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## War's Didactics

*A Theoretical Exploration on how Militaries Learn from Conflict*

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## Abstract

Over the last decades the field of “military innovation studies” has proliferated tremendously. In particular, adaptations by armed forces in wartime have received extensive academic attention. The merit of military innovation studies is that it identifies the attributes of military organizations with regard to how they learn and change. It contributes specific driver, factors of influence, manifestations and impediments to how armed forces learn from war. From these attributes a frame of reference can be distilled. However, as of yet the process of how militaries learn and change based on experience from conflict is not clearly understood. Although the literature on organizational learning is increasingly applied to military adaptation, it remains underutilized. This research paper posits that organizational learning theory can provide a good starting point for studying learning processes in armed forces as the literature is concerned with the process of incorporating experience and knowledge to enhance the organization’s performance in relation to its environment. Therefore, a synthesis between military innovation studies and organizational learning theory that builds on their respective strengths is in order.

By exploring both fields of literature this study finds that there are essentially three related strands of learning in relation to conflict: informal adaptation during deployment at the level of units or national contingents to overcome operational challenges that does not require organizational resources or attention; formal organizational adaptation seeks to address performance deficiencies with the support of the institutional level; institutional learning that leads to structural changes after the latest war has ended. Distinguishing between these three strands allows for analyzing their distinct dynamics. Ultimately, these strands are incorporated in an analytical model that seeks to help understand learning from conflict more holistically. The main addition of this model is that it recognizes the distinct dynamics of learning in conflict, and retaining those lessons afterwards. However, it also shows that these processes are inherently related. The model with its strands and the frame of reference of attributes can be utilized in further empirical research.

## Acknowledgements

This research paper is the result of my first foray in the literature on military innovation and organizational learning as a part of my PhD-research on how the British and Dutch armies learned from their experiences during the war in Afghanistan. As I burrowed into these academic fields, I could not help but feel that they could benefit from each other in order to understand how military organizations learn from their experiences in war. Although far from a novel idea, I found that my understanding of the literature on military innovation and organizational learning required more depth and structuring. Moreover, for the purpose of my PhD-research, my theoretical framework would benefit from a (embryonic) synthesis of these fields to explain the incorporation of experience to enact change in military organizations. This has led to this publication which has helped me structure my thoughts and guide my research. Hopefully, this research paper will be helpful to other students of how armed forces learn.

First of all, I want to thank my PhD-supervisors Frans Osinga and Martijn Kitzen for their support in pursuing this publication and their encouraging commentary. Additionally, Ivor Wiltenburg and Erik de Waard have read earlier drafts and helped improve the text by providing perceptive comments. I am further indebted to scholars who have generously shared their insights on these subjects during conversations or by e-mail. These include Wout Broekema, Tom Dyson, Adam Grissom, Frank Hoffman, James Kiras, Sebastiaan Rietjens, James Russell, Tom de Schryver and Rob Sinterniklaas. Finally, I want to thank Louis Rijk for his editorial work and help with the visual representations of the models. This has helped the readability of this text tremendously. Of course, any mistakes remaining in this text are my own.

## Introduction

In any war belligerents will seek to adapt, in order to gain an edge over the enemy. Moreover, as the adversary learns simultaneously, learning, and adapting during war is critical for staving off defeat or even for survival.<sup>1</sup> Evidently, military planners will also seek an advantage prior to war. Solutions to (presumed) operational challenges can manifest in implementing new technologies, trying out new concepts, introducing new competencies, and allocating additional resources or a combination of those.<sup>2</sup>

In the last four decades, the literature on how armed forces incorporate change to gain a competitive edge over potential adversaries has grown significantly.<sup>3</sup> This collective body of literature is colloquially known as “military innovation studies”.<sup>4</sup> It encompasses all efforts to enact organizational change in armed forces. This can be done with radical transformation through the implementation of new technologies, and concepts in peacetime, or with more incremental changes based on experiences from the battlefield.

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. By large, the latest research focused on adaptations made by Western armed forces in the wars in Iraq and Afghanistan.<sup>5</sup> Conversely, the earlier literature emphasized on novel concepts, and technologies that were introduced “top-down” in times of peace.<sup>6</sup> 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.<sup>7</sup>

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- 1 Williamson Murray (2011). *Military Adaptation in War: With Fear of Change*. New York: Cambridge University Press, p. 12; Frans Osinga (2005). *Science, Strategy and War: The Strategic Theory of John Boyd*. Delft: Eburon Academic Publishers, p. 273-274; Eliot Cohen and John Gooch (2006). *Military Misfortunes: The Anatomy of Failure in War*. New York: Free Press, p. 2628. Cohen and Gooch distinguish between learning and adapting. In their book the former pertains to lessons from previous wars while the latter designates the process of adaptation in conflict.
  - 2 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
  - 3 See Stuart Griffin (2017). Military Innovation Studies: Multidisciplinary or Lacking Discipline. *The Journal of Strategic Studies*, 40(12), 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](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3504246) *Strategic Studies*, 40(12), pp. 196-224; 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](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3504246)
  - 4 See Adam Grissom (2006). The future of military innovation studies. *The Journal of Strategic Studies*, 29(5), p. 906-907.
  - 5 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.
  - 6 Grissom. (2006). Future of Military Innovation Studies, p. 919-920.
  - 7 Murray. (2011). *Military Adaptation*, p. 12.

What is currently missing is an overall explanation of how armed forces learn from experiences during conflict, and how this knowledge is retained afterwards. This question is pertinent beyond academic purposes. According to some observers, Western militaries are in the process of discarding the knowledge they have acquired during the counterinsurgency campaigns in Iraq and Afghanistan.<sup>8</sup> Instead, these armed forces are recalibrating to enhance their ability to fight conventional wars against state actors.<sup>9</sup> Yet if analyzed correctly, throughout history previous wars have held relevant knowledge to the keen observer.<sup>10</sup> Without institutionalization of these lessons, armed forces are bound to repeat the same mistakes.<sup>11</sup>

The academic literature on organizational learning offers a valuable perspective on how organizations utilize the experience from interaction with their environment to enact organizational change. From this experience, deficiencies can be identified that impede the functioning of the organization. To enhance its performance, the organization must respond to these shortcomings, and change its ways. Despite the potential benefits of continual adaptation to the environment, organizations also need a modicum of stability for their operations. Incessant changes can be as dangerous to the core processes of an institution as calcified inertia. Thus leadership of an organization must seek to find a balance between change, and routine: how to weigh the focus on change or continuity affects the people of the organization, and is inherently a political process.

A subset of military innovation studies incorporates elements of organizational learning theory. Perhaps the most influential early examples of applying organizational learning theory to armed forces are the works of Richard Downie, and John Nagl.<sup>12</sup> In recent years, elements of organizational learning theory have increasingly been used to explain the processes of adaptation in armed forces.<sup>13</sup> However, scholars such as Stuart Griffin and Tom Dyson contend that organizational learning theory has not been utilized to its full potential. They argue that the application of concepts from the literature has often been narrow.<sup>14</sup> Furthermore, the field of military innovation studies can benefit from theoretical developments in organizational

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- 8 David Ucko and Thomas Marks (2018). Violence in context: Mapping the strategies and operational art of irregular warfare. *Contemporary Security Policy*, 39(2), p. 212.; Jason Clark. (2019, March 29). "Good Allies": *International Perspectives on Afghanistan*. Retrieved from The War Room: <https://warroom.armywarcollege.edu/articles/good-allies>
  - 9 David Ucko (2012). Whither Counterinsurgency. In P. B. Rich, & I. Duyvesteyn (Eds.), *The Routledge Handbook of Insurgency and Counterinsurgency*. London: Routledge, p. 67-68.
  - 10 Jonathan Bailey. (2006). Military history and the pathology of lessons learned: the Russo-Japanese War, a case study. In W. Murray, & R. H. Sinnreich (Eds.), *The Past as Prologue: The Importance of History to the Military Profession* (pp. 170-194). Cambridge: Cambridge University Press, p. 193-194.
  - 11 Cohen and Gooch. (2006). *Military Misfortunes*, p. 223
  - 12 Richard Downie (1998). *Learning from Conflict: The U.S. Military in Vietnam, El Salvador, and the Drug War*. Westport: Praeger; John Nagl (2002). *Learning to Eat Soup with a Knife: Counterinsurgency Lessons from Malaya and Vietnam*. Chicago: Chicago University Press
  - 13 See for example: Sergio Catignani (2014). Coping with Knowledge: Organizational Learning in the British Army? *The Journal of Strategic Studies*, 37(1), 30-64; Chad Serena (2011). *A Revolution in Military Adaptation: The US Army in Iraq*. Washington D.C.: Georgetown University Press; Frank Hoffman (2015). *Learning While Under Fire: Military Change in Wartime*. London: King's College (Doctoral Dissertation).
  - 14 Griffin (2017). *Military Innovation Studies*, p. 211-213 ; Tom Dyson (2020). *Organisational Learning and the Modern Army*. Abingdon: Routledge, p. 6.

learning literature. As such, armed forces can be considered a distinct subset of organizations with characteristic processes of learning, rather than a discrete category.

Yet, the utility of organizational learning theory to explain change in military organization is not without its detractors. According to the critics, armed forces cannot be compared with normal organizations, as in wartime they operate in significantly different environments due to the presence of adversaries that employ violence to attain their objectives.<sup>15</sup> Furthermore, a recurring proposition is that militaries are more adverse to change because of these high stakes involved in war. To cope with the chaos and friction of war, armed forces are designed to reduce uncertainty. Thus organizational stability is considered a benefit in the volatile environment of conflict. Even so, the pertinent question remains whether the differences between military, and other organizations outweigh the similarities.

This research paper aims to examine the process of learning, and change within military organizations in relation to conflict, through the lens of organizational learning literature. As such, the *primary* objective of this paper is to identify the dynamics, and influencing factors of institutionalization of lessons from war in military organizations. It posits that learning in, and beyond conflict are distinct elements with peculiar dynamics within a larger process. Consequently, I argue that in order to understand how militaries learn, this process should be studied in its entirety. In order to understand the learning process of armed forces, both a frame of reference, and an analytical model are called for. To this end, the *secondary* objective of this research paper is to contribute to a synthesis between organizational learning theory, and military innovation studies. This will result in an analytical framework to study learning processes by armed forces in relation to conflict.

For this purpose, this research paper is structured into five chapters. *Chapter 1* assesses the extent to which literature on organizational learning can be used to understand learning by armed forces in relation to conflict. It explores the process, dynamics, and influencing factors of organizational learning that have been established by a wide array of scholars. *Chapter 2* analyzes the state of military innovation studies. This chapter delves into the critique that is levelled against this vibrant field of study. It also seeks to identify developments, and trends in the literature. Furthermore, earlier applications of organizational learning theory to military subjects are assessed on their explanatory value. *Chapter 3* subsequently analyzes the drivers, influencing factors, manifestations, and potential obstructions of learning by armed forces. *Chapter 4* seeks to provide the synthesis of organizational learning theory, and military innovation studies. This chapter will thus introduce an analytical model through which the process of learning can be studied. Furthermore, it elaborates on three strands of learning in relation to conflict, and their dynamics. *Chapter 5* then summarizes the findings of this study, and suggests further opportunities for research that potentially could benefit from this work.

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15 Grissom (2006). The future of military innovation studies, p. 926, Stephen Rosen (1991). *Winning the Next War: Innovation and the Modern Military*. Ithaca: Cornell University Press., p. 4; Barry Posen *The Sources of Military Doctrine: France, Britain and Germany between the World Wars*. Ithaca: Cornell University Press. p. 222-228.



# 1. Organizational learning theory

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How organizations learn is a subject of intense study in organizational research. Although the field already exists for five decades, the academic interest in how organizations learn has only increased vastly since the 1990s. Initially, the organizations under study were mainly business companies that seek profit in a competitive environment.<sup>1</sup> More recently, learning processes are studied in other types of organizations such as, for instance, non-governmental organizations.<sup>2</sup> 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.<sup>3</sup> As of yet, there is no overarching theory that explains, and predicts how organizations learn.<sup>4</sup> 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 the vast discourse.<sup>5</sup> Instead, it will give an overview of central concepts within organizational learning theory in order to establish a fundamental understanding of the field. The objective of this chapter is to identify what elements of this literature that can help explain how organizations acquire, disseminate, and utilize knowledge to enhance their performance. In the subsequent chapters these concepts will be contrasted with the literature on learning by armed forces.

## 1.1 Definitions, and literature

To understand organizational learning theory, organizational learning should first be defined. Regrettably, this is not a straightforward enterprise, as the scholarly literature is rife with definitions.<sup>6</sup> Organizational learning essentially consists of two processes: a cognitive process of acquiring new knowledge, and a behavioral process of utilizing new knowledge for enhancing

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- 1 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.
  - 2 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.
  - 3 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.
  - 4 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.
  - 5 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.
  - 6 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.

organizational performance.<sup>7</sup> Although knowledge acquisition does not automatically lead to changed behavior, the main objective is the improvement of organizational actions.<sup>8</sup>

A definition that places a premium on knowledge acquisition is offered by Marleen Huysman: “Organizational learning is the process through which an organization constructs knowledge or reconstructs existing knowledge”.<sup>9</sup> Huysman recognizes that organizational improvement does not by design follow from learning, as the process can be hindered through individual and organizational flaws and irrationalities.<sup>10</sup> Seeking knowledge for the sake of knowledge seems to be a rather esoteric endeavor that is not sustainable for most organizations. Perhaps the most succinct definition of organizational learning is that it is “a process of detecting and correcting error”.<sup>11</sup> While this definition is too bare-boned, it draws the attention to the central aspect of identifying deficiencies in the organization and trying to remedy them.

