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The crucible of war: Dutch and British military learning processes in and beyond southern Afghanistan

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Chapter 2

Chapter 2: The Military Dimensions of Organizational Learning

2.1: Introduction

The study of how military organizations implement change has grown steadily over the last decades.⁶² Collectively, the resulting literature is known as “military innovation studies.”⁶³ This field encompasses all efforts to enact organizational change in armed forces. For instance, study of military innovation includes “revolutions in military affairs” or even tectonic shifts in scientific paradigms and their effects on warfare.⁶⁴ Other works examine the implementation of innovative technology or concepts in peacetime.⁶⁵ Then, there are the analysis of battlefield adjustments and adaptations.⁶⁶

By and large, the latest research has focused on adaptations made by Western armed forces in the wars in Iraq and Afghanistan.⁶⁷ Conversely, the earlier literature emphasized on novel concepts, and technologies that were introduced “top-down” in times of peace.⁶⁸ The distinction between “peace time innovation”, and “wartime adaptation” is by no means dichotomous. New technologies, and concepts must be validated, and refined through application during real conflicts; at the same time, experiences during conflict invariably help drive the search for measures that can enhance the performance of the military organization.⁶⁹

62 See Stuart Griffin (2017). Military Innovation Studies: Multidisciplinary or Lacking Discipline. *The Journal of Strategic Studies*, 40(1-2), p. 198-203; Michael Horowitz and Shira Pindyck (2019). *What is A Military Innovation? A Proposed Framework*. University of Pennsylvania. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3504246 *Strategic Studies*, 40(1-2), pp. 196-224.

63 See Adam Grissom (2006). The future of military innovation studies. *The Journal of Strategic Studies*, 29(5), p. 906-907.

64 See MacGregor Knox and Williamson Murray (Eds.). (2001). *The Dynamics of Military Revolution, 1300-2050*. New York: Cambridge University Press; Antoine Bousquet (2009). *The Scientific Way of Warfare: Order and Chaos on the Battlefields of Modernity*. London: Hurst.

65 See for instance: Barry Posen (1984). *The Sources of Military Doctrine: France, Britain and Germany between the World Wars*. Ithaca: Cornell University Press; Michael; Elizabeth Kier (1997). *Imagining War: French and British Military Doctrine between the Wars*. Princeton: Princeton University Press; Michael Horowitz (2010). *The Diffusion of Military Power: Causes and Consequences for International Politics*. Princeton: Princeton University Press.

66 See: Meir Finkel (2011). *On Flexibility: Recovery from Technological and Doctrinal Surprise on the Battlefield*. Stanford: Stanford University Press, p. 223-226; Lawrence Freedman (2017). *The Future of War: A History*. London: Penguin, p. 277-279; Williamson Murray (2011). *Military Adaptation in War: With Fear of Change*. New York: Cambridge University Press, p. 5; Michael Hunzeker (2021). *Dying to Learn: Wartime Lessons from the Western Front*. Ithaca: Cornell University Press; Raphael Marcus (2018). *Israel's Long War With Hezbollah: Military Innovation and Adaptation Under Fire*. Washington D.C.: Georgetown University Press.

67 See for example: Theo Farrell, Frans Osinga, and James Russell (Eds.). (2013). *Military Adaptation in Afghanistan*. Stanford: Stanford University Press; Chad Serena (2011). *A Revolution in Military Adaptation: The US Army in Iraq*. Washington D.C.: Georgetown University Press; James Russell (2011). *Innovation, Transformation and War: Counterinsurgency Operations in Anbar and Ninewa Provinces, Iraq, 2005-2007*. Stanford: Stanford University Press.

68 Grissom. (2006). Future of Military Innovation Studies, p. 919-920.

69 Murray. (2011). *Military Adaptation*, p. 1-2.

As these examples indicate, the research on military change contains a diverse set of subjects and dynamics. However, this diffuse application of “military innovation” has yet to provide a compelling explanation on how armed forces learn in relation to conflict. Recent research was primarily concerned with how armed forces *adapted* to challenges *during* conflict. For the purpose of this research, the distinctions between adaptation, innovation, transformation, and associated terms are interesting but not critically important. Rather, this chapter is concerned with the full range of learning processes by military organizations, and their dynamics. Consequently, whether an institutionalized lesson can be categorized as an adaptation or as an innovation is beside the point; the germane question for this chapter is how learning processes work during and after war. What is currently missing in the literature is an overall explanation of how armed forces learn from experiences during conflict, and how this knowledge is retained afterwards.

This chapter aims to provide a theoretical framework to study the process of learning within military organizations in relation to conflict.⁷⁰ To this end, a synthesis between organizational learning literature and the literature on military innovation will be presented. This synthesis will thereby achieve the main objective of this chapter of identifying the dynamics that influence institutionalization of lessons from war in military organizations. It posits that learning in, and beyond, conflict are distinct elements with peculiar dynamics that arise within a larger process. Consequently, I argue that in order to understand how militaries learn and change, this process should be studied in its entirety.

For this purpose, this chapter is structured into three sections. The first section examines relevant aspects of organizational learning literature. Given the breadth of this field, a comprehensive overview of the literature and adjacent subjects is beyond the ability of this research. To address the research question, the chapter explores the relevant processes and dynamics of organizational learning that can help explain the institutionalizing of knowledge from experience. The second section provides an overview of the literature on military innovation studies. It analyzes pertinent developments in the field and identifies specific elements that can help to explain how militaries learn from conflict. Furthermore, this part assesses earlier use of organizational learning theory in military case studies. This overview can help identify potential lacunae for explaining how armed forces learn in relation to conflict. Finally, the third section fuses elements of military innovation studies with organizational learning theory. Consequently, a novel theoretical framework is presented that distinguishes between informal and formal learning during conflict and the efforts towards institutionalization following the conclusion of a war or mission. Additionally, this section builds an analytical model that incorporates these distinct but related strands

70 This chapter is an adaptation of previous work by the author on learning in military organizations, see: Martijn van der Vorm (2021). *War's Didactics: A Theoretical Exploration on how Militaries Learn from Conflict*. Breda: Netherlands Defence Academy; Martijn van der Vorm (2021). Learning and Forgetting Counterinsurgency. In R. Johnson, M. Kitzen, & T. Sweijs (Eds.), *The conduct of War in the 21st Century: Kinetic, Connected and Synthetic* (pp. 189-208). London: Routledge

of learning. Ultimately, this synthesis will help to understand how armed forces learn from their wartime experiences and seek to retain this knowledge for future conflicts.

2.2: Organizational learning theory

How organizations learn has long been a subject of intense academic attention. Initially, the organizations under study were mainly business companies that seek profit in a competitive environment.⁷¹ More recently, learning processes are also studied in other types of organizations such as, for instance, non-governmental organizations.⁷² An important driver of this interest is that organizations themselves are interested in how they learn, as this can help improve their performance and long term success.⁷³ As of yet, there is no overarching theory that explains and predicts how organizations learn.⁷⁴ Nonetheless, the literature of organizational learning holds useful elements to study learning by military organizations in relation to conflict.

This chapter does not seek to provide a comprehensive overview of that vast discourse.⁷⁵ Instead, it will give an overview of central concepts within organizational learning theory in order to establish an essential understanding of the field. The objective of this chapter is to identify what elements of this literature can help to explain how organizations acquire, disseminate, transform and utilize knowledge to enhance their performance. In the subsequent sections these concepts will be contrasted with works on military change.

71 Hans Berends and Elena Antonacopoulou (2014). Time and Organizational Learning: A Review and Agenda for Future Research. *International Journal of Management Reviews*, 16, p. 437; Linda Argote and Ella Miron-Spektor (2010). Organizational Learning: From Experience to Knowledge. *Organization Science*, 22(5), p. 1123.

72 See for example: Kathleen Carley and John Harrald (1997). Organizational Learning Under Fire: Theory and Practice. *The American Behavioral Scientist*, 40(3), pp. 310-332; Wout Broekema (2018). *When does the phoenix rise? Factors and mechanisms that influence crisis-induced learning by public organizations*. Leiden: Leiden University; Anna Mahura and Gustavo Birollo (2021). Organizational practices that enable and disable knowledge transfer: The case of a public sector project-based organization. *International Journal of Project Management*, 39, pp. 270-281

73 Bernard Burnes, Cary Cooper and Penny West (2003). Organisational learning: the new management paradigm? *Management Decision*, 41(5/6), p. 452; Linda Argote and Ella Miron-Spektor (2010). Organizational Learning: From Experience to Knowledge. *Organization Science*, 22(5), p. 1123.

74 Mary Crossan, Cara Maurer, and Roderick White (2011). Reflections on the 2009 AMR Decade Award: Do we have a theory of organizational learning? *Academy of Management Review*, 36(3), p. 457-458.

75 Overviews of the literature on organizational learning are readily available see for example: Mary Crossan and Marina Apaydin (2010). A Multi-Dimensional Framework of Organizational Innovation: A Systemic Review of the Literature. *Journal of Management Studies*, 47(6), pp. 1154-1191; Burnes, et al. (2003). Organisational learning, pp. 452-464; Berends and Antonacopoulou (2014). Time and Organizational Learning, pp. 437-453.

2.2.1: Definition

The literature on organizational learning offers a plethora of definitions.⁷⁶ At a fundamental level, organizational learning encompasses two processes: a cognitive process of acquiring new knowledge, and a behavioral process of utilizing new knowledge for enhancing organizational performance.⁷⁷ At root, improvement of the organization's performance is the main objective of learning.⁷⁸ Improvement of performance is inherently related to the reduction of errors. A somewhat bare-boned definition of organizational learning is that it is "a process of detecting and correcting error".⁷⁹

More illuminating is the definition offered by Marleen Huysman: "Organizational learning is the process through which an organization constructs knowledge or reconstructs existing knowledge."⁸⁰ Yet, this definition lacks the relation of learning to the organization's performance. C. Marlene Fiol and Marjorie A. Lyles do emphasize the enhancement of performance: "Organizational learning means the process of improving actions through better knowledge and understanding."⁸¹

However, what is missing from these examples is the organization's relation with its environment. To ensure its survival, any organization seeks to improve its operations and address threats and opportunities from the environment; when unable to do so, the organization will eventually fail.⁸² A relevant definition then must combine the aspects of knowledge creation, organizational performance, and its environment.

Consequently, the working definition of organizational learning adopted for this study is an extension of Huysman's description: the process through which an organization constructs knowledge or reconstructs existing knowledge for maintaining or enhancing its performance in relation to its environment.

An important caveat to this definition is that learning processes by themselves do not directly or necessarily lead to better performance. For instance, organizations can learn the wrong

76 For an elaborate overview of definitions up to 1993 see: Jörg Noll and Sebastiaan Rietjens (2016). Learning the hard way: NATO's civil-military cooperation. In M. Webber, & A. Hyde-Price (Eds.), *Theorising NATO: New perspective on the Atlantic alliance*. London: Routledge, p. 225.

77 Wout Broekema (2018). *When does the phoenix rise? Factors and mechanisms that influence crisis-induced learning by public organizations*. Leiden: Leiden University, p. 24.

78 Cyril Kirwan (2013). *Making Sense of Organizational Learning: Putting Theory into Practice*. Farnham: Gower Publishing, p. 142.

79 Chris Argyris (1977). Double Loop Learning in Organizations. *Harvard Business Review*, 55(5) p. 116.

80 Marleen Huysman (2000). An organizational learning approach to the learning organization. *European Journal of Work and Organizational Psychology*, 9(2), p. 134-135.

81 C. Marlene Fiol and Marjorie Lyles (1985). Organizational Learning. *The Academy of Management Review*, 10(4), p. 803.

82 Argyris (1977). Double Loop Learning, p. 117-118; Huysman (2000). An organizational learning approach, p.136.

lessons or apply knowledge incorrectly.⁸³ Moreover, implemented solutions to identified performance gaps can be ineffective due to changes in the environment. This notion equally applies to military organizations, where environmental factors can negate adaptations. Furthermore, the enemy will seek to gain advantages through adaptation.⁸⁴

2.2.2: Organizational learning as a process

Generally, organizational learning is described as a process that consists of consecutive steps. This general characteristic has led to various models and descriptions of organizational learning, but most scholars agree on the cyclical nature of the process.⁸⁵ Furthermore, organizational learning is regarded as a dynamic process and additionally, multiple learning processes can exist concurrently within an organization.⁸⁶

2.2.2.1: Levels of learning

In the literature on organizational learning, multiple levels of learning are identified: individual, group, project, organizational and inter-organizational. These levels have distinct attributes that shape the interaction between them. To understand the process of learning in its entirety, its components must be assessed.

Organizational learning starts with individual members' experience from interacting with the environment.⁸⁷ In this way, individuals acquire knowledge that can make them more adept in performing their tasks.⁸⁸ As such, individual members can address performance gaps by adjusting their approaches. At the same time, they can develop heuristics that are detrimental to the organization, such as short-cuts that impede safety.⁸⁹

83 George Huber (1991). Organizational learning: the contributing processes and the literatures. *Organization Science*, 2(1), p. 89.

84 Aimee Fox (2018). *Learning to Fight: Military Innovation and Change in the British Army, 1914-1918*. Cambridge: Cambridge University Press, p. 9.

85 Marilyn Darling, et al. (2016). Emergent Learning: A Framework for Whole-System Strategy, Learning, and Adaptation. *The Foundation Review*, 8(1), pp. 59-73; Crossan and Apyadin (2010). A Multi-Dimensional Framework of Organizational Innovation, pp. 1154-1191.

86 Barbara Grah, et al. (2016). Expanding the Model of Organizational Learning: Scope, Contingencies, and Dynamics. *Economic and Business Review*, 18(2), p.191.

87 Maria Aragon, Daniel Jimenez and Raquel Sanz Valle (2013). Training and performance: The mediating role of organizational learning. *Business Research Quarterly*, 17, p. 162; Argote and Miron-Spektor (2010). Organizational Learning, p. 1124; Ikujiro Nonaka and Noboru Konno (1998). The Concept of "Ba": Building a Foundation for Knowledge Creation. *California Management Review*, 40(3), p. 40-42.

88 Daniel Kim (1993). The Link between Individual and Organizational Learning. *Sloan Management Review*, 35(1), p. 38-39.

89 Catherine Wang and Pervaiz Ahmed (2003). Organisational Learning: a critical review. *The Learning Organization*, 10(1), p. 9.

This individual knowledge is often tacit.⁹⁰ Through close proximity, tacit knowledge can be shared between individuals.⁹¹ Still, this is insufficient for sharing knowledge beyond immediate coworkers. By making the knowledge explicit, it can be consciously shared in a group.⁹² Instruments for explicating knowledge are discussion, instruction, or written manuals. This facilitates knowledge dissemination and retention, enabling members of a group, can retrieve this explicit knowledge.⁹³ A group's capacity to learn can be enhanced by implementing learning mechanisms such as periodic evaluations or providing feedback.⁹⁴ Although the organization can support learning at group level, teams can implement such mechanisms by themselves.

An additional way to study more informal learning practices is through “communities of practice.”⁹⁵ Here specialists share a common, informal group identity based on their trade or position, for instance engineers or consultants.⁹⁶ Within these communities, specific knowledge can be shared between their members both at an organizational or inter-organizational level. In other words, these specialists can learn from each other's experiences, even when this knowledge is not present in their own team or organization.⁹⁷ A potential negative effect of such communities is that they become insulated from other sources of knowledge.⁹⁸

Beyond teams and “communities of practice,” learning from projects forms a distinct analytical lens. A project can be defined as a temporary organization that is tasked with obtaining a particular goal.⁹⁹ To be sure, not every temporary organization will have a detailed objective that can be optimized. For instance, military missions are often

90 Ikujiro Nonaka and Georg von Krogh (2009). Perspective—Tacit Knowledge and Knowledge Conversion: Controversy and Advancement in Organizational Knowledge Creation Theory. *Organization Science*, 20(3), pp. 635-652; Huysman (2000). An organizational learning approach, p. 136.

91 Ikujiro Nonaka and Ryoko Toyama (2003). The knowledge-creating theory revisited: knowledge creation as a synthesizing process. *Knowledge Management Research & Practice*(1), p. 4-5.

92 Nonaka and Konno (1998). The Concept of “Ba”, p. 43-44.

93 Jeanne Wilson, Paul Goodman, and Matthew Cronin (2007). Group Learning. *Academy of Management Review*, 32(4), p. 1054-1055.

94 Nory Jones and John Mahon (2012). Nimble knowledge transfer in high velocity/turbulent environments. *Journal of Knowledge Management*, 16(5), p. 778-779

95 Jean Lave and Etienne Wenger (1991). *Situated Learning: Legitimate Peripheral Participation*. Cambridge: Cambridge University Press, p. 89.

96 Wai Fong Boh (2007). Mechanisms for sharing knowledge in project-based organizations. *Information and Organization*, 17(1), p. 47-49.

97 Stephen Duffield and Stephen Whitty (2016). How to apply the Systemic Lessons Learned Knowledge model to wire an organisation for the capability of storytelling. *International Journal of Project Management*, 34(3), p. 430-431.

98 Mahura and Birolo (2021). Organizational Practices, p. 279

99 Hans Berends and Irene Lammers (2010). Explaining Discontinuity in Organizational Learning: A Process Analysis. *Organization Studies*, 31(8), p. 1049.

conducted by bespoke task forces with broadly formulated end states.¹⁰⁰ In general, the project (or temporary) organization can learn and adapt throughout its existence.¹⁰¹ Apart from this intra-project learning, institutionalizing of lessons for new projects is relevant for this research. In this way, knowledge is available for future use.¹⁰² However, the temporal aspects of projects often impede the ability to learn from them. Generally, achieving the project's objective is prioritized over knowledge retention.¹⁰³ Furthermore, after the end of a project, the temporary organization can be dissolved which can lead to the dissipation of the acquired knowledge.¹⁰⁴

Finally, organizational learning relates to how lessons affect the whole organization's performance. As the scale of the organization that must change increases, the implementation of such change can become more complicated. In particular, profound adjustments to the strategy of the institution will be hard to enact.¹⁰⁵ Furthermore, new knowledge of this nature will affect how individual members perceive their performance and possibly the environment. Consequently, the institutionalization of lessons will affect subsequent learning processes.¹⁰⁶

2.2.2.2: Models of organizational learning

To assess the consecutive steps of organizational learning, scholars have built analytical models to understand the entire process.¹⁰⁷ In this subsection, several of these models are examined. While exhaustive overview of models is beyond the scope of this research, this short analysis can help understand the different steps of organizational learning and how they are linked.¹⁰⁸

100 Rolf Lundin and Ander Soderholm (2013). Temporary organizations and end states: A theory is a child of its time and in need of reconsideration and reconstruction. *International Journal of Managing Projects in Business*, 6(3), p. 591.

101 Sue McClory, Martin Read and Ashraf Labib (2017). Conceptualising the lessons-learned process in project management: Towards a triple-loop learning framework. *International Journal of Project Management*, 35(7), pp. 1322-1335.

102 Anna Wiewiora, Michelle Smidt and Artemis Chang, (2019). The 'How' of Multilevel Learning Dynamics: A Systemic Literature Review Exploring How Mechanisms Bridge Learning Between Individuals, Teams/Projects and the Organization. *European Management Review*, 16, p. 95.

103 Rolf Medina and Alicia Medina (2017). Managing competence and learning in knowledge-intensive, project-intensive organizations: A case study of a public organization. *International Journal of Managing Projects in Business*, 10(3), p. 517.

104 Berends and Lammers (2010). Explaining Discontinuity, p. 1061; Chantal Savelsbergh, Liselore Havermans and Peter Storm (2016). Development paths of project managers: What and how do project managers learn from their experiences? *International Journal of Project Management*, 34(4), p. 559-562.

105 Fiol and Lyles (1985). Organizational Learning, p. 808.

106 Daniel Kim (1993). The Link between Individual and Organizational Learning. *Sloan Management Review*, 35(1), p. 45-48

107 Mary Crossan, Cara Maurer, and Roderick White (2011). Reflections on the 2009 AMR Decade Award: Do we have a theory of organizational learning? *Academy of Management Review*, 36(3), p. 449

108 See for example: Mikael Holmqvist (2003). A Dynamic Model of Intra- and Interorganizational Learning. *Organization Studies*, 24(1), p. 114; Anna Wiewiora, Michelle Smidt and Artemis Chang (2019). The 'How' of Multilevel Learning Dynamics: A Systemic Literature Review Exploring How Mechanisms Bridge Learning Between Individuals, Teams/Projects and the Organization. *European Management Review*, 16, p. 99-102.

