efficiency using order and discipline to create automated human behaviour that will react dutifully when called upon. This attribute of the CAF creates an effective reaction to a set of military operations, but is limited to the conventional standards that have been created to generate this efficiency. The balance between standardization and flexibility in reaction to new challenges is what defines the CAF's change capacity in this definition.

The CAF is resilient through the training of its people. A robust education and training system creates soldiers, sailors, and aviators that are both specialized and generalized in their abilities. This resiliency, however, does not extend to the CAF's information technology infrastructure. The capacity for the CAF to share data is limited by systems that are not interoperable. When addressing the learning capacity of the CAF

through these information systems, the CAF is limited by the command and control structures it has emplaced to ensure order. Barriers to collectively learning from individual experiences are a challenge.

Finally, the CAF as an operationally focused organization, is flexible towards how it is employed, but is resistant to changing the foundations of its culture. The male-centric composition of the CAF contributes to a narrow view of what is organizationally acceptable to change and what is not. Likely unconscious and implicit views are at play as evidenced by the CAF's eagerness to implement change policy but failure to actually make substantial changes.

These definitions of the CAF provide a basis for analyzing how and where the CAF can benefit from the concepts of a learning organization.

# PART II – ANALYSIS AND FINDINGS

## CHAPTER 5: ANALYSIS

This chapter focuses directly on analyzing the similarities and differences between the CAF as an organization and the theoretical model of learning organizations. To conduct this analysis, the chapter makes qualitative comparisons in conjunction with a framework of antecedents, moderators and outcomes developed for Senge's five principles of learning organizations. This framework, researched by Hong Bui and Yehuda Baruch, takes a systems approach to the analysis of learning organizations, examining the interconnectedness of an organization as a whole. Use of this framework, with a foundational understanding of learning organizations and metaphorical definitions of the CAF, teases out significant areas of improvement for the CAF in becoming more like a learning organization.

### The Conceptual Learning Organization Framework

In an effort to make Senge's inspirational model more accessible and "testable" to organizations, Bui and Baruch built a framework based on an in depth literature review of learning organizations.[168] Each discipline of Senge's model evoked antecedents, outcomes and moderators which the researchers used to create the systems diagram in Figure 1. The strengths of this framework are that it further operationalizes learning organizations for implementation and research. Bui and Baruch later tested the model and found it to be valid in supporting Senge's model.[169] The limitations of the model are that

[168] Hong Bui and Yehuda Baruch, "Creating Learning Organizations…, 209.

[169] Hong Bui and Yehuda Baruch, "Learning organizations in higher education: An empirical evaluation within an international context," *Management Learning* 43, no.5 (2011), 515-544.

it cannot encompass all variables of moderators and factors that affect learning organizations: only the key determinants from literature review are used.

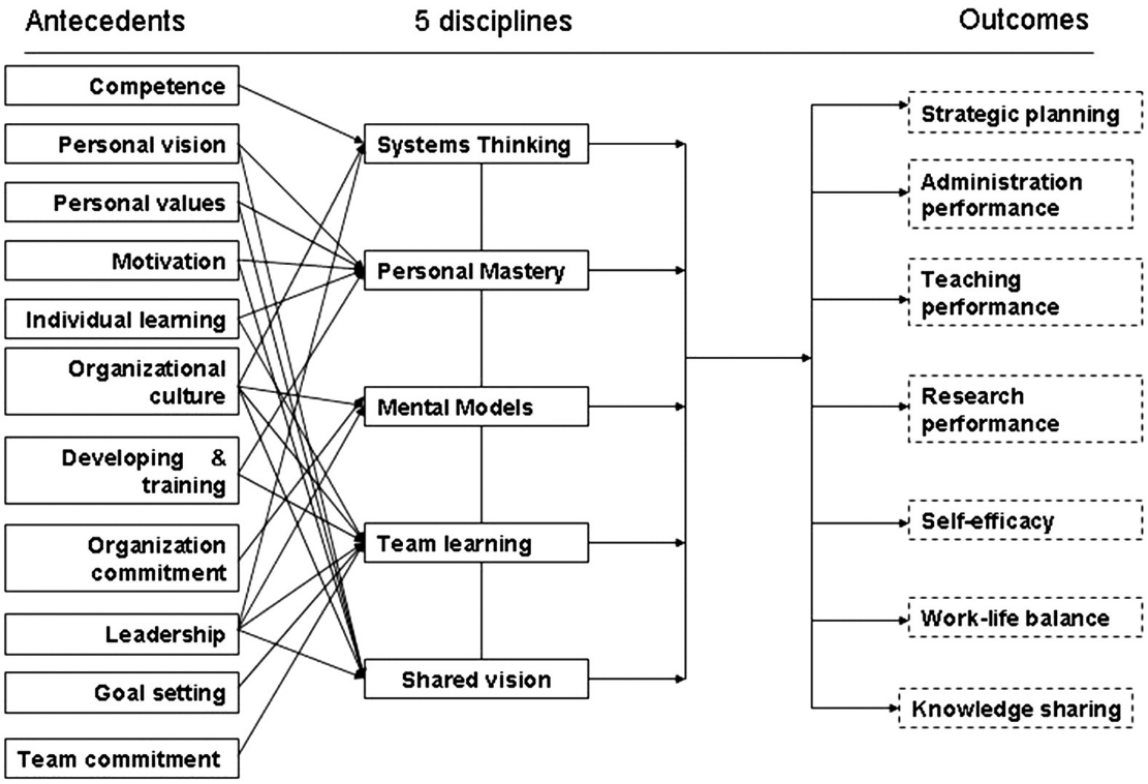


**Figure 1 – Learning Organization Framework**

Source: Bui and Baruch, "Learning Organizations…, 518.

The antecedents of the model represent factors that if espoused in the CAF could lead to the practice of the five disciplines. The effectiveness of outcomes from the practice of the five disciplines is moderated by human resource policies, organizational sectors (ie. finance, research, services, etc.), the learning environment, communication systems, and organizational size. Through the framework's lens, each discipline can be analyzed in the CAF context.