Organizations do not exist in a vacuum and therefore have to remain attuned to their environment.<sup>12</sup> Inherently, an organization seeks to improve its operations to ensure continuity, and to be able to address threats and opportunities from the environment. When unable to do so, the organization will eventually fail.<sup>13</sup> A combination of these aspects can be found in the definition provided by C. Marlene Fiol and Marjorie A. Lyles: “Organizational learning means the process of improving actions through better knowledge and understanding”.<sup>14</sup> This, however is also insufficient for the purpose of this research, as the improvement is limited to actions which appear inconsequential because they do not relate to an objective or the environment of the organization. A suitable definition then must combine the aspects of knowledge creation, organizational performance and the organization’s environment.

Therefore, the working definition of organizational learning for this research paper is an extension of Huysman’s designation: the process through which an organization constructs knowledge or reconstructs existing knowledge for maintaining or enhancing its performance in relation to its environment.

A crucial qualification to this working definition is that organizational learning does not invariably lead to better performance. While this is the objective, organizations can learn lessons that are incorrect due to a faulty analysis of the deficiency at hand, or if the proffered solution does not work.<sup>15</sup> Furthermore, organizational responses to identified problems can be rendered obsolete by changes in the environment of the organization. Evidently, this notion is

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

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

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

10 Ibidem, p. 135.

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

12 Huysman (2000). An organizational learning approach, p.136.

13 Argyris (1977). Double Loop Learning, p. 117-118.

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

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

highly relevant to military organizations, where the environment is to a large extent shaped by adversaries who seek to impose their will through the use of force. Moreover, the adversary will strive to adapt to the actions of the enemy and the environment as well.

The emphasis on knowledge in the literature on organizational learning calls for a definition of the concept. Knowledge can be defined as: “facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject”.<sup>16</sup> Organizational knowledge encompasses “rules, procedures, strategies, activities, technologies, conditions, paradigms, frames of references, etc., around which organizations are constructed, and through which they operate”.<sup>17</sup> In organizations knowledge is acquired by individuals through their own experience or reflections on experiences from other individuals.<sup>18</sup> Individual knowledge can be seen as tacit or implicit knowledge. Although tacit knowledge can help individuals in their work, it is difficult to share with other individuals. Unless this knowledge is made explicit through data and information in for example documents, presentations and education, it will be lost to the rest of the organization. Therefore, knowledge must be *institutionalized* to become organizational knowledge, enabling the collective to retain the knowledge despite personnel turnover.<sup>19</sup>

## 1.2 Organizational learning as a process

Throughout the literature on organizational learning the process of institutionalizing knowledge is described in steps. In a general sense, knowledge is acquired by individual members or small groups within the organization. A group in this sense is a subunit of the organization as a whole, i.e. a small team of coworkers or a department that collectively perform tasks. By distributing knowledge it can proliferate throughout the organization, and possibly be refined. Eventually, to become institutionalized, the validity must be accepted by the wider organization. When knowledge is institutionalized, it forms the frame of reference for members of organization and shapes their actions and acquisition of knowledge.<sup>20</sup> This general dynamic has led to various models and descriptions of organizational learning, but most scholars agree on the cyclical nature of the process.<sup>21</sup> Furthermore, organizational learning is regarded as a dynamic process. Additionally, multiple learning processes can exist concurrently within an organization.<sup>22</sup>

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16 Oxford University Press. *Oxford Dictionaries*. Retrieved from [Oxforddictionaries.com](http://www.oxforddictionaries.com): <http://www.oxforddictionaries.com>

17 Huysman (2000). An organizational learning approach, p. 136.

18 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.

19 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.

20 Nonaka and Konno (1998). The Concept of “Ba”, p. 41-42.

21 Marylin 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 Apaydin (2010). A Multi-Dimensional Framework of Organizational Innovation, pp. 1154-1191.

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

In this section, the various levels of learning will be explored. By examining the individual, group, project and organizational levels of learning, the attributes of these levels can be identified. More crucially, these provide insights in the way these levels are linked and interact. Finally, a sample of models that illustrate the process of organizational learning are studied to identify common aspects and debates.

### 1.2.1 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.

As recognized by scholars of organizational learning, individual members of an organization learn from experience by interacting with the environment, regardless of whether this knowledge is subsequently institutionalized by the organization.<sup>23</sup> Through their accumulated experience, individuals acquire knowledge that can make them more adept in performing their tasks or learn new competencies if they can apply it correctly.<sup>24</sup> On the other hand, individuals can learn lessons that are not beneficial to the organization, such as short-cuts that impede safety or are wasteful.<sup>25</sup> Despite this qualification, individual members can react to perceived performance deficiencies by taking corrective action.

However, this knowledge is specific to individuals, and therefore tacit in nature. If other members of the organization are to benefit from the acquired knowledge, it must be communicated. Sharing of tacit knowledge between individuals can best be done through close proximity and shared experiences.<sup>26</sup> While individuals can learn from each other in this way, it is insufficient for sharing knowledge beyond the closest members of a group. By making the knowledge explicit, it can be consciously shared in a group.<sup>27</sup>

While individual learning from experience can conceptually be considered the starting point of organizational learning, from a research perspective it is inherently limited. First of all, organizational learning cannot be seen as the sum of the learning by the individual members that form the organization. The process is shaped by the existing norms and systems that facilitate (or impede) learning within the organization.<sup>28</sup> Secondly, the tacit nature of most individual knowledge makes it hard to trace the origins of learning processes in organizations. Of course,

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23 Maria Aragon, Daniel Jimenez and Raquel Sanz Valle (2013). Training and performance: The mediating role of organizational learning. *Business Research Quarterly*, 17, p. 162.

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

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

26 Ikujiro Nonaka and Ryoko Toyama (2003). The knowledge-creating theory revisited: knowledge creation as a synthesizing process. *Knowledge Management Research & Practice*(1), p. 45.

27 Nonaka and Konno (1998). The Concept of "Ba", p. 43-44.

28 Fiol and Lyles (1985). Organizational Learning, p. 804.

individual members of an organization can exert profound influence on its learning process, most evidently when they hold a leadership position.

When knowledge is made explicit, and communicated to the group level, it can help improve the performance of the group. The individual's experience is then stored in the collective memory of the group through discussion, instruction or written manuals. This storage of knowledge makes its availability independent of the presence of the individual group members from which the knowledge originates.<sup>29</sup> When the group is confronted with similar circumstances, it can retrieve this knowledge and take remedial action.<sup>30</sup> A group's capacity to learn can be increased by actively enabling information sharing from individual members, evaluate actions, and providing feedback.<sup>31</sup> In principle, learning at group level can occur without interference from the wider organization.

Another way to study collective learning below the organizational level is to examine the process of learning in relation to projects. The defining factor of a project is that a temporary organizational structure is tasked with attaining a specific objective.<sup>32</sup> The organization that executes the project can learn, and make adjustments to its actions, while it works towards its goal. When necessary, the project can request additional resources such as personnel and funds from the wider organization. In that case the organization supports implementing change in the project based on the knowledge acquired. It can also share its knowledge to other projects or to the organization of which it is part for future use.<sup>33</sup> This latter form of learning can be regarded as institutionalization of lessons, as the acquired knowledge will be available for new projects. However, projects are often subject to time-pressure, so the priority is on reaching the objective, rather than retaining the knowledge beyond the lifespan of the organization.<sup>34</sup> Additionally, once the project has ended, the collective experiences can dissipate if the project is not thoroughly evaluated. Thus, the lessons of the project are not institutionalized in the organization.

When studying organizational learning by armed forces in relation to war, the concept of projects is interesting. Expeditionary operations are regularly conducted by bespoke organized elements such as task forces, rather than organic units. Furthermore, such deployments are often executed on a rotational basis, marking temporal boundaries for the involved personnel. The objectives for these missions are mostly of a limited character, although not always clear. Regardless of the intensity of the expeditionary mission, the institutional level will continue to operate with a modicum of normalcy as it has to recruit and train personnel, prepare for future conflicts, and

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- 29 Jeanne Wilson, Paul Goodman and Matthew Cronin (2007). Group Learning. *Academy of Management Review*, 32(4), p. 1042-1043.  
30 Ibidem, p. 1054-1055.  
31 Nory Jones and John Mahon (2012). Nimble knowledge transfer in high velocity/turbulent environments. *Journal of Knowledge Management*, 16(5), p. 778-779  
32 Hans Berends and Irene Lammers (2010). Explaining Discontinuity in Organizational Learning: A Process Analysis. *Organization Studies*, 31(8), p. 1049.  
33 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.  
34 Berends and Lammers (2010). Explaining Discontinuity, p. 1061.

possibly sustain concurrent operations. As such, how experiences from a discrete mission affect the institution arguably resembles learning from projects.

Ultimately, organizational learning is concerned with how knowledge from experience affects an organization in its entirety. As stated in the working definition, knowledge is used here to enable and improve the organization's effectiveness in relation to its environment. But how is learning manifested in the organization? When an organization shows observable alterations in its behavior, the manifestations of learning are clear.

The scale and scope of the change wrought by learning can differ immensely. Some adjustments are relatively small, easy to implement, and affect only parts of the organization such as improving standard operating procedures. Examples of this are new, or changed, routines and procedures that direct the normal operations. A corollary of such adjustments is that the organization must ensure that individual members must adhere to them through training and (written) instructions. Other alterations can change the strategy of an organization and have more profound repercussions.<sup>35</sup> Examples of more invasive change can be new organizational structures, establishing new processes and organizational outputs, and the acquisition or even invention of new technologies.

Beyond these tangible changes, some manifestations of learning are harder to observe. Institutionalized knowledge will become part of the shared and individual mental frameworks in an organization. Consequently, this will shape how people in the organization view their environment, and how they experience it. As such, the acquisition of new knowledge will be affected by the institutionalization of previous lessons. This notion underwrites the cyclical nature of learning in organizations.<sup>36</sup>

With the constituent parts of organizational learning described, the next subsection examines several models that illustrate the process more comprehensively. The dynamics and factors influencing this process will be elaborated upon further on in this chapter.

### 1.2.2 Models of organizational learning

The process of organizational learning consists of several distinct steps that ultimately lead to new knowledge being institutionalized in the organization. This will lead to new routines, procedures, norms et cetera, that affect how new experiences and knowledge are perceived by the individuals within the organization. Scholars have identified various steps through which new knowledge must flow in order to become "institutionalized". Beyond the discrete steps in this process, the dynamics linking these steps are crucial to understand organizational learning.<sup>37</sup>

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

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

37 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

This subsection explores several analytical models that represent the process of learning, encompassing the steps, and the linkages between them that should lead to organizational knowledge.

Invariably, organizational learning starts with knowledge acquisition or creation. Individuals or “units” within the organization produce based on experience from internal processes or interaction with the environment.<sup>38</sup> An early model of organizational learning that incorporates this notion is provided by George Huber. He distinguishes four processes of organizational learning: knowledge acquisition, information distribution, information interpretation, and organizational memory. Knowledge acquisition denotes the process of how organizations obtain knowledge. While this may seem a straightforward explanation, Huber identifies various sub-processes of knowledge acquisition. He contends that knowledge can come from different sources such as experience, and emulation.<sup>39</sup>

When new knowledge (or information at that stage) is acquired, it must then be distributed, so it becomes available to other members of the organization.<sup>40</sup> This a prerequisite for the subsequent step: information interpretation by the organization. How the new information is understood within the organization can determine how it is to be used for knowledge. Interpretation of information is shaped by the institutional knowledge already present. Huber acknowledges that this step requires more study.<sup>41</sup>

In the final step, organizational memory, the acquired knowledge is stored in the organization beyond individual members. This means that in spite of personnel turnover, the knowledge remains available to the organization. Examples of how such knowledge is stored are standard operating procedures, routines and scripts. However, this concerns solely routine knowledge that can be used for day-to-day operations. How other types of knowledge could be institutionalized is beyond Huber’s article.<sup>42</sup>

Another perspective on how knowledge is converted from the individual level towards the organizational level is offered by Ikujiro Nonaka and Noboru Konno. They argue that a key process of sharing knowledge between individuals is done tacitly. In this process of “*Socialization*”, knowledge is shared by close proximity. This means that the way an individual behaves can be an example to another individual, who thereby acquires new knowledge. In order to disseminate knowledge beyond nearby individuals, it must be made explicit in terms that are comprehensible to others. Through this *externalization* step, for instance by verbal dialogue or written instructions, individual knowledge can become part of the mental model of a group of individuals, such as a team of co-workers.<sup>43</sup> In the subsequent *combination* step explicit knowledge is systemically

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38 Kim (1993). The Link between Individual and Organizational Learning, pp. 37-50; Argote and Miron-Spektor (2010). Organizational Learning, p. 1128-1129;

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

40 Ibidem, p. 101.

41 Ibidem, p. 102-103.

42 Ibidem, p. 105-107.

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

captured and integrated by the organization. This knowledge originates both from within and outside of the organization. Crucial in this step is agreement within the organization about the validity of this knowledge, so it can be translated into concrete steps to enact change.<sup>44</sup> Ultimately, the organizational knowledge must be *internalized* by the individuals in the organization. The relevance of the knowledge is to be accepted by the individual. Knowledge can be internalized by education, training and exercises. In this way, explicit knowledge becomes tacit, which shapes how individuals interpret their environment and experiences, making this model of learning cyclical in nature.<sup>45</sup>

A more recent and intricate model is provided by Barbara Grah, *et al.*<sup>46</sup> 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, but argue that storing the knowledge is insufficient for the process of learning to continue. Knowledge has to be applied practically in order to produce new experiences and information feedback, thereby perpetuating the cycle of learning.<sup>47</sup> Another noteworthy addition to this model is that the authors include the factors that act as "learning inhibitors and facilitators".<sup>48</sup>

An often-used model of organizational learning is that by Mary Crossan, *et al.*<sup>49</sup> This model consists of the steps *intuiting, interpreting, integrating, and institutionalizing*. In the first step, *intuiting*, it is contended that learning or acquiring knowledge through experience by individuals is often a subconscious process. What an individual learns is subject to prior knowledge and the individual's general aptitude to recognize patterns, similarities and differences. Consequently, this learning is intuitive and results in tacit knowledge.<sup>50</sup>

This tacit knowledge has to be given meaning by both the individual, and the group the individual is part of, through shared observations, and language in the *interpreting* step. From this the group can develop actions that utilize of the acquired knowledge by *integrating* it within the organization's operations. For instance, a solution is found and implemented for fixing an identified error in the organizational process in which the group takes part. The final step, *institutionalizing*, ensures that the knowledge is shared and incorporated throughout the organization. In this step, the knowledge results in changed strategies, structures and routines. Because such changes affect the whole organization, institutionalization requires the support of the leadership. Thus, institutionalization will occur after careful deliberation and therefore will

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44 *Ibidem*, p. 44-45.