For example, Ikujiro Nonaka and Noboru Konno offer a model that explains how knowledge is transferred from the individual to the institution. A main argument is that tacit knowledge sharing forms a crucial part in the learning process. In the step of “*Socialization*,” members of the organization can learn from each other through close proximity. To extend the range of dissemination the knowledge must be made explicit through “*externalization*.” Instruments for this step can be written or verbal instructions.¹⁰⁹ The third step of “*combination*” is the deliberate effort by the organization to capture knowledge and integrate it in its normal processes. For this step, the organization must accept the validity of this knowledge in order to change its operations.¹¹⁰ Finally, new knowledge must be “*internalized*” by the organization’s members. Through training and education, individual members learn this new knowledge and apply it in their work. As such, the explicit knowledge becomes tacit again, thereby emphasizing the cyclical character of organizational learning.¹¹¹

A more recent and intricate model is provided by Barbara Grah, *et al.*¹¹² Based on a literature review the authors construct a model that adds applying the acquired knowledge to enact change within the organization. They incorporate Huber’s processes: knowledge acquisition, information distribution, information interpretation, and organizational memory.¹¹³ However, they argue that storing the knowledge in itself is inadequate. The new knowledge must be applied to enhance performance. This will help create new experiences and feedback on the organization’s performance, thereby continuing the cycle of learning.¹¹⁴ Marleen Huysman contributes a succinct model that includes the organization’s environment as a source for knowledge.¹¹⁵ This relationship is reciprocal as the organization’s knowledge affects the environment.¹¹⁶ Huysman posits that the organization can learn from competitors, but also from feedback from its clients. Moreover, an organization can implement external knowledge by hiring new personnel or consultants. Still, this form of knowledge acquisition can be subject to biases and miscommunication.¹¹⁷

A final, well-known analytical model is provided Mary Crossan, *et al.*¹¹⁸ It depicts the steps of *intuiting, interpreting, integrating, and institutionalizing*. The first step of *intuiting*, states that

109 Nonaka and Konno (1998). The Concept of “Ba”, p. 42-44.

110 *Ibidem*, p. 44-45.

111 *Ibidem*, p. 45.

112 Barbara Grah, *et al.* (2016). Expanding the Model of Organizational Learning, pp. 183-212.

113 George Huber (1991). Organizational learning, p. 91-99.

114 *Ibidem*, p. 204.

115 Crossan, *et al.* do acknowledge that learning is not a closed cycle, but they do not explicitly depict it in their model, see page 522.

116 Huysman (2000). An organizational learning approach, p. 139-140.

117 *Ibidem*, p. 140

118 See for example Sandra Duarte Aponte and Delio Castaneda Zapata (2013). A model of organizational learning in practice. *Estudios Gerenciales*, 29, pp. 439-444; Maria Aragon, Daniel Jimenez and Raquel Sanz Valle (2013). Training and performance: The mediating role of organizational learning. *Business Research Quarterly*, 17, pp. 161-173.

individual learning from experience is often a subconscious process. This is influenced by the individual's frames of reference, aptitude to process information and existing knowledge. Therefore, the acquired knowledge is mostly tacit.¹¹⁹

By *interpreting*, this tacit knowledge is given meaning by the individual and the immediate team. After this, the group can apply the new knowledge to address deficiencies through the step of *integrating* it within the group's tasks. To ensure that this knowledge is applied throughout the organization, the step of *institutionalizing* is required. As this can affect the operations, the structures, and the norms of the organization, its leadership has to support the resulting changes. This precondition means that this last step entails deliberation and time.¹²⁰ As knowledge is institutionalized, this will influence how individual members perceive their operations in relation to the environment and thus how they learn.¹²¹

Huber/Grah, et al.	Nonaka and Konno	Crossan et al.	Huysman
Knowledge acquisition	Socialization	Intuiting	Individual knowledge
Information distribution	Externalization	Interpreting	Communicated knowledge
Information interpretation	Combination	Integrating	Organizational knowledge
Organizational memory	Internalization	Institutionalizing	Environmental knowledge
Knowledge application (Grah)	-	-	-

Table 2.1: Identified steps of organizational learning. Note that the processes as identified by these scholars are cyclical.

To be sure, models of organizational learning processes by themselves do not explain learning. As the authors acknowledge, these learning processes have an inherent political dimension as existing institutional norms is challenged through knowledge acquisition.¹²² To understand these dynamics, the following subsection will examine the literature on the most pertinent concepts.

119 Crossan, et al. (1999). An Organizational Learning Framework, p. 526-527.

120 Ibidem, p. 527-530.

121 Ibidem, p. 532.

122 Jan Schilling and Annette Kluge (2010). Explaining Discontinuity in Organizational Learning: A Process Analysis. *Organization Studies*, 31(8), p. 343-353.

2.2.3: The dynamics and political dimension of organizational learning

While organizations learn to address deficiencies and adjust to changes in their environment, accumulated knowledge does not automatically lead to enhanced performance.¹²³ At a fundamental level, organizational learning can have two broad interdependent manifestations: *exploitation* and *exploration*. *Exploitation* can be described as improving existing competencies. This allows an organization to enhance its efficiency and helps to attain success in the short term. Conversely, *exploration* is more focused on questioning the organization's core assumptions in relation to potential changes in the environment. If we assume a changing environment, then *exploration* is essential for the organization's survival.¹²⁴ More succinctly, exploitation seeks reliability in experience, while exploration seeks variety in experience.¹²⁵

While both exploitation and exploration are crucial for the organization's success, its leadership must seek to balance these two efforts as organizational time, attention, and other resources are finite.¹²⁶ Furthermore, these types of learning require different viewpoints and activities. In essence, exploitation is driven by experience and is generally internally focused.¹²⁷ Given the immediate impact of improving current operations that help organizational stability in the short term, exploitation is more familiar and easier to pursue.¹²⁸ At the same time the awareness of changes in the environment, changes that may precipitate profound changes in the organization for new opportunities, competitive advantages and addressing critical deficiencies, is crucial for the organization's existence over time. However, the higher echelons of an organization can be apprehensive to engage in such profound changes, as doing so might impede the normal operations. At the lower levels of the organizations, this reluctance can lead to personnel to become cautious in pointing out performance gaps lest they be "punished" for challenging the institution's norms.¹²⁹ From the perspective of leadership, the hesitation to radically alter objectives, policies and operations is understandable, as this entails risk-taking with uncertain returns.¹³⁰ This inherent tension forms part of the crux of organizational learning.

123 Karl Weick and Frances Westley (1999). Organizational Learning: Affirming an Oxymoron. In S. R. Clegg, C. Hardy, & W. R. Nord (Eds.), *Managing Organizations*. London: SAGE Publications, p. 205-206.

124 James March (1991). Exploration and Exploitation in Organizational Learning. *Organization Science*, 2(1), p.71-72.

125 Holmqvist (2003). A Dynamic Model, p. 96.

126 Ibidem, p. 100.

127 Anil Gupta, Ken Smith, and Christina Shalley (2006). The Interplay between Exploration and Exploitation. *Academy of Management Journal*, 49(4), p. 694.

128 March (1991). Exploration and Exploitation, p. 71-72; Levinthal and March (1993). The Myopia of Learning, p. 110.

129 Argyris (1977). Double Loop Learning in Organizations, p. 116.

130 March (1991). Exploration and Exploitation, p.71; Weick and Westley (1999). Organizational Learning, p. 190-191.

The balancing act between exploitation and exploration is therefore a strategic consideration for the organization's leadership. This is further complicated by an inherent political dimension.¹³¹ When a group in an organization argues for a change of direction that will affect the organization, this has repercussions for the internal distribution of power.¹³² Beyond the rational apprehension of leaders to create risks by changing the direction of the organization, the disinclination for alterations can also stem from the higher strata wanting to retain the current power arrangements.¹³³ Consequently, new knowledge will not always be promoted in an organization.¹³⁴ Thus, while organizational learning is a deliberate process, it is certainly not always driven or shaped by rational decision making that solely affects organizational performance, but also the internal power distribution.¹³⁵

The literature on organizational learning identifies two mechanisms to navigate the balance between exploitation and exploration: ambidexterity, and punctuated equilibrium. Ambidexterity indicates the ability to wield two elements simultaneously, in this case exploitation and exploration. For organizations in complex and volatile environments, such as armed forces, the need for such ambidexterity is apparent. A way to attempt to attain balance is to assign the two aspects as tasks to various parts or subunits of the organization. For instance, the subunit that is responsible for routine operations will often be tasked with *exploitation*. Conversely, another element of the organization can be tasked with *exploration* through experimentation and scanning for external developments. This latter arrangement requires some organizational "slack" that allows resources and attention towards exploration, as this normally will not yield tangible benefits in the short term.¹³⁶ In practice, organizations will generally have to navigate between exploration and exploitation simultaneously. Consequently, organizations and their constituent units must adopt an ambidextrous stance. This requires being attuned to feedback from routine operations and to the dynamics of the environment.¹³⁷

Another mechanism, punctuated equilibrium, is based on a "temporal cycling between extended periods of exploitation and short bursts of exploration [...]."¹³⁸ In other words,

131 Berends and Lammers (2010). Explaining Discontinuity in Organizational Learning, p 1061.

132 Thomas Lawrence, Michael Maus, Bruno Dyck (2005). The Politics of Organizational Learning: Integrating Power into the 4I Framework. *Academy of Management Review*, 30(1), p. 180.

133 Scott Ganz (2018). Ignorant Decision Making and Educated Inertia: Some Political Pathologies of Organizational Learning. *Organization Science*, 29(1), p. 55.

134 Thomas Lawrence, Michael Maus, Bruno Dyck (2005). The Politics of Organizational Learning: Integrating Power into the 4I Framework. *Academy of Management Review*, 30(1), p.181.

135 Ibidem, p 182-184; Huysman (2000). An organizational learning approach, p. 135.

136 Zeki Simsek (2009). Organizational Ambidexterity: Towards a Multilevel Understanding. *Journal of Management Studies*, 46(4), p. 599-603.

137 Javier Tamayo-Torres, Jens Roehrich, and Michael Lewis (2017). Ambidexterity, performance and environmental dynamism. *International Journal of Operations & Production Management*, 37(3), p. 291.

138 Gupta, et al. (2006). The Interplay between Exploration and Exploitation, p. 698.

this concept posits that organizations experience stable periods in which changes do occur, but these are incremental and evolutionary. Yet a crisis in operational performance, due to the advent of new technology, being outcompeted, or other developments in the environment, may force more momentous change to the organization, including the organization's mission and core assumptions.¹³⁹ While this implies a binary state between stability and transformational change, the reality is often more nuanced. Based on the developments and the organization's reactions to them, the range of the effects of learning can differ. Evidently, within larger organizations, experiences from interaction with the environment can have diverse effects on the organization's subunits.¹⁴⁰ A pertinent challenge of punctuated equilibrium is that the organization must be sufficiently attuned to its environment to recognize developments that require profound change. Moreover, there must be organizational mechanisms in place to enact the necessary restructuring.

Perhaps the most well-known designations that distinguish between levels of learning are "single loop" and "double loop" learning. First, single loop learning allows the organization to continue its normal processes and pursue its objectives with corrections based on information feedback during operations. Individuals or groups of individuals acquire knowledge from their experience while operating within the organization and its environment. Through this experience, they can identify deficiencies within the operations of the organization. Furthermore, this learning does not always require the support of the organization's leadership.¹⁴¹

Conversely, "double loop" learning is more profound.¹⁴² In this type of learning, the actions are not limited to small corrective actions, but the institutional norms are challenged and changed. Of course, this type of learning requires the active support of the organization's leadership due to the significant repercussions on its operations.¹⁴³ As such, single loop and double loop learning resemble the concepts of exploitation and exploration.

Beyond single and double loop learning, the literature also identifies "triple loop" learning. Yet, there are diverging views of what triple loop learning entails.¹⁴⁴ Without engaging in a contentious effort for defining this concept, here triple loop learning is identified as the

139 Christoph Loch and Bernardo Huberman (1999). A Punctuated-Equilibrium Model of Technology Diffusion. *Management Science*, 45(2), p. 160-161.

140 Andrew Wollin (1999). Punctuated Equilibrium: Reconciling Theory of Revolutionary and Incremental Change. *Systems Research and Behavioral Science*, 16, p. 365-367.

141 Argyris (1977). Double Loop Learning, p. 116; Fiol and Lyles (1985). Organizational Learning, p. 807-810.

142 Other scholars call this "higher learning", see for example: Fiol and Lyles (1985). Organizational Learning, p. 808.

143 Argyris (1977). Double Loop Learning, p. 118-122.

144 Paul Tosey, Max Visser and Mark Saunders (2011). The origins and conceptualizations of 'triple-loop' learning: A critical review. *Management Learning*, 43(3), p. 291-297.

process that reflects on the organization's ability to learn.¹⁴⁵ Reflecting on and enhancing the learning processes naturally affects the efficacy of the ability to learn from experience and improve the organization's performance. By establishing and resourcing a formal learning process, the organization can ensure that knowledge is used to enhance its performance. However, as such mechanisms often require additional resources while not directly contributing to the short-term outcome, lessons learned processes often receive scant attention.¹⁴⁶

In sum, short-term objectives such as stability, continuity and possibly enhanced profits favor the type of learning that helps to *exploit* the strengths of an organization. In the long term however, organizations must continually *explore* new ways to operate in relation to their environment to identify opportunities and threats to its success or even existence. This dilemma is not always driven by technocratic considerations, but is at least subject to internal political dynamics, as the implementation of new knowledge can upset the organizational status quo. As such, learning is not solely based on the interaction by an organization and its environment, but is also subject to its culture, learning arrangements and hierarchical structure. Following from the underlying dynamics at play in organizational learning, a closer look at these factors influencing or impeding the process of learning is warranted.

2.2.4: Influencing factors on organizational learning

When examining learning processes in organizations, the factors influencing the ability to learn should be considered. Of course, the internal traits of organizations can differ significantly. A large bureaucracy will have different attributes than a small start-up company. Moreover, the environments in which organizations operate will differ, and therefore have an impact on how each organization learns.

In the literature, several influencing factors on how organizations learn are identified.¹⁴⁷ Common factors are culture, organizational structures, strategy, and environments, seen as able to act both as facilitators and as inhibitors to organizational learning.¹⁴⁸ These factors are inherently interdependent, as they simultaneously affect the organization and its place in the environment.

¹⁴⁵ See Georges Romme and Arjen van Witteloostuijn (1999). Circular organizing and triple loop learning. *Journal of Organizational Change Management*, 12(5), p. 440; Kristi Yuthas, Jesse Dillard and Rodney Rogers (2004). Beyond Agency and Structure: Triple-Loop Learning. *Journal of Business Ethics*, 51, p. 238-240.

¹⁴⁶ Sue McClory, Martin Read and Ashraf Labib (2017). Conceptualising the lessons-learned process in project management: Towards a triple-loop learning framework. *International Journal of Project Management*, 35, p. 1333-1334.

¹⁴⁷ See for example the doctoral dissertation by Tommi Tikka. He identifies 15 "conditions" for organizational learning: p. 44-63.

¹⁴⁸ Fiol and Lyle (1985). *Organizational Learning*, p. 804. These aspects are applied by Barbara Grah, et al. (2016). *Expanding the Model of Organizational Learning*, p. 196.

First of all, the environment in which an organization exists shapes the experiences from which it learns. Relevant aspects of the environment are for example volatility, competition, dependence on resources, clients, and regulatory institutions.¹⁴⁹ For instance, an enterprise in a highly volatile market is more likely to explore new opportunities, and willing to incur associated risks, as competition compels it to continuously seek new opportunities and processes to survive.¹⁵⁰ Another perspective on volatile environments can be obtained through organizations that have to respond to crisis situations, such as natural disasters. Depending on the uniqueness of a crisis situation, the organization tasked with the response must navigate between planned reactions and improvisation. While a unique crisis will yield a wealth of experience, capturing new knowledge for posterity will be a lesser priority than dealing with the situation at hand. After a crisis has been dealt with, the organization can incorporate the acquired knowledge into new plans and procedures.¹⁵¹

On the other side of the spectrum, one can imagine a bureaucratic organization that operates in a more stable environment and is therefore inherently averse to radical change. This is not to say that such an organization is unable to learn, but learning will require more time, resources, and concerted effort. With a stable environment, organizations are more likely to place emphasis on increasing efficiency in their normal operations.¹⁵² Furthermore, public organizations have to contend with additional pressures, as their operations are subject to political and public scrutiny.

Likewise, internal factors influence organizational learning profoundly. Organizational culture is regarded as a defining trait in this respect. Of course, organizational culture is shaped by its environment: it is manifested in shared beliefs and norms that shape how an organization operates and learns.¹⁵³ This has two main effects. First of all, it affects what knowledge is assessed to be relevant to the organization. Culture also shapes how that knowledge is acquired, utilized, and distributed.¹⁵⁴ Secondly, a culture that delegates responsibility and rewards initiative will be more open to the free flow of knowledge and the changes this might induce.¹⁵⁵

Furthermore, culture has a profound influence on the way an organization is structured. Some scholars regard, organizations that are structured as networks, with delegated

149 Argote and Miron-Spektor (2010). *Organizational Learning*, p. 1125.

150 Keith Thomas and Stephen Allen (2006). The learning organisation: a meta-analysis of themes in literature. *The Learning Organization*, 13(2/3), p. 124-125.

151 Donald Moynihan (2008). Learning under Uncertainty: Networks in Crisis Management. *Public Administration Review*, 68(2), p. 352-353.

152 Fiol and Lyle (1985). *Organizational Learning*, p. 805.

153 Weick and Westley (1999). *Organizational Learning*, p. 205-206.

154 David De Long and Liam Fahey (2000). Diagnosing cultural barriers to knowledge management. *The Academy of Management Executive*, 14(4), p. 125-126.

155 Weick and Westley (1999). *Organizational Learning*, p. 191-192.

authority, as being more conducive to acquire new knowledge.¹⁵⁶ Moreover, in a decentralized structure, knowledge can be more easily diffused and incorporated to enact change in the organization.¹⁵⁷ Other scholars argue a decentralized structure impedes the implementation of new ideas, as the acquired knowledge is regarded as relevant to just the subunit rather than the wider organization. Here, the loose connection between the subunit and the wider organization causes a different outlook on the applicability of knowledge.¹⁵⁸

A related aspect to culture and structure is the influence of leadership on an organization's ability to learn. Leaders are shaped by the organization's culture, but also concurrently exert influence on this culture. Furthermore, they function as an intermediary between individual members and the abstract notion of the "organization" itself.¹⁵⁹ When leaders espouse learning as a crucial process within the organization, they can foster a sense of curiosity, and experimentation among their personnel.¹⁶⁰ Moreover, leaders can perform a crucial role in feeding forward new knowledge towards the higher echelons of the organization. When a leader (manager) accepts the relevance of knowledge acquired at individual or group level, he or she can advocate the use of this knowledge by the wider organization.¹⁶¹

Culture, structure, and leadership conducive to learning from interacting with the environment are thus crucial for organizational learning. However, organizations have to make specific provisions for acquiring, interpreting, integrating, and distributing knowledge. Shaker Zahra and Gerard George define these organizational routines and processes as "absorptive capacity." They distinguish between "potential absorptive capacity" and "realized absorptive capacity", with the former consisting of identifying, acquiring, processing, and understanding new knowledge.¹⁶² In order to then realize the absorption of new knowledge and enact change in the organization, new knowledge must be combined with existing knowledge. Subsequently, this knowledge can be used to "refine, extend, and leverage existing competencies or to create new ones [...]."¹⁶³

156 Wiewiora, et al. (2019). The 'How' of Multilevel Learning Dynamics, p. 105.

157 Christina Fang, Jeho Lee and Melissa Schilling (2010). Balancing Exploration and Exploitation Through Structural Design: The Isolation of Subgroups and Organizational Learning. *Organization Science*, 21(3), p. 627-628.

158 Jan Schilling and Anette Kluge (2009). Barriers to organizational learning: An integration of theory and research. *International Journal of Management Reviews*, 11(3), p. 355.