**Personal Mastery in the CAF**

This discipline is focused on creative growth at the individual level. Although individual in nature, personal mastery at the lowest level has significant benefits at the organizational level through outcomes of individual performance, self-efficacy, and work-life balance. All of these factors contribute to the motivation of CAF members and their sense of duty towards the organization. Because the CAF places an emphasis on people and human capital, personal mastery increases in value within the organization.[170] The challenge of personal mastery is that the CAF cannot impose it upon members, but rather promote its practice through the environment it creates.

From this perspective, the CAF is oriented towards personal mastery by providing opportunity for specialized training to individuals. Examination of the CAF's resiliency in the previous chapter exposed its focus on specialized training. This type of training builds confidence in members and when tied with consistent generalized training throughout a member's career, creates an environment of continued learning – one of the antecedents to personal mastery.

The nuances of the CAF training principles and objectives are important to understand in the context of personal mastery as well. Although continuous learning is promoted, the CAF as a machine-like organization seeks to efficiently produce officers and non-commissioned members (NCM). In this context, the CAF training progression favours professional development vice personal development. In addition, several human resource policies support the favouritism towards professional skills. For example, career advancement policies are heavily focused on professional skills only. Although the CAF

[170] Hong Bui and Yehuda Baruch, "Creating Learning Organizations…, 211.

requires specific professional skill sets, a balance with more personal skills such as vision and goal setting may offer more opportunity to promote the discipline of personal mastery within the CAF.

**Mental Models in the CAF**

The mental models developed within a learning organization define how collective members understand the systems within the organization and how they interact with external systems. These perceptions and images of the system are powerful in their effect on problem solving and decision making. Mental models have the ability to improve organizational performance and knowledge sharing directly. In terms of the CAF's capacity to espouse mental modeling, there is mixed evidence towards success.

Mental modeling requires organizational commitment. Because of the volunteer nature of military service in Canada and the requirement to agree to "unlimited liability" of service, in general, CAF members have a deeper commitment to the organization than other employment types. Further, the CAF indoctrinates members into a culture based on the values of duty, loyalty, integrity, and courage.[171] The CAF depends on its culture to generate effectiveness in operations, and therefore aims to maintain a strong culture.[172] This was evident in looking at the CAF as a psychic prison: strong implicit forces are at play in the organization. Both an inherent commitment to the organization and existence of strong culture suggests that the CAF effectively employs mental modeling, although there is little evidence that modeling is consciously occurring, but rather unconsciously employed through the collective understanding of how processes should work. The CAF

[171] Department of National Defence, D2-252/2009E, *CFJP 01 Canadian Military Doctrine*…, 4-4.
[172] Allan English, *Understanding Military Culture: A Canadian Perspective* (Montreal, Kingston: McGill Queen's University Press, 2004).

can produce and use mental models, but is limited in its understanding of how to purposefully create them to leverage change.

The framework reveals several reasons the CAF is limited in effectively using mental models. First is that although commitment within the CAF is generally strong, there still exists a threat to trust in the organization and overall job satisfaction. These factors are linked to the ability to challenge assumptions and develop new mental models.[173] In a 2006 retention survey, 47% of CAF members reported they disagreed to some extant with the statement "I trust senior leaders to make the right decision for [CAF] members."[174] In parallel, the sentiment of "if given the opportunity, the [CAF] would take advantage of me," was felt by 67% of members.[175] In 2017 surveys, approximately a third of members within the defence community felt that senior leaders would not resolve employee concerns with the organization, and higher rates (40-43%) suggested that bureaucratic processes with fewer resources degraded quality of work.[176]

In addition to these attitudes within the CAF, the structure of authority in the CAF inherently creates large power gaps, which Bui and Baruch say challenge the learning environment of an organization.[177] This second threat to mental modeling is fueled by the machine-like structure of the CAF where challenging the status quo is less likely to occur. Morgan notes that often in bureaucracies, a compliance with direction is rewarded, while a deviance from it is punished causing a culture of pleasing superiors instead of reporting failures.[178] Ignoring deep seated issues and a lack of reporting has been seen in

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[173] Hong Bui and Yehuda Baruch, "Creating Learning Organizations…, 212.
[174] Megan Thompson, "Organizational Trust: An enduring relevance for Defence," *DRDC* (Toronto, 2018), 4.
[175] *Ibid*.
[176] *Ibid.*
[177] Hong Bui and Yehuda Baruch, "Creating Learning Organizations…, 212.
[178] Gareth Morgan, *Images of Organization.…*, 81.

the CAF with the emergence of Op *Honour*. The ability to test mental models and trust that some failure may be accepted as part of future investment in long term success is challenged by the CAF's traditional hierarchal structure.

Lastly, a challenge to mental modeling is the ability to share said models. As noted in the previous chapter when examining the distributed communications of the CAF, there were severe limits to capacity in this function. A noted deficiency for the CAF in its *Data Strategy* is the organization's data literacy and ability to create useful information from data.[179] The need to improve the management of knowledge within the CAF is focused twofold: maintaining pace in a data rich operational environment and improving data that feeds performance management.[180] There is still a gap in ability to communicate models vertically and horizontally throughout the organization. The CAF in essence needs to create a communications environment where the mental models of groups can "go viral" within the organization.

Mental modeling builds shared views of elements of an organization. If focused properly, it can be a strong tool in developing change programs. Although the CAF has challenges in its current policies and IT structure to truly harnessing the benefits of mental modeling, it does have the type of cultural foundation that can lend to widespread understanding of models. Notwithstanding, the CAF has invested well in developing transformational leadership skills throughout the force, enabling leaders to explain, and

[179] Department of National Defence, D2-421/2019E, *The Department of National Defence and Canadian Armed Forces Data Strategy* (Ottawa: 2019), 14.
[180] *Ibid., 5*

foster dialogue surrounding mental models.[181] In this respect, the CAF has potential to further benefit from mental modeling.

**Team Learning in the CAF**

Teamwork is an expectation of service in the CAF.[182] The CAF is essentially structured as a system of teams within teams. The emphasis on teams within the CAF is linked to operational success. The CAF's flexibility of thought in operations is one of its noted strengths, but unfortunately this flexibility does not carry over to the underlying institutional structure of the CAF. In some ways this protects the CAF from becoming unstable, but it also limits the learning and empowerment of teams.