45 *Ibidem*, p. 45.

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

47 *Ibidem*, p. 204.

48 *Ibidem*, p. 196.

49 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.

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

require time.<sup>51</sup> In turn the acquired knowledge will at all levels form feedback, and shape how the organization operates and how new experiences are perceived.<sup>52</sup>

Another, rather straightforward model on organizational learning is offered by Marleen Huysman. The main contribution of her model is that it incorporates the environment: it incorporates sources of knowledge outside of the organization.<sup>53</sup> At the same time, the organization influences the available knowledge in its environment.<sup>54</sup> Not only can knowledge be acquired through the experience of other organizations, such as competing firms, but also from feedback provided by clients. Furthermore, organizations acquire new knowledge when they take on new employees or hire consultants. Huysman asserts that, just as internal learning processes, the acquisition and institutionalization of external knowledge can be prone to miscommunication and biases.<sup>55</sup> Consequently, incorporating knowledge, such as best practices from other organizations, does not necessarily lead to enhanced performance.

Of course, this subsection does not provide an exhaustive list of models on organizational learning.<sup>56</sup> By dissecting the processes, insight can be obtained about the constituent steps of organizational learning (see table 1). Furthermore, the depicted analytical models show how scholars in the field themselves interpret organizational learning as a process. By assessing the selected descriptions of the learning process in organizations, several points stand out. First of all, the process starts with the acquisition of knowledge. Huysman, and Crossan et al., situate this step at the individual level while Huber and Grah et al. see this as an organizational function. Secondly, new knowledge must be disseminated, and interpreted if it is to be used by the organization. Third, all authors acknowledge that learning in itself is subject to faults and does not necessarily lead to organizational improvement. Finally, the assessed literature acknowledges that this process is cyclical in nature so that institutionalized knowledge shapes how new knowledge is perceived by members of the organization.

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51 Ibidem, p. 527-530.

52 Ibidem, p. 532.

53 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.

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

55 Ibidem, p. 140

56 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.

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

While identification of the steps of organizational learning is an important aspect for understanding the process of organizational learning, it is by no means sufficient. Analytical models as depicted above can be perceived as too mechanistic, and devoid of human influences. Fortunately, the literature on organizational learning has ample attention to the political aspects of organizations and the other factors influencing organizational learning.

### 1.3 The dynamics and political dimension of organizational learning

The notion that organizations learn to correct errors and adapt to changes in their environment suggest that, in theory, the accumulated experience will lead to increasingly proficient organizations. However, one just has to look at the attrition rate of business enterprises to see that the process of learning is by no means positivistic. In other words, acquired experience does not consistently lead to improvement.<sup>57</sup> The acquisition and implementation of knowledge is subject to an inherent tension between short-term efficiency and long-term survival of the organization. Moreover, as organizations are in its essence collectives of individuals coalescing around a common objective, the interactions within organizations have an inherent political dimension.<sup>58</sup> This section analyzes the dynamics and modes of organizational learning as well as the related political considerations that shapes this process.

At its core, organizational learning consists of two processes that have an interdependent if at times discordant relationship: *exploitation* and *exploration*. The notion of *exploitation* means that an organization seeks to improve its existing competencies. This enables the organization to increase its efficiency in its normal operations for short term success. Exploration is the search for alternative courses of action in relation to a changing environment, and is crucial for long term survival of the organization.<sup>59</sup> More succinctly, exploitation seeks reliability in experience,

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57 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.  
58 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.  
59 James March (1991). Exploration and Exploitation in Organizational Learning. *Organization Science*, 2(1), p.71-72.

while exploration seeks variety in experience.<sup>60</sup> For the continuing success of an organization, both exploitation, and exploration are essential.<sup>61</sup>

However, as time, resources and attention are finite, resources organizations must seek to strike a balance between exploitation and exploration. This is not to argue that exploration and exploitation are incompatible, but rather that the concepts imply different viewpoints and activities. Generally, exploitation is based on experience and is, although not exclusively so, internally focused.<sup>62</sup> Given the immediate impact of improving current operations that helps organizational stability in the short term, exploitation is generally easier to pursue than the uncertain returns of exploration.<sup>63</sup> At the same time the awareness of changes in the environment that precipitates profound changes in the organization for new opportunities, competitive advantages and addressing critical deficiencies are crucial for the organization's survival in the long run. However, the higher echelons of an organization can have reservations to engage in such profound and expensive alterations, as this might upset the day-to-day operations of the organization. In turn, such reservations can lead to lower level personnel to be circumspect in communicating the perceived deficiencies lest they be "punished" for questioning the underpinning norms of the organization.<sup>64</sup> From the organization's perspective, the disinclination to radically changing objectives, policies and operations is understandable, as this entails risk-taking that might or might not be rewarded.<sup>65</sup> This inherent trade-off forms the crux of organizational learning.

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. 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. The promotion of change by default challenges the status quo. Beyond rational reluctance by leadership to drastically alter the direction of the organization, the disinclination for change can also stem from the higher strata wanting to retain the current power arrangements.<sup>66</sup> Consequently, new knowledge will not always be promoted in an organization.<sup>67</sup> Thus, while institutionalizing lessons from experience in organizations is a deliberate, conscious process, it is certainly not always driven or shaped by rational decision making that solely affects organizational performance, but also the internal power distribution.<sup>68</sup>

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

61 Ibidem, p. 100.

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

63 March (1991). Exploration and Exploitation, p. 71-72.

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

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

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

67 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.

68 Ibidem, p 182184; Huysman (2000). An organizational learning approach, p. 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 attain balance is to assign the two aspects as tasks to different 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.<sup>69</sup> Within militaries, one can imagine the establishment of an experimenting unit that is tasked with integrating new technologies and developing new operating concepts. At the same time, other units continue their normal operations and training cycles. Potentially, the outcomes from experimentations can be incorporated in doctrine, education and training, and thus become part of the normal routines. Another military application of (unconscious) ambidexterity can be that of a deployed unit on a mission, and the wider institution that supports it. While the deployed unit must seek to overcome adversarial actions and other operational challenges, the larger institution will concurrently continue to function in a relatively routine manner.

The other described coping mechanism, punctuated equilibrium, is based on a “temporal cycling between long periods of exploitation and short bursts of exploration [...]”.<sup>70</sup> In other words, this concept posits that organizations experience stable periods in which changes do occur, but these are incremental and evolutionary. As noted above, organizations generally prefer this situation, as it offers stability. Yet a crisis in operational performance, due to the advent of new technology, being outcompeted or other developments in the environment, may force more significant change to the organization, including the organization’s mission and core assumptions.<sup>71</sup> 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 to the organization’s subunits.<sup>72</sup> 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.

The analogy of punctuated equilibrium for armed forces is evident: the difference between war, and peace. At face value, the environment during war time is one of intense and violent

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

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

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

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

instability. Conversely, peace offers a steady environment in which the organization presumably is not threatened. Interestingly however, classic literature on learning by military organizations argues that during war, the changes are more incremental than radical. This is a consequence of a reluctance to engage in profound changes to the organization because of the uncertain benefits that even might impede the combat effectiveness. The argument here is that the risk of losing a war is simply too serious to experiment with sweeping changes. Instead, profound changes, based on new technologies, concepts or previous experiences mainly occur during peace time when militaries have the time, attention and resources to contemplate them.<sup>73</sup> This notion will be further explored in the next chapters.

The distinction between changes in routine processes, and those that affect the organization at a more profound level, is also reflected in the oft-used notion of “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. If the individual or group can correct these deficiencies by making small, routine adjustments to the normal process, the organization’s course can continue. This closely adheres to the notion of exploitation. Furthermore, this type of action does not necessarily require the attention or resources from the organization at large.<sup>74</sup>

Conversely, “double loop” learning (resembling exploration) is more invasive.<sup>75</sup> In this type of learning, the actions are not limited to small corrective actions, but the process itself (and the underlying policies and objectives) are questioned, and if necessary, altered. Evidently, double loop learning requires more effort, attention and resources as it challenges the routine workings of an organization. Consequently, due to the scope and scale of double loop learning, the analysis of the deficiencies and its repercussions must be accepted by the leadership of the organization.<sup>76</sup> Mirroring the concepts of exploitation and exploration, single loop and double loop learning coexist within an organization, and are necessary for its continuous success.

Beyond single and double loop learning, the literature also identifies triple loop learning. Yet, there are diverging views of what triple loop learning entails.<sup>77</sup> Without engaging in a contentious effort for defining this concept, here triple loop learning is identified as the process that reflects on the organization’s ability to learn.<sup>78</sup> Reflecting on and enhancing the learning processes naturally affects the efficacy of the ability to learn from experience and improve the organizations performance. By establishing and resourcing a lessons-learned process, the organization can

73 See for example: Rosen (1991). *Winning the Next War*, p.252-253; Murray (2011). *Military Adaptation in War*, p. 12.

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

75 Other scholars call this “higher learning”, see for example: Fiol and Lyles (1985). *Organizational Learning*, p. 808.

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

77 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.

78 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.

ensure that knowledge is utilized for addressing the operational deficiencies. However, as such mechanisms often require additional resources while not directly contributing to the short term outcome, lessons learned processes often receive scant attention.<sup>79</sup> Armed forces generally have some form of a lessons learned process in place that seeks to learn from operational experience. The extent to which such mechanisms are effective in enhancing performance remains an open question, as they are often under resourced and have little authority to force change on the organization.<sup>80</sup>

In sum, short term objectives such as stability, continuity and possibly 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. Following from the underlying dynamics at play in organizational learning, a closer look at the factors influencing or impeding the process of learning is warranted.

## 1.4 Influencing factors on organizational learning

While 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. This subsection will identify several factors that can shape or impede the learning abilities of organizations.

### 1.4.1 Shaping factors

In the literature, several influencing factors on how organizations learn are identified. Common factors are culture, organizational structures, strategy, and environments. These factors can act both as facilitators and as inhibitors to organizational learning.<sup>81</sup> These factors are inherently interdependent, as they simultaneously affect the organization and its place in the environment.

First of all, the environment in which an organization exists shapes the experiences from which it learns. Enterprises, large and small, that are unable to adapt to changing environments will fail. The environment of an organization is all that lies beyond its boundaries. Relevant aspects

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79 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.

80 Dyson (2020). *Organisational Learning and the Modern Army*, p 42-44.

81 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.

of the environment are for example volatility, competition, dependence on resources, clients, and regulatory institutions.<sup>82</sup> For instance, an enterprise in a highly volatile market is more likely to explore new opportunities, and indeed incur the associated risks; as competition compels it to continuously seek new opportunities and processes to survive.<sup>83</sup>

Another perspective on volatile environments can be obtained through organizations that have to respond to crisis situations, such as natural disasters. These organizations have to monitor the environment to anticipate emerging crises. 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.<sup>84</sup>

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 emphasize on increasing efficiency in their normal operations.<sup>85</sup> Furthermore, public organizations have to contend with additional pressure, 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 manifest in shared beliefs and norms that shape how an organization operates and learns.<sup>86</sup> First of all, it affects what knowledge is assessed to be relevant to the organization. Culture also shapes how knowledge is acquired, utilized, and distributed.<sup>87</sup> 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.<sup>88</sup>

Evidently, culture has a profound influence on the way an organization is structured. Generally, organizations that are structured as networks, with delegated authority, are regarded to be more conducive to acquire new knowledge.<sup>89</sup> Moreover, in a decentralized structure, knowledge can be more easily diffused and incorporated to enact change in the organization.<sup>90</sup> Other scholars

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

83 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.

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

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

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

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

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

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

90 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.

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.<sup>91</sup>

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.<sup>92</sup> When leaders espouse learning as a crucial process within the organization, they can foster a sense of curiosity, and experimentation among their personnel.<sup>93</sup> 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.<sup>94</sup>

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". The former consist of identifying, acquiring, processing, and understanding new knowledge.<sup>95</sup> In order to realize 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 [...]"<sup>96</sup>

While identification of organizational processes that affect learning is in itself useful, this must be translated to explicit organizational mechanisms to assess their individual and collective impact on learning.<sup>97</sup> To start, 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

91 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.

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

93 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.

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

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

96 Ibidem, p. 190.

97 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.

relevant to the organization.<sup>98</sup> Concurrently, the storage, implementation and distribution of knowledge within the organization is an important consideration.

Aspects that can assist this 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.<sup>99</sup> Absence 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, as they often do not manifestly contribute to the organization’s short term results.<sup>100</sup>

How these factors influence organizational learning depends on how they interact. In essence, aspects like the environment, culture, leadership, structure, and organizational mechanisms for learning affect the balance between exploitation and exploration. Beyond these influencing factors, more environmental and organizational can be identified that have an impact on how an organization learns.<sup>101</sup> For the purpose of this research paper, the factors of influence described here are sufficient to establish the idea that multiple variables affect the dynamics of organizational learning.

#### 1.4.2 Impediments

Beyond these influencing factors that can facilitate or inhibit learning, there are other limitations to learning. As established in the previous chapter, political considerations can impede learning when elements of the organization resist change based on new knowledge.<sup>102</sup> Inhibitors of learning can range from individual biases, unclear objectives, competition between organizational elements to risk aversion or simply failing to recognize the relevance of knowledge to organization. Such inhibitors can hinder the various steps in the process of learning.<sup>103</sup> Another impediment to institutionalization can be active or passive resistance by elements of the organization that do not accept the change, even if the necessity is recognized by the organization’s leadership.