159 Yochanan Altman and Paul Illes (1998). Learning, leadership, teams: corporate learning and organisational change. *The Journal of Management Development*, 17(1), p. 50.

160 Priscilla Kraft and Andreas Bausch (2016). How Do Transformational Leaders Promote Exploratory and Exploitative Innovation? Examining the Black Box through MASEM. *Journal of Product Innovation Management*, 33(6), p. 702-703.

161 Wiewiora, et al. (2019). The 'How' of Multilevel Learning Dynamics, p. 104.

162 Shaker Zahra and Gerard George (2002). Absorptive Capacity: A Review, Reconceptualization, and Extension. *Academy of Management Review*, 27(2), p. 186-189.

163 Ibidem, p. 190.

Other scholars argue that while identification of organizational processes that affect learning is in itself useful, this must be translated into explicit organizational mechanisms to assess their individual and collective impact on learning.¹⁶⁴ To start with, the operations of an organization will invariably yield environmental and internal feedback about the organization's performance. To address deficiencies in performance, the organization must have the ability to identify, collect, analyze, and disseminate this feedback. Moreover, the information of the feedback must be assessed as relevant to the organization.¹⁶⁵ Concurrently, the storage, implementation, and distribution of knowledge within the organization is a further important consideration.

Aspects that can assist these operations are, for example, knowledge databases, knowledge management specialists, and intra-organizational training. Perhaps the quintessential organizational element that is concerned with learning is a "Research and Development" (or equivalent) team that searches for new knowledge that could be useful to the organization.¹⁶⁶ Even with this search capability, absent or dysfunctional organizational learning mechanisms will impede the flow of knowledge throughout the organization and are detrimental to effective learning. At the same time, specific learning mechanisms are vulnerable to discontinuation or resource withdrawal, as they often do not manifestly contribute to the organization's short-term results.¹⁶⁷

2.2.5: Sub conclusion

By exploring the literature on organizational learning, several aspects of the field stand out. First of all, organizational learning is the process focused to enhance the organization's performance. This is reflected in the working definition used for this research: *the process through which an organization constructs knowledge or reconstructs existing knowledge for maintaining or enhancing its performance in relation to its environment.*

Secondly, for an organization to learn from experience, knowledge development follows several distinct levels (individual, group, project, organization) which must be considered to understand the process in its entirety. A third element of the literature that is considered is the depiction of the learning process in analytical models. Although these models offer diverging explanations of organizational learning, they contribute to our understanding of

■
164 Peter Lane, Balaji Koka, and Seemantini Pathak (2006). The Reification of Absorptive Capacity: A Critical Review and Rejuvenation of the Construct. *Academy of Management Review*, 31(4), p. 847.

165 Kathleen Carley and John Harrald (1997). Organizational Learning Under Fire: Theory and Practice. *The American Behavioral Scientist*, 40(3), p. 320-322.

166 Micha Popper and Raanan Lipschitz (1998). Organizational Learning Mechanisms: A Structural and Cultural Approach to Organizational Learning. *The Journal of Applied Behavioral Science*, 34(2), p. 170-172.

167 Cyril Kirwan (2013). *Making Sense of Organizational Learning: Putting Theory into Practice*. Farnham: Gower Publishing, p. 123

how the process of learning works. Moreover, the models emphasize the continuous dynamic of learning. The fourth salient aspect of the literature is that it shows consideration for the political and social dimensions of learning. Although learning to enhance performance is a laudable objective, political considerations and the tension between exploration and exploitation complicate organizational change based on new knowledge. A fifth and final attribute of the field is that it identifies several factors that influence learning such as the organization's environment, culture, structure, and leadership. Moreover, organizational learning is subject to fallacies that impede learning (examined in-depth in subsection 2.3.4.3).

The combination of these aspects of the literature renders organizational learning theory as a promising explanatory model for military change based on experiential learning. Yet, the idiosyncrasies of armed forces and war must be considered in order to understand how militaries learn. Of course, a defining characteristic of militaries organizations is that they have to apply force in a violent and chaotic environment against adversaries, that also include local and global audiences, various non-government organizations, corporate actors, interagency partners and multinational organizations. Yet, armed forces generally are preparing for such contingencies in times of peace. To understand these special attributes, the literature on military change is explored in the following section.

2.3: Military innovation studies and learning in military organizations

How military organizations acquire and implement new knowledge, both in and out of conflict, has been subject to intense study. This academic subfield is known as *military innovation studies*.¹⁶⁸ Over the last two decades, this body of literature has grown rapidly.¹⁶⁹ As noted previously, this is in large part due to the extensive scholarly work concerning the experiences of Western armed forces during their deployments in Iraq and Afghanistan.¹⁷⁰ Still, adaptation in earlier conflicts, and innovation in peacetime, continue to attract considerable scholarly attention as well.¹⁷¹ As such, the study of organizational change in

168 Grissom (2006). The future of military innovation studies, p. 906.

169 Griffin (2017). Military Innovation Studies, p. 196-197; Rob Sinterniklaas (2018). *Military Innovation: Cutting the Gordian Knot*. Breda: Faculty of Military Sciences, Netherlands Defence Academy, p. 15-16.

170 The literature on military change during the campaigns in Iraq and Afghanistan covers many of the involved countries. See for example: Olivier Schmitt (2017). French Military Adaptation in the Afghan War: Looking Inward or Outward. *The Journal of Strategic Studies*, 40(4), pp. 577-599; Robert Egnell (2011). Lessons from Helmand, Afghanistan: what now for British counterinsurgency? *International Affairs*, 87(2), pp. 297-315; George Dimitriu, Gijs Tuinman and Martijn van der Vorm (2016). Formative Years: Military Adaptation of Dutch Special Operations Forces in Afghanistan. *Special Operations Journal*, 2(2), pp. 146-166; Olof Kronval and Magnus Petersson (2016). Doctrine and Defence Transformation in Norway and Sweden. *The Journal of Strategic Studies*, 39(2), pp. 280-296; Fabrizio Cotticha and Francesco Moro (2016). Learning From Others? Emulation and Change in the Italian Armed Forces Since 2001. *Armed Forces & Society*, 42(4), 696-718.

171 See for example: Michael Hunzeker (2021). *Dying to Learn: Wartime Lessons from the Western Front*. Ithaca: Cornell University Press; Aimee Fox (2018). *Learning to Fight: Military Innovation and Change in the British Army, 1914-1918*. Cambridge: Cambridge University Press; Meir Finkel (2011). *On Flexibility: Recovery from Technological and Doctrinal Surprise on the Battlefield*. Stanford:

armed forces holds a somewhat distinct position in relation to more generic scholarship on organizational learning.

2.3.1: Historiography and critique

Essentially military innovation is a catch-all phrase for change in military organizations. It is described in various ways: innovation, adaptation, learning, and emulation.¹⁷² Unfortunately, as scholars like Adam Grissom and Rob Sinterniklaas demonstrate, these different designations of change are ill-defined and sometimes used interchangeably.¹⁷³ Grissom offered a consensus (if implicit) definition of what military innovation entails: changes in the way a “military formation function[s] in the field”, “is significant in scope and impact”, and “is tacitly equated with greater military effectiveness”.¹⁷⁴ Others, like, Theo Farrell and Terry Terriff categorize adaptation, innovation and emulation as “pathways” that can lead to *military change*.¹⁷⁵ Of these three avenues towards military change, emulation is clearly and concisely defined as: “importing new tools and ways of war through imitation of other military organizations”. Adaptation is defined as: “adjusting existing military methods and means”, while innovation “involves developing new military technologies, tactics, strategies, and structures”. Farrell, and Terriff state that adaptation can lead to innovation when multiple adjustments “lead to new means and methods.”¹⁷⁶

Nina Kollars considers adaptation as being a component of innovation. Kollars defines innovation as “a novel revision/change in how we do things, that is brought into practice on purpose”.¹⁷⁷ Subsequently, she defines adaptation as “intended change aimed at the solution of a current problem for which current techniques and technologies are not desired”.¹⁷⁸ Notably in these definitions, innovation is the superlative of adaptation, either as blanket term as argued by Kollars, or as a more novel and intense iteration of military change as stated by Farrell and Terriff.

Stanford University Press; Robert T. Foley (2014). Dumb donkeys or cunning foxes? Learning in the British and German armies during the Great War. *International Affairs*, 90(2), pp. 279-298; Antoine Bousquet (2009). *The Scientific Way of Warfare: Order and Chaos on the Battlefields of Modernity*. London: Hurst; Phil Haun (2019). Peacetime military innovation through inter-service cooperation: The unique case of the U.S. Air Force and Battlefield Air Interdiction. *The Journal of Strategic Studies*, 42(1), pp. 1-27.

172 Sinterniklaas (2018). *Military Innovation*, p. 16.

173 Grissom (2006). The future of military innovation studies, p. 907-908. Sinterniklaas (2018). *Military Innovation*, p. 17-21.

174 Grissom (2006). The future of military innovation studies, p. 907.

175 Theo Farrell and Terry Terriff (2002). Introduction. In T. Farrell, & T. Terriff (Eds.), *The Sources of Military Change* (pp. 3-20). Boulder: Lynne Rienner, p. 6.

176 Ibidem, p. 6.

177 Nina Kollars (2012). *By the Seat of Their Pants: Military Technological Adaptation in War*. Columbus: The Ohio State University, p. 43-44.

178 Ibidem, p. 52.

To add to the plethora of definitions, other distinctions, and relations between the two concepts of adaptation and innovation exist. On his part, Williamson Murray draws a distinction between adaptation and innovation on the basis of context. According to Murray, adaptation is military change during conflict, while innovation pertains to change in peacetime.¹⁷⁹ By contrast, Matthew Tattar demarcates innovation as being proactive, while adaptation is reactive.¹⁸⁰

The lack of clear and distinct definitions of the concepts of adaptation and innovation suggests that the blanket term of “military change” as offered by Farrell and Terriff is the most appropriate. As this research is primarily concerned with the process of learning in and from recent counterinsurgency campaigns, the strict categorizing of manifestations of military change in either “adaptation” or “innovation” is unnecessary. However, the term “adaptation,” and its derivatives, will feature throughout the research. Adaptation fits better with the notion that the armed forces had to improvise and indeed adapt to the operational challenges posed the counterinsurgency campaigns, thereby following Tattar’s notion that adaptation is reactive rather than proactive.

2.3.2: Approaches to study military change

The vague distinctions between adaptation and innovation are indicative for the field of military innovation studies. As critical scholars observe, military innovation literature has not yielded a comprehensive theory on the way military organizations implement change.¹⁸¹ Whereas the issue of definitions can, as noted, pragmatically be skirted, the lack of a common theory for how military organizations change is of more consequence for this research. Earlier works in this field opted for different internal and external explanations on how armed forces change.

In his 2006 article, Grissom distinguished between four “schools of military innovation research” that had emerged since the 1980’s: the “civil-military model”, the “interservice model”, the “intraservice model”, and the “cultural model”.¹⁸² The quintessential example of the school of civil-military relations is Barry Posen’s monograph “the Sources of Military Doctrine”, which is habitually acknowledged as a foundational work.¹⁸³ Posen posited that military organizations are inherently prone to inertia. For innovation to occur, external

179 Murray (2011). *Military Adaptation in War*, p. 2.

180 Matthew Tattar (2011). *Innovation and Adaptation in War*. Waltham: Brandeis University (Doctoral Dissertation), p. 13.

181 Grissom (2006). The future of military innovation studies, p. 925; Griffin (2017). *Military Innovation Studies*, p. 218-219; Sinterniklaas (2018). *Military Innovation*, p. 29-30.

182 Grissom (2006). The future of military innovation studies, p. 908.

183 Ibidem.

intervention is needed by civilian leadership with collaboration of “maverick officers.”¹⁸⁴ According to Deborah Avant, this dynamic was also discernible in irregular warfare, such as the Boer Wars and the Vietnam War. She argues that the sway politicians hold over their armed forces is indicative of how successful they can be in enforcing change.¹⁸⁵

The interservice model argued that competition over finite resources between the military services within a state forms a driver for change. When a new technology or capability arises, for example ballistic missiles or aircraft carriers, the competition between military services will intensify to absorb this new task. These efforts will thus drive innovation in technology, concepts, and organization.¹⁸⁶ In essence the alternative *intraservice* model is a variation on this theme as it studies competition between arms or branches within a service. The scholar associated with this third school, Stephen Rosen, asserts that innovation is initiated by senior officers within a service who develop “a new theory of victory, an explanation of what the next war will look like, and how officers must fight if it is to be won.”¹⁸⁷ By such theories of victory, new or existing branches compete for dominance within their service. This competition then drives new concepts such as aircraft carriers or airmobile infantry.¹⁸⁸

The final school of military innovation that Grissom identified posits that cultural factors are the determinant of how military forces change. This view was introduced by Theo Farrell, and Terry Terriff, who argue that cultural aspects and internal processes of military organizations must also be examined to understand change. They regard military change as being a result of a complex interplay between the militaries, and their environments.¹⁸⁹

Beyond these schools of thought, Grissom pondered the inclusion of “bottom-up” innovation. Whereas the four schools he identified explained military change as being implemented from the top downwards, historical evidence suggested that meaningful change can be initiated by units in the field.¹⁹⁰ Research on “bottom-up” innovation did exist, as Grissom acknowledged, but there was no real theory on how this type of military change worked.¹⁹¹ By neglecting “bottom-up” innovation, the field of military innovation

184 Posen (1984). *The Sources of Military Doctrine*, p. 222-236.

185 Deborah D. Avant (1993). The Institutional Sources of Military Doctrine: Hegemons in Peripheral Wars. *International Studies Quarterly*, 37(4), 409-430

186 See for example Harvey Sapolsky (1972). *Polaris System Development: Bureaucratic and Programmatic Success in Government*. Cambridge: Harvard University Press; Andrew Bacevich (1986). *The Pentomic Era: the US Army between Korea and Vietnam*. Washington DC: National Defense University Press.

187 Rosen (1991). *Winning the Next War*, p.20.

188 Ibidem.

189 Farrell and Terriff (Eds.). (2002). *The Sources of Military Change*, p. 271-275.

190 Grissom (2006). The future of military innovation studies, p. 919-920.

191 See for earlier works on military change initiated at the lower levels of militaries: Bruce Gudmunsson (1989). *Stormtroop Tactics: Innovation in the German Army, 1914-1918*. New York: Praeger; Michael Doubler (1994). *Closing with the Enemy: How GIs Fought the War in Europe, 1944-1945*. Lawrence: University Press of Kansas; Keith Bickel (2001); *Mars Learning: The Marine Corps' Development of Small Wars Doctrine, 1915-1940*. Boulder: Westview Press.

studies lacked conceptual models upon which to test the empirical data.¹⁹² Grissom's call for more research on military change initiated at the tactical level was singularly well-timed, as Western units at that time were struggling to adapt to the challenges posed by counterinsurgency operations in Iraq and Afghanistan.¹⁹³

Interestingly, Grissom discounts the utility of organizational learning theory to study "bottom-up" adaptation, referring in this critique to the theoretical framework provided by Richard Downie.¹⁹⁴ His reasoning for this is that organizational learning literature relegated the agency of frontline troops to merely information gathering. In Grissom's examples, initiatives from lower levels gain traction through informal dissemination, in some instances even while going against the organizational grain.¹⁹⁵ Grissom therefore argues that in Downie's model, and by extension the organizational learning literature up until that point, the agency for innovation is placed at the institutional level, and not with tactical (deployed) units.¹⁹⁶

In "Learning from Conflict" (1998), Downie introduces a model for learning by military organizations. He uses this model for learning processes in "Low Intensity Conflict," which includes counterinsurgency, stabilization operations, and humanitarian interventions. Downie focuses on doctrinal change after conflicts, as "doctrine reflects learning that militaries have assimilated from their experiences".¹⁹⁷ He further argues that to explain doctrinal change, a theory must address the interaction between external factors that necessitate a change in doctrine and the "institutional response to those influences".¹⁹⁸ In other words, operational challenges during wartime will necessitate organizational changes to address them.¹⁹⁹

To explain this process of change, Downie offered a framework of institutional learning. He defines this as "a process by which an organization (such as the U.S. Army) uses new gained knowledge or understanding from experience or study to adjust institutional norms,

192 Grissom (2006). The future of military innovation studies, p. 925

193 See for work on early adaptation by Western armed forces in Iraq and Afghanistan: Brian Burton and John Nagl (2008). Learning as we go: the US army adapts to counterinsurgency in Iraq, July 2004–December 2006. *Small Wars & Insurgencies*, 19(3), pp. 303–327; James Russell (2010). Innovation in War: Counterinsurgency Operations in Anbar and Ninewa Provinces, Iraq, 2005–2007. *The Journal of Strategic Studies*, 33(4), 595–624; Theo Farrell and Stuart Gordon (2009). COIN Machine: The British Military in Afghanistan. *The RUSI Journal*, 154(3), pp. 18–25

194 Grissom (2006). The future of military innovation studies, p. 926.

195 Ibidem, p. 920–922.

196 E-mail correspondence by the author with Adam Grissom, 12–12–2018.

197 Downie, *Learning from Conflict*, p. 2.

198 Ibidem

199 Ibidem, p. 5–6.

doctrine and procedures in ways designed to minimize previous gaps in performance and maximize future success."²⁰⁰

As such, institutional learning is depicted as a process (see figure 2.1) of six steps. The first step is that of evaluating the operational environment and the institutional performance relative to it. From this, organizational performance gaps can be identified (step 2). Subsequently, actions are initiated to ameliorate the organizational shortfalls. More succinctly, this is where elements within the organization improvise and adapt to the changed environment (step 3). What follows is the acceptance, or rejection, of the adaptation by the organization at the institutional level. When a consensus is reached within the organization about the applicability of an adaptation or lesson, this can be incorporated into doctrine (step 4). Conversely, when the adaptation is rejected, alternative solutions for addressing the operational challenges can be sought. When the doctrine is revised to include the necessary adaptations, the changes must be transmitted, so that all elements within the organization, such as individual commanders and deployed units, are made aware of them (step 5). The final stage then is that the change in doctrine leads to a change in organizational behavior (step 6).²⁰¹

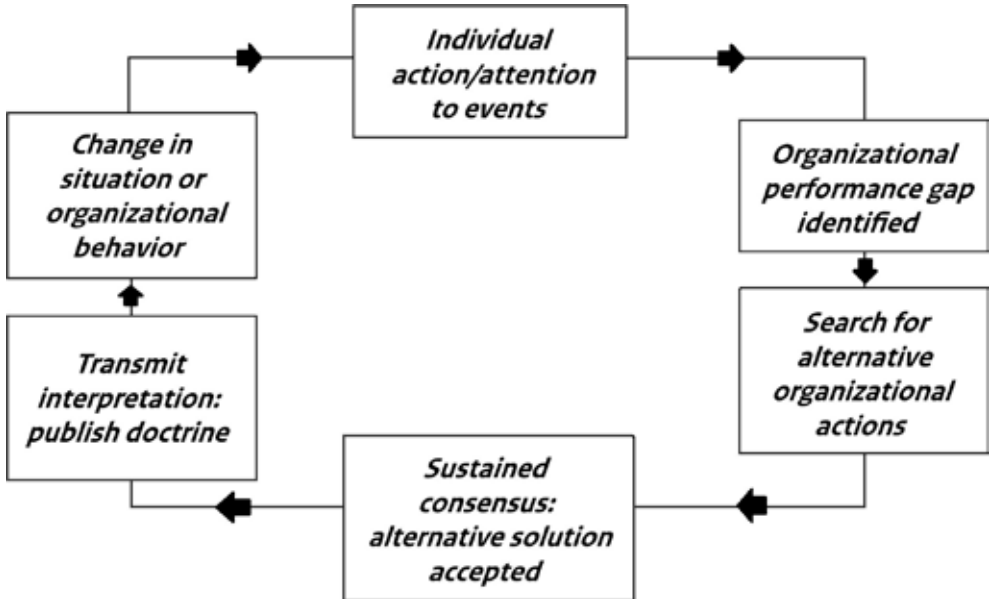


Figure 2.1: Downie's Learning Cycle

200 Downie (1998). *Learning from Conflict*, p.22.

201 Ibidem, p. 241-242.

Downie's model helps to understand the interaction between responding to operational deficiencies in the field and the institutional reaction and support to these experiences. This model was, perhaps more famously, adopted by John Nagl for analyzing how the United Kingdom and the United States adapted to the challenges in the wars in Malaya, and Vietnam respectively.²⁰² However, Downie's model is ill-suited for this, as it does not capture adaptations by units in the field that are not embraced by the organization. Still, wartime adaptations merit intense study as they provide the foundations of potential institutionalization.