Groups that collaborate and have a common goal are what drive a learning organization. With several overlapping antecedents, team learning shares the same benefits of commitment, leadership, and organizational culture that are provided to mental models. The key deduction of the team learning discipline when examining the CAF through a learning organization lens is that the CAF aligns team goals towards operations, whereas a learning organization aligns team goals towards overall organizational performance, thus enabling enduring success in operations.

The primary factor affecting team learning in the CAF is goal setting. Goals within the CAF appear in numerous forms. Mission statements and orders provide team goals. Performance management strategies set ideal metrics, thus providing goals. Administrative orders and policies present varying sets of organizational goals. Strategic direction and long term visualizations set out goals and checkpoints to achieve. The goal

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[181] Piotr Malinowski, "Canadian Model of Military Leadership as a Successful Mixture of Civilian and Military Experiences," *Journal of Corporate Responsibility and Leadership* 2, no.1 (2015), 77-94.

[182] Department of National Defence, D2-252/2009E, *CFJP 01 Canadian Military Doctrine*…, 4-5.

rich environment of the CAF is a product of its machine like structure. The mindset is as follows: as long as the CAF checks off each step to be completed, the organization will complete the necessary processes to ensure delivery of a product – a ready military force. The systems view of team learning highlights how these varying goals actually degrade performance rather than improve it. When goals are not aligned within the organization, the parts of an organization often work against each other, in opposite directions towards separate goals. Without systems team learning, managers and leaders are placed in dilemmas of which goals to achieve. For example, managers may need to choose between the goals of reaching the target equipment operability for the year or ensuring work-life balance is achieved.

The CAF doctrinal remedy to flexibility in enabling goals is mission command. The explicit intent of commanders and supervisors is meant to provide guidelines for a team to choose its goals. In a particular operation with set goals, this approach has proven effective, but as the goals of each level of the organization begin to intertwine, it becomes much more difficult to allow the intent function of mission command guide and align the work of teams. Again, examination of the CAF through this lens suggests an ability to synchronize efforts on operations, but less so when improving the institution as a whole. As a de facto choice, operations are given primacy, while supporting future growth is subtly ignored.

Team learning cannot be fully summarized without again considering the communications structure of the CAF. Within the team learning discipline, a lack of communication ability equals a lack of dialogue. Senge places considerable emphasis on the need for teams to practice dialogue together in order to improve an understanding of

shared goals and aligning efforts.[183] To be achieved, dialogue not only requires a feeling of trust and commitment to an organization, but also the ability to readily access knowledge and work from the same sets of information. Team learning ability suffers in the CAF because of the lack of common information in a data heavy organization.

The CAF possesses the foundational leadership, culture, and training structures to generate strong goal oriented teams. The challenge the organization faces is that it operates in "parts" rather than the "sum of its parts." When one part is tasked with a mission, it is usually effective, but when the whole organization attempts to set goals, the competing nature of goals acts as a barrier and individual efforts are not aligned.

**Shared Visions in the CAF**

Closely related to goal setting is the creation of a shared vision. Following an extensive search, no clearly stated vision exists for the CAF. The closest vision for the CAF is presented in current defence policy. The vision of "strong at home, secure in North America, and engaged in the world" certainly has meaning for the CAF but extends into the realm of diplomacy and government affairs beyond CAF control.[184] CJOC provides a vision based on 14 principles for operating in the future environment, but this vision is focused solely on operations. Within the three services, there are varying states of operative visions. The CA clearly states a vision in all of its doctrine including the most recent *Modernization Strategy*.[185] The stated vision for the RCAF is most concise as "An agile and integrated air force with the reach and power essential for Canadian Forces operations." The RCN on the other hand dedicates in lieu of doctrine an

[183] Peter M. Senge, *The Fifth Discipline*…, 240.
[184] Department of National Defence, D2-386/2017E, *Strong Secure Engaged.*.., 59.
[185] Government of Canada, "Royal Canadian Air Force," last accessed 3 March 2021, http://www.rcaf-arc.forces.gc.ca/en/overview.page.

entire publication to its vision of the RCN in *Leadmark 2050*.[186] Vision statements are common among organizations, but what is less common is a truly *shared* vision. The evidence of visions in the CAF suggest that a shared vision in the sense of a learning organization does not exist.

Learning organizations require shared visions because they link personal visions and values of members to a common purpose. Similar to aligning team learning, a shared vision creates a common understanding and generates motivation to achieve it. The CAF has the strength in organizational culture and leadership to achieve shared visions, but is challenged again by communication within the organization and by the size of the organization (moderators of shared vision).

The strong compatibility between CAF transformational leadership and learning organizations has already been noted. One of the nuanced factors within this aspect is how CAF leadership defines leading the institution and in particular the stewardship of the organization. How stewardship is viewed is important because leaders within a learning organization are more focused on acting as stewards, improving visions and mental models, than leading people through direct influence. The CAF's definition of stewardship focuses heavily on the profession of arms itself and uses language like "safeguarding" and "preserving" to describe leadership actions that balance the growth of CAF systems.[187] In contrast to this view, stewards of the CAF should embrace newer ideas to foster growth and arrange newer concepts with shared values. For a true learning organization to emerge with a shared vision, leaders must resist imposing a vision from

[186] Department of National Defence, *Leadmark 2050…*
[187] Department of National Defence, *Leadership in the Canadian Forces*…,115.

the senior level as it leads to a sense of apathy towards the vision. The soldiers, sailors, and aviators gain no connection to the vision and are less inclined to aid in attaining it.

A significant challenge for the CAF in building a shared vision is the sheer size of the organization. The CAF tends to become more divided as it grows by creating new sub-organizations to manage new tasks. This is a traditional machine-like approach to command and control, but it creates more and more versions of a vision to manage. Each part of the CAF is assigned its own particular role and function, therefore the ability to self-organize (brain-like approach) is limited.[188] The self-organization of teams lends to building a shared vision because the team needs to have dialogue about their purpose and goals to form a structure in response. The emerging use of "edge" organizations suggests advantages in agility and self-organization.[189] Although a fully decentralized CAF is likely not the answer, more flexible edge organizations united by a shared vision shows potential for improving this characteristic of learning organizations.