Arguably, the greatest impediment to learning is the failure to recognize relevant knowledge. Daniel Levinthal and James March identify three types of fallacies that affect learning. First is “temporal myopia” that prioritizes short term benefits of learning over potential long term

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

99 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.

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

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

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

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

benefits. Common difficulties in routine operations can easily require all the attention of an organization. That means that Levinthal and March argue that exploitation usually prevails over exploration. A second limitation is “spatial myopia”, in which learning that takes effect near the learner is prioritized over effects that occur more remotely. An extension of this notion is that knowledge that is closer at hand will be sought out more readily than for example knowledge that is available from outside the organization. The third limitation is called “failure myopia”, which tends to eliminate failures from learning. While failures can lead to better insights, they pose a risk to the operations of the organization. Ideally, both successes and failures are taken into account.<sup>104</sup>

## 1.5 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 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 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 ample 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.

The combination of these aspects of the literature render organizational learning theory as a promising explanatory model for military change during conflict. This is not to say that any model of organizational learning can be used as a template for how military organizations learn in times of war. The idiosyncrasies of armed forces as opposed to other organizations are too apparent and manifold to simply disregard. One of the defining traits of military organizations is that they have to apply force in a violent and chaotic environment. Moreover, in this environment armed forces face competitors, or rather adversaries, that seek to diminish their success by all available means, including physical destruction. Consequently, failure to learn will have more far-reaching effects than missed profits. To account for the specific characteristics of learning

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<sup>104</sup> Levinthal and March (1993). *The Myopia of Learning*, p. 110.

by military organizations, a closer examination of recent literature on this subject is therefore necessary.



## 2. Military innovation studies: the state of the art

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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*.<sup>1</sup> Over the last two decades, the field of military innovation studies has burgeoned.<sup>2</sup> 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.<sup>3</sup> Beyond these recent conflicts studies on earlier wars continue to emerge as well.<sup>4</sup> By applying the label “military”, the field is demarcated from innovation in other organizations. The obvious, but nonetheless crucial, implication is that the process of innovation in military organizations is distinct from other instances of innovation. Therefore, the objective of this section is concerned with the specific characteristics of military innovation studies, and how the field can contribute to an analytical framework on learning in relation to conflict.

### 2.1 Historiography and critique

The subject of research of military innovation studies is broader than the name implies. Rather, it is a catch-all phrase for change in military organizations that encompasses innovation, adaptation, emulation, and other forms of change.<sup>5</sup> Consequently, this would mean that these subsidiary components of change in military organizations are well defined and sufficiently distinct. Alas, as Adam Grissom demonstrated, and more recently Rob Sinterniklaas, this is not the case.<sup>6</sup> Sinterniklaas in particular shows that the concepts of *innovation and adaptation* are ill-defined, and are often used interchangeably.<sup>7</sup> For instance, Theo Farrell and Terry Terriff categorize adaptation, innovation and emulation as “pathways” that can lead to *military change*.<sup>8</sup> Of these three avenues towards military change, emulation is clearly and concisely defined

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- 1 Grissom (2006). The future of military innovation studies, p. 906.
  - 2 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.
  - 3 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.
  - 4 See for example: 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: 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
  - 5 Sinterniklaas (2018). *Military Innovation*, p. 16.
  - 6 Grissom (2006). The future of military innovation studies, p. 907-908. Sinterniklaas (2018). *Military Innovation*, p. 17-21.
  - 7 I am indebted to Rob Sinterniklaas for portions of the current paragraph. For a more comprehensive analysis of the definitions issue see: Sinterniklaas (2018). *Military Innovation*, p. 17-21.
  - 8 Theo Farrell and Terry Terriff (2002). Introduction. In T. Farrell, & T. Terriff (Eds.), *The Sources of Military Change* (pp. 320). Boulder: Lynne Rienner, p. 6.

as: “importing new tools and ways of war through imitation of other military organizations”.<sup>9</sup> 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”.<sup>10</sup> In his seminal article, Grissom offered a “consensus (if tacit) definition 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”.<sup>11</sup>

Nina Kollars provides a different take on the distinction between innovation and adaptation. In her dissertation she identifies 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”.<sup>12</sup> Subsequently, she defines adaptation as “intended change aimed at the solution of a current problem for which current techniques and technologies are not desired”. The distinguishing features of adaptation in this definition are deliberative action, and the reactive nature of it.<sup>13</sup> Notable in these definitions is that 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.

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.<sup>14</sup> By contrast, Matthew Tattar demarcates innovation as being proactive, while adaptation is reactive.<sup>15</sup>

The lack of clear and distinct definitions of the concepts of innovation and adaptation suggests that the blanket term of “military change as offered by Farrell and Terriff is the most appropriate, as it covers all forms of military change. 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 “innovation” or “adaptation” 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. This paper will however describe the academic subfield concerned with military change as “military innovation studies”, as this is the most widely used expression.

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9 Ibidem, p. 6.

10 Ibidem, p. 6.

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

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

13 Ibidem, p. 52.

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

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

## 2.2 Schools of thought

The fuzzy distinctions between adaptation and innovation, and the multitude of definitions of the concepts, are illustrative for the field of military innovation studies. As Grissom, Griffin and Sinterniklaas observe, military innovation literature has not yielded a comprehensive theory on the way military organizations and learn.<sup>16</sup> Where the issue of definitions can expediently be skirted, the lack of a common theory for how military organizations change is of more consequence for this research. More specifically, the stated objective of this paper is to examine how armed forces learned in, and from, war. This requires a clear theoretical framework that allows for analyzing the empirical data. As such, theory is subservient to the reconstruction of the learning processes under study.

In 2006, Adam Grissom took stock of the discourse on military innovation. In his article, Grissom identified 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”.<sup>17</sup> The quintessential example of the school of civil-military relations is Barry Posen’s monograph “the Sources of Military Doctrine”, which is invariably credited as the foundational work of the field.<sup>18</sup> Posen argued that armed forces themselves are inherently prone to inertia. For innovation to occur, external intervention is needed by civilian leadership with collaboration of “maverick officers”.<sup>19</sup> 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 for how successful they can be in enforcing change.<sup>20</sup>

The interservice model posits that the rivalry between military services within a state over resources is an important driver for military change. When a new technology or capability arises, for example ballistic missiles, the competition between military services will intensify to absorb this new task. These efforts will thus drive innovation in technology, concepts, and organization.<sup>21</sup> In variation of this argument, the intraservice model looks to competition between branches within a service. The scholar associated with this third school, Stephen Rosen, asserts that innovation is initiated by senior officers within a service that 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”.<sup>22</sup> 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.<sup>23</sup> The

16 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.

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

18 Ibidem.

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

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

21 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.

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

23 Ibidem

final school of military innovation that Grissom identified contends that cultural factors are the determinant of how military forces change. This view was introduced by Theo Farrell, and Terry Terriff who contend that the cultural aspects, and internal processes of military organizations must also be examined to understand military change. They regard military change as a result of a complex interplay between the militaries, and their environments.<sup>24</sup>

Beyond the categorization of the literature on military change to that point, the most important contribution of Grissom's article was the promotion of research on instances of "bottom-up" innovation. Grissom stressed that the four schools as identified by him explained military change as initiated from the top downwards, while historical evidence suggested that meaningful change was fostered by units in the field.<sup>25</sup> Research on "bottom-up" innovation did exist as Grissom acknowledged, but there was no real theory on how this type of military change worked.<sup>26</sup> By neglecting "bottom-up" innovation, the field of military innovation studies lacked conceptual models upon which to test the empirical data.<sup>27</sup> 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.<sup>28</sup>

For the purpose of this research, the unclear distinctions between adaptation, innovation, transformation, and associated terms are interesting but not critically important. Rather, this paper is concerned with the learning processes by military organizations, and their manifestations. Consequently, whether an institutionalized lesson can be categorized as an adaptation or as an innovation is beside the point; the germane question for this study is how, and why the lessons from counterinsurgency campaigns were institutionalized (or not), and what factors influenced this process. Furthermore, scholars like Grissom, Griffin, and Sinterniklaas rightly point out that military innovation studies has not provided a theory with sufficient explanatory power for understanding how armed forces adapt to operational challenges.

Although the preceding subsection has painstakingly revealed the deficiencies of military innovation studies, the field is certainly not without its merit. Many scholars have made constructive contributions to the understanding of military change. In the following section the beneficial aspects of the literature will be surveyed. Subsequently, several instances of the organizational learning theory's application to military case studies will be examined. The final

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

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

26 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.

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

28 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

component of this section will gauge the applicability of the conceptual model on learning in military organizations as established by Richard Downie (1998).

## 2.3 Downie's application of organizational learning theory

In the preceding sections of this chapter, the literature on organizational learning theory and military innovation studies were explored. Both fields are pertinent to the research on change in military organizations. Richard Downie is recognized as one of the first scholars who applied organizational learning theory.<sup>29</sup>

In his influential work "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. Arguably, this model could also be used for military adaptation in conventional war against a peer competitor, as the model does not contain specific parameters that exclude types of conflict.<sup>30</sup> Downie's central thesis is that the U.S. military has failed to learn from previous experiences in "Low Intensity Conflict".

Downie focuses his research on doctrinal change after the conflicts under study as "doctrine reflects learning that militaries have assimilated from their experiences".<sup>31</sup> 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".<sup>32</sup> External factors that can spur change in military organizations can be operational challenges, such as overcoming tactics by the adversary, negotiating hindrances by terrain, or climate or mitigating friction. Another key cause for change can be the proliferation and incorporation of new technologies. Adoption of a new technology can alter the way armies fight, and change how commanders conceive of operational concepts.<sup>33</sup> The examples of nascent technology having a profound impact on the prosecution of war are manifold, but to name a few one can think of the internal combustion engine, radar, and the machine gun. Such developments must be institutionalized in military doctrine to ensure a common concept of operations.<sup>34</sup> Lastly, intervention by civilian authorities can prod military armed forces to change their ways. This typology of outside incentives for altering the military organization tie in with Theo Farrell's identification of *drivers*.

Institutional learning is defined by Downie 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

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

30 Richard Downie (1998). *Learning from Conflict: The U.S. Military in Vietnam, El Salvador, and the Drug War*. Westport: Praeger, p. 241.

31 Ibidem, p. 2.

32 Ibidem

33 Ibidem, p. 56.

34 See MacGregor Knox and Williamson Murray (Eds.). (2001). *The Dynamics of Military Revolution, 1300-2050*. New York: Cambridge University Press.

institutional norms, doctrine and procedures in ways designed to minimize previous gaps in performance and maximize future success”.<sup>35</sup> In this definition, the inspiration by organizational learning theory is evident. While Downie acknowledges that the outcome of this process is not enhanced performance per se, he contends that the rationale behind it is to address current issues with performance, or increase the likelihood of success in future endeavors.<sup>36</sup>

In order to understand the model of “Doctrinal Change” (see figure 1) as advocated by Downie, the individual elements require further elaboration. This cycle starts with the incentive to change, which in itself is caused by “international threats and influences”. Examples of such threats and influences could be enemy actions or tactics, or the development of new technology. These incentives can elicit change by the military organization itself (at the institutional level). If no action is taken, the threats and influences can lead the national-level, civilian leadership, goading the military into action. As the arrows represent, this influence can be exerted at several points in the process.<sup>37</sup> As specified by Downie, these interventions can occur “[...] before the military recognizes this threat, [...] before the military has defined options to respond to the threat or, [...] the civilian leadership can intervene to influence the military’s selection of an option to solve the doctrinal deficiency caused by the systemic threat”.

Ideally however, the military organization is adequately attuned to its surroundings, and so that it acknowledges events in the international (or operational) environment to which it must respond. This constitutes the first step in the cycle of doctrinal change. Related to the notion of a changed environment is the analysis of the organization’s capabilities and how these are affected by the changes. 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 in 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 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).<sup>38</sup>

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

36 *Ibidem*, p. 23.

37 *Ibidem*, p. 240-242.

38 *Ibidem*, p. 241-242.

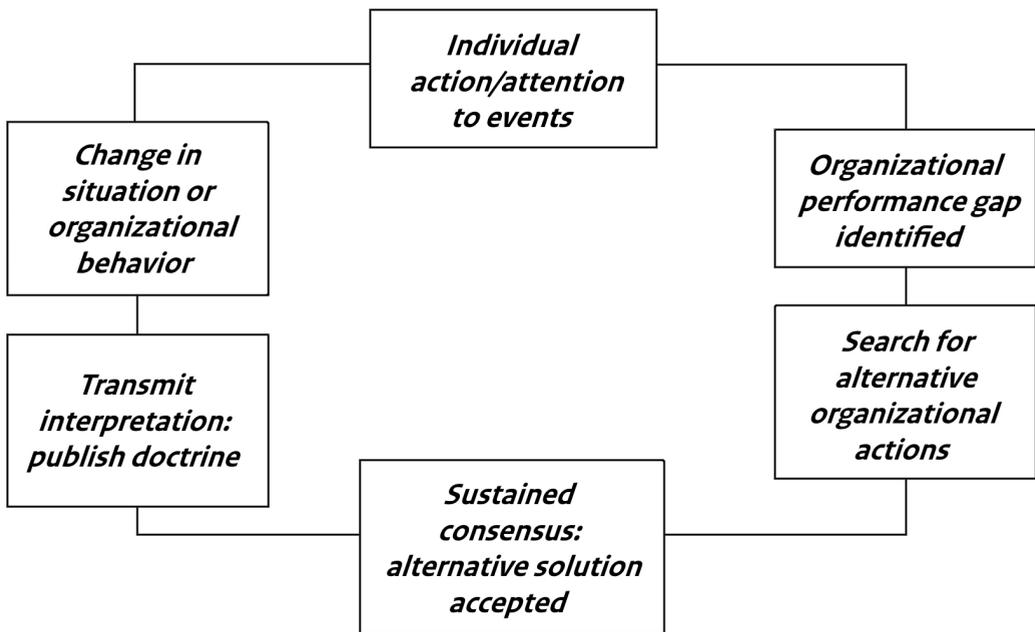


Figure 1: Downie's Learning Cycle with the influence by international, national, and institutional-level interaction

In conclusion of this subsection, Downie's model can serve as a basis for a framework for understanding the process of how military organizations learn from conflict. Yet, the process of learning in military organizations as described by Downie is somewhat bare-boned and seemingly technocratic. It helps to identify steps in the process of learning, but has little regard for the factors influencing it beyond environmental influences, external pressures, and institutional factors. Consequently, when utilizing an analytical model, the factors shaping or obstructing the learning process must be taken into account, if not incorporated in the model itself. Moreover, a comprehensive model for military learning must incorporate a step that looks at manifestations of change beyond the formulation or revision of doctrine. A final element that is required for this research is that the lessons from conflict cannot be seen without the lessons that are learned within the context of the conflict itself. John Nagl adopted Downie's model for analyzing how the United Kingdom and the United States adapted to the challenges in the wars in Malaysia, and Vietnam respectively.<sup>39</sup> 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. Nagl's verdict on learning by the British and American armed forces is therefore too dichotomous.