2.3.3: Current trends in the literature

If anything, the study of how armed forces enact change has picked up steam in the last two decades. Consequently, the field of military innovation studies has seen important developments, but in general, however, most works are restricted to empirical works of contemporary or historical examples. More theoretical explanations for military change remain scarce.²⁰³

Within this considerable body of literature, four tentatively connected trends relevant to this research are discernible. To start, the "bottom-up" approach to military change has become a dominant theme. Secondly, a substantial portion of the recent research looks at the influence of cultural factors on military change. A third trend is the welcome addition of more non-Western perspectives, both in regular armed forces as for non-state actors such as insurgencies. Finally, renewed attention to organizational learning theory is in evidence.

The wars in Iraq and Afghanistan provided an impetus to the study of "bottom-up" adaptation. Here, Western militaries were caught unprepared for the irregular aspects of these conflict and consequently had to adapt. The resulting scholarly works indicate that the primary agents of change were the units in the field.²⁰⁴ By forming informal networks, troops on the ground shared knowledge and skills that enabled them to address day-to-day challenges.²⁰⁵

An interesting aspect is that creative solutions from the field are often met with reluctance or bureaucratic inertia at the institutional level. This lack of support from the institution

202 See Nagl (2002). *Learning to Eat Soup with a Knife*, p. 6-11.

203 Griffin (2017). *Military Innovation Studies*, p. 202.

204 Russell (2011). *Innovation, Transformation and War*, p. 4; Serena (2011). *A Revolution in Military Adaptation*, p. 173; David Johnson (2016). You Go to Coin with the Military You Have. In B. Heuser, & E. Shamir (Eds.), *Insurgencies and Counterinsurgencies: National Styles and Strategic Cultures*. Cambridge: Cambridge University Press, p. 115-118,

205 Nina Kollars (2015). War's Horizon: Soldier-Led Adaptation in Iraq and Vietnam. *The Journal of Strategic Studies*, 38(4), p. 548-550.

hindered the coherent application of lessons and the sharing of knowledge beyond units or rotations.²⁰⁶ Naturally, operational challenges are most pressing for deployed service members; as such, they will be inclined to implement changes that seek to mitigate deficiencies. By contrast, the institution cannot solely focus on the current operations but also maintain readiness for future contingencies at varying levels of threat.

The attempts to adapt to operational challenges were by no means exclusive to American forces.²⁰⁷ As a result, comparative case studies on how national militaries learned from operations emerged.²⁰⁸ By comparing these cases, differences and similarities in adaptation processes can be identified.

This segues into the second current that is discernible in recent literature on military change: the central role awarded to cultural factors.²⁰⁹ In his book on how armed forces handle doctrinal and technological surprise, Meir Finkel asserts that cultural traits are crucial for explaining how militaries seek to overcome such strategic and tactical jolts.²¹⁰ An imperative for successful adaptation is that the organization accepts “uncertainty as a given condition”, and is open “to study the possibilities that might develop in wartime”.²¹¹ Additionally, the institutional enthusiasm (or lack thereof) to learn lessons from the past or recent operations is another cultural attribute with significant influence on how armed forces recover from surprise on the battlefield.²¹²

Dima Adamsky further elaborates on the influence of cultural traits in military change. He studied how the United States, Israel, and the Soviet Union managed transformation in warfare based on technological developments. The differences in their approaches

206 See Janine Davidson, *Lifting the Fog of Peace*, p. 175-177.; Barno and Bensahel, *Adaptation under Fire*, 142-155; Hoffman, *Mars Adapting*, 219-220.

207 See for example: Robert Egnell (2011). Lessons from Helmand, Afghanistan: what now for British counterinsurgency? *International Affairs*, 87(2), pp. 297-315; Torunn Laugen Haaland (2016). The Limits to Learning in Military Operations: Bottom-up Adaptation in the Norwegian Army in Northern Afghanistan, 2007-2012. *The Journal of Strategic Studies*, 39(7), pp. 999-1022; Raphael D. Marcus (2019). Learning ‘Under Fire’: Israel’s improvised military adaptation to Hamas tunnel warfare. *The Journal of Strategic Studies*, 42(3-4), pp. 344-370.

208 For recent counterinsurgency operations some comparative studies have been published such as: John Nagl and Richard Weitz (2015). Counterinsurgency in Afghanistan: The UK, Dutch, German, and French Cases. In G. A. Mattox, & S. M. Grenier (Eds.), *Coalition Challenges in Afghanistan* (pp. 170-182). Stanford: Stanford University Press; Olivier Schmitt (2017). French Military Adaptation in the Afghan War: Looking Inward or Outward. *The Journal of Strategic Studies*, 40(4), pp. 577-599. For a historical comparison see: Robert Foley (2014). Dumb donkeys or cunning foxes? Learning in the British and German armies during the Great War. *International Affairs*, 90(2), pp. 279-298.

209 See for example: Dima Adamsky and Kjell Inge Bjerga. (Eds.). (2012). *Contemporary Military Innovation: Between anticipation and adaptation*. Abingdon: Routledge; Robert Foley, Stuart Griffin and Helen McCartney (2011). ‘Transformation in contact’: learning the lessons of modern war. *International Affairs*, 87(2), 253-270. Furthermore, see the edited volume by Theo Farrell, Frans Osinga and James Russell (Eds.). (2013). *Military Adaptation in Afghanistan*. Stanford: Stanford University Press. In this book different national perspectives are shown. Although it does not explicitly compare these perspectives, cultural factors permeate the case studies.

210 Finkel (2011). *On Flexibility*, p. 5.

211 *Ibidem*, p. 227.

212 *Ibidem*, p. 230.

are, according to Adamsky, caused by cultural factors. For instance, the Soviet Union's General Staff generally searched for "discontinuities in military affairs". This led to the introduction of a holistic new conceptual framework that preceded the introduction of novel technologies.²¹³ Conversely, in the United States military, new concepts are most often initiated by the services. Furthermore, the predisposition of the American armed forces towards technology led to technological developments driving and shaping their new conceptual developments.²¹⁴

Another insightful addition on the role of culture on learning is research by Aimee Fox into military innovation in the British Army during the First World War.²¹⁵ Firstly, the British Army was culturally disinclined to formalize its conceptual foundations in doctrine. British officers argued that formal doctrine would lead to a dangerous straitjacket. As the British Army had global responsibilities in policing the Empire, it could not afford to prepare for a specific threat or operational environment prior to the First World War.²¹⁶ A second attribute of the British Army influenced by culture was the homogenized nature of its officer corps. Most officers hailed from the same social milieu, which meant that the members knew each other prior to their service and also associated outside of the army. In turn, this entailed that officers could share news, knowledge, and skills in an informal way by use of their networks.²¹⁷

Still other scholars have noted that efforts to enforce change can be stymied by lower tiers of a military organization when these changes are perceived as incompatible with the prevalent culture of the organization. Interestingly, these instances impede changes initiated for counterinsurgency operations, because the alterations are perceived to be detrimental to the combat readiness of the units or the services.²¹⁸

A third trend in the recent literature is the analysis of adaptation by non-Western armed forces and irregular adversaries. In relation to the armed forces, the study of these institutions can provide interesting contrasting perspectives to Western militaries. Germane examples are the Iraqi and Afghan militaries. An interesting attribute of these armed forces is that they recently have been built from "scratch."²¹⁹ Moreover, these militaries received significant

213 Dima Adamsky (2010). *The Culture of Military Innovation: The Impact of Cultural Factors on the Revolution in Military Affairs in Russia, the US, and Israel*. Stanford: Stanford University Press, p. 132.

214 Ibidem, p. 132-134.

215 Aimee Fox (2018). *Learning to Fight: Military Innovation and Change in the British Army, 1914-1918*. Cambridge: Cambridge University Press.

216 Ibidem, p. 20-21.

217 Ibidem, p. 37-45.

218 See Austin Long (2016). *The Soul of Armies: Counterinsurgency Doctrine and Military Culture in the US and UK*. Ithaca: Cornell University Press and Sergio Catignani (2012). 'Getting COIN' at the Tactical Level in Afghanistan: Reassessing Counter-Insurgency Adaptation in the British Army. *The Journal of Strategic Studies*, 35(4), pp. 513-539.

219 Antonio Giustozzi (2015). *The Army of Afghanistan*. London: Hurst, p. 227-230.

assistance from Western states. Therefore, a pertinent topic in this regard is how security force assistance affects the learning processes of the recipient organization and, potentially, that of the provider. Furthermore, some non-Western militaries are engaged in intra-state conflicts that pose an existential threat to the state. The incentive to adapt to operational challenges in these cases will be even stronger.²²⁰

Studying the learning processes of non-state actors can potentially yield even more valuable insights. Clearly, insurgent groups are organized differently than their Western opponents. Much has been made of the networked organizations of the various insurgent groups that allowed them to adapt to challenges on the fly and share this knowledge quickly to other cells or networks.²²¹ Being unconstrained by “norms, organizational culture, and bureaucratic inertia,” insurgents could experiment with new tactics and techniques.²²² This ability was augmented with unrestricted contemporary information and knowledge sharing capabilities, and good situational awareness.

For insurgencies to be ultimately successful, their organizational capabilities have to be adaptable.²²³ At first, they need to withstand conventional capabilities from the incumbent regime (and its potential foreign partners) and wage a campaign of guerrilla warfare and political subversion. Eventually, insurgents generally have to build more conventional capabilities in order to defeat the regular military in the field as well as develop a viable governing organization.²²⁴ In sum, studying non-Western actors can provide fresh perspectives on both battlefield adaptations and institutional change.

A fourth trend in recent literature on military change is the renewed influence of organizational learning theory.²²⁵ A noteworthy application of organizational learning literature is Frank Hoffman’s *Mars Adapting* (2021).²²⁶ In his book, Hoffman analyzes how armed forces change during wartime, with an emphasis on adaptation initiated by tactical units. He distinguishes between *organizational learning* and *institutional learning*. The former concept

220 See for example: Maarten Broekhof, Martijn Kitzen and Frans Osinga (2019). A Tale of Two Mosuls: the resurrection of the Iraqi armed forces and the military defeat of ISIS. *Journal of Strategic Studies*; Douglas Porch (2020). An Incomplete Success: Security Assistance in Colombia. In T. Mahnken (Ed.), *Learning the Lessons of Modern War* (pp. 269-289). Stanford: Stanford University Press; Ahmed Hashimi (2020). Lessons of Modern War: A Case Study of the Sri Lankan War. In T. Mahnken (Ed.), *Learning the Lessons of Modern War* (pp. 181-196). Stanford: Stanford University Press

221 The quintessential article on the traits of insurgent groups in Iraq is that of: Stanley McChrystal (2011, February 21). It Takes A Network: The new frontline of modern warfare. *Foreign Policy*.

222 Abdulkader Sinno (2008). *Organizations at War in Afghanistan and Beyond*. Ithaca: Cornell University Press, p. 82-84; Chad Serena (2014). *It Takes More than a Network*. Stanford: Stanford University Press, p. 139.

223 Theo Farrell (2018). Unbeatable: Social Resources, Military Adaptation, and the Afghan Taliban. *Texas National Security Review*, 1(3), pp. 59-75; Sinno (2008). *Organizations at Wars*, p. 295-297.

224 Noriyuki Katagiri (2014). *Adapting to Win: How Insurgencies Fight and Defeat Foreign States in War*. Philadelphia: University of Pennsylvania Press, p. 169-170.

225 Griffin (2017). *Military Innovation Studies*, p. 208-210.

226 Frank Hoffman (2021). *Mars Adapting: Military Change During War*. Annapolis: Naval Institute Press.

pertains to learning at the unit-level in theatre, while the latter occurs when these lessons are institutionalized within the military at large. With institutional learning, the wider organization can disseminate the lessons from the operational theatre, and accordingly help prepare successive units.²²⁷

Hoffman captures this process of learning in an analytical model that consists of four steps (see figure 2.2).²²⁸ First of all is the *inquiry* step, in which individuals at the tactical level observe gaps between their expectations and the actual experiences during operations. These gaps are then subject to inquiry. The second step in the process is *interpretation*, in which the empirical data on the perceived is analyzed and given meaning. This can lead to adjustments within the units that do not require assistance or support by the wider organization. Subsequently, the third step, *investigation*, sees experimentation, enabled by higher commands or even the entire institution, for addressing the identified performance gaps. It is in this step that decisions are made whether the proposed solutions must be enacted by the institution or not. If this is the case, the fourth and last step, *integrate and institutionalize*, can take place. Remedial action is undertaken to improve the performance of the institution during operations by enacting organizational changes, acquisition of new materiel, and publishing and disseminating new doctrine.²²⁹

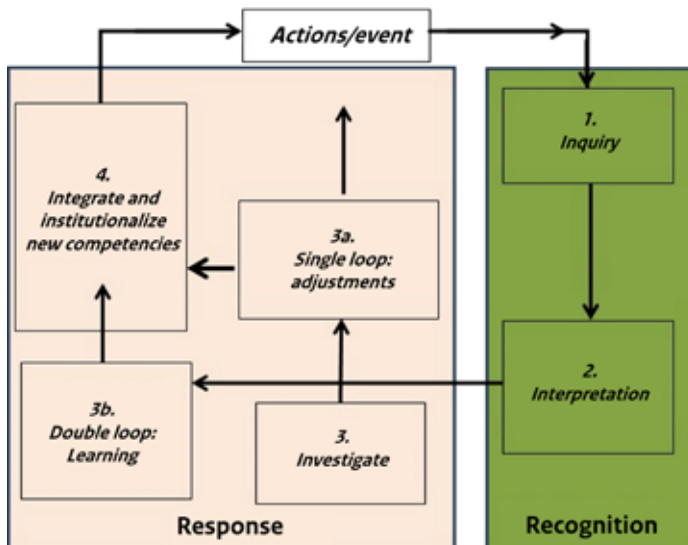


Figure 2.2: Frank Hoffman's model for "Organizational Adaptation"

227 Ibidem, p. 34-35.

228 Ibidem, p. 42.

229 Ibidem, p. 40-41.

The salient contribution of this model is that captures the agency of deployed units in adapting, and the dialectic between the “bottom-up” adjustments and the institutional response. Still, close study of the model shows that it has an important limitation, as Hoffman only considers change during conflict. While his model explicitly incorporates *institutionalization*, it does not consider how adaptations are retained within a military organization beyond a given conflict. Given that some adaptations were only accepted by the institutions after overcoming reluctance, the question of whether these lessons have been institutionalized is relevant.

Another example organizational learning literature is the book by Tom Dyson *Organisational learning and the modern army* (2020). Dyson contends that organizational learning offers a more positive take on how militaries implement change based on their experiences. At the same time, the “military innovation” literature can provide insight in the factors influencing and impeding learning by military organizations.²³⁰ Dyson further emphasizes the role of formal learning processes in effective learning because absorption by the organisation requires related processes and resources to develop the necessary absorptive capacity. However, the efficacy of such formal processes depends on the willingness of leadership to underwrite the importance of the new experience and translate it into organizational action. In large part, according to Dyson, this aspect is driven by organizational culture and bureaucratic politics.²³¹

To conclude this subsection, the recent literature on how military organizations learn and adapt has enriched the field considerably. Empirical studies on how units learn from conflict have proliferated. Adam Grissom’s call for studying “bottom-up” change was not for naught. Furthermore, the influence of culture has become pervasive in the writings on military change. Lastly, aspects of organizational learning theory have permeated the body of literature more extensively in the past years.

2.3.4: Aspects of military learning

A main impetus for learning is when operational experience shows deficiencies in the unit’s performance. Such challenges include activities by the adversary, operating in austere environments, prolonged combat operations with the associated friction, sustainment of deployed units over long lines, and cooperating with external partner organizations.²³² Besides learning from their own experience, armed forces can learn from experiences of

²³⁰ Dyson (2020). *Organisational Learning and the Modern Army*, p. 68.

²³¹ Ibidem, p. 40-44.

²³² Theo Farrell (2013). Introduction: Military Adaptation in War. In T. Farrell, F. Osinga, & J. A. Russell (Eds.), *Military Adaptation in Afghanistan*. Stanford: Stanford University Press, p. 8-10.

others and adopt new technologies and concepts. This form of learning is called emulation. Although emulation can provide a shortcut for developing new capabilities, the adopting organizations must accept and absorb the full implications of them to be effective. In literature on military change, this issue is identified as part of the challenge of knowledge transfer.²³³

Another cause for change can be the proliferation and incorporation of new technologies. Technological innovations fused with new operational concepts can have profound operational repercussions; both as opportunities, and as challenges. Adoption of a new technology can alter the way that armies fight and change how commanders conceive of operational concepts. Militaries must find a way to incorporate them throughout the organization to prevent being at a disadvantage relative to the enemy.²³⁴

Although operational challenges will often lead to the identification of performance gaps, and subsequently to potential solutions, this process of learning is influenced by several factors that shape its eventual manifestations. Moreover, these factors shape the way that performance during campaigns is evaluated, how deficiencies are analyzed, and how these can be mitigated. These factors originate both outside of the military organization as well as from within.

2.3.4.1: External factors of influence

How armed forces learn is shaped by (inter)national factors that bear on the political context in which they exist. As one starting point, Theo Farrell offers four types of “shapers” for the process of adaptation that are external to the armed forces: domestic politics, alliance politics, strategic culture, and civil-military relations.²³⁵ First, domestic political considerations can affect how armed forces adapt in a conflict by the weight that the government awards to the mission. If an expeditionary mission is regarded as crucial, a government will be more likely to commit more resources to it, thereby enabling changes in how the military conducts an operation.²³⁶ Moreover, political dynamics at home are often more influential than the (perceived) international threat.²³⁷ When a mission is treated as an afterthought

233 See Emily Goldman (2002). The Spread of Western Military Models to Ottoman Turkey and Meiji Japan. In T. Farrell, & T. Terriff (Eds.), *The Sources of Military Change*. Boulder: Lynne Rienner, p. 61-62; Fabrizio Cottichia and Francesco Moro (2016). Learning From Others? Emulation and Change in the Italian Armed Forces Since 2001. *Armed Forces & Society*, 42(4), p. 712-714.

234 See MacGregor Knox and Williamson Murray (Eds.). (2001). *The Dynamics of Military Revolution, 1300-2050*. New York: Cambridge University Press; Farrell (2013). *Military Adaptation*, p. 8.

235 Farrell (2013). Introduction, p. 10.

236 Ibidem, p. 12.

237 Elizabeth Kier (1997). *Imagining War: French and British Military Doctrine between the Wars*. Princeton: Princeton University Press, p. 143.

in the domestic political discourse, conversely, the deployed troops will have to resort to improvisation, as additional resources will not be forthcoming.²³⁸

Alliance politics can be another shaping factor. Of course, domestic, and international political deliberations can interact. An example arises in the case of a senior partner in an alliance that can exert pressure on a junior partner to deploy a certain military capability to a mission, a capability that the junior partner does not possess at the time. This compels the junior partner to acquire the capability and necessary knowledge.²³⁹ The influence of alliance politics was manifested in Afghanistan in 2009, when the United States opted to deploy additional forces to Afghanistan and implement its counterinsurgency approach. The U.S. asked its allies to adopt the population-centric counterinsurgency approach as well and commit the additional resources required to implement this approach, in order to align the efforts by the various national contingents.²⁴⁰ Smaller nations are thus influenced by how their senior allies conduct a war.²⁴¹

The third factor of influence that Farrell identifies is the relationship between the military and its civilian leadership. Whereas domestic politics and alliance politics point to why civilian leadership intervenes regarding change in its armed forces, the civil-military relations help explain the extent of civilians' ability to do so. If the political leadership of a state has firm control over its armed forces, it can more readily initiate strategic change within the military.²⁴² When the armed forces have a more independent position, the military leadership will be less likely to acquiesce to civilian initiatives for change.²⁴³

A fourth shaping factor is the strategic culture of a country. Farrell defines strategic culture as "the sum of beliefs about the use of force that are shared by the military and policy communities of a state. Such beliefs, or norms, prescribe when and how military force may be used".²⁴⁴ More succinctly, strategic culture can be equated with a "national way of war", and

238 See Kristen Harkness and Michael Hunzeker (2015). Military Maladaptation: Counterinsurgency and the Politics of Failure. *The Journal of Strategic Studies*, 38(6), pp. 777-800.