Once again, the communication structures of the CAF hamper its ability to reach full learning potential. Specifically, the development of a shared vision requires collaboration between teams at all levels and a shared understanding of current organizational knowledge. The technology required to achieve wider spread collaboration and management of knowledge matured 15 years ago, yet the CAF arguably only started to realize its full potential when forced into isolation by the COVID-19 pandemic.[190] This

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[188] Marie-Eve Jobidon et al., "Role Allocation and Team Structure in Command and Control Teams," *DRDC* (Toronto: 2014).

[189] David S. Alberts, "Agility, Focus, and Convergence: The Future of Command and Control," *The International C2 Journal* 1, no.1 (2007), 8-9.

[190] A. Auger, D. Gouin, and J. Roy, "Decision support and knowledge exploitation technologies for C4ISR," *DRDC* (Valcartier: 2006), 49.

type of reaction during a crisis supports the theory that rigid organizations can only realize change through a shock to the entire organization.[191]

The limitations to the CAF achieving a shared vision are based in how leadership perceives its stewardship of the institution, managing the size and structure of the organization, and improving modern communication capacity.

**Systems Thinking in the CAF**

Several of the challenges the CAF faces in becoming more like a learning organization note the absence of the fifth, and most important discipline of Senge's model: systems thinking. In this final section of analysis, the aptitude towards systems thinking in the CAF is examined. Systems thinking is the underlying discipline of learning organizations that bridges together organizational and individual competencies in learning. Not only does an organizational culture and its leadership need to embrace systems thinking, but individuals need to be competent in seeing systems, diagnosing them, communicating them, and improving them. This means the knowledge of single versus double loop learning should be understood and the signs of reinforcing and balancing feedback loops readily seen when examining a problem.

Implementation of systems thinking is achievable through existing leadership and leverage of organizational culture. These two antecedents are well established in the CAF, notwithstanding the challenge of changing their focus to a systems point of view. However, the real basis for the proliferation of systems thinking is competency and education of the subject. The CAF should leverage its training institutions in this respect.

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[191] Marshall L. Stocker, "Crisis Facilitates Policy Change, Not Liberalization," *Journal of Financial Economic Policy* 8, no. 2 (2016), 248-267; Hamza Mudassir, "Why Does It Take A Crisis For Companies to Change?" *Entrepreneur*, 17 June 2020, https://www.entrepreneur.com/article/351983.

The following paragraphs review how well the CAF is aligned to systems thinking and where it is best taught within the organization.

A systems view produces strategic direction that is insightful and sustainable in the long term. This is because systems thinking examines the wholeness of a problem and how the interconnections between an organization's parts need to interact to reach an enduring solution. Systems thinking also recognizes reinforcing loops will not continue forever and that change will be constant. The strategies listed in the *Pan-Domain Force Employment Concept* and *Strong Secure Engaged* emphasize the need for the CAF to be more adaptive and agile.[192] This stems from a realization that the future is a complex environment. The CAF focus on targeting in operations also lends to the analysis of second and third order effects of military action.[193] These literatures signify an organizational orientation towards systems thinking. The CAF leadership clearly understands that a linear and bureaucratic approach to the problems of tomorrow will not suffice in achieving Canada's defence objectives. The challenge arises in re-orienting the entire CAF towards this type of thinking, marking a step towards more use of the learning organization disciplines. The narrowed view of thinking within the CAF further challenges the diverse approach needed to enable systems thinking.

One of the CAF's strengths is its ability to train and educate members in a variety of subjects and skills. The teaching of systems thinking is thought to be most effective at the earliest stage.[194] This allows for people to practice viewing problems in a systems

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[192] Department of National Defence, *Pan-Domain Force Employment Concept…*; Department of National Defence, *Strong Secure Engaged…*

[193] Department of National Defence, *CFJP 3-9 Targeting 1st Edition* (Ottawa: Strategic Joint Staff, 2014), 10.

[194] Arndt Holger, "Enhancing System Thinking in Education Using System Dynamics," *Simulation* 82, no.11 (2006), 795.

view, normalizing the behaviour. Unfortunately, the public education system teaches in a more linear fashion, dividing up subjects and teaching facts about each topic in isolation, with a focus on memorizing principles.[195] Most recruits to the CAF are practiced in viewing a problem in distinct parts rather than the whole. The CAF needs to alter this mindset, and indoctrinate a systems thinking mindset as early as possible in a member's military career. This presents a significant hurdle to the CAF training system which is geared towards specialization of NCMs and more generalized training of officers. Within the CAF, officers are viewed as seeing the "big picture" while NCMs manage the details. A systems thinking approach recommends all members see the big picture when making decisions.

The CAF's culture, although narrowly focused, can act as a leverage point for the institutionalization of systems thinking. The strongest antecedents to change come from the CAF's leadership skill and ability to cohesively unite groups toward a narrow goal. Supported by team learning, mental models, and a shared vision, the CAF can become more competent in systems thinking and benefit from the overlapping effects of the other disciplines of a learning organization.

Overall analysis of the CAF within a learning organization framework suggests the following considerations. First, the CAF is not ignorant to the characteristics of a learning organization, nor completely unable to implement them. Disciplines like mental modeling, team building, and shared visions are heavily predicated on the existence of skilled transformational leaders. The CAF is well situated to develop leaders in this respect. The CAF although often struggling with culture change, does have a strong

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[195] *Ibid*.

foundational culture. This is something that many organizations idealize of having as a starting point for change. Finally, the CAF has the institutional backbone for a key concept in learning organizations: continued lifelong learning. Careers in the CAF have no end to training throughout, and the developmental periods of each member supports consistent learning.

Second, there are several elements of the organization that impede learning organization characteristics. The hierarchal structure of the CAF lends to the imposition of orders and directives vice collaboration of shared visions. This hierarchy also suppresses any challenges to the status quo. In the search for efficiency, the CAF as a machine, driven towards operations, tries to follow linear steps and ignore the paybacks of a collaborative learning environment where failure is accepted and built upon. The rank structure and ability to rise through it enforces professional development of skills with less attention to the personal development of values and visions.

Goals within the CAF are disjointed by division of labour. Members of the CAF are less likely to see problems as a whole within a larger system, and more likely to blame issues on other organizations within the system. The alignment of teams is challenging because of overlapping goals and misdirection of efforts. The goal of success in operations is seen as the primary objective, but the supporting structure to its future success is negated from the laser focus on operations.