Interestingly, Grissom omitted the literature on organizational learning as exemplified by Richard Downie. In a footnote, Grissom states that Downie's framework of learning in "low intensity conflict" cannot be used as an example of "bottom-up" innovation, as Downie limits

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

the “bottom-up” characteristics to information gathering (acquiring new knowledge). Downie argues that for institutionalization of lessons, senior officers within the organization have to be receptive to new ideas, and commit resources to it.<sup>40</sup> In Grissom’s examples, initiatives from lower levels gain traction through informal dissemination, in some instances even while going against the organizational grain.<sup>41</sup> 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.<sup>42</sup>

Yet, as the first chapter of this paper attests, organizational learning literature generally incorporates both the grass-roots acquisition of knowledge and how the wider organization can utilize it. Indeed, the utilization of new knowledge to enact organizational change for competitive advantage is at the core of this literature. While individuals and subunits can learn and improve their performance, larger changes require the consent and resources of the wider institution. As such, this body of literature should not be written off for explaining adaptation in military organizations.

## 2.4 Current trends in the literature

Since Grissom’s important article in 2006, the field of military innovation studies has seen important developments. First, and foremost, empirical research has proliferated tremendously in recent years. A substantial number of these studies are not explicitly concerned with theoretical explanations, but are rather descriptive works of contemporary or historical examples of military change. Academics, often with close connection to military organizations, have engaged in research to examine what and how various armed forces have learned during the wars of the early twenty-first century.<sup>43</sup>

Within this veritable deluge of literature on military change over the last years, four tentatively connected trends (or “currents”) relevant to this research are discernible. In the first current the “bottom-up” approach to military change is the dominant theme. As such, Grissom’s call for more attention to military change initiated at the tactical level has been answered. Secondly, a substantial portion of the recent research, looks at the influence of cultural factors on military change. In the third current a renewed attention for organizational learning theory is in evidence. The fourth current is the consideration awarded to non-Western perspectives, both in regular armed forces as for non-state actors such as insurgencies.

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

41 Ibidem, p. 920-922.

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

43 Griffin (2017). Military Innovation Studies, p. 202.

## 2.4.1 First current: attention to military change from the “bottom-up”

The rise in studies to “bottom-up” military change is in part a result of the wars of the early twenty-first century. As shown in the introduction, Western armed forces in Iraq and Afghanistan saw themselves confronted with operational challenges for which they were ill-prepared. To address these deficiencies, the deployed units had to improvise and adapt. By default, units in the field had to formulate their own responses to the ordeal caused by insurgency, as institutional solutions were too slow to take effect, if forthcoming at all. These efforts have resulted in numerous cases that were studied by scholars who had access to the armed forces involved.<sup>44</sup>

For instance, an early contribution to “bottom-up” innovation is the monograph by James Russell (2011). His study shows that several battalions and brigades of both the United States Army and the United States Marine Corps in 2005–2007 developed creative answers to the local insurgencies in the Anbar and Ninewa provinces of Iraq. Russell argues that these “innovations” occurred in the absence of “top-down” guidance.<sup>45</sup> The sentiment that American units on the ground were the primary agents of change in Iraq is echoed by others.<sup>46</sup> By forming informal networks, troops on the ground shared knowledge and skills that enabled them to address day-to-day challenges.<sup>47</sup>

American forces were by no means unique in their ability to “learn under fire”. As recent studies show, units from other countries adapted in the field as well.<sup>48</sup> Of course, there were variations in how the units from varying countries adapted. However, as previously noted, comparative case studies on how national militaries learn are relatively scarce.<sup>49</sup> Moreover, divergences were not limited to national approaches; units differed in their ability and methods for adapting to the operational challenges.<sup>50</sup> Explanations that account for these variations are particularly interesting for this research: can the differences be ascribed to leadership, national strategic culture, organizational culture or other internal attributes or to external factors? Interestingly, Russell assigns little influence to cultural factors in his otherwise cogent explanation for adaptation by tactical units. Russell’s argument is premised on that Army and Marine Corps units

44 Ibidem, p. 197–200.

45 Russell (2011). *Innovation, Transformation and War*, p. 4.

46 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. 137.

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

48 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(34), pp. 344–370.

49 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.

50 See for a detailed study on the subsequent British rotations to Helmand province in Afghanistan: Theo Farrell (2017). *Unwinnable: Britain’s War in Afghanistan, 2001–2014*. London: The Bodley Head.

both “delivered similarly structured outputs *in spite of* organizational and cultural dissimilarities”.<sup>51</sup> This argument implies that organizational culture is beholden to the military services, and does not extend to the United States military as a whole.

A counterargument that can be brought to bear to this is that the various units, and their commanders, felt able to improvise and experiment with solutions. Russell does acknowledge that the U.S. military provided an environment that proved conducive to adaptation by tactical units, although did not force this on the lower levels of the organization. To at least some extent military commanders are influenced by the organizational culture. Moreover, it is interesting to note that adaptations made by Army and Marine Corps units did not differ in principle, but showed substantial variations in their execution. While this is insufficient to attribute this variation solely to organizational culture, its influence on these differences cannot be discounted.

#### 2.4.2 Second current: the centrality of culture on military change

This segues into the second current that is discernible in recent literature on military change: the central role awarded to cultural factors.<sup>52</sup> The national strategic culture or the military organization’s own culture, can shape the way the process of learning works. Is an organization conducive to change or resigned to inertia? Is experimentation by officers and enlisted personnel promoted and facilitated, or discouraged? 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.<sup>53</sup> An imperative for successful adaptation to surprise on the battlefield is cognitive flexibility. This suggests that a military organization should accept “uncertainty as a given condition”, and open “to study the possibilities that might develop in wartime”.<sup>54</sup> 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.<sup>55</sup>

Dima Adamsky further elaborates on the influence of cultural traits in military change. He studied how the United States, Israel, and the Soviet Union handled transformation in warfare based on technological developments. The differences in their approaches are, according to Adamsky, caused by cultural factors. For instance in the Soviet Union, conceptual thinking was a prerogative of the General Staff which was continuously looking for “discontinuities in military affairs”. This led to the introduction of a holistic new conceptual framework that preceded the

51 Russell (2011). *Innovation, Transformation and War*, p. 209.

52 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.

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

54 *Ibidem*, p. 227.

55 *Ibidem*, p. 230.

introduction of novel technologies.<sup>56</sup> As such, technology was embedded into the conceptual framework of war. On the other hand 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 new conceptual developments.<sup>57</sup> 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.<sup>58</sup>

Another insightful addition to the discourse on the influence of culture is provided by Aimee Fox in her monograph about military innovation in the British Army during the First World War.<sup>59</sup> Fox argues that cultural factors are an important factor for explaining how the British Army learned during the First World War. 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.<sup>60</sup> A second attribute of the British Army that was 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.<sup>61</sup>

### 2.4.3. Third current: the “rediscovery” of organizational learning theory

A third current in recent literature on military change is the influence of organizational learning theory. Since Grissom’s substantiated dismissal of organizational learning theory, it has been used more extensively by students of military change. At first glance, this development seems somewhat ironic.<sup>62</sup> However, this new attention for organizational learning can be explained by the increased attention for military change that is initiated by the tactical level during conflict: the “bottom-up” approach. This increased attention can in large part be credited to the counterinsurgency campaigns in Iraq and Afghanistan, where tactical units had to adapt to the challenges posed by the environment, without immediate support by their institutions. These

56 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.

57 *Ibidem*, p. 132-134.

58 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. *Journal of Strategic Studies*, 35(4), pp. 513-539.

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

60 *Ibidem*, p. 20-21.

61 *Ibidem*, p. 37-45.

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

units gained experience and acquired knowledge that informed their attempts to overcome the challenges.<sup>63</sup> Often, these adaptations were shared informally, thereby bypassing formal learning mechanisms.<sup>64</sup> In organizational learning theory, the collection of knowledge, which is the start of the learning process, is placed at the individual who interacts with the environment. By analogy, it is the individual soldier (or unit) that interacts with environment during conflict.<sup>65</sup> Intrinsically, organizational learning theory is therefore indeed compatible with the “bottom-up” approach in military innovation studies.

The aforementioned deliberate omission of organizational learning theory in Grissom’s review of literature on military innovation was noted and challenged by Frank Hoffman.<sup>66</sup> In his dissertation, Hoffman analyzes how armed forces change during wartime, with an emphasis on adaptation initiated by tactical units. Hoffman focuses on the internal characteristics that influence the learning process of an organization. As a proponent of organizational learning theory, he also addresses the dismissal of the theory by Grissom on account of the latter’s analysis of the work by Downie and, by extension, Nagl. While Hoffman concurs with Grissom that organizational learning theory as presented by Downie is too centralized, Hoffman charges that Grissom should have looked to other interpretations of this theory as it “supported [Grissom’s] call for increased attention to “bottom-up” innovation”.<sup>67</sup>

By contrast, organizational learning theory places more emphasis on “bottom-up” learning. From the literature on organizational learning Hoffman distills that learning begins with individuals, and progresses up via the group-level (or unit-level in armed forces) towards the institutional level. Hoffman subscribes to this notion and argues that particularly during conflict, the challenges posed by the operational environment lead to new information and ideas, that should lead to overcoming these challenges. Additionally, Hoffman distinguishes between *organizational learning* and *institutional learning*. The former concept 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.<sup>68</sup>

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63 Serena (2011). *A Revolution in Military Adaptation*, p. 15-16.

64 Sergio Catignani (2014). Coping with Knowledge: Organizational Learning in the British Army? *The Journal of Strategic Studies*, 37(1), p. 31-32.

65 Raphael Marcus (2019). Learning ‘Under Fire’: Israel’s improvised military adaptation to Hamas tunnel warfare. *The Journal of Strategic Studies*, 42(34), pp. 344-370

66 Frank Hoffman (2015). *Learning While Under Fire: Military Change in Wartime*. London: King’s College (Doctoral Dissertation), p 14.; This omission is also noted by Stuart Griffin (2017), p. 208.

67 Frank Hoffman (2015). *Learning While Under Fire*, p. 34-37.

68 Ibidem, p. 48.

Hoffman then seeks to build a model for the process of learning that incorporates the critical components that make up this learning capacity. Based on the organizational learning literature, Hoffman identifies four steps in the process of learning (see table 2). 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 final 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.<sup>69</sup> Hoffman integrates these steps in a model for “Organizational Adaptation” (see figure 2).<sup>70</sup>

Downie	Hoffman
1. Individual action/attention to events	1. Inquiry
2. Identification of performance gap	2. Interpretation
3. Search for alternative actions	3. Investigation
4. Sustained consensus	4. Integrate & institutionalize
5. Transmit interpretation	-
6. Change in organizational behavior	-

Table 2: The identified steps of learning by Downie and Hoffman

69 Ibidem, p. 52-53.

70 Ibidem, p. 233.

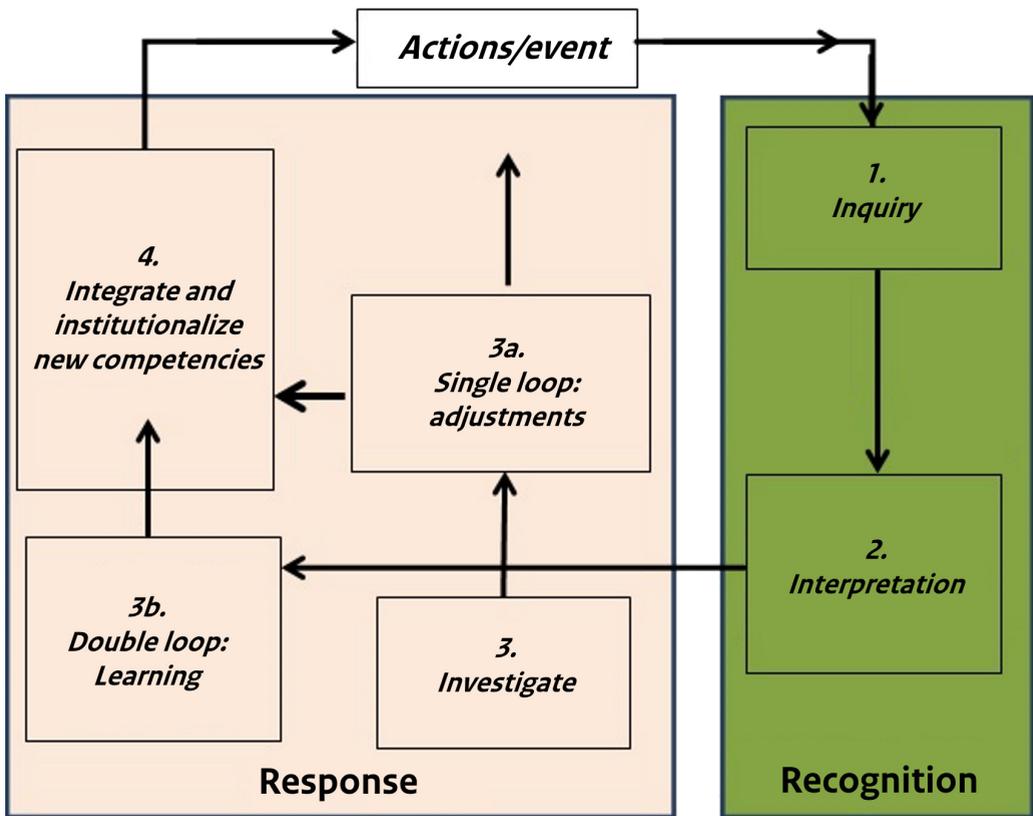


Figure 2: Frank Hoffman's model for "Organizational Adaptation"

This model depicts the process of learning during conflict. It allows for informal "single loop" learning by units in the field, and formal institutional "double loop" learning to take place concurrently. If no broader organizational response is required, battlefield adaptations will suffice. Additionally, Hoffman shows that deployed units have sufficient agency to respond to operational challenges and not meekly wait for the organization to step in. Moreover, it recognizes that tactical adaptations can also be a source for institutional learning, as is illustrated by the arrow pointing from step 3a: "Single loop: adjustments" towards step 4: "Integrate & Institutionalize".<sup>71</sup>

The main contribution of Hoffman's model is that it depicts both 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 a salient 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

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71 Ibidem, p. 232.

conflict. Given that some adaptations were only accepted by the institutions after overcoming reluctance, the question of whether these lessons have been institutionalized is pertinent.