239 See Rob de Wijk and Frans Osinga (2010). Military Innovation on a Shrinking Playing Field: Military Change in the Netherlands. In T. Terriff, F. Osinga, & T. Farrell (Eds.), *A Transformation Gap? American Innovations and European Change*. Stanford: Stanford University Press, p. 133-134.

240 Howard Coombs (2015). Canada: The Evolution of a New Canadian Way of War. In S. Grenier, & G. Mattox (Eds.), *The Politics of Alliance: Coalition Challenges in Afghanistan* (pp. 65-79). Redford City: Stanford University Press, p. 69.

241 Mikkel Rasmussen (2013). The Military Metier: Second Order Adaptation and the Danish Experience in Task Force Helmand. In T. Farrell, F. Osinga, & J. A. Russell (Eds.), *Military Adaptation in Afghanistan* (pp. 136-158). Stanford: Stanford University Press, p. 138-139.

242 Farrell (2013). Introduction, p. 17-18.

243 See Debora Avant (1993). The Institutional Sources of Military Doctrine: Hegemons in Peripheral Wars. *International Studies Quarterly*, 37(4), pp. 409-430.

244 Farrell (2013). Introduction, p. 14.

is therefore not just beholden to the military but also to the government and the society.²⁴⁵ While Farrell conflates organizational and strategic culture, this is a different concept, which will be elaborated upon in the next section.²⁴⁶

Strategic culture supersedes organizational culture, and is formed by enduring aspects such as geography, history, and demography.²⁴⁷ Therefore, change in strategic culture is often slow, if discernible at all. Exceptions to this assertion are that of Germany and Japan. After these countries lost the Second World War, the use of their militaries for foreign policy objectives was heavily curtailed. This represented a dramatic departure for both countries, as in the preceding decades their strategic culture considered the armed forces as the primary foreign policy instrument.²⁴⁸ Of course, this dramatic change in strategic was imposed on these vanquished states by their conquerors, rather than initiated internally.

Beyond the external factors as listed by Farrell, further sources of influence can be identified. First of all, the perception of (external) threat by a state influences how its armed forces must be calibrated.²⁴⁹ A clear and present threat, such as the Warsaw Pact for Western European countries during the Cold War, can serve as a focal point for the formation of armed forces. Any military advantage held by a rival power must be offset through mirroring the adversaries' capabilities, alliance formation, or by negating it with an asymmetrical approach.²⁵⁰ As such, threat perception can guide the search for new relevant knowledge in how to build the national military. Lessons from previous and current operations are to be weighed against the primary threats that are identified by the national strategic making process.²⁵¹ To be sure, accumulated knowledge from previous wars can differ markedly from perceived future threats, which complicates the balancing strategic balancing in required military capabilities.

A seminal example of this dynamic is the purging of lessons from the Vietnam War by the U.S. military, as they were deemed irrelevant to the threat posed by Warsaw Pact forces in Central Europe.²⁵² Although external threats are the prime reason for the existence of national armed forces, the perception of these threats cannot be considered as a sufficient

245 David Kilcullen (2019). *Strategic Culture*. In P. R. Mansoor, & W. Murray (Eds.), *The Culture of Military Organizations* (pp. 33-52). Cambridge: Cambridge University Press, p. 35.

246 Farrell (2013). Introduction, p. 14.

247 Kilcullen (2019). *Strategic Culture*, p. 36- 44.

248 An example of dramatic change in strategic culture is that of Germany after 1945. Previously, German leadership considered the aggressive use of force as a valid instrument of foreign policy. After the Second World War, this notion was dispelled in German politics and society. See David Kilcullen (2019). *Strategic Culture*, p. 36- 44.

249 Sally Stoecker (1998). *Forging Stalin's Army: Marshal Tukhachevsky and the Politics of Military Innovation*. Boulder: Westview Press, p. 18.

250 Posen (1984). *The Sources of Military Doctrine*, p. 61-62.

251 Kier (1997). *Imagining War*, p. 146.

252 Andrew Krepinovich (1986). *The Army and Vietnam*. Baltimore: Johns Hopkins University Press, p. 270-271.

explanation for change in these military institutions. Political and institutional factors shape how “realist” concerns are translated into (new) military capabilities.²⁵³

A final external factor that can be identified is defense policy, which offers guidance for the structuring and procurement for a state’s military. The incumbent government’s policy for its armed forces is generally valid for the course of its period in office. It is shaped by the current threat perception and by political considerations, both international and domestic. Besides these elements, the resources that a government has available (and is willing) to spend will have a profound influence on the content and ambition of these plans. Furthermore, resources that have already been committed to a certain project, such as equipment procurement, will also shape decision-making in this regard. All aspects will interact in drafting a political program for the national military.²⁵⁴

Defense policy will affect how knowledge from previous conflicts is incorporated within the military. If implementation of lessons will result in organizational restructuring or materiel acquisition that is at odds with the prevailing policy, institutionalization of knowledge will naturally be impeded. Of course, the defense policy will contain insights from previous conflicts and other path-dependencies, and can as such be a by-product of learning. However, the drafting of policy is a prerogative of politicians, so the role of the military is limited to offering advice.

Aside from the adversary and the operational environment, armed forces have to content with a volatile political context that is largely beyond their control. Therefore, how militaries interpret and incorporate new knowledge is subject to multiple external influencing factors. Most organizations, such as business enterprises and bureaucracies, will be affected by (international) political considerations and regulations. Nevertheless, aspects such as strategic culture, threat perception, civil-military relations and defense policy apply (almost) exclusively to military organizations. This means that, for examining how armed forces learn, these external factors and their effects on operationalization must all be taken into account (see Table 2.2).

■
253 Goldman (2002). *The Spread of Western Military Models*, p. 61-62.

254 See De Wijk and Osinga (2010). *Military Innovation on a Shrinking Playing Field*, p.141-143.

External influencing factors	Operationalization
Domestic politics	What domestic political considerations affect the organization, and processes of the armed forces?
Alliance politics	What are the requirements of allies (deployments, capabilities, doctrine) of the national armed forces?
Civil-military relations	To what extent can policy makers intervene in the internal processes of the military?
Strategic culture	What is the dominant strategic culture, and how does it affect the armed forces?
Threat perception	What are the perceived threats to the state's security?
Defense policy	What are the government's plans, and resources for the armed forces?

Table 2.2: External influencing factors of learning

2.3.4.2: Internal factors of influence

Although the preceding subsection identifies several external factors of influence, armed forces themselves have considerable agency to shape their learning processes. Various internal factors influence how militaries learn; taken together, these factors form the learning capacity of an organization. Frank Hoffman defines this learning capacity as “the aggregate ability of a military organization to recognize and respond to performance gaps generated by campaign pressures, unexpected adversary actions or unanticipated aspects of the operating environment via adaptation or innovation”.²⁵⁵ This notion echoes “absorptive capacity” as espoused by the literature on organizational learning.²⁵⁶ According to Hoffman, the learning capacity of an organization is shaped by four attributes: leadership, organizational culture, learning mechanisms, and dissemination mechanisms.

Almost self-evidently, the leadership of individual commanders has significant impact on the conduct of operations by their units or formations. The examples of U.S. officers McMaster (Tal Afar) and Petraeus (Mosul) in Iraq show that units can perform admirably in counterinsurgency under adequate guidance, even while the larger organization seems to fail.²⁵⁷ This perception is reinforced by further examples as given by James Russell.²⁵⁸ Intrinsically, leadership, on all levels, is an important factor influencing how military

²⁵⁵ Hoffman (2015). *Learning While Under Fire*, p. 42.

²⁵⁶ See for example: Zahra and George (2002). Absorptive Capacity, pp. 185-203; Dyson (2020). *Organisational learning*, p. 19-21.

²⁵⁷ Burton and Nagl (2008). *Learning as we go*, pp. 303-327; Mark Moyer (2009). *A Question of Command: Counterinsurgency from the Civil War to Iraq*. New Haven: Yale University Press.

²⁵⁸ Russell (2011). *Innovation, Transformation and War*.

organizations adapt or learn; leadership that is open to new ideas and promotes initiative at the tactical level, can form an important enabling factor for learning.²⁵⁹ Conversely, commanders or other individuals that do not attend to identified performance gaps and proposed remedies, can obstruct the process of learning.²⁶⁰ To analyze the impact of leadership on learning from conflict, the influence of individuals on the learning process must be assessed.

Likewise, the culture of a military organization can enable and impede the process of learning, as it creates expectations of how members of the organization will act in a certain situation.²⁶¹ Organizational culture can be dissected into four categories: identity, norms, values, and perceptual lens. Identity pertains to how an organization sees itself, what attributes it possesses, and what its role is in relation to its environment.²⁶² With regard to identity in armed forces, it should be noted that they are comprised of different services that have distinct identities, built up through shared experiences over long histories. Generally, this identity is far stronger than that of the collective “military identity”. Moreover, distinct subcultures can exist between the various branches that constitute a service.²⁶³

The norms of an organization point to accepted and expected behavior by its members. Some norms are upheld because doing so confers benefits to the individual, for example commendation or the absence of punishment. Others are internalized and maintained without the need of enforcement, because the organization members adhere to them intrinsically.²⁶⁴ Organizational values are linked to norms and consist of ideas and character traits that “elevate one’s status in the relevant society.”²⁶⁵

The final element of organizational culture is the perceptual lens with which the organization views its environment. Elizabeth Kier states that organizational culture provides a military (or service) with a finite range of options to deal with changes in the environment. Courses of action that fall outside of the mental model provided by the organizational culture are generally not considered. Therefore, if either deficiencies or solutions are incongruent with the organizational culture, armed forces are often unable to learn from them.²⁶⁶

259 Rafaella Di Schiena, Geert Letens, Eileen Van Aken and Jennifer Farris (2013). Relationship between Leadership and Characteristics of Learning Organizations in Deployed Military Units: An Exploratory Study. *Administrative Sciences*(3), p. 156-161.

260 Adam Jungdahl and Julia Macdonald (2015). Innovation Inhibitors in War: Overcoming Obstacles in the Pursuit of Military Effectiveness. *The Journal of Strategic Studies*, 38(4), p. 495-496.

261 Mansoor and Murray (Eds.). (2019). *The Culture of Military Organizations*, p. 2.

262 Jeannie Johnson (2018). *The Marines, Counterinsurgency and Strategic Culture*. Washington D.C.: Georgetown University Press, p. 24-25.

263 Mansoor and Murray (Eds.). (2019). *The Culture of Military Organizations*, p. 11-13.

264 Johnson (2018). *The Marines, Counterinsurgency and Strategic Culture*, p. 26-28.

265 Ibidem, p. 28.

266 Kier (1997). *Imagining War*, p. 144.

Other, more practical factors influencing organizational learning are the availability and quality of the learning and dissemination mechanisms. Without such organizational arrangements in place, battlefield adaptations cannot be transferred in a coherent manner to other units or the wider organization.²⁶⁷ Institutionalization of knowledge requires clear and candid information on how the military organization performs in operational circumstances by way of evaluations, debriefs and patrol reports.²⁶⁸ Such processes and documents capture the experiences of individual soldiers and units, and help to make tacit knowledge explicit.²⁶⁹

From the point of knowledge acquisition, irrespective of its source the new knowledge has to be shared and stored throughout the organization. This is acknowledged by scholars on organizational learning by armed forces who argue that this requires institutional resources that exceed the capabilities of single units.²⁷⁰ Organizational instruments, such as an adequately staffed organizational components that collect, analyze and store lessons encountered, are crucial for the institutionalizing of lessons from the battlefield.²⁷¹ An American example of a learning establishment is the Center for Army Lesson Lessons Learned” (CALL). Its task is to collect and analyze specific operational challenges, to seek potential solutions, and to disseminate the knowledge throughout the organization.²⁷² Another example is NATO’s “Joint Analysis and Lessons Learned Centre” (JALLC).²⁷³

Ultimately, dissemination of acquired knowledge is important in order to allow the organization to reap the benefits of the hard-won experiences. To internalize new knowledge, it must be instilled at the individual level. Where learning mechanisms are predominantly meant to make tacit knowledge explicit, dissemination mechanisms must help making the knowledge part of the tacit mental model of the organization and its members.²⁷⁴ Still, the sharing of knowledge is not always straightforward. For instance, units must be willing to

267 Nina Kollars (2015). Organising Adaptation in War. *Survival*, 57(6), p. 115-117.

268 Kathleen Carley and John Harrald (1997). Organizational Learning Under Fire: Theory and Practice. *The American Behavioral Scientist*, 40(3), p. 326-327. Andrzej Lis (2014). Knowledge Creation and Conversion in Military Organizations: How the SECI Model is Applied Within Armed Forces. *Journal of Entrepreneurship Management and Innovation*, 10(1), p. 66-67.

269 Nory Jones and John Mahon (2012). Nimble knowledge transfer in high velocity/turbulent environments. *Journal of Knowledge Management*, 16(5), p. 777.

270 Dyson (2019). The military as learning organisation, p. 2.; Byrne and Barrister (2013). Knowledge Management in Defence, p 115.

271 Robert T. Foley, Stuart Griffin, and Helen McCartney (2011). 'Transformation in contact': learning the lessons of modern war. *International Affairs*, 87(2), p. 261; Tim Causey (2020, June 22). *War is a Learning Competition: How a Culture of Debrief Can Improve Multi-Domain Operations*. Retrieved from: Over the Horizon Journal: https://othjournal.com/2020/06/22/war-is-a-learning-competition/amp/?__twitter_impression=true#

272 Janine Davidson (2010). *Lifting the Fog of Peace: How Americans Learned to Fight Modern War*. Ann Arbor: The University of Michigan Press, p. 102-110; Steven Mains and Gil Ad Arieli (2011). Learning While Fighting: Operational Knowledge Management That Makes a Difference. *PRISM*, 2(3), p. 177-178; Meir Finkel (2011). *On Flexibility: Recovery from Technological and Doctrinal Surprise on the Battlefield*. Stanford: Stanford University Press, p. 114-118.

273 Dyson (2019). The military as learning organisation, p. 6.

274 Andrzej Lis (2014). Knowledge Creation and Conversion in Military Organizations: How the SECI Model is Applied Within Armed Forces. *Journal of Entrepreneurship Management and Innovation*, 10(1), p. 71.

share their experiences.²⁷⁵ Furthermore, issues of classification can hinder information-sharing.²⁷⁶

Formal dissemination mechanisms include doctrine, education, training, and exercises. Despite its limitations as an instrument for enacting change, doctrine helps to provide agreed-upon concepts and ideas in communicable form. The knowledge within these tomes must however be effectively propagated if individual service members are to internalize it. This starts with the education of personnel at, for instance, military academies and staff colleges. Moreover, the acquired knowledge and the concomitant skills must be practiced in training and evaluated in exercises.²⁷⁷ By incorporating recent experiences in training scenarios, units can evaluate new concepts and procedures in simulated settings. To function correctly this requires the training institutions and their scenarios to be attuned to the institutional knowledge repositories.²⁷⁸ Particular instances in which new knowledge can quickly be incorporated are predeployment exercises and tactical bulletins that must be implemented in a way that ensure that the latest experiences are disseminated throughout the organization. In other words, it requires investment in time, resources and attention.²⁷⁹ More informal sharing arrangements, such as military journals and (online) fora can help facilitate the sharing of knowledge as well.²⁸⁰

Another internal factor that can be identified is the allocation of resources. For instance, institutional arrangements for learning and budget to experiment often have to compete with operational demands. In times of tight budgets or time constraints, such crucial entities for the organizational learning process are often understaffed or scrapped in its entirety.²⁸¹

A final, related factor that affects the way military organizations learn is internal politics. This was reflected upon in discussing the early literature on military innovation studies, where interservice and intraservice rivalries were regarded as catalysts for innovation.²⁸²

275 Andrzej Lis (2012). How to Strengthen Positive Organizational Behaviors Fostering Experiential Learning? The Case of Military Organizations. *Journal of Entrepreneurship, Management and Innovation*, 8(4), p. 24-26.

276 See for one research on the problem of classification in knowledge sharing: Barry Byrne and Frank Bannister (2013). Knowledge Management in Defence. *Defence Forces Review*, pp. 71-93

277 O'Toole and Talbot (2011). Fighting for Knowledge, p. 51-52.

278 Davidson (2010). *Lifting the Fog of Peace*, p. 110-114.

279 Kitzen, et al. (2013). Soft Power, the Hard Way, p. 176-183. The authors note that while in this case a bulletin was written it was not formally disseminated, hence undercutting institutionalization of the lessons. See for a more successful example: Steven Mains and Gil Ad Ariely (2011). Learning While Fighting: Operational Knowledge Management That Makes a Difference. *PRISM*, 2(3), p. 176.

280 Hoffman (2015). *Learning While Under Fire*, p. 233-240.

281 Mains and Ad Ariely (2011). Learning While Fighting, p. 174-175.

282 See Adam Grissom's overview of this literature in his seminal article: (2006), p. 910-916.

Although competition between and within services have distinct attributes, the dynamics of politics are essentially similar.²⁸³

The struggle between services and branches is often driven by the need to procure scarce resources. Acquisition and implementation of new knowledge can thus be regarded as an opportunity, because new capabilities can raise the profile of the service or branch so that it gains additional funds.²⁸⁴ This positive influence on developing new capabilities can be offset by institutional apprehension towards new knowledge. Adjustments to core competencies that do not challenge the values and norms of the organization are less prone to meet political obstruction. On the other hand, new knowledge that does challenge these fundamental organizational traits will be more controversial. Questioning or even altering the organization's strategy, mission and culture will upset the status quo and the organization's power arrangements. As such, militaries are apprehensive to question their norms, as this will potentially degrade their core capabilities.²⁸⁵

Stephen Rosen contends that in military organizations, due to their relative distance from the rest of society, this political dimension is even more prominent.²⁸⁶ Rosen understands that in military organizations power is distributed through influence over who is promoted to positions of senior command. Invariably, senior commanders control these career paths, so personnel that advocate innovative ideas must ensure sponsorship by the relevant actors within the organization.²⁸⁷ Although the internal workings of armed forces may appear opaque to an external observer, internal debates on new theories of warfare and changes in career paths can shed light on how military politicking influences learning processes. These various internal factors are summarized in table 2.3.

283 Ganz (2018). Ignorant Decision Making, pp. 39-57; Lawrence, et al. (2005). The Politics of Organizational Learning, pp. 180-191.

284 For a case study on inter service cooperation see: Phil Haun (2019). Peacetime military innovation through inter-service cooperation: The unique case of the U.S. Air Force and Battlefield Air Interdiction. *The Journal of Strategic Studies*, 42(1), pp. 1-27. For an appreciation of inter service cooperation in the U.S. military and how this affects military change see: S. Rebecca Zimmerman, et al. (2019). *Movement and Maneuver: Culture and the Competition for Influence Among the U.S. Military Services*. Santa Monica: RAND Corporation.

285 Hasselbladh and Yden (2019). Why Military Organizations Are Cautious About Learning?, p. 15-16.

286 Rosen (1991). *Winning the Next War*, p. 19.

287 Ibidem, p. 20-21.

Internal influencing factors	Operationalization
Leadership	To what extent do individuals promote or stymie learning processes?
Organizational culture	To what extent is new knowledge congruent with the organizational culture?
Learning mechanisms	What organizational arrangements are in place to capture and analyze knowledge? How do they function?
Dissemination mechanisms	How is knowledge shared throughout the organization?
Resource allocation	To what extent are the learning processes supported by staff and funds?
Organizational politics	To what extent does internal politicking influence the acceptance and implementation of new knowledge? What is the effect of new knowledge on the internal power distribution?