Third, the CAF has an explicit view that systems thinking will aid the organization in dealing with complexity and uncertainty. The understanding of this view likely rests only at the senior level of the CAF, limiting the full potential of systems thinking within the whole organization. This creates a gap in explicit direction and

implicit execution contrary to said direction. Education in the study of systems thinking and continued practice can likely help narrow the gap.

Fourth, and final, the information technology systems within the CAF and their ability to facilitate knowledge management and communication are a key element to the CAF behaving more like a learning organization. These systems allow a common knowledge of problems, and the sharing of mental models. They enable team learning and the development of shared visions. The ability to see the "whole" of the CAF is highly dependent on IT structure in part due to its size, and in part due to the distribution of its people.

In summary of this chapter, the CAF shares similarities with the conceptual learning organization, but has the potential to improve these similarities and develop the skillsets and knowledge necessary to operate at a more growth enlightened level. There are however, deeply rooted challenges to advancing in the learning organization direction.

# CHAPTER 6: FINDINGS AND RECOMMENDATIONS

Through analysis using the conceptual learning framework in conjunction with metaphorical images of the CAF and an understanding of learning organization disciplines, three major findings and accompanying recommendations are made in this chapter. These findings directly respond to the question: how can the CAF benefit from becoming more like a learning organization?

The CAF already has some of the essential building blocks of a theoretical learning organization. Analysis noted that the CAF has a distinct culture allowing the organization to collectively focus efforts towards a goal. The CAF has a training structure that supports continued learning and a search for further knowledge. The CAF also has strong leadership foundations focused on facilitating and leading change. Through the analysis conducted in the previous chapter, a similar diagram to that of Bui and Baruch's can be created for the CAF displaying where it's strengths and weaknesses lie in comparison to the learning organization disciplines (Figure 2). Examining the missing links between learning organization disciplines and antecedents within the CAF assists in deducing the three major findings for improvement.

The findings presented here do not speak to the CAF's strengths, but instead are focused on how the CAF can significantly *improve* and benefit from the study of learning organizations. The subsequent sections first review the barriers to improvement, followed by the major research findings.

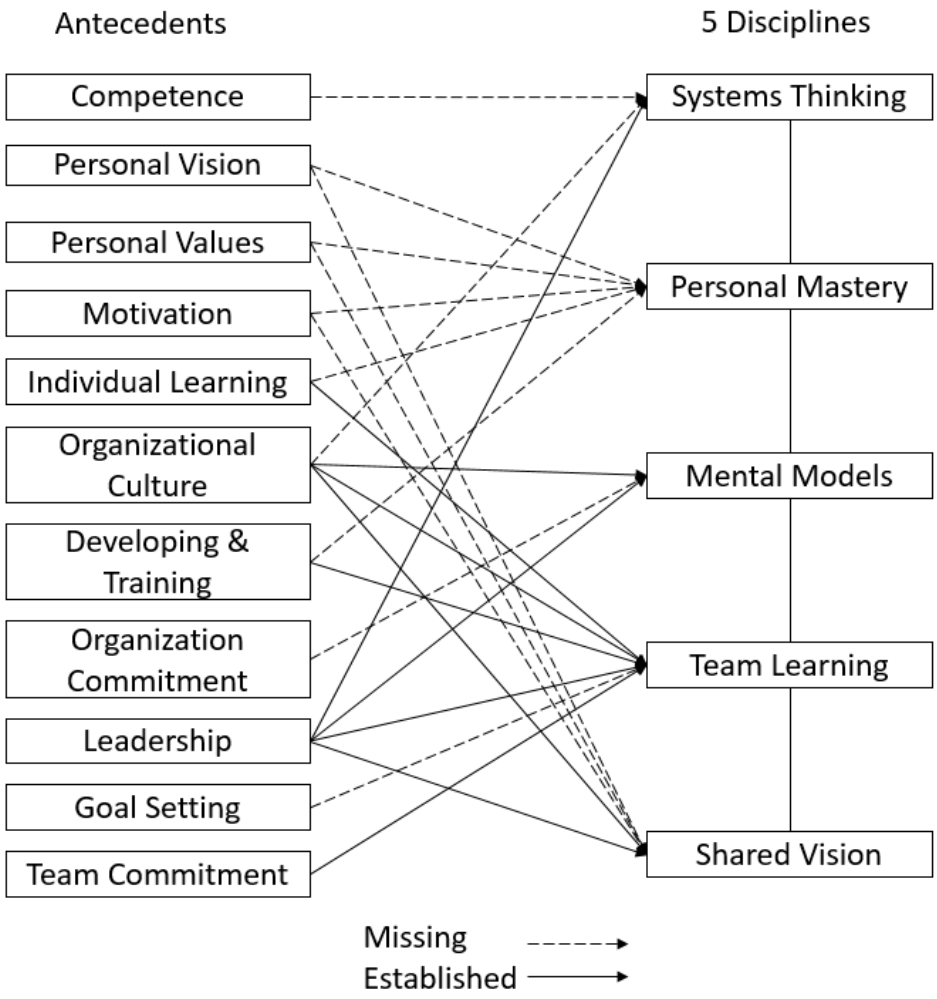


**Figure 2 – The CAF Learning Organization Framework**

**Barriers to Learning**

Two major barriers emerged from analysis of the CAF's organizational behaviour as a learning organization. These barriers present a common obstacle to all findings of proposed improvement. Prior to examining findings, these barriers must be highlighted as context when considering recommendations and steps to improvement.

The first, and enduring barrier for the CAF to become more like a learning organization, is its structure. This barrier refers not only to the hierarchal design and division of labour of the CAF, but also the standardization of policies used to enforce a

rigid structure. The bureaucratic structure of the CAF is meant to rationalize the most efficient means of generating a force to conduct operations, but this structure is inflexible in achieving further goals. Because of the organizational rigidity in the CAF, several disciplines of learning organizations cannot thrive. Systems thinking, in particular, as a cornerstone of learning organizations, is a difficult mindset to educate in a large organization that has many divisions. Building shared visions and team learning is also challenged by large differences in power dynamics created by the structure of the CAF. The structure of the CAF traditionally achieves disciplined efficiency in the mentally challenging warfare environment. Nonetheless, when it comes to seeing the interlinkage of problems and embracing constant change, the rigid structure of the CAF places limits on the ability to change.