In 2017, Stuart Griffin noted the contemporary uptick in the utilization of organizational learning literature for change in armed forces. Although he subscribes to the idea that this literature has much to offer for studying learning by militaries, he contends that the application has been uneven. Griffin posits that authors have often used concepts like single and double loop learning, without entirely understanding those. Instead, organizational learning literature should be studied more extensively, and could inform future research on learning by military organizations.<sup>72</sup>

A more recent utilization of organizational learning literature is the book by Tom Dyson “Organisational learning and the modern army” (2020). Dyson states that this body literature offers a more optimistic lens for how armed forces can learn from conflict. Still, he does not discount the “military innovation” literature, as it provides insight on the factors influencing and impeding learning by military organizations.<sup>73</sup> Dyson further emphasizes the role of formal learning processes in effective learning. 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.<sup>74</sup> As such, Dyson’s book is an example of fusing organizational learning literature with a detailed grasp of the idiosyncrasies of learning processes within the military.

#### 2.4.4. Fourth current: increased attention for non-Western examples

Another welcome addition in the recent literature is the analysis of adaptation by non-Western armed forces and irregular adversaries. Regarding 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”. As such, the institutional development of these militaries can provide insights on organizational culture, emulation and civil-military relations.<sup>75</sup> 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. However, whether improved combat effectiveness contributes to a political settlement often remains an open question.<sup>76</sup>

72 Griffin (2017). *Military Innovation Studies*, p. 211-213.

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

74 Ibidem, p. 40-44.

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

76 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

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.<sup>77</sup> Being unconstrained by “norms, organizational culture, and bureaucratic inertia”, insurgents could experiment with new tactics and techniques. This ability was augmented with unrestricted contemporary information and knowledge sharing capabilities, and good situational awareness. These strengths enabled insurgents to adapt faster than their adversaries.<sup>78</sup> The decentralized nature of insurgent groups, and by extension their learning processes, makes it hard to target them. Destruction of so-called “terrorist training camps” therefore often proves a mirage, because the sharing of knowledge is conducted in an informal manner and does not require extensive infrastructure.<sup>79</sup>

While modern insurgent groups have an inherent advantage in acquiring new knowledge, and sharing these lessons with others, in the long term these strengths prove to be liabilities. Chad Serena contends that the successes of Iraqi insurgents were mostly tactical. Moreover, these successes consisted mainly in the application of force on their adversaries and associated civilians. Positive objectives, such as forming an alternative government for “liberated areas”, or when the incumbent government was defeated, were conspicuously lacking.<sup>80</sup> This explains to a certain extent why the decentralized groups were unable to coalesce around a common, attainable objective. According to Serena, the inability of the Iraq insurgency to evolve as an alternative to the central government is a result of organizational weaknesses that elsewhere have been considered strengths.<sup>81</sup> The fragmentation of insurgent groups prohibited the achievement of positive long-term goals, such as supplanting a government, rather than just undermining or displacing it. Ironically, this pathology is similar for both insurgents and counterinsurgents.

To attain organizational goals beyond sowing anarchy, the organization has to learn and change. In this case, a more centralized and hierarchic organizational was needed in order to evolve into an alternative to the central government, instead of devolving into criminal groups that perpetrate violence for power and profit.<sup>82</sup> This required central guidance, and more formalized organizational learning and knowledge sharing arrangements. As these could not be created, the Iraqi insurgent groups could ultimately not adapt sufficiently.<sup>83</sup>

This dynamic is also discernible in Afghanistan where the resistance was able to defeat an imploding communist government, but the various *Mujahedeen*-parties were unable to form a

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77 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.*

78 Chad Serena (2014). *It Takes More than a Network.* Stanford: Stanford University Press, p. 139.

79 Abdulkader Sinno (2008). *Organizations at War in Afghanistan and Beyond.* Ithaca: Cornell University Press, p. 82-84.

80 Serena (2014). *It Takes More than a Network*, p. 140-141.

81 Of course, there was a plethora of insurgent groups in Iraq following the American-led invasion of 2003. In his book, Serena deliberately conflates these groups to a single insurgency.

82 *Ibidem*, p. 142.

83 *Ibidem*, p. 145-147.

working government. They were defeated and replaced in 1994 by the Taliban, that had a far more centralized leadership.<sup>84</sup>

After the Taliban was defeated in turn, its exiled leadership was more successful in imposing structural reforms in order to increase control over the groups that were fighting the central government in Kabul and its international allies. As the Taliban had a more hierarchical structure and a vestige of governance capabilities, it possessed the institutional clout to retain knowledge, and used it to steer the organization. This enabled the Taliban to promulgate new tactics, and increase tactical performance by training units in the field through experts who were sent by the Taliban's military leadership. Beyond military adaptation, the Taliban sought to increase its legitimacy by establishing courts in rural areas, dispensing crude but swift justice.<sup>85</sup> For insurgencies to be ultimately successful, their organizational capabilities have to be adaptable. At first 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.<sup>86</sup> In sum, studying non-Western actors can provide fresh perspectives on both battlefield adaptations and institutional change.

## 2.5 Sub conclusion

In conclusion of 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. The following chapter will continue to categorize aspects pertaining to military change such as driving and shaping factors, manifestations, and inhibitors.

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84 Sinno (2008). *Organizations at Wars*, p. 295-297.

85 Theo Farrell (2018). Unbeatable: Social Resources, Military Adaptation, and the Afghan Taliban. *Texas National Security Review*, 1(3), pp. 59-75.

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



### 3. Aspects of military learning

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As described in the introduction, the learning processes within military organizations have important parallels with other organizations. Yet, the idiosyncrasies of armed forces are equally manifest, and should be considered when applying organizational learning concepts. For instance, the differences between a military organization and a business company are striking. Although the latter might operate in a dynamic “Darwinian” environment with cutthroat competition, armed forces have to adapt to environments in which the ability to adapt can affect life and death. Moreover in Western states, armed forces are a governmental instrument. They do not exist for themselves, but rather to defend the sovereignty and territorial integrity of the state. Furthermore, armed forces are currently employed as an instrument to further foreign policy objectives, such as showing commitment to an alliance.<sup>1</sup> If armed forces have distinct characteristics from other organizations, this should be reflected in the factors influencing how armed forces learn, and the manifestations thereof. This chapter therefore identifies the attributes that drive, shape, and inhibit organizational learning in armed forces. Furthermore, the military manifestations of learning

#### 3.1 Drivers

In the edited volume “Military Adaptation in Afghanistan” (2013), Theo Farrell provides an overview of factors influencing the process of adaptation for armed forces during counterinsurgency operations. He distinguishes between so-called “drivers” and “shapers”.<sup>2</sup> By drivers, Farrell means those factors that are severe enough to initiate change in military organizations. Shapers, to that extent, are described as the factors that influence this process of adaptation. These influencing factors will be elaborated upon further on in this chapter.

First and foremost, Farrell identifies the overcoming of operational challenges as a driver for adaptation. Such challenges include activities by the adversary, operating in arduous terrain, prolonged combat operations with the associated friction, sustainment of deployed units over long lines, cooperating with civilian agencies and local allies. Another impetus for change can be the advent of new technologies. As stated above, technological innovations fused with new operational concepts can have profound operational repercussions; both as opportunities, and as challenges.<sup>3</sup>

Besides learning from their own experience, armed forces can learn from experiences of others and adopt new technologies and concepts. As established previously, this form of learning is

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- 1 Jason Clarke (2019, March 29). “Good Allies”: *International Perspectives on Afghanistan*. Retrieved from War Room: <https://warroom.armywarcollege.edu/articles/good-allies/>
- 2 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.
- 3 Ibidem p. 8-10.

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.<sup>4</sup> In contemporary conflicts, Western armed forces rarely operate on their own but rather in coalitions. This means that the members of a coalition are in close proximity to experiences, and lessons that are learned by partners. In the case of junior partners, Fabrizio Cottichia, and Francesco Moro posit that they lack the resources to learn just by themselves. Incorporating knowledge from allies is therefore an expedient way to enact organizational change to overcome operational challenges.<sup>5</sup> Working in coalitions is in itself an additional argument for emulation, since utilizing lessons from partners as a source for change can help improve interoperability. Conversely, if all members of a coalition go through independent learning processes, the outcomes can vary widely. If the militaries of different countries have different solutions for the same military problem, this will have a negative impact on their cooperation.

### 3.2 Manifestations

Beyond identifying what factors influence learning by military organizations, the eventual manifestations pertaining to this process need to be established as well. Several reasons argue for studying the manifestations of learning by military organizations to enhance understanding of the process. First of all, explaining the process of learning in military organizations needs practical outcomes to be complete. Armed forces require knowledge and skills that can be translated to actions in an operational environment. Without potential impact on practical manifestations, this learning process is solely an academic exercise. Secondly, the substance of the lessons should be subject to scrutiny, because this can answer questions relating to the quality of both the product and the process.

Again, Farrell offers a broad list of adaptation examples. In these examples, he distinguishes between the strategic, and the operational levels. Examples of the former category are altered strategies, and changes in force levels and resources. At the operational level, changes in doctrine, training and operations are considered manifestations.<sup>6</sup> Because Farrell regards adaptation and innovation as being part of a “sliding scale”, the manifestations of innovation imply “a greater degree of novelty and disruptive organizational change than adaptation”.<sup>7</sup> Resulting manifestations of military innovation are changes in the organization’s structure, or the acquisition of new technology.<sup>8</sup> Rob Sinterniklaas summarized the manifestations (see table 3).<sup>9</sup> Because this research paper considers both adaptation and innovation as results of the learning process by military organizations, this distinction is not further considered here.

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4 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.  
5 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.  
6 Farrell (2013). Introduction, p. 8.  
7 Ibidem, p. 7.  
8 Ibidem  
9 Sinterniklaas (2018). *Military Innovation*, p.31.

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

Table 3: Manifestations of learning

Most manifestations of learning by military organizations are relatively straightforward to study, if not to implement. For example, a change in strategy or plans and operations based on the learning process should be discernible to the informed observer. Still, changing the objective in a conflict or the operational approach, requires processes that asks hard questions. 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.<sup>10</sup>

Whether such changes lead to enhanced performance is of course another question entirely. 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.<sup>11</sup> Changes in organizational structures are 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”.<sup>12</sup> 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 are the concepts and ideas that soldiers abide to within a unit or a collective of associated units. Often, this

10 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>

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

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

type of doctrine is not written down.<sup>13</sup> 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.<sup>14</sup>

In an article on military doctrine, Harald Hoiback argues that good formal doctrine then must consist of three elements: theory, culture, and authority. First, it has to provide a theory on how contemporary wars are to be won. Secondly, doctrine must fit in with the dominant culture in the armed forces or service that it is written for. If this consideration is not taken into account, the doctrine will not be read. Thirdly, doctrine must be endorsed by the military leadership to imbue it with sufficient authority. This authority provides “additional leverage” to the ideas in the doctrine over other existing thoughts on war and victory.<sup>15</sup>

Another source of contention is the objective of doctrine. What is the text in official doctrine trying to convey? According to Hoiback, there are three types of doctrine with different purposes. First, there is the doctrine as a tool of command, prescribing how to act. A second purpose for doctrine can be to serve as a tool for change, prescribing what the organization should become. The third type of doctrine is that as a tool for education. It enlightens officers, and by extension soldiers, on how the organization thinks and does and why.<sup>16</sup> In modern Western militaries with “heterogeneous strategic challenges”, doctrine is mostly used as a tool for education. Doctrine as a tool for command can be applied by states that have a stable strategic environment with consistent threats.<sup>17</sup>

The quintessential modern example of doctrine as a tool for change is of course the American *Field Manual 324* (FM 324), written and implemented during the war in Iraq. Not only were Conrad Crane and his team able to draft the new doctrine in little more than a year, its patron general David Petraeus was able to try and put these ideas into practice.<sup>18</sup> Whether the changes to the U.S. Army and Marine Corps as envisioned in the FM 324 were the right ones has subsequently been a source for intense debate.<sup>19</sup> As doctrinal publications are valid for a certain amount of time, a doctrine will more often than not incorporate new knowledge as the strategic environment will have changed in the intervening period since the previous iteration. To take this argument

13 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.

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

15 Harald Hoiback (2016). The Anatomy of Doctrine and Ways to Keep It Fit. *The Journal of Strategic Studies*, 39(2), p. 188-189.