Table 2.3: Internal influencing factors of learning

2.3.4.3: Impediments

Whereas the described external and internal factors can influence how military learning processes work to generate learning, organizational attributes can be identified that solely function as an impediment to learning. As noted in the literature, bureaucratic hindrances can hinder the implementation of change.²⁸⁸

For instance, William Fuller asserts that learning lessons from previous conflicts can be hindered by a lack of receptivity within the institution. Fuller identifies two fallacies that can cause decreased receptivity: the fallacy of linear projection, and the fallacy of the significant exception. The fallacy of linear projection entails a military organization expecting that a future war will closely resemble the previous war, and that while armed forces will adapt incrementally, they are apprehensive to discard the current paradigm. Conversely, the fallacy of the significant exception means that the experience of a previous conflict holds no lessons for future wars, as it is assumed to be an aberration to the dominant paradigm.²⁸⁹

Further impediments to learning can occur when the knowledge is questioned because it does not conform to the institutional norms. Often, this leads to “dysfunctional organizational responses, or *systems of denial* [italics in original], to strategic anomalies -

²⁸⁸ See for example Adam Jungdahl and Julia Macdonald (2015). Innovation Inhibitors in War: Overcoming Obstacles in the Pursuit of Military Effectiveness. *The Journal of Strategic Studies*, 38(4), p. 467-468; Downie (1998). *Learning from Conflict*, p. 181-182; Davidson, *The Fog of Peace*, p. 173-175.

²⁸⁹ William Fuller (2008) ‘What is a military lesson?’, in Thomas Mahnken, *Strategic Studies, A Reader*, Routledge, p. 41-44.

inconvenient information - that contradict assumptions."²⁹⁰ Consequently, the sources or validity of knowledge are questioned or even rejected by the institution.²⁹¹

2.3.4.4: Manifestations

Most manifestations of learning by military organizations are relatively straightforward to study, if not to implement. A list of manifestations is provided in table 2.4 based on the works of Theo Farrell and Rob Sinterniklaas;²⁹² as seen, for example, in a change in strategy or plans and operations. Of course, changing strategy will generally require consent by civilian leadership; as such, implementing change at the strategic level is harder than at the tactical or technical levels.²⁹³

Manifestations of military change
Tactics, Techniques and Procedures
Plans and operations
Military strategy
Education and training
Force levels and resources
Doctrine and concepts
Organizational structures
Equipment

Table 2.4: Manifestations of learning

Whether such changes lead to enhanced performance is of course another question entirely. For example, the same applies to force levels and resources. For instance, the acquisition of armored vehicles to withstand blasts by improvised explosive devices (IEDs) and making these available to deployed troops in the field is a clear-cut example of the latter.²⁹⁴

²⁹⁰ Andrew Hill and Stephen Gerras (2016). Systems of Denial: Strategic Resistance to Military Innovation, *Naval War College Review*; 69(1), p. 110.

²⁹¹ Hill and Gerras (2016). Systems of Denial, p. 115.

²⁹² Farrell (2013). Introduction, p. 7-8; Sinterniklaas (2018). *Military Innovation*, p.31.

²⁹³ Justin Lynch (2019, July 30). *The Three Types of Organizational Learning*. Retrieved January 2, 2020, from The Strategy Bridge: <https://thestrategybridge.org/the-bridge/2019/7/30/the-three-types-of-organizational-learning?rq=lynch>

²⁹⁴ See David Barno and Nora Bensahel (2020). *Adaptation under Fire: How Militaries Change in Wartime*. New York: Oxford University Press, p. 142.-155.

Changes in organizational structures include, for example, the establishment of a unit for civil-military cooperation, structurally augmenting the intelligence staff sections within battalions or brigades, or disbanding certain units as they are deemed obsolete. Changes in education and training to instill new concepts, tactics, techniques, and procedures will be visible in revised curricula. In sum, these manifestations of change in military organizations are comparatively practical in nature.

Military doctrine is a more contentious manifestation of change. Doctrine can be defined as “an approved set of principles and methods, intended to provide large military organizations with a common outlook and a uniform basis of action.”²⁹⁵ It should be noted that doctrine is, and should be, subject to change. Therefore, the principles and concepts in doctrine are not set in stone but are valid for a certain amount of time. The contention on doctrine arises in part from a distinction between formal and informal doctrine. Informal doctrine comprises the concepts and ideas that soldiers abide to within a unit or collective of associated units. Often, this type of doctrine is not written down.²⁹⁶ Formal doctrine is, by default, that which is accepted and propagated by the military organization. Ideally, informal, and formal doctrine are closely aligned, and at least compatible. In a particularly illuminating research, Austin Long posits that despite the development of doctrine for counterinsurgency operations, units in Iraq and Afghanistan defaulted to other approaches when this doctrine was perceived as incompatible with the organizational culture and informal doctrine.²⁹⁷

While enshrining lessons and insights from operations in doctrine is a crucial component of the institutionalization of knowledge in a military organization, it is by no means sufficient. Improving doctrine is futile when it is not internalized by service members who may or may not read doctrine, let alone understand it. Thus, doctrinal change is both a manifestation of, as well as a necessary condition for, learning in military organizations. Doctrine should serve as a conceptual foundation for change in strategy, operations, procedures, and integrating innovative technologies and materiel. It is not, however, a sufficient condition for institutionalizing knowledge.²⁹⁸ These changes can be enacted through education, training, and altering organizational structures.²⁹⁹

²⁹⁵ Richard Holmes (Ed.) (2001). *The Oxford Companion to Military History*, Oxford: Oxford University Press, p. 262.

²⁹⁶ See for example Keith Bickel (2001). *Mars Learning: The Marine Corps' Development of Small Wars Doctrine, 1915-1940*. Boulder: Westview Press. Bickel studies how knowledge on counterinsurgency was retained and shared throughout the United States Marine Corps in the interbellum despite a lack of attention to this type of operations on behalf of the Marine Corps' leadership.

²⁹⁷ Long (2016). *The Soul of Armies*.

²⁹⁸ See for example: Austin Long (2008). *Doctrine of Eternal Recurrence: The U.S. Military and Counterinsurgency Doctrine, 1960-1970 and 2003-2006*. Santa Monica: RAND Corporation, p. 2-3; Harald Hoiback (2011). What is Doctrine? *The Journal of Strategic Studies*, 34(6), pp. 879-900.

²⁹⁹ Crane (2016). *Cassandra in Oz*, p. 48.

2.3.5: Sub conclusion

As this section shows, the field of military innovation studies offers a broad view of how armed forces change, both in times of war and peace. Furthermore, the literature helps to identify factors that drive, influence, and impede the learning process by military organizations. Still, the processes underpinning how armed forces learn from experience are not sufficiently understood. Therefore, the interaction of these factors in combination with the insights from organizational learning literature can offer an improved understanding of how militaries learn and implement change.

2.4: Synthesis

The current section aims to build a synthesis from the discourses on organizational learning and military innovation. Its objective is to produce a comprehensive theoretical framework on how militaries learn in relation to conflict. Furthermore, an analytical model is provided to assess the process of learning. In turn, these theoretical contributions help to analyze the empirical findings on the experiences by the Dutch (chapter 4) and British (chapter 5) armed forces in Southern Afghanistan in ways that better explain the learning processes and experiences revealed in the cases.

2.4.1: Three strands of learning

In any examination of the vast body of literatures on organizational learning and military change, a shared and recurring theme is the distinction between two modes of learning. First, the informal learning by individuals or units that seeks to address performance gaps encountered during operations; a seemingly objective, rational enterprise. The second mode of learning is more invasive as it can affect the strategy, structure, or the processes of the organization. Evidently, such changes require the attention, resources, and above all, the acceptance of the institution's leadership.

In addition to these modes of learning during conflict, this research hypothesizes that the lessons learned are perceived and managed differently after the conflict has ended, with a potentially altered understanding of the strategic environment relative to what was encountered during the conflict itself. Consequently, this research postulates that there are essentially three strands of learning in military organizations: informal adaptation by deployed units during conflict; formal organizational adaptation during conflict; and the institutional learning from the previous experiences after the conflict has ended. In

the following subsections, the three strands of learning and their characteristics will be described.

2.4.1.1: Informal organizational learning in conflict

The first identified strand of informal learning by units invariably takes place during operations.³⁰⁰ This is necessary, as units in the field must learn to cope with the operational environment and the adversaries in it. The cycle of competitive adaptation is often too fast for the organizational processes to keep up with it. Moreover, due to the typically dispersed nature of operations, local units have the best knowledge of the operational environment and are therefore best suited for overcoming obstacles.³⁰¹ Thus, deployed units and their commanders should be empowered to experiment with battlefield solutions to overcome tactical problems. Ideally, this acquired knowledge is horizontally shared with other units currently in theatre, or to subsequent rotations that can encounter similar challenges.³⁰² From an organizational learning perspective, this strand of learning can be compared with group learning. Knowledge is shared between group members with the objective to enhance the group's performance. While the knowledge can be shared with other groups, even those from other organizations, the wider organization is not necessarily affected by this learning process.³⁰³

The notion of informal learning does not mean that organizational arrangements are irrelevant.³⁰⁴ When the military organization allows individuals such as unit commanders sufficient latitude to improvise and adapt, this can instill an atmosphere in which innovative ideas can thrive. James Russell provides several examples of how local commanders experimented within their units with adaptations, without being hindered by institutional obstructions.³⁰⁵ Another telling example of informal learning as a result of the operational environment is that of a U.S. Marine battalion in Iraq in 2006 that reinforced its intelligence section from four officers to over 30 analysts to keep abreast of the vast amount of information coming from the field.³⁰⁶ This decision was entirely within the purview of the battalion

300 Evidently, units and individual service members learn during training and exercises as well.

301 Murray. *Military Adaptation*, p. 13-15.

302 On horizontal knowledge sharing in armed forces see for example: Robert Foley (2014). Dumb donkeys or cunning foxes? Learning in the British and German armies during the Great War. *International Affairs*, 90(2), pp. 279-298; Bruce Gudmunsson (1989). *Stormtroop Tactics: Innovation in the German Army, 1914-1918*. New York: Praeger; Nina Kollars (2015). War's Horizon: Soldier-Led Adaptation in Iraq and Vietnam. *The Journal of Strategic Studies*, 38(4), pp. 529-553.

303 See for example Jeanne Wilson, Paul Goodman, and Matthew Cronin (2007). Group Learning. *Academy of Management Review*, 32(4), pp. 1041-1059.

304 Dirk Basten and Thilo Haamann (2018). Approaches for Organizational Learning: A Literature Review. *SAGE Open*, p. 1.

305 James Russell (2011). *Innovation, Transformation and War: Counterinsurgency Operations in Anbar and Ninewa Provinces, Iraq, 2005-2007*. Stanford: Stanford University Press, p. 70-71.

306 Ibidem, p. 69.

commander. Yet he would not have taken this decision lightly, as this additional intelligence personnel had to come from within the battalion and therefore could not perform their organic tasks, such as conducting patrols.³⁰⁷ While this approach yielded results, it was not institutionalized; it did not lead to augmented intelligence sections within all Marine and Army battalions or brigades. Of course, commanders should retain sufficient leeway to deploy their personnel as they see fit, but in this case the decision for additional intelligence analysis capacity was in support of units engaged in a counterinsurgency operation. Structurally augmenting the intelligence sections with trained personnel, whether just for the units participating in a given campaign or for all similar units, requires institutional intervention and resources.

When such instruments are not in place, informal learning proves to be insufficient to institutionalize lessons from a previous deployment, even within the confines of a single unit. When the experience from past campaigns is not formally incorporated and shared, the acquired knowledge proves to be ephemeral.³⁰⁸ A survey conducted among Dutch infantry officers in 2015 shows that the experience acquired by them on missions to Afghanistan had largely evaporated by then, as their unit recalibrated towards conventional warfare.³⁰⁹

Still, research on special operations forces suggests that some units can be capable of institutionalizing knowledge acquired on missions on their own. Such units have greater continuity in personnel and often form communities of practice, even internationally. Moreover, these highly specialized units do not only execute operations, but they are also responsible for concept development, knowledge retention and training their own personnel. Individual members alternate between those roles, thereby ensuring the retention of lessons for future operations.³¹⁰ As such, these units can function as “anchor points” to store knowledge that is relevant for their tasks, in particular when these tasks are central to the units’ culture. Presumably, other specialized units that have their own structures for training and doctrinal development will be able to form such anchor points.

307 E-mail correspondence by the author with James Russell, 8 March 2019.

308 David Fitzgerald (2013). *Learning to Forget: US Army Counterinsurgency Doctrine and Practice from Vietnam to Iraq*. Stanford: Stanford University Press, p.5-9; Catignani (2014). *Coping with Knowledge*, p. 58-59; De Winter (2015). *The Army after Afghanistan*, p. 47-49; Hoffman, *Mars Adapting*, p. 254-256; Murray, *Military Adaptation*, p. 18-23.

309 Sjoerd de Winter (2015). *The Army after Afghanistan: A Case Study on Military Adaptation to Counterinsurgency Warfare within 12 Infantry Battalion Air Assault the Regiment Van Heutsz*. Breda: Netherlands Defence Academy (Master Thesis), p. 47-49.

310 See George Dimitriu, Gijs Tuinman and Martijn van der Vorm (2016). Formative Years: Military Adaptation of Dutch Special Operations Forces in Afghanistan, *Special Operations Journal*, 2(2), pp. 146-166; Tessa Melkonian and Thierry Picq (2010). Opening the “Black Box” of Collective Competence in Extreme Projects: Lessons from the French Special Forces. *Project Management Journal*, 41(3), 79-90; Tessa Melkonian and Thierry Picq (2011). Building Project Capabilities in PBOs: Lessons from the French Special Forces. *International Journal of Project Management*, 29, 455-467.

2.4.1.2: Formal organizational learning in conflict

The second strand is composed of lessons from the conflict that lead to adaptations that are sanctioned by the wider organization for the duration of the conflict. When the armed forces as a whole acknowledges the value of adaptations, these can be disseminated and implemented in a more coherent and systemic fashion. The adaptations implemented pertain to the theatre of operations and the support to the mission within the armed forces. Conceptually, this strand of learning can be compared with the learning process within projects. The acquired knowledge here can help the organization to reach its objectives of a project. Still, lessons from a mission or project can be deemed only relevant to that specific context, which will lead to the evaporation of knowledge, prohibiting future use.³¹¹

In the literature on how militaries learn from conflict, the dialectic between newly acquired knowledge and the perceived core competences of the organization is a common theme. In Western armed forces, this tension is manifested by the practice of irregular warfare during missions concurrently with the perceived importance of preparing for interstate conventional war.³¹² Some scholars and officers see experience in irregular war as detrimental to the ability of fighting conventional adversaries.³¹³ This is a reflection of the theme of those organizational learning theories which problematize how organizations cope with the inherent tension between exploiting knowledge to refine their routine operations, and exploring knowledge to redefine their mission, strategy and structure in order to increase their chance for success or even survival in the long run. Somewhat paradoxically in this analogy to the military context, ‘routine operations’ tangentially equate with conventional warfare while the practice of irregular warfare corresponds with exploring new competencies that lie beyond normal tasks.

To a certain extent, the apprehension by armed forces to adapt to irregular war is understandable when a dichotomous distinction between “irregular war” and “conventional war” is upheld as the mental model. Military organizations have to operate in lethal, complex, and chaotic environments and have established mechanisms to deal with the uncertainties of war through making calculated assumptions. According to Hasselbladh and Yden, the notion of conventional war is ingrained in Western armed forces and helps them to render “complex situations actionable from a military, instrumental perspective.”³¹⁴ Furthermore, they contend that this penchant towards conventional war cannot be wished

311 See for example Anna Wiewiora, Michelle Smidt and Artemis Chang, (2019). The ‘How’ of Multilevel Learning Dynamics: A Systemic Literature Review Exploring How Mechanisms Bridge Learning Between Individuals, Teams/Projects and the Organization. *European Management Review*, 16, pp. 93-115; Lundin and Soderholm, *Temporary organizations*, p. 591-592.

312 See for example: Hasselbladh and Yden (2019). Why Military Organizations Are Cautious About Learning?; Long (2008). *Doctrine of Eternal Recurrence*; Kitzen (2012). *Western Military Culture and Counterinsurgency*.

313 See Douglas Porch (2011). The dangerous myths and dubious promise of COIN. *Small Wars & Insurgencies*, 22(2), pp. 239-257; Gian Gentile (2010). Freeing the Army from the Counterinsurgency Straitjacket. *Joint Forces Quarterly*, 58(3), pp. 121-122.

314 Hasselbladh and Yden (2019). Why Military Organizations Are Cautious About Learning?, p. 15.

away. Thus, on this view, when change is forced on military organizations, this will erode basic capabilities.³¹⁵ Yet, this distinction between irregular war and conventional war is not only unhelpful for analyzing conflicts, but also false. Contemporary warfare requires Western militaries to be ambidextrous; they must be able to fight conventional wars and employ more non-kinetic instruments in support of civil authorities or during stabilization operations.

A telling example of the underlying tension concerns both the U.S. Army and Marine Corps in Iraq (2003-2007); the acquisition of Mine-Resistant Ambush Protected-vehicles (MRAPs) to provide mobility while mitigating the threat posed by Improvised Explosive Devices (IEDs). While the need for MRAPs was identified early on by units in the field, the procurement was delayed because the services favored other solutions to the scourge of IEDs. Although the deployed units had recognized the dire need for these vehicles, they had to rely on the wider organization to implement the response. Eventually, the MRAPs were procured and deployed through political intervention.³¹⁶

Often, this kind of change to operational performance is thus informed by tactical adaptation by deployed units; but it can also be initiated by the leadership of the organization or even external sources. A further example of this latter phenomenon is the engagement by the U.S. Marine Corps of law enforcement agencies in order to learn from the latter's experience of collecting intelligence and providing security in urban environments. With the help of this knowledge, a software database was developed that helped to process and analyze the intelligence data acquired by the military units.³¹⁷

The described American organizational responses were shaped by the pressures that the war in Iraq exerted on the U.S. military and its political leadership. By default, such changes require resources and organizational support in varying degrees. However, when the conflict ends, the military can revert back to the old organizational and conceptual arrangements. For instance, if augmentations to intelligence sections as learned in Iraq are not substantiated in organization tables of battalions and brigades, the experience will dissipate. When the previous conflict is regarded as an aberration, there will be little incentive to retain the acquired knowledge for future wars. In the case of the recent counterinsurgency campaigns this risk is palpable, as other strategic challenges have arisen and the lessons are deemed as being detrimental to the core competencies of fighting conventional opponents.³¹⁸

315 Ibidem, p. 15-16.

316 David Barno and Nora Bensahel (2020). *Adaptation under Fire: How Militaries Change in Wartime*. New York: Oxford University Press, p. 142-155.

317 James Russell (2011). *Innovation, Transformation and War: Counterinsurgency Operations in Anbar and Ninewa Provinces, Iraq, 2005-2007*. Stanford: Stanford University Press, p.69-71.

318 See for example: Gian Gentile (2013). *Wrong Turn: America's Deadly Embrace of Counterinsurgency*. New York: The New Press; Douglas Porch (2013). *Counterinsurgency: Exposing the Myths of the New Way of War*. New York: Cambridge University Press;

2.4.1.3: Institutional interconflict learning

The third, and final, strand of learning arises when armed forces retain lessons beyond a conflict. When the strategic context of a military organization has, or is perceived to be, changed, the hard-won experience of the previous war can be viewed from a distinct perspective. The lessons from the most recent conflict can inspire new technology, procedures, organizational structures, and concepts. Of course, new strategic challenges can arise that usurp the interests of military and political leaders. In the last decade, ascending revisionist powers such as Russia and China, and the threat posed by the Islamic State, have clearly commanded the interest of the Western armed forces. At the same time, Western militaries continue to be engaged in irregular intrastate wars. Moreover, the American disentanglement from Iraq in 2011 turned out to be premature even prior to the most recent events. Knowledge pertaining to these theatres will likely remain relevant for the foreseeable future.³¹⁹ Thus, while a thorough analysis of the strategic environment is periodically necessary to prepare for future conflicts, militaries should not discard the lessons from previous wars.³²⁰ This is indeed a central element of this research.