The second barrier is the CAF's communication framework. A reoccurring theme in the analysis chapter was that the CAF lacked the ability to communicate knowledge in a distributive manner. The barrier of communication does not refer to the CAF's ability to communicate orders down the hierarchal chain of command. On the contrary, this structure of communication is efficient and serves the purpose of reacting to operational demands quickly. The barrier of communication to the CAF as a learning organization is focused on what processes and customs exist to communicate in all directions of the structure, and the technology that supports them. The technical barrier is the weaknesses of the CAF's culture of data usage and stewardship of data knowledge. This issue is noted in the CAF's *Data Strategy* which aims to remedy this problem. Without the fixed ability to store and query data from a common location that provides up to date and accurate information, the CAFs common communication of issues will be hindered. The

more social barrier of CAF communication is the ability to openly hold dialogue between services, units, and teams. Rewards, punishments and the competitive meritocracy of the CAF de-incentivizes speaking openly about failure and thus learning collectively from mistakes. This type of communication environment is a barrier to all disciplines of a learning organization, particularly team learning and shared vision. The communication barrier is a necessary challenge to overcome and is linked to both the structure of the CAF and its culture.

**Improvement of Systems Thinking**

The first finding notes a need to improve systems thinking within the CAF. Systems thinking is the foundation of learning organizations. Some aspects of the CAF knowingly or not, embrace this mindset of viewing problems as a whole, but there is significant room for improvement. Analysis notes that the CAF has the type of leadership and training institutions necessary to support systems thinking. Explicitly, the CAF states it needs to take a systems approach to problems with statements like "Leaders at all levels must … understand how [roles and missions] interrelate and must be agile and adaptive…"[196] However necessary this mindset is, it is challenged by the barriers previously noted. Many CAF leaders may understand the importance of the statement above, but come time to execute planning will revert to practiced and taught linear methods of thinking, often following step by step doctrinal instructions. The structural norms of the CAF encourages planning in isolation with touchpoints between organizations for decision making, limiting time to discuss problems as a whole and have meaningful dialogue to produce innovative solutions. Moreover, lack of integration of

[196] Department of National Defence, *Pan-Domain Force Employment Concept.…*, 16.

data between organizations makes it unlikely that commanders and staff will make the effort to integrate with each other, unless absolutely needed for self-serving reasons.

The implicit nature to avoid good integration between organizations in the CAF is trained into personnel from the beginning of their careers by teaching very linear approaches to problems. It is recommended that the principles of systems thinking and how to view problem sets in this manner are taught at the lowest level of training. The CAF should investigate how pedagogical research approaches the teaching of systems thinking and indoctrination of the knowledge. Knowledge objectives during training should focus on the effective use of single and double-loop learning in systems, and viewing individual and team problems as part of a larger system. Increasing the use of system and design approaches to training scenarios increases the likelihood of its natural use in more complex problems throughout a CAF member's career. It also encourages creative thinking and framing of everyday frictions within the CAF, promoting a departure from the status quo where necessary. The CAF's limited use of systems thinking at higher levels is not sufficient to implement widespread change. A second approach, indoctrinating systems thinking throughout the training career of a member, is recommended.

In support of training of systems thinking sooner, it is also recommended that the CAF formally adopt a systems approach to operational planning. Current doctrine in this respect has a limited systems view of complex problems, and approaches complexity through a logical step by step process.[197] Since doctrine is usually taught as a basis for learning how to plan in a complex environment, it should be modified to support a better

[197] Department of National Defence, B-GJ-005-500/FP-000, *CFJP 5.0 The Canadian Forces Operational Planning Process* (Ottawa: 2008), 3-1.

education of systems thinking. The CAF should investigate a more direct approach to scoping complex problems in operational planning using systems analysis. Efficient and logical procedures for planning under adverse conditions are still needed, but teaching a systems view encourages the integration and joint planning that the CAF seeks to operationalize. Investigating the future of systems thinking in operational design, and how allied forces implement systems analysis tools serves as a good starting point for research.[198] Further, because the CAF does not formally train how to plan garrison or daily routine, the operational planning domain is the most logical place to teach these skills that can be transferred to solving non-operational problems as well.

Systems thinking in the CAF allows the organization to find leverage in complex problems, and it promotes a culture of viewing the organization in constant change as part of a system, rather than statically transitioning from a current to a future state. When sustained, this mindset is more likely to face uncertainty effectively.

**Creating a CAF Vision and De-Mystifying Goals**

A systems oriented organizational approach requires a common and shared vision. The secondary effect of multiple divisions of effort as a solution to complex problems, is competing goals and priorities. This second finding focuses on improving goal orientation, and creating a shared vision within the CAF.

The CAF is an organization designed to be an instrument of government power, and it is designed to exert military power in a precise manner. Ironically, the precision of the CAF disadvantages its ability to manage the increasing complexity of the

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[198] Aaron Jackson, *Design Thinking in Commerce and War: Contrasting Civilian and Military Innovation Methodologies* (Alabama: Air University Press, 2021; U.S. Department of Defence, *JP 5-0 Joint Planning* (Joint Force Development, 2020); Australian Department of Defence, *ADFP 5.0.1 Joint Military Appreciation Process* (Joint Doctrine Directorate, 2019).

organization's foundational elements. In a search for more precision and efficiency, the CAF has become practiced in eliminating distractions to the ultimate goal: success in operations. Although operational goals are met, other goals are put at risk. Further, the sub-organizations of the CAF excel at conducting a temporary and operationally focused mission task. Orders for more enduring institutional change are then less familiar in their scope and design. Precisely assigning tasks and objectives for culture change leads to a hidden ignorance of said objectives, rationalized by a focus on operations. When overloaded with diverging goals, or assigned separate goals that do not share the same vision, the CAF is challenged by a competition among sub-organizations in achieving goal success.

Operations are supposed to be the overarching goal of the CAF. As the CAF faces complexity and uncertainty in operations, the organization has seen the need to invest in diversity and the support and enabling functions of operations in contrast to a traditionally operator focused approach. The CAF needs to clarify both operational and institutional goals and unite their purpose. This is best achieved through the creation of a shared vision: a lacking element of the CAF as a learning organization.