16 Ibidem, p. 190-192.

17 Ibidem, p. 190

18 See Conrad Crane (2016). *Cassandra in Oz*. Annapolis: Naval Institute Press.

19 See for instance Gian Gentile (2010). Freeing the Army from the Counterinsurgency Straitjacket. *Joint Forces Quarterly*, 58(3), pp. 121-122; Frank Hoffman (2011-2012). Neo-Classical Counterinsurgency. *Parameters*, 41(4), pp. 117; Douglas Porch (2011). The dangerous myths and dubious promise of COIN. *Small Wars & Insurgencies*, 22(2), pp. 239-257; David Ucko (2014). Critics gone wild: Counterinsurgency as the root of all evil. *Small Wars & Insurgencies*, 25(1), pp. 161-179

further, if there is no incentive to revise doctrine, there is no reason to publish an updated version. Therefore, most doctrines will serve both as a tool for change, as well as a tool for education, although the balance will vary between publications.

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. It is however not a sufficient condition for institutionalizing knowledge.<sup>20</sup> Doctrine should serve as a conceptual foundation for change in strategy, operations, procedures, and integrating new technologies and materiel. These changes can be enacted through education, training, and altering organizational structures.<sup>21</sup>

Without such practical measures, doctrine will be relegated to condensed thoughts, only read by doctrine writers, dilettantes and researchers. It can also become a fig leaf for genuine institutionalization of the lessons learned from conflict.<sup>22</sup> The value of those lessons for future conflict are diminished, while the military organizations can point at the shelves holding tomes of condensed wisdom, generating a false sense of accomplishment about the acquired experience and knowledge.

### 3.3 Factors influencing the process of learning

Although operational challenges will often lead to the identification of performance gaps, and subsequently to potential solutions, this process of learning is influenced by various factors that shape its eventual manifestations. Moreover, these factors shape the way how 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 from within.

#### 3.3.1 External factors

How armed forces learn is shaped by (inter)national factors that bear on the political context in which they exist. To start, 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.<sup>23</sup> First, domestic political considerations can affect how armed forces adapt in a conflict by the weight the government awards to the mission. If an expeditionary

20 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. 23; Harald Hoiback (2011). What is Doctrine? *The Journal of Strategic Studies*, 34(6), pp. 879-900.

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

22 See Andrew Hill and Stephen Gerras (2016). Systems of Denial. *Naval War College Review*, 69(1), p. 119-120.

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

mission is regarded crucial, a government will be more likely to commit more resources to it, thereby enabling changes in how the military conducts an operation.<sup>24</sup> Moreover, political dynamics at home are more influential than the (perceived) international threat.<sup>25</sup>

An illustrative example of the influence of domestic American politics on how armed forces apply knowledge is the case of the “Surge” in Iraq in 2007. Although the knowledge needed for conducting a population-centric counterinsurgency campaign had been captured in American doctrinal publications (FM 324), the implementation of this new approach hinged on political dynamics in the United States. The American government’s impetus to change tack in Iraq was in large part a consequence of the defeat the Republican Party suffered in the Congressional elections, late in 2006. This defeat was ascribed to the electorate’s dissatisfaction with the situation in Iraq. President George W. Bush consequently opted to reinforce the American efforts in Iraq and tasked general Petraeus to implement the new counterinsurgency doctrine. In this case, the floundering campaign in Iraq was evident for several years by the end of 2006, but it took an electoral defeat for the acquired knowledge to be implemented, along with the resources necessary.<sup>26</sup> Conversely, when a mission is treated as an afterthought in the domestic political discourse, the deployed troops will have to resort to improvisation, as additional resources will not be forthcoming.<sup>27</sup>

Alliance politics can be another shaping factor. Of course, domestic and international political deliberations can interact. An example is a senior partner in an alliance that can exert pressure on a junior partner to deploy a certain military capability to a mission, that the junior partner does not possess at the time. This compels the junior partner to acquire the capability and necessary knowledge.<sup>28</sup> 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. It 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.<sup>29</sup> Smaller nations are thus influenced by how their senior allies conduct a war.<sup>30</sup>

The third factor of influence that Farrell identifies is the relationship between the military and its civilian leadership. Where domestic politics and alliance politics point to why civilian leadership

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24 Ibidem, p. 12.  
25 Elizabeth Kier (1997). *Imagining War: French and British Military Doctrine between the Wars*. Princeton: Princeton University Press, p. 143.  
26 David Ucko (2009). *The New Counterinsurgency Era*. Washington DC: Georgetown, p. 112-113.  
27 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  
28 ; 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.  
29 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.  
30 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.

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.<sup>31</sup> When the armed forces have a more independent position, the military leadership will be less likely to acquiesce to civilian initiatives for change.<sup>32</sup>

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”.<sup>33</sup> More succinctly, strategic culture can be equated with a “national way of war”, and is therefore not just beholden to the military, but also to the government and the society.<sup>34</sup> Consequently, this is a different concept than organizational culture, which will be elaborated upon in the next section.<sup>35</sup>

Strategic culture supersedes organizational culture, and is formed by enduring aspects such as geography, history and demography.<sup>36</sup> Therefore, change in strategic culture is often slow, if discernible at all.<sup>37</sup> 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 were heavily curtailed. This was a dramatic departure for both countries, as in the preceding decades their strategic culture considered the armed forces as the primary foreign policy instrument. Of course, this dramatic change in strategic was imposed on these vanquished states by their conquerors, rather than initiated internally.

The influence of strategic culture on how a state approaches war can be further examined by the example of the United States. American strategic culture has been shaped by its geographical position between two vast oceans, bordered by friendly (and mostly innocuous) states.<sup>38</sup> Hallmarks of the American strategic culture are the employment of vast resources, directly applying overwhelming firepower against the enemy, and thereby seeking decisive, measurable victories.<sup>39</sup> Furthermore, the United States has the propensity to employ technological solutions to strategic problems. As a result, adaptation to operational challenges will generally be influenced by technological means rather than other aspects.<sup>40</sup> By identifying a national strategic

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

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

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

34 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.

35 Farrell conflates the notions of strategic culture and organizational culture.

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

37 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.

38 Peter Mansoor and Williamson Murray (Eds.). (2019). *The Culture of Military Organizations*. Cambridge: Cambridge University Press, p. 67.

39 Adamsky (2010). The Culture of Military Innovation, p. 78-79.

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

culture, one can assess whether new knowledge acquired by its armed forces is congruent with this culture. Potentially, this aspect can help predict whether new experiences and knowledge will be accepted by political (and military) leaders, and as such, result in change in the armed forces.

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.<sup>41</sup> 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.<sup>42</sup> 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.<sup>43</sup>

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.<sup>44</sup> 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 explanation for change in these military institutions. Political and institutional factors shape how "realist" concerns are translated in (new) military capabilities.<sup>45</sup>

A final external factor that can be identified is a defense policy. This 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. All aspects will interact in drafting a political program for the national military.<sup>46</sup>

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 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.

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

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

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

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

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

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

Aside from the adversary and the operational environment, armed forces have to contend with a volatile political context that is largely beyond their control. Therefore, how militaries interpret and incorporate new knowledge is subject to 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 must all be taken into account.

External influencers	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 4: External influencing factors of learning

### 3.3.2. 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 armed forces 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”.<sup>47</sup> This notion echoes “absorptive capacity” as espoused by the literature on organizational learning.<sup>48</sup> 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, individual commanders have 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

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

48 See for example: Zahra and George (2002). *Absorptive Capacity*, pp. 185-203

adequate guidance, even while the larger organization seems to fail.<sup>49</sup> This perception is reinforced by examples as given by James Russell.<sup>50</sup> Intrinsically, leadership, on all levels, is an important factor influencing how military 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.<sup>51</sup> Conversely, commanders or other individuals that do not subscribe to identified performance gaps and proposed remedies, can obstruct the process of learning.<sup>52</sup> 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.<sup>53</sup> 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.<sup>54</sup> With regard to identity in armed forces, it should be noted that they are comprised of different services that have distinct identities. 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.<sup>55</sup>

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.<sup>56</sup> Organizational values are closely linked to norms and consist of ideas and character traits that “elevate one’s status in the relevant society”.<sup>57</sup>

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.<sup>58</sup>

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49 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.

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

51 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.

52 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.

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

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

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

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

57 Ibidem, p. 28.

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

Of course, the organizational culture of the military will be influenced by the strategic culture of the state. In essence, most armed forces have the same tasks but can have a distinct culture.<sup>59</sup> This does not mean that international armed forces can perceive their role as essentially the same. Consider the inability (or unwillingness) of Western armed forces to retain knowledge on counterinsurgency, as they feel it is detrimental to their ability to fight conventional wars.<sup>60</sup> If a state's armed forces are insulated from the wider society, organizational culture is more prone to develop independently from its societal roots.<sup>61</sup>

The elements and origins of an organization's culture are therefore germane to assess its impact on how the organization learns. Armed forces that are rigidly enforcing conformity are less prone to change their way than militaries that encourage initiative and defer responsibilities to local commanders. As such, individual organization members are shaped by the organizational culture. This is not to say that the influence of culture is absolute or even binary. Forceful individuals, particularly in a command position, can ignore these cultural norms, or even choose to deliberately challenge them.<sup>62</sup> Moreover, external pressure such as operational challenges and civilian intervention can compel organizations to consider options that fall outside of their cultural scope. However, in both cases cultural undercurrents can still stymie the implementation of this foreign knowledge.<sup>63</sup>

Other, more practical factors influencing organizational learning are the availability and quality of the learning and dissemination mechanisms in an organization. Without such organizational arrangements in place, battlefield adaptations cannot be transferred in a coherent manner to other units or the wider organization.<sup>64</sup> Institutionalization of lessons requires clear and candid information on how the military organization performs in operational circumstances by ways of evaluations, debriefs and patrol reports.<sup>65</sup> Such documents capture the experiences of individual soldiers and units, and help to make tacit knowledge explicit.<sup>66</sup> This helps identifying deficiencies in performance, for instance when the enemy employs tactics that a unit cannot overcome with its standard drills or equipment. Other examples of learning mechanisms can be mission evaluations, and organizational teams that seek to analyze strategic trends and examine conflicts for tactical and operational novelties (emulation).

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

59 Ibidem, p.152-153.

60 See Martijn Kitzen (2012). Western Military Culture and Counterinsurgency: An Ambiguous Reality. *Scientia Militaria*, 40(1), pp. 124.

61 Mansoor and Murray (Eds.). (2019). *The Culture of Military Organizations*, p. 456-457.

62 See Caitlin Lee. (2019). The role of culture in military innovation studies: Lessons learned from the US Air Force's adoption of the Predator Drone, 1993-1997. *Journal of Strategic Studies*, p. 25-27.

63 Ibidem, p. 28-29.

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

65 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.

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

organizational learning by armed forces. They argue that this requires institutional resources that exceed the capabilities of single units.<sup>67</sup> 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.<sup>68</sup> 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.<sup>69</sup> Another example is NATO’s “Joint Analysis and Lessons Learned Centre” (JALLC).<sup>70</sup>

Yet, even when institutional learning mechanisms are in place, capturing relevant knowledge and analyzing its usefulness for the organization is not a straightforward endeavor. Learning from experience requires that the involved units are willing to share their knowledge.<sup>71</sup> Furthermore, issues of classification can impede the transfer of knowledge.<sup>72</sup> The subject of impediments to learning in military organizations will be explored more thoroughly in the next section. The existence, functioning, and output of organizational arrangements such as the American CALL and NATO’s JALLC can help establish its influence on the learning process.

Ultimately, the dissemination of the 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.<sup>73</sup> This resonates with the process of externalization and internalization, as describe by Nonaka and Konno.<sup>74</sup>

Examples of formal dissemination mechanisms are doctrine, education, training, and exercises. Despite its limitations as an instrument for enacting change, doctrine helps providing agreed-upon concepts and ideas. The knowledge within these tomes must however be 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 tested in exercises.<sup>75</sup> By incorporating recent experiences in training scenario’s, units can test new concepts and procedures in simulated

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

68 Robert T. Foley, Stuart Griffin and Helen McCartney (2011). ‘Transformation in contact’: learning the lessons of modern war. *International Affairs*, 87(2), p. 261.

69 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 Ariely (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.

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

71 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.

72 See for a 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

73 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.

74 See Nonaka and Konno (1998). The Concept of “Ba”, p. 40-54.

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

settings. To function correctly this requires the training institutions and their scenarios to be attuned to the institutional knowledge repositories.<sup>76</sup> Particular instances in which new knowledge can quickly be incorporated are predeployment exercises and tactical bulletins that must ensure that the latest experiences are disseminated throughout the organization.<sup>77</sup> More informal sharing arrangements, such as military journals and (online) fora can help facilitate the sharing of knowledge as well.<sup>78</sup> Furthermore, the existence of an informal discourse on military matters can foster an organizational culture that values learning.

From an academic perspective, the influence of learning, and dissemination mechanisms can be studied by examining the existence and quality of these aspects within the organization. After action reviews and evaluation reports can be assessed on their own merits, but also how these are subsequently handled throughout the organization.<sup>79</sup> Furthermore, the functioning of organizational elements concerned with knowledge management can be indicative of the learning process. For the dissemination of knowledge, the extent of the incorporation in doctrinal publications is a first indicator of knowledge being shared within the organization. More informative however could a study of the curricula of educational institutions and scenarios of exercises, to gauge the proliferation of new concepts among service members.