The main question here is how an altered strategic environment shapes the perception, and consequently, retention of the acquired knowledge of previous conflicts. This knowledge can both originate from the informal learning by tactical units, or from organizational adaptation. Officers who are contemplating how to respond to the current and future threats will often be influenced by their own experiences in previous wars. These experiences have to be weighed against the current context and can consequently be discarded, retained or refined, and may lead to new insights. Preferably, as a foundational step, military organizations conduct thorough evaluations of their experiences of the past conflict to assess their performance, contemplate shortcomings and identify potential solutions. For academic reasons, such evaluations are ideally unclassified, but this should not be the prime consideration for armed forces.³²¹

Edward Luttwak (2007). Dead End: Counterinsurgency Warfare as Military Malpractice. *Harper's Magazine*, 314(1881), pp. 33-42

319 See for example: David Ucko (2019). Systems Failure: the US way of irregular warfare. *Small Wars & Insurgencies*, 30(1), pp. 223-254.

320 Williamson Murray (2011). *Military Adaptation in War: With Fear of Change*. New York: Cambridge University Press, p. 38; Elliot Chohen and John Gooch (2006). *Military Misfortunes: The Anatomy of Failure in War*. New York: Free Press, p. 20-25.

321 For an unclassified example of such an evaluation see the two-volumed U.S. Army evaluation on its performance in the Iraq War: Joel Rayburn and Frank Sobchak (Eds.). (2019). *The U.S. Army in the Iraq War, Volume I: Invasion, Insurgency, Civil War, 2003-2006*. Carlisle: United States Army War College Press; Joel Rayburn and Frank Sobchak (Eds.). (2019). *The U.S. Army in the Iraq War, Volume II: Surge and Withdrawal, 2007-2011*. Carlisle: United States Army War College Press. Other examples are the British Army evaluation of its campaign in Helmand and the Israeli report on the 2006 war in Lebanon. See respectively: British Army *Operation HERRICK Campaign Study*. Warminster: Directorate Land Warfare; Raphael Marcus (2018). *Israel's Long War With Hezbollah: Military Innovation and Adaptation Under Fire*. Washington D.C.: Georgetown University Press, p. 1-2.

To preserve this hard-won knowledge for posterity, it must be institutionalized. This requires dissemination of the knowledge beyond evaluations or doctrinal publications. For instance, the knowledge can, and should, be reflected in the curricula of military academies and of command and staff colleges. Furthermore, the knowledge should be put into practice in training scenarios, so officers and enlisted personnel can get acquainted with it in controlled environments.³²² Institutionalization of lessons learned can be manifested through the procurement of new materiel and the implementation of associated concepts and organizational structures.

This third strand of learning by military organizations elevates the knowledge beyond the context of a specific conflict. By institutionalizing knowledge, the organization improves its durability, and retains the availability of the knowledge in future wars. However, institutionalization of knowledge is not a normative prescription in the sense that institutional learning is not always beneficial to military organizations. Institutionalization of prior experiences does not absolve armed forces from analysis of whether this knowledge is still relevant in the current strategic environment. The analogy of the French Army during the interbellum, and its emphasis on defensive operations based on its experiences in the First World War resulting in the Maginot Line, asserts itself. Armed forces should retain their flexibility and capacity to learn, in order to overcome the challenges posed by the next conflict. However, at the same time, it would be wasteful to relearn forgotten knowledge from previous wars while under fire. This harkens back to the dialectic between exploitation of institutional knowledge and the exploration for new knowledge in which organizations should strive to preserve a delicate equilibrium.

2.4.2: Towards an analytical model

The objective of this chapter is to develop a suitable theoretical framework and analytical model for understanding the learning process in military organizations in relation to their environment. Whereas the preceding section identifies three strands of learning, this section identifies the steps of the process and seeks to synthesize both aspects in a comprehensive analytical model. A detailed discussion on the working of this model is provided as well.

■
322 Paddy O'Toole and Steven Talbot (2011). Fighting for Knowledge: Developing Learning Systems in the Australian Army. *Armed Forces & Society*, 37(1), pp. 42-67; Harald Hoiback (2016). The Anatomy of Doctrine and Ways to Keep It Fit. *The Journal of Strategic Studies*, 39(2), p. 192.

2.4.2.1: Steps of learning

In the first and second sections of this chapter several models have been introduced that are derived from organizational learning theory. These are typically comprised of several steps; it will already be evident that these models have inspired the ideas underpinning this chapter to a large extent. Dissecting the process of learning into discrete steps can help analyzing learning in military organizations. Nevertheless, I propose that some modifications in these steps are necessary in order to incorporate the three strands of learning. In total, six steps are identified in this new synthesis: *evaluation, identification, response, adaptation, contemplation, and institutionalization* (see table 2.5).

Synthesis	Crossan	Downie	Hoffman
Evaluation	Intuit	Individual action/ attention to events	Inquiry
Identification	Interpret	Identification of performance gap	Interpretation
Reaction	Integrate	Search for alternatives	Investigation
Adaptation	Institutionalization	Sustained consensus	Integrate & institutionalize
Contemplation	-	Transmit interpretation	
Institutionalization	-	Change in organizational behavior	

Table 2.5: Synthesized steps in military learning process compared with other models

The first step, *evaluation*, incorporates individual observations of the conflict and the environment by individual members through the formal evaluation mechanisms that are in place during missions. As such, this step explicates the experiences and knowledge held by individuals. In the subsequent steps, *identification* and *reaction*, elements of the organization respectively recognize performance gaps and seek to address them. These activities can occur at the level of deployed units (informally), but also in the wider institution (formally).³²³ The adaptation step implements and integrates the solutions for the duration of the conflict.³²⁴

323 David Barno and Nora Bensahel (2020). *Adaptation under Fire: How Militaries Change in Wartime*. New York: Oxford University Press, p. 26-27.

324 Mary Crossan, et al. (1999). An Organizational Learning Framework: From Intuition to Institution. *Academy of Management Review*, 24(3), p. 528-529.

The main contribution of the model introduced here is that it adds the two additional steps: *contemplation* and *institutionalization* after the conflict has ended. The former evaluates the lessons post-conflict and weighs their relevance against the assessment of the current and future strategic environment. Subsequently, the latter ensures that the knowledge is stored and used for organizational change. In the following subsections these steps will be described into more detail. Furthermore, the way these separate steps fit into the three strands of learning and how they can be influenced will be explored.

2.4.2.1.1: Evaluation

In contrast to most models, this step is not concerned with the individual acquiring knowledge from experience in the field, but rather how the collective experiences are evaluated. This is not to deny the individuals agency in acquiring and disseminating knowledge. Rather, it is a reflection of military practice in which any action or mission is collectively evaluated during deployments to conflict theatres. After a patrol or operation is concluded, an “after action review” will be held to assess whether the activity has met its objectives and to identify any salient aspects during the preparation or conduct of this activity.³²⁵ The perception of these experiences will be shaped by the tacit knowledge that resides in the organization and its members.

At the higher levels, such as a regional command or a national task force, the development of the conflict is routinely evaluated through campaign assessments. With these assessments the effects of operations on the environment can be gauged in order to assist operational decision making. In other words, assessment can help the commander and staff to determine how to adjust their plans and operations.³²⁶ Obviously, this requires clear objectives that are to be reached, and identification of indicators that signify the progress (or lack thereof) towards these goals. Allowing for some oversimplification, measuring progress in conventional war is relatively straightforward. Relevant metrics here can be casualties (friend or foe), territory that changed hands, and destroyed materiel.³²⁷ A complicating variable can be the domestic support for the war effort of the belligerents.

In stabilization or counterinsurgency operations, often fused with state building efforts, identification of relevant metrics and interpreting those correctly is far more complex.³²⁸

³²⁵ Tim Causey (2020, June 22). *War is a Learning Competition: How a Culture of Debrief Can Improve Multi-Domain Operations*. Retrieved from: Over the Horizon Journal: https://othjournal.com/2020/06/22/war-is-a-learning-competition/amp/?__twitter_impression=true#

³²⁶ Ben Connable (2012). *Embracing the Fog of War: Assessment and Metrics in Counterinsurgency*. Santa Monica: RAND Corporation, p. 2-4. Connable provides a helpful distinction between campaign assessment and intelligence on p. 3.

³²⁷ Stephen Rosen (1991). *Winning the Next War: Innovation and the Modern Military*. Ithaca: Cornell University Press, p. 30-31.

³²⁸ Scott Gartner. (2015). *Wartime Strategic Assessment: Concepts and challenges*. In L. Blanken, H. Rothstein, & J. Lepore (Eds.), *Assessing War: The Challenge of Measuring Success and failure*. Washington DC: Georgetown University Press p. 35-37.

In such missions, the objectives can include stabilization, economic reconstruction, security sector reform, humanitarian aid, and assisting host-nation governance.³²⁹ To assess the progress towards these multiple objectives requires a myriad of indicators. Pure military considerations such as the destruction of the adversaries combat power can be relevant but are just one indication of the developments in theatre. Moreover, they could be counterproductive to the overall objective. Furthermore, commanders must be aware of the distinction between measuring progress in the campaign and evaluating unit performance in combat.³³⁰

Beyond fighting, many of the other objectives can be considered to be beyond the routine tasks of the military, and this means it can be hard to assess the developments in these non-military spheres.³³¹ A further complicating factor in this regard is that modern conflicts generate overwhelming amounts of data. Although this can enhance the understanding of conflicts, analyzing all possible information in a timely fashion will be beyond operational staffs.³³²

Even more fundamentally, indicators of developments may well not be quantifiable. A predilection for statistics, without due consideration of what they convey about the situation in an area of operations, will distort the understanding of the environment. Ultimately, this makes an assessment of the mission and redressing performance deficiencies near-impossible.³³³ Therefore, quantitative metrics must be grounded in a qualitative understanding of the conflict and the environment.³³⁴

The complexity of assessing counterinsurgency campaigns is illustrated by the American efforts in Vietnam.³³⁵ Well-known instruments used by the U.S. were the Hamlet Evaluation System (HES) and the infamous “body-count.” The HES sought to comprehensively assess the security of the South-Vietnamese population. A multitude of indicators were used to generate massive amounts of quantitative data that were aggregated and analyzed centrally.

329 Sebastiaan Rietjens, Joseph Soeters and Willem Klumper (2011). Measuring the Immeasurable? The Effects-Based Approach in Comprehensive Peace Operations. *International Journal of Public Administration*, 34, p. 334-335.

330 See Gregory Daddis (2011). *No Sure Victory: Measuring U.S. Army Effectiveness and Progress in the Vietnam War*. New York: Oxford University Press, p. 14-17.

331 Stephen Rosen (1991). *Winning the Next War: Innovation and the Modern Military*. Ithaca: Cornell University Press, p. 35.

332 See for an optimistic take on data in conflict: Eli Berman, Joseph Felter and Jacob Shapiro (2018). *Small Wars, Big Data: The Information Revolution in Modern Conflict*. Princeton: Princeton University Press, p. 16-18.

333 See Sebastiaan Rietjens, Joseph Soeters and Willem Klumper (2011). Measuring the Immeasurable? The Effects-Based Approach in Comprehensive Peace Operations. *International Journal of Public Administration*, 34, p. 336-337

334 Eli Berman, Joseph Felter and Jacob Shapiro (2018). *Small Wars, Big Data: The Information Revolution in Modern Conflict*. Princeton: Princeton University Press, p.33-43; Sebastiaan Rietjens, Joseph Soeters and Willem Klumper (2011). Measuring the Immeasurable? The Effects-Based Approach in Comprehensive Peace Operations. *International Journal of Public Administration*, 34, p. 336-337.

335 See for an overview of these struggles: Gregory Daddis (2011), *No Sure Victory: Measuring U.S. Army Effectiveness and Progress in the Vietnam War*. New York: Oxford University Press

A fundamental flaw was that this data was devoid of any qualitative context; in essence, HES provided troves of data that were irrelevant for the understanding of the conflict and informed decision making.³³⁶ Concerning the “body-count”, this metric had by itself relatively little informative value regarding the development of the war. More problematic even was that the veracity of the numbers of enemies killed was flawed and that it was used as the “primary gauge of success in [...] combat operations promotions.”³³⁷ From an ethical perspective, this created a perverse incentive to inflate enemy casualties. More recently, the assessments of the war in Afghanistan were routinely used in the United States (and beyond) to maintain public support for those missions. Metrics that supposedly conveyed progress without qualitative context gave an overoptimistic account of the conflict. Essentially such metrics were affected by political considerations and held little operational value.³³⁸

Despite the challenges of producing valid assessments on campaigns and operations, the evaluation step is a crucial first element of learning in conflict. To understand this step, evaluation, the indicators, and data that are used to measure progress must be examined.³³⁹ If the data derived from evaluations and progress reports is valid, it can help to establish an understanding of whether the objectives of the campaign are being attained in relation to the operational environment. This is however subject to both internal influences, such as organizational culture, and external influences such as domestic politics. After action reviews on the unit level are routinely conducted and are somewhat more straightforward, as these are predominantly focused on the unit’s performance.

2.4.2.1.2: Identification

By assessing the effects of tactical activities, operations or a campaign, commanders can obtain insight whether their organizations are performing in accordance with expectations. Furthermore, the *evaluation* step can indicate whether the organization, ranging from a squad to the entire coalition or military organization (including the non-deployed elements), can be expected to reach its objectives. If the results of the activities and campaign are less encouraging than envisioned, the organization must look to its own operations to find out where its performance is lacking. Evidently, if operations and campaigns are to be successful, the organization that conducts them must learn to overcome the performance gaps.

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336 Ben Connable (2012). *Embracing the Fog of War: Assessment and Metrics in Counterinsurgency*. Santa Monica: RAND Corporation, p. 111-131.

337 Ibidem, p. 107-108.

338 Craig Whitlock (2019, December 9). At War With the Truth. *The Washington Post*.

339 Stephen Rosen (1991). *Winning the Next War: Innovation and the Modern Military*. Ithaca: Cornell University Press, p. 36.

For this to occur, it is crucial to identify what exact deficiencies are hindering the accomplishment of the stated objectives, and what causes them. For instance, a unit can find that it uses invalid concepts or tactics in relation to the operational environment. Another cause of lack of success can be inadequate resources, such as insufficient troops or the unavailability of equipment. A fundamental deficiency is when the deployed unit simply lacks the competencies that are needed to attain its objectives, such as the knowledge on how to perform non-military functions in a stabilization operation.³⁴⁰ One related and commonly recognized deficiency is when the organization does not sufficiently understand the operational environment as its intelligence is inadequate.³⁴¹

Identifying performance gaps informs the units and organization of whether units can address these deficiencies themselves, or whether organizational assistance is required. Procuring equipment and raising troop levels are generally beyond the capability of a deployed unit, thus organizational assistance is necessary. On the other hand, adjusting tactics or experimenting with new concepts can be done in the field if the involved units possess the knowledge and latitude to do so. If not, it falls to the higher echelons of the organization. Formal organizational learning mechanisms such as knowledge centers can then assist in analysis of the problem and subsequently search for a response. The organization's capabilities and capacities are brought to bear on the problem, and the process takes on a more formal character.

It should be noted that this implies that the various levels within the organization are in concurrence on what the performance gap is, and where it resides in the organization. In practice, the analysis of performance deficiencies will often diverge between different organizational levels.³⁴² Naturally, this impedes the learning process, as it will lead to formulating different responses.

Another potential hindrance to identifying performance deficiencies is that it can be subject to biases. When the level of violence in the area of operations increases, the unit responsible for that area can conclude that it is failing in taking on the enemy. As a result, the unit will potentially seek the solution in more aggressive operations or by applying more firepower. However, the causes of the violence may be different than those identified, and therefore require a different organizational response. Thus, the interpretation of what the evaluation indicates about the organization's performance affects the learning process. For research purposes, examining this *identification* step can help bridge the assessment of the organization's activities and its efforts to overcome operational challenges.

340 James Russell (2011). *Innovation, Transformation and War: Counterinsurgency Operations in Anbar and Ninewa Provinces, Iraq, 2005-2007*. Stanford: Stanford University Press, p. 41-42.

341 Eliot Cohen and John Gooch (2006). *Military Misfortunes: The Anatomy of Failure in War*. New York: Free Press, p. 40-43.

342 Richard Downie (1998). *Learning from Conflict: The U.S. Military in Vietnam, El Salvador, and the Drug War*. Westport: Praeger, p. 6.

2.4.2.1.3: Reaction

In this stage, the deployed unit or the organization at large seeks to address the identified performance deficiency (or exploit a recognized opportunity). The reaction can include adjusting existing concepts, organization structures and tactics, techniques, and procedures (TTPs).³⁴³ At the same time, entirely novel approaches might be experimented with. This reaction can lead to embracing new competencies that normally lay outside the unit's purview.

How an organization, or its constituent elements, react to an identified performance gap can be influenced by several factors. As such, the responses sought can diverge across national armed forces and between units. For example, a penchant for technological solutions rooted in the organizational or strategic culture can impede the search for response of an unconventional character. Moreover, exploring measures that challenge the organization's norms, values and power arrangements can instigate internal political obstruction. Exploiting existing competencies is therefore often more straightforward. Other potential responses, such as increasing the levels of troops in theatre, can be prohibited by civilian leadership due to political considerations.

To a certain extent, a deployed unit can seek to address the identified deficiencies in an informal fashion without assistance from the institutional level. When the organization is unwilling or unable to support a response, the units in the field must seek to cope with the operational challenges independently. This is of course dependent on the commander's and subordinates' creativity but can also be abetted or stymied by the organization's culture. If the dominant culture promotes risk aversion and is prone to centralized power structures, the perceived opportunities for experimentation will be curtailed.³⁴⁴ Conversely, if experimentation and risk taking is rewarded, and authority is devolved to the lower levels, both individuals and units will be keener to try-out novel approaches.

If a performance gap is acknowledged at the institutional level, the organization can help rectify this deficiency through a more formal process.³⁴⁵ This can occur both in the theatre of operations, or within the bounds of the wider organization. Beyond inquiring what an operational commander needs to address the problem, the organization can establish teams that search for responses through experimentation. Furthermore, responses to operational challenges can be sought in the experiences of other armed forces. This form of emulation

343 Frank Hoffman (2015). *Learning While Under Fire: Military Change in Wartime*. London: King's College (Doctoral Dissertation), p. 53.

344 Meir Finkel (2011). *On Flexibility: Recovery from Technological and Doctrinal Surprise on the Battlefield*. Stanford: Stanford University Press, p. 101-110.

345 Tom Dyson (2020). *Organisational Learning and the Modern Army: a new model for lessons-learned processes*. Abingdon: Routledge, p. 25.

can help bypass a part of trial-and-error experimentation, as the response generally has been applied and tested in wartime. However, the new knowledge must be transferred with due regard for the specifics of one's own operational environment and the attributes of the organization. If this knowledge is not congruent with, for instance, the organizational culture, or is objected to by the civilian leadership on the basis of political considerations, it will not be implemented in the organization.³⁴⁶

Another source of inspiration can be lessons from historical cases. The risks associated with this approach are however considerable. Historical analogies are susceptible to myth-building and misrepresentation. As a result, implementing historical "lessons" to a contemporary problem is liable to produce negative results. This does not mean that history does not hold valuable insight for military professionals, but rather that it cannot serve as a repository of "quick fixes".³⁴⁷

Just as deployed units and organizations can grapple with more than one deficiency, they also seek multiple responses for a recognized performance gap. These processes can occur simultaneously, reiterating that there often distinct learning processes working concurrently, and potentially influencing, one another. If a potential response fails to solve the problem, the unit or organization can revert to the identification step to conduct further analysis of the deficiency.

2.4.2.1.4: Adaptation

In this step, the outcomes of the learning process during the conflict will be implemented. This means that the changes in the organization, whether informally at the unit level or formally at the institutional level, will be manifested through a change in the organization's behavior. As noted in the previous chapter, these manifestations can be instantiated in strategy, doctrine, operations, organizational structure, and resources.

For implementation of the response to change the organization's behavior, the knowledge underpinning it must be disseminated. If this knowledge pertains to informal adaptations, it can be transferred to adjacent or successive units. Whether this horizontal diffusion works is subject to the extent that the organizational culture fosters informal knowledge dissemination, and the willingness of personnel to share lessons. Formal adaptations must be implemented through the organization's dissemination mechanisms, such as

346 Fabrizio Cottichia and Francesco Moro (2016). Learning From Others? Emulation and Change in the Italian Armed Forces Since 2001. *Armed Forces & Society*, 42(4), p. 701.