Visions and the intents of leaders are not foreign concepts within the CAF, but their alignment to a purpose and support are not so common. In a learning organization, creating a vision is not completed by a planning cycle or focus group at the senior levels of the organization. The effectiveness of a shared vision is based on how much commonality it shares with the individual visions of the organization, creating "buy in" to the vision. Recall that Senge notes the attitudes from apathy to full commitment have a significant effect on a vision. In this respect, the CAF's structure of delivering orders in a

top down manner is at a great disadvantage because it does little to achieve commitment except demand it. This method works in operations because soldiers, sailors, and aviators have been indoctrinated to act on lawful orders within the operational scope. They know that they may have to risk their own life to achieve mission success.

When immediate danger is not present, and an order is given to comply with new policy in an effort to improve diversity or reporting of sexual misconduct, the CAF member takes time to compare the order to their individual values and vision of the CAF. The discrepancies between the order and their values may cause an adverse attitude towards complying with the order. Further, because the order represents a change to the norm, it is easy for the CAF member to find others that share their view, thus supporting their resistance to the order. Explicitly, the CAF member can appear to support the change, because in essence they do not have to take any action to display compliance, only restrain from specific behaviours.

This attitude does not successfully implement change and it is enabled by the lack of a shared vision. The learning organization's shared vision combats this apathetic attitude towards change by collectively creating visions, so that members of the organization are intrinsically motivated to support organizational change.

Collectively creating visions for change is a foreign concept to the CAF. Senior leaders often fool themselves by thinking that discipline will ensure compliance and that the necessity of change will be enough to answer members questioning why change is required. In order to fix this problem, it is recommended that the CAF research the best manner to create a properly shared vision within the organization. Further research on this point should focus on two topics. First, which methods of collectively building a

vision within a large public organization are effective, and second, what are the best cross-generational communication methods to harness individual and collective thoughts on a CAF vision. This process is a departure from the CAF norm of automatic compliance, and therefore requires further research into implementation, however it is not meant as a recommendation to democratize the CAF. A shared vision gains the commitment of others through dialogue not a vote by the majority.

Once a shared vision is achieved, policy implementation can be more successfully implemented through traditional methods because the overall vision is supported. The infamous boot and beard Canadian Forces General Messages (CANFORGEN) serve as an example of this concept. Little to no resistance was received to these policy changes to dress and deportment within the CAF. There was already a tacitly shared vision throughout the CAF that beards could be permitted in most daily circumstances and that boots were unique to every individual and not suited for mass supply. The policy, although still controlling the conditions for growing beards and purchasing boots, was successful in implementation.

Additionally, the requirement for a shared vision suggests the CAF should seek to clarify how institutional change benefits the traditional vision of excellence in operations. There is no immediately visible reinforcing effect that builds support for institutional change. Members are simply told “it takes time to achieve culture change.” This in fact reinforces for most linear thinking members that the change is not working, and therefore no action is required on their part. The link between necessary institutional change and operational success needs to be made much more clear within the CAF. A shared vision

will help, as will a more widespread systems approach to thinking, but the evidence of necessity must be made more accessible to all CAF members.

The improvement of goal divergence and creation of a shared vision is a step towards becoming more like a learning organization. Once these skills are mastered, the organization becomes more agile in its ability to change and reorient in a volatile environment.

**Individual Creativity and Innovation**

The first two findings note the organizational and collective improvements the CAF can make within systems thinking and shared vision. These improvements are made reasonable because of the CAF's strength in team building, leadership, and cohesive culture. The final finding focuses on a weakness born out of a heavy focus on building teams: individual development. The individual within an organization is a force multiplier for the organizational level disciplines of a learning organization. As the discipline of personal mastery suggests, an individual that has personally developed the skills of creating personal visions and understands the value of creative tension, is much more suited to aid in developing collective visions and innovation.

The immediate solution to improving individual personal skillsets is to educate and instruct the needed skillsets. As much as some education and practice may benefit individuals in learning the types of skills used to create their own vision and develop creativity, care must be taken to not impose ideals. Personal goal setting and their achievement is an individual task within a learning organization that develops the individual's ability to see their reality as a "creative work."[199] Balancing necessary

[199] Peter M. Senge, *The Fifth Discipline*…, 131.

imposed order and developing creativity and innovation is exactly the predicament the CAF faces.

Examination of the CAF's culture as a psychic prison noted the tendency of the CAF to assimilate member thinking to a narrow point of view focused on CAF values and beliefs which are centered on the concepts of duty, loyalty, discipline, integrity, and a fighting spirit. The CAF therefore cannot expect much creative thought from its ranks, as most have been taught how to work together in the profession of arms within disciplined restrictions. Further, a male dominant gender suggests that creativity is held in less esteem. The CAF asks for innovating solutions to problems from personnel that have been trained to think, work, and share only team thoughts.

How does the CAF overcome the balance of disciplined and creative thought? This research makes three recommendations. The first recommendation is the CAF continue its push to diversify the organization. Increasing the variety of viewpoints, background, and experiences serves to help balance a traditionally narrow view of the status quo life in the CAF. These efforts should be tied to the improvements of a shared vision suggested in the previous section.

The second recommendation is to further research how the skills of personal mastery can be integrated into CAF training. Personal reflection skills and development of personal visions within the lower ranks of the CAF is necessary to generate an intrinsic motivation to innovate and find creative solutions within the organization. These softer skills are uncommonly taught formally within the CAF, but are a key necessity to benefiting from learning organization principles, mainly a positive attitude towards change at the individual level.

The last recommendation is to develop an overall environment within the CAF where personal goals and betterment are supported. The Canadian Army has taken steps to encourage personal growth through its Mission: Ready program.[200] The successes and challenges of this program should be further analyzed to improve an environment that allows individual development. Any program of this nature will require support from the command structure of the CAF. Investigation into policies that may conflict with personal growth programs should be undertaken. Finally, the external narrative of the CAF as a place for individual growth should be re-invested in. Not only do CAF members need to feel that they can develop individually within the CAF, but the public perception needs to support this belief as well.