347 John Kiszely (2006). The relevance of history to the military profession: a British view. In W. Murray, & R. Hart Sinnreich (Eds.), *The Past as Prologue* (pp. 23-33). Cambridge: Cambridge University Press, p. 25-28.

pre-deployment training, doctrinal publications or establishing new organizational structures.³⁴⁸

The formal and informal learning processes towards adaptation in conflict can be concurrent and independent, reflecting the coexistence of the first two strands of learning as established in this chapter. The outcomes of these processes can of course affect one another. An informal adaptation initiated and implemented in the field can be accepted by the wider organization, which may subsequently disseminate it formally to other units that participate in the current campaign, thereby implementing it throughout the institution. Conversely, as formal adaptations are diffused, they will affect the deployed units who may also have made informal changes to their operations. These formal adaptations can, if they are compatible, enhance and reinforce the informal adaptations. If they are not, the formal lessons can replace the informal knowledge, provided that the lower echelons accept them. As shown by Catignani and Long, such formal adaptations can be rejected by units in the field as impractical or as incongruent with their normal mission.³⁴⁹

The adaptations will subsequently affect the subsequent *evaluation* step. As changes have been made to the unit's (or organization's) behavior, the evaluation will take these adaptations into account to see whether they influence the environment. Ideally, the adaptations lead to more effective activities by the organization. Of course, events in the environment may well have other causes than adaptations. If the effects of the changes on the conflict are indeed observable, this can help in making further adaptations, spurring another cycle of learning. A prominent effect can be that the adversary is forced to react to one's own adaptations. When, on the other hand, no impact on the adversary is discernible, this warrants making further adjustments to the performance of both the organization and the deployed units. In sum, this underwrites the primacy of the *evaluation* step.

2.4.2.1.5: Contemplation

Where the previous four steps have dealt with the learning process during a specific conflict, the subsequent two steps signify what happens with these lessons beyond this conflict. If the knowledge is to be genuinely institutionalized, in the sense that it will be available in other contexts, this outcome requires conscious contemplation on account of the organization. This step essentially consists of two elements: evaluation of the previous conflict, and analysis of the current strategic environment.

348 John Nagl (2002). *Learning to Eat Soup with a Knife: Counterinsurgency Lessons from Malaya and Vietnam*. Chicago: Chicago University Press, p. 7.

349 See Sergio Catignani (2012). 'Getting COIN' at the Tactical Level in Afghanistan: Reassessing Counter-Insurgency Adaptation in the British Army. *Journal of Strategic Studies*, 35(4), pp. 513-539; Austin Long (2016). *The Soul of Armies: Counterinsurgency Doctrine and Military Culture in the US and UK*. Ithaca: Cornell University Press.

After the conflict has ended, military organizations can look at their experiences in a more comprehensive manner. Such post-facto evaluations can help appraise the organization's performance and its learning process throughout the campaign. Deficiencies that were not acknowledged previously can come to light through a thorough reappraisal of the conflict.³⁵⁰ Furthermore, new potential responses to similar responses may be found. Finally, a campaign evaluation can assess the effect that the adaptations had during conflict.³⁵¹ Theoretically, a thorough and candid evaluation also benefits from the absence of operational pressures.³⁵² In practice, other considerations such as new campaigns or reorganizations will often form distractions to such evaluations. Ultimately, however, a campaign evaluation can yield an array of lessons from the last conflict for the organization.

Unquestionably, implementing knowledge from the latest conflict is of course not enough; lessons from recent experiences might not be relevant and should thus be unlearned.³⁵³ Instead, the relevance of lessons and concepts must be weighed against a thorough examination of the current and future strategic context.³⁵⁴ States, and their armed forces, often engage in strategic analysis, and forecasts.³⁵⁵ Such strategic assessments often include threat perceptions and guidance for defense policy, in which the perceived threats in the strategic environment will shape the vision on what military capabilities are required to meet them.³⁵⁶ Evidently, predicting the future of warfare is a tall order. Nevertheless, the keen observer can discern trends and developments.

Recent changes to the strategic environment have been perceived as profound; no longer are large-scale expeditionary counterinsurgency missions the norm. Instead, the resurgence of the Russian Federation, and the growing assertiveness of China dominates the attention of Western strategists. In practical terms, this results in a recalibration of Western armed forces towards fighting high-intensity conventional wars against state competitors.³⁵⁷ Some

350 Williamson Murray (2011). *Military Adaptation in War: With Fear of Change*. New York: Cambridge University Press, p.5.

351 See for instance Joel Rayburn and Frank Sobchak (Eds.). (2019). *The U.S. Army in the Iraq War, Volume I & II*. Carlisle: United States Army War College Press.

352 See Stephen Rosen (1991). *Winning the Next War: Innovation and the Modern Military*. Ithaca: Cornell University Press, p. 261; Eliot Cohen and John Gooch (2006). *Military Misfortunes: The Anatomy of Failure in War*. New York: Free Press, p. 236-237.

353 See Karen Becker (2019). Organizational Unlearning: The Challenges of A developing Phenomenon. *The Learning Organization*, 26(5), p. 534-536.

354 Michael Howard (1963). The Use and Abuse of Military History. *RUSI Journal*, 107(625), p.7.

355 See for example: HM Government. (2015). *National Security Strategy and Strategic Defence and Security Review 2015: A Secure and Prosperous United Kingdom*. London; UK Ministry of Defence. (2015). *Strategic Trends Programme: Future Operating Environment 2035*. Shrivenham: Development, Concepts and Doctrine Centre; Joint Chiefs of Staff. (2016). *Joint Operating Environment 2035*. Washington D.C.: U.S. Department of Defense; United States Department of Defense (2018). *National Defense Strategy*. Washington D.C.

356 Williamson Murray. „Innovation: Past and Future.“ In *Military Innovation in the Interwar Period*, Editor: Williamson Murray en Allan R. Millet, 300-328. New York: Cambridge University Press, 1996, p. 304-306.

357 See for example: United States Department of Defense. *National Defense Strategy 2018*. Washington D.C.: U.S. Department of Defense, 2018; HM Government. “National Security Strategy and Strategic Defence and Security Review 2015: A Secure and Prosperous United Kingdom”. London, 2015; Department of Defence. *2016 Defence White Paper*. Canberra: Commonwealth of Australia, 2016.

scholars and practitioners have argued that this development is overdue, as the recent campaigns in Iraq and Afghanistan have degraded the Western ability to fight conventional wars. Consequently, these armed forces recalibrate towards conventional warfare and the associated skills.³⁵⁸ This does not augur well for retaining the lessons from the previous conflicts, however, as Western militaries are prone to revert back to their normal concepts and organizational structures.³⁵⁹

In a more general sense, Western armed forces prepare for the most dangerous strategic scenarios and seek to prevent surprise attacks that result in an instantaneous defeat.³⁶⁰ At the same time, military planners have a predilection to prepare for short decisive campaigns in which the adversary is to be paralyzed through a combination of speed, deft maneuvering, and technological advantages. This should prevent protracted and inconclusive wars.³⁶¹ As such, counterinsurgency operations with elusive adversaries, long commitments and strategically unsatisfying results go against the grain of Western military thought.

While analyzing the strategic environment, armed forces must explore what capabilities they need for addressing future threats. Western strategists do habitually explore new technologies and their potential impact on warfare. This leads to assertions about the changing character of war, while tending to neglect the continuities. Furthermore, this exploration is usually focused on exploiting their core competency: fighting conventional wars.³⁶² Emphasizing technological developments tends to disregard explorations in other competencies that are needed for peacekeeping and stabilization operations.³⁶³ Moreover, exploiting the routine core competency of conventional war fighting is often detrimental to the performance in counterinsurgency or stabilization operations, as those require different approaches.³⁶⁴

2.4.2.1.6: Institutionalization

The sixth and ultimate step of the process is *institutionalization* of the knowledge when it is assessed to be of continuing relevance to the organization. In essence, the knowledge must

358 Douglas Porch. *Counterinsurgency: Exposing the Myths of the New Way of War*. New York: Cambridge University Press, 2013 318-345; Otto van Wiggen and Robbert-Jan Aarten. "Oefening Bison Drawsko 2017: Een essentiële nulmeting voor de Landmacht". *Militaire Spectator* 186, nr. 12 (2017): 581-596.

359 Hans Hasselbladh and Karl Yden. "Why Military Organizations Are Cautious About Learning?" *Armed Forces & Society*, 2019: p. 15-17.

360 Lawrence Freedman. *The Future of War: A History*. London: Penguin, 2017, p. 277-279.

361 Cathal Nolan. *The Allure of Battle*. Oxford: Oxford University Press, 2017, p. 572-577.

362 H.R. McMaster (2017). Learning from Contemporary Conflicts to Prepare for Future War. *Orbis*, 61(3), 314-315.

363 Tim Sweijjs and Frans Osinga (2019). VII: Maintaining NATO's Technological Edge. *Whitehall Papers*, 95(1), p. 115-116.

364 John Vrolyk (2019, December 19). *Insurgency, not war is China's most likely course of action*. Retrieved December 19, 2019, from War on the Rocks: <https://warontherocks.com/2019/12/insurgency-not-war-is-chinas-most-likely-course-of-action>

lead to change in organizational behavior. As detailed previously, this change can result in different manifestations. For example, institutionalization can lead to new organizational structures, modifications in education and training, novel capabilities, and equipment, altered, and new concepts and doctrine. By itself, incorporating knowledge into doctrinal publications is insufficient to bring about such change. Without more practical manifestations of this knowledge, the military organization risks only ostensibly institutionalizing the knowledge without it being internalized by its members, hence losing its value.³⁶⁵

The main difference with adaptation (step 4) is that the knowledge retained in the contemplation step is assessed as being of enduring relevance. Doing so leads to structural reforms that are relevant beyond the context in which the experiences were initially acquired. Ultimately, this knowledge must be internalized by the individual members so that it shapes their mental model.³⁶⁶ Explicit knowledge then becomes tacit knowledge and ensures its availability in other contexts such as new missions. This organizational knowledge will shape how the experiences in new operational context are perceived and form a new cycle of organizational learning. The notion of accumulating knowledge warrants a reiteration of the qualification that this process says little, by itself, about the quality of the lessons learned, and potentially less about the resulting military performance.

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365 Andrew Hill and Stephen Gerras (2016). Systems of Denial: Strategic Resistance to Military Innovation, *Naval War College Review*; 69(1), p. 115.

366 See Ikujiro Nonaka and Noboru Konno (1998). The Concept of “Ba”: Building a Foundation for Knowledge Creation. *California Management Review*, 40(3), 40-54.

2.4.2.2: An analytical model

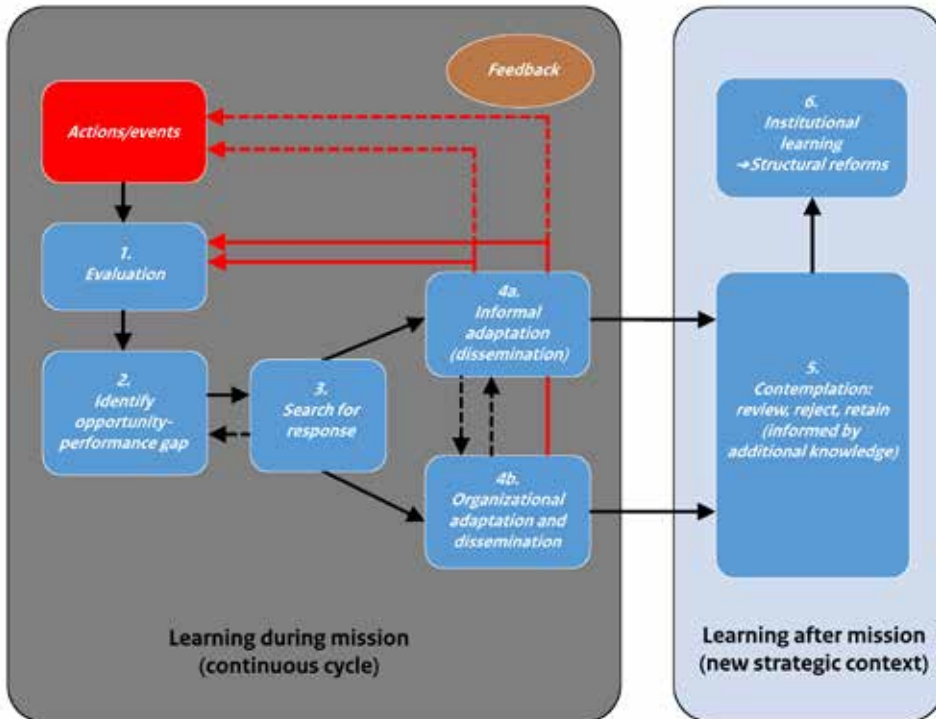


Figure 2.3: The proposed comprehensive model for institutional learning

The combination of the three strands of learning and the six distinct steps of the learning process are visualized in the analytical model in figure 2.3. The model is not an end in itself but can serve as an analytical tool to help trace the process of learning in a military organization. It depicts the hypothesized three strands of learning, and their constituent steps. For a thorough analysis of the process of learning by military organizations, the model should be used in conjunction with the influencing factors as described in chapter 3. Furthermore, the obstructions to learning as described in this chapter will serve as a contextualized frame of reference when the learning processes of the armed forces under study are found to have been impeded. Although for the sake of readability this frame of reference is not included in the model, the influencing factors, impediments, and manifestations can be used as tools of analysis to dissect learning processes in relation to conflict.

The main addition of this model to the study of change in military organizations is that it recognizes the distinct dynamics of learning in conflict and retaining those lessons afterwards, while at the same time it also shows that these processes are inherently related. Evidently, the use of an analytical model such as this has its limitations. First of all, it can be construed as being deterministic, and without taking adequate regard to the dynamics of learning in relation to conflict. What the model cannot convey is therefore that multiple learning processes can occur simultaneously, whether by means of formal or informal modes. Furthermore, learning processes can be interdicted by negative influences or outright inhibitors.

A further qualification of this model is that the depicted bifurcation of learning in conflict and post-conflict is somewhat artificial. Consider the case of the International Security Assistance Force in Afghanistan (ISAF); following its end in 2014, the Resolute Support Mission (RSM) succeeded it. This new mission focused on Security Force Assistance, rather than direct population-centric counterinsurgency operations. The majority of the lessons learned during ISAF were understood to be relevant to the operations of RSM, as the conflict for all practical purposes remained the same. Moreover, the Western dichotomy of the missions would probably have been lost on the Afghan population in general, and the adversaries in particular. A final consideration was that the post-conflict phase merely shows a different strategic environment. The end of one conflict does not mean that the military organization is not engaged in other conflicts. In the 21st century, Western armed forces have generally continuously been deployed to one expeditionary mission or another.

Despite the inherent limitations of this analytical model, it helps visualize the learning process of military organizations in relation to conflict. It shows the links between the steps and how the process feeds back into organizational activities. For a comprehensive understanding of a specific learning process, it should be viewed in conjunction with the frames of reference that list the manifestations of learning, the influencing factors, and the potential impediments, discussed in this chapter.

2.4.3: Sub conclusion

By fusing organizational learning theory with relevant knowledge on military organizations, a synthesis of learning by armed forces can be established. This leads to the identification of three strands of learning. The first two, informal and formal adaptation during conflict, have been established by other scholars. It is the third strand of learning, institutionalization after conflict, which forms a new contribution. The underpinning argument is that formal organizational adaptation in conflict, by itself, is insufficient for knowledge retention after conflict. To retain this knowledge, additional evaluations and strategic analysis are necessary.

2.5: Conclusion

The academic attention towards how militaries change has yielded a wealth of empirical studies. These works contribute to explain the specific attributes of armed forces and their environment that influence these processes of change. Still, the process of learning in and from conflict requires additional theoretical grounding. Increasingly, organizational learning literature has been applied towards research on military case studies. Still, it can be argued that this field has neither been explored nor exploited to its full potential. Moreover, a relevant question is whether learning processes in relation to combat operations have unique attributes, compared to those in other types of organizations. This chapter's objective is to provide a synthesis between organizational learning theory and military innovation study, in order to contribute to the understanding of learning processes in military organizations.

The literature on organizational learning theory provides a good starting point to study how armed forces learn in relation to conflict. First of all, it depicts learning as an experiential process that seeks to enhance the organization's performance in relation to its environment. A second important aspect is that it examines how knowledge is utilized to enact change, and how it is transferred between the various levels throughout the organization. Thirdly, it views learning as a highly dynamic social process that has a decided political aspect to it. Furthermore, concepts such as double-loop learning and the trade-off between *exploitation* and *exploration* show the inherent tension within learning as a process of change. Finally, the literature examines factors influencing the process of learning beyond political considerations, such as culture, organizational structures, and leadership. In this regard, the critique by those scholars who contend that organizational learning is too deterministic and technocratic seems to be a misrepresentation of a broad and rich academic field. Moreover, it overemphasizes the uniqueness of armed forces as opposed to other organizations.

To be sure, armed forces have idiosyncratic attributes, but they remain a subset of organizations rather than a discrete category. The second section elaborates on the specific traits of armed forces with regard to learning from experience. Of course, challenges posed by the operational environment, and the adversaries therein, form the most compelling driving factors to learn and adapt. The militaries' processes of learning can result in multiple manifestations, such as strategy, doctrine, and concepts, plans and operations, organizational structures, force levels and equipment, training and education, and tactics, techniques and procedures.

The eventual manifestations of learning are shaped by a multitude of factors. External factors are predominantly a reflection of the political environment of armed forces. These factors include civil-military relations, domestic politics, alliance politics, strategic culture, defense policy, and threat perception. Internal factors are in principle not exceptional to military

organizations but have a distinct character. Such internal factors of influence consist of leadership, organizational culture, internal politics, resource allocation, and learning and dissemination mechanisms. The identified internal and external factors of influence form a frame of reference that can be applied to studying processes of learning. Admittedly, the wide array of factors does not provide a straightforward explanation for how armed forces learn from conflict. However, this frame of reference helps to reconstruct processes of learning by including the several factors, avoiding the abstract nature of any model. Moreover, the influencing factors have a dynamic interplay, making isolation of one shaper artificial.

In establishing a synthesis of organizational learning and military innovation studies, this research posits that there are essentially three related strands of learning in relation to conflict. Informal adaptation in conflict occurs at the level of unit or national contingent to overcome operational challenges and does not require organizational resources or attention. Formal organizational adaptation seeks to address performance deficiencies with the support of the institutional level. Both strands of learning can influence each other by initiating adaptations at the formal and informal levels. These adaptations are valid for the course of the current conflict. After the conflict, the acquired knowledge must be assessed on its relevance for retention in a new strategic environment. If the new knowledge is congruent with the core competencies and prevalent culture of the organization, retaining it will be straightforward. Conversely, if the lessons learned question the organization's mission, task and culture, the risk of reverting back to the status quo is palpable. The third strand, institutional learning, examines the dynamics of knowledge retention and strategic analysis.

To study these strands holistically, this chapter establishes an analytical model comprising six steps: *evaluation*, *identification*, *reaction*, *adaptation*, *contemplation* and *institutionalization*. The first four steps occur during a given conflict if a unit or an institution seeks to enhance its performance. Multiple adaptation processes, both formal and informal, can be initiated simultaneously; concurrent processes can even seek to address the same perceived performance gap. Regardless of the efficacy of the adaptations or the outcome of the campaign, the lessons of the conflict must be assessed and weighed against the strategic context if they are to be institutionalized. These elements of strategic analysis beyond conflict occur in the fifth step, *contemplation*. Finally, when lessons from the previous conflict are refined, and retained, this leads to structural reforms in the organization. This sixth step, *institutionalization*, ensures that the acquired knowledge is available for future wars. Furthermore, the knowledge becomes part of the mental models of the organization's members, thereby forming the foundations of new learning processes.

The acquired insights from this chapter will be used to analyze *how* learning processes work and *why*. To focus the empirical case studies on learning during Dutch and British operations

in Afghanistan, the next chapter provides a frame of reference for counterinsurgency prescriptions. In other words, it establishes themes of *what* the militaries can (or should) learn in counterinsurgency conflicts. In these case studies in chapters 4 and 5, the presented analytical model will help identify which stages the various manifestations are attained, and this enables the interplay between informal and formal learning in conflict and eventual institutionalization to be analyzed. Additionally, for each manifestation the relevant influencing factors will be identified. Finally, at a more fundamental level, the impact of underlying dynamics from organizational learning literature will be assessed. As such, the current chapter provides a theoretical lens through which military learning can be analyzed.