One of the major counter-arguments to the pursuit of personal growth earlier in a member's career is that the experience will come with time in the job and is not needed for more junior tasks. This argument proposes that the lowest common denominator of an organization will raise itself over time due to training and experience. This research proposes that instead of waiting, the CAF raise the lowest common denominator at entry in to the organization by integrating personal growth skills in training. This approach positions the CAF to learn from an entire organization rather than only the portion that has gained enough experience (and been shaped to the status quo) due to time.

The three major findings presented on where the CAF can most benefit from a learning organization concept are focused on the disciplines of systems thinking, shared vision, and personal mastery. They share the challenges of the CAF's bureaucratic and structure and communications framework. These findings represent significant benefits to

[200] Canadian Army, "Mission: Ready," last accessed 4 March 2021, https://strongproudready.ca/missionready/en/home-en/

the CAF's ability to operationally succeed in an uncertain environment without risking an ignorance to the foundational structure of the CAF.

Systems thinking within the CAF will support a mindset towards constant change and an approach to problem solving that looks past the status quo. Shared visions in the CAF will enable efficiency of labour towards common goals and increase the collective motivation to achieve goals. Personal mastery in the CAF increases human innovation capital and creates the image of the CAF as an employment of choice. These benefits encompass the concepts of learning organizations, and the ability to successfully evolve in a changing organizational environment.

**Research Limitations**

No research is absolved from limitations, and this paper is no exception. The first limitation is that the research is qualitative in nature, needing more empirical data for validation. Further research into the topic should investigate the use of the DLOQ to analyze empirical data against the findings made here. The qualitative nature of the research is also limited by the same limitations of supporting concepts. Bui and Baruch's learning organization framework, in particular, cannot account for all factors that construct the five disciplines of a learning organization, however the major factors are included.[201]

Similarly, metaphorical analysis, although powerful, inherently abstracts information of the target organization. Viewing the CAF through metaphors creates insight into elements of the organization, but simultaneously hides other factors. Use of more metaphors can mitigate this limitation. An externally conducted cultural study of

[201] Hong Bui and Yehuda Baruch, "Creating Learning Organizations…, 220.

the present day CAF would also improve the understanding of deeply rooted issues within the organization. Defining an organization is inherently a constructive process, demanding its own collection of research.

Finally, there is continued debate on learning organization theory and the utility of Senge's model. The most prominent criticism is that the model is overly optimistic, not accounting for the realities of a necessary bureaucratic structure.[202] Nonetheless, Senge's work is consistently cited in research of learning organizations, and used to gain important insight into the concept. The idealistic view of Senge's model provides an ambitious target for learning organization research.

Despite these limitations, the paper presents key findings on how learning organization theory can benefit the CAF and its ability to limit catastrophic failure as an organization existing in an uncertain and volatile organizational environment.

[202] Shih-Wi Hsu and Peter Lamb, "Still in search of learning organization?..., 31.

# CONCLUSION

The CAF is a unique public organization that operates in a contested environment where the use of deadly force is sanctioned by law. The CAF was created to serve the interests of Canada and protect Canadians, and therefore has a duty to remain competitive in the domain of armed conflict. This duty encompasses both excellence in operations and management of the institution built and shaped to support all CAF tasks. Modern day military operations require the CAF to constantly adapt to a changing conflict environment.

This research set out to contrast the CAF against learning organization theory and find how the organization could benefit by becoming more like a learning organization, theoretically able to thrive in a changing environment. The results suggest the CAF should focus on improving the use of systems thinking in planning and problem solving, develop a shared and uniting vision, and invest in the individual development and personal growth of its members. These findings are not necessarily unique concepts on their own, but represent areas of improvement that are not always intuitively linked to operational performance. In this sense, the research draws attention to the deeper indicators of the CAF's capacity for change. Overall, the learning organization's more holistic view of the CAF provides insight into how the organization can better approach future uncertainty.

The theory of learning organizations seeks exactly what the CAF desires: embracing an environment of constant change. Through the disciplines of personal mastery, mental models, shared vision, team learning, and an overall foundation of

systems thinking, Senge suggested that an organization could attain a new level of change management. The CAF is rooted in a strong culture, with ideals that are resistant to change, sometimes to the detriment of the organization's credibility. The CAF operates rationally and efficiently, and has proven flexibility in adapting to a wide set of operational mandates. In order to achieve its goals, the CAF relies on extensive training and strong leadership coupled with shared values of the profession of arms. Several of these concepts support the tenets of a learning organization, but a reorientation of its strengths is needed to fully benefit from learning organization potential.

The CAF is hindered by a bureaucratic structure that increases discipline and efficiency of tasks at the expense of creativity and innovation. The ability for the CAF to learn as an organization through distributed teams and individuals is limited by its hierarchal communications framework. It is difficult for the CAF to accept short term failure as an investment for greater future success. The operational focus of the organization limits the view of personnel to a single task, creating a binary and linear mindset towards problems. Either the task supports operations or it does not. Failure is not an option. Often, supporting concepts to operations are discarded to ensure no time is wasted on achieving the mission. What is missing, but hidden to CAF leaders, is a united shared vision with full commitment from all members that properly envisages the CAF's future. It is hidden because leaders think it already exists: operational success. The study of learning organizations promotes a systems view that examines the interconnectedness of the organization. This view of the CAF suggests that a better shared vision could exist, uniting the supporting and enabling elements of the CAF with the operational. This type

of vision could also help address gravely needed culture change with respect to sexual misconduct.

Future research along the lines of organizational development should focus on empirically validating results and investigating how the CAF can implement suggested changes that lead towards a change embracing organization. Ultimately, the ability to adapt quickly is what will determine the CAF's performance both as a public institution and in military operations.

In closing, the people of the CAF have a large part to play in the organization's ability to adapt. The research has shown the importance of individual growth with respect to unifying an organization's efforts in achieving a set vision. The CAF recognizes a need for continued personal growth for its members, but needs to continue to investigate how to do better. The CAF's traditional disciplined structure bounds individual creativity and innovation. The balance between discipline in combat and ingenuity of thought remains a challenge. As the only organization mandated to defend Canadians, members of the CAF must always remain committed personally to learning, and a life that creatively expands the necessities of an effective professional military.

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