An additional and related factor that can be identified is the availability and allocation of resources. For instance, institutional arrangements for learning and budget to experiment often have compete with operational demands. In times of tight budgets, such crucial entities for the organizational learning process are often understaffed or scrapped in its entirety.<sup>80</sup> In the United Kingdom during its involvement in Iraq and Afghanistan in the early 21<sup>st</sup> century, the absence of such institutional arrangements led to a situation where its army was able to adapt (after a fashion) to operational challenges and spread these lessons between deployed units, but failed to enact organizational transformation throughout the wider army beyond the area of deployment.<sup>81</sup>

A final factor that affects the way military organizations learn is internal politics. This was reflected upon in the early literature on military innovation studies, where interservice and intraservice rivalries were regarded as catalysts for innovation.<sup>82</sup> Although competition between and within services have distinct attributes, the dynamics of politics are essentially similar. The

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

77 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 succesful example: Steven Mains and Gil Ad Ariely (2011). *Learning While Fighting: Operational Knowledge Management That Makes a Difference*. *PRISM*, 2(3), p. 176.

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

79 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/?\\_\\_twitter\\_impression=true#](https://othjournal.com/2020/06/22/war-is-a-learning-competition/?__twitter_impression=true#)

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

81 Foley, et al. (2011). 'Transformation in contact', p 262.

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

effect of internal politics is of course referenced to in the literature on organizational learning as well.<sup>83</sup>

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.<sup>84</sup> This positive influence on developing new capabilities can be offset by institutional apprehension to 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 organizations strategy, mission and culture will upset the status quo and the organization's power arrangements. This dynamic shows abundant similarities with the difficulties associated with "exploration" and "double-loop learning". Armed forces are even more reluctant to question their core competencies, as this will potentially degrade their core capabilities.<sup>85</sup>

Stephen Rosen even contends that in military organizations, due to their relative distance from the rest of society, this political dimension is even more prominent.<sup>86</sup> 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 advocates new ideas must ensure sponsorship by the relevant actors within the organization.<sup>87</sup>

The effect of this dynamic was seen with the rise of general Petraeus and his adherents in the U.S. Army. When they attained their respective positions of influence by propagating knowledge on counterinsurgency, they gained the influence to implement change within the organization.<sup>88</sup> Although the internal workings of armed forces may appear opaque to an external observer,

83 Ganz (2018). *Ignorant Decision Making*, pp. 3957; Lawrence, et al. (2005). *The Politics of Organizational Learning*, pp. 180-191.

84 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. 127. 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.

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

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

87 Ibidem, p. 20-21.

88 See Fred Kaplan (2013). *The Age of Petraeus: The Rise and Fall of Counterinsurgency*. *Foreign Affairs*, 92(1), pp. 75-90.

internal debates on new theories of warfare and changes in career paths can shed light on how military politicking influences learning processes.

Internal influencers	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 5: Internal influencing factors of learning

### 3.4 Impediments

A final element that is necessary to understand military change, or the absence thereof, are the impediments to military change. For this research, understanding obstructions in military learning processes is crucial, since examples of incomplete learning cycles can provide better insight in when and how lessons are not institutionalized. In much of the literature on military innovation, bureaucracy within the military organization itself is regarded as an impediment to meaningful change.<sup>89</sup> Richard Downie also incorporates institutional resistance to change in his work. He ascribes this to a lack of consensus within the institution that causes a blockade to change. Incompatible perspectives within the organization can exacerbate the lack of consensus, thus further reducing the possibilities for change.<sup>90</sup> Without explicitly stating so, Downie identifies institutional politics as an important factor influencing learning. By default, the agents of institutional inertia are favored by this dynamic. However, to understand political considerations and other “agents of inertia”, more detailed knowledge of how these obstructions work is needed.

More recent research on obstructions in military learning offers valuable insight. 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 that a military organization expects 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

89 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.

90 Downie (1998). *Learning from Conflict*, p. 181-182.

means that the experience of a previous conflict holds no lessons for future wars, as it is an aberration to the dominant paradigm.<sup>91</sup>

While the “fallacies” work in opposite direction, analysis of specific cases can possibly show examples of both in the armed forces under scrutiny. Which one of these fallacies is encountered depends on the prior historical experience (or institutional memory), and how the current conflict is perceived within the engaged militaries. Is the deployment considered a formative experience or instead as a deviation from the military’s normal practice?

Another helpful addition for understanding impediments in learning processes is offered by Andrew Hill and Stephen Gerras. They contend that most organizations expend considerable effort to refine their dominant theory through how they perceive the environment. This corresponds with the concept of “exploitation”. Although this seems a rational course of action, this often leads to “dysfunctional organizational responses, or *systems of denial* [italics in original], to strategic anomalies -inconvenient information- that contradict assumptions”.<sup>92</sup> In other words, military organizations are often not attuned to “exploration”. Hill and Gerras identify three “systems of denial” that impede the organization’s ability to develop new responses to a changed environment: questioning the intentions, authority, or legitimacy of the source of information; questioning the validity, generalizability, or applicability of information, and; revising the dominant theory to incorporate and dilute the new information.<sup>93</sup>

These “systems of denial” can form institutional impediments to organizational learning, potentially affecting various steps within process. The first two obstructions can impede the attention to environmental change, the identification of organizational performance gaps and the search for alternative actions (see figure 1). With the third “system”, a consensus is reached on a revised doctrine. However, by just assimilating the new information within the dominant

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

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

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

doctrine rather than acting upon it, the new information becomes indistinguishable and therefore irrelevant.

Institutional obstructions	Fallacies
Questioning the source of information	Linear projection
Questioning the relevance of information	Significant exception
Diluting/misusing the information	-

Table 6: Overview of impediments on learning

### 3.5 Sub conclusion

As this chapter demonstrates, a large number of factors that drive, influence and impede the learning process by military organizations can be identified. Somewhat curiously, the external factors are what set the military apart from other organizations. The interaction between domestic and international political considerations, fused with the strategic culture and threat perception, make for a unique environment for armed forces. The internal shapers can apply in a general sense to other organizations as well. All organizations are influenced by leadership, organizational culture, learning capacity, and internal politics. By themselves however, these factors have little explaining power for the process of learning by military organizations. Instead, the dynamic interaction of these factors influencing the process must be studied against the empirical data on adaptation in and beyond conflict.<sup>94</sup> By integrating these factors, and examining them against the specific outcomes of learning (manifestations), the course of this process can be analyzed.

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 94 Marcus (2018). *Israel's Long War With Hezbollah*, p. 6; Stoecker (1998). *Forging Stalin's Army*, p. 18.



## 4. Synthesis

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With the overview of the attributes of learning by armed forces and the exploration of the discourses on military innovation and organizational learning, this section endeavors to provide a synthesis of these fields. This must lead to an analytical model and a frame of reference on the military learning processes and the influence of the identified factors on it. With the aid of these instruments, subsequent research can analyze the empirical data and establish how militaries learn during, and after conflict.

From a theoretical perspective the study on how armed forces learn during conflict is germane, but incomplete. The resulting overriding question is to what extent these lessons are retained in the context of another conflict.<sup>1</sup> Are the lessons regarded as applicable solely to the previous conflict? Does the altered context lead to further contemplation and a reappraisal of the knowledge acquired in wartime? What is the influence of the new context on the lessons learned? To paraphrase William Fuller, is the previous conflict the exception to the rule or is it a portent of all future wars?<sup>2</sup> Both approaches are of course problematic, so managing experience and knowledge from past wars is relevant in order to find a balance between retaining useful lessons, and sufficient flexibility and adaptability.

An oft-cited problem in this literature is that formal institutional learning mechanisms, and knowledge repositories struggle to keep up with the operational challenges and the pace of operations. Invariably, service members turn to informal networks to acquire the sought knowledge.<sup>3</sup> While these informal networks are expedient in sharing knowledge, overreliance on informal learning has the inherent weakness that it can easily lead to evaporation of the knowledge, in particular due to personnel turnover.<sup>4</sup> While this turnover is pertinent in peace time, its effects are exacerbated during deployments, where rotations are scheduled in intervals ranging from roughly five to twelve months.

In the literature on how militaries learn from conflict, the dialectic between newly acquired knowledge and the perceived core competences is a common theme. In Western armed forces, this tension is manifested by the practice of irregular warfare during missions and the perceived importance of preparing for interstate conventional war.<sup>5</sup> Some scholars and officers see

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1 The literature on military change often distinguishes between war and peace time. However, Western armed forces are almost continuously deployed and as such part of a conflict. These new conflicts affect how the lessons of previous conflicts are regarded and whether they are still relevant. For instance, Western armed forces are still engaged in Afghanistan, while the character of this engagement has changed profoundly over the years and currently does not capture as much attention as previously. Other missions or potential conflicts take precedence in conceptual deliberations instead of the more narrow Resolute Support Mission.

2 Fuller (2008). What is a military lesson?

3 Kollars (2015). *War's Horizon*, p. 545-548; Serena (2011). *A Revolution in Military Adaptation*, p. 161-163.

4 Catignani (2014). *Coping with Knowledge*, p. 58-59; De Winter (2015). *The Army after Afghanistan*, p. 47-49.

5 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*.

experience in irregular war as detrimental to the ability of fighting conventional adversaries.<sup>6</sup> This is a reflection of the central theme of organizational learning theory, which theorizes 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, routine operations 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. 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”.<sup>7</sup> Furthermore, they contend that this penchant towards conventional war cannot be wished away. When change is forced on military organizations, this will erode basic capabilities.<sup>8</sup> Yet, this distinction between irregular war and conventional war is not only unhelpful for analyzing conflicts, it is also false. Contemporary warfare requires both the ability to combat capable opponents as well as employing other, non-kinetic instruments. Where the former is within the competency of armed forces, the latter is still more problematic. Striking a balance between these options, and knowing when and how to deploy them, is more of an art than a science.

If a workable balance between exploitation and exploration is found, organizational instruments must be in place that help promoting changes to the organization. An important and quintessential military instrument is doctrine. While the characteristics and utility of doctrine will be examined further on in this chapter, it is important to note here that doctrine should foster both common understanding as well as the capability of critical thought among officers.<sup>9</sup> The knowledge enshrined in doctrine must then be propagated to (officer) education and unit training, so that it transcends into practical knowledge.<sup>10</sup>

While the availability and free flow of knowledge throughout a military organization is a necessary condition for military change, it is by no means sufficient. For this, the ability to utilize the knowledge to enact alterations to the organization and its processes is needed.<sup>11</sup> Tom Dyson asserts that the defining organizational trait that shapes this ability, is a culture that values initiative, creativity and flexibility. These aspects are envisioned in Western militaries in the concept of “mission command”, in which orders are essentially limited to objective and

6 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.

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

8 Ibidem, p. 15-16.

9 Harald Hoiback (2016). The Anatomy of Doctrine and Ways to Keep It Fit. *The Journal of Strategic Studies*, 39(2), p. 192.

10 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.

11 Raphael Marcus (2015). Military Innovation and Tactical Adaptation in the Israel-Hizballah Conflict: The Institutionalization of Lesson-Learning in the IDF. *The Journal of Strategic Studies*, 38(4), p. 523-525.

intent, and decision making authority is delegated to lower levels in order to allow for extensive freedom of action. The resulting knowledge must be supported by the military leadership to foster change, which suggests that the tenets of mission command must extend to higher echelons of the organization.<sup>12</sup>

## 4.1 Three strands of learning

While examining the vast body of literature on organizational learning, and military change, a recurring theme is the distinction between two modes of learning. First, the informal learning by individuals or units that tries to address organizational deficiencies during routine operations. In a military context this would translate to adjusting and adapting to operational challenges during missions. The second mode of learning is that which changes the strategy, structure or the processes of the organization. As this type of change affects a significant part of the organization, it requires the attention, resources, and above all, the acceptance of the organization's leadership. An example of this from a military perspective is the U.S. military's turn to a population centric counterinsurgency approach and implementation of some of its concepts in Iraq and Afghanistan. One distinguishing feature of both modes of learning in armed forces is that these organizations will face an adversary that will also learn, thereby spurring an "adaptation race" in order to attain victory, or at least stave off defeat.<sup>13</sup>

This research aims to take the analysis of learning in conflict a step further by examining to what extent the knowledge acquired during conflict is retained after (the commitment to) the conflict has ended. In other words, how are the lessons from conflict perceived and institutionalized outside of their original context? As stated in the introduction of this research, Western armed forces have been said to neglect or even discard the lessons learned during their engagements in Iraq and Afghanistan in the early twenty-first century. If Western militaries have proven to be adept at learning during recent unsuccessful counterinsurgency campaigns, but discard this knowledge afterwards, this perceived aptitude is nothing more than a consolation prize.

This research paper therefore hypothesizes that the lessons learned from a conflict are perceived and handled differently after the conflict has ended, with a potentially altered strategic environment than 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. Ultimately, an analytical model based on a combination of the models by Downie and Hoffman will be constructed that incorporates these strands and shows the process of learning in and from conflict.

12 Tom Dyson (2019). The military as learning organisation: establishing the fundamentals of best-practice in lessons learned. *Defence Studies*, p. 810.

13 Williamson Murray (2011). *Military Adaptation in War: With Fear of Change*. New York: Cambridge University Press, p. 12.

#### 4.1.1 Informal organizational learning in conflict

The first identified strand of informal learning by units invariably takes place during operations.<sup>14</sup> 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.<sup>15</sup> 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.<sup>16</sup> 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 from other organizations, the wider organization is not necessarily affected by this learning process.<sup>17</sup>

The notion of informal learning does not mean that organizational arrangements are irrelevant.<sup>18</sup> 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.<sup>19</sup> 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.<sup>20</sup> This decision was entirely within the purview of the battalion commander. Yet he will 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.<sup>21</sup> While this approach yielded results, 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 additional intelligence analysis capacity was in order for 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.

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

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

16 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.

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

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

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

20 Ibidem, p. 69.

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

In some tightly knitted units, such as special operations forces with greater continuity in personnel, informal learning can be shared and utilized for acquiring new competencies more easily. For example, the Dutch Army Special Forces Regiment has its own training component and center of excellence, staffed by operators with experience in special operations. These organizational arrangements and resources help the regiment to retain knowledge from operations.<sup>22</sup> When such arrangements 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. 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 oriented towards other type of missions.<sup>23</sup>

If the knowledge is to be preserved, well-placed individuals such as officers placed in educational roles, can help foster knowledge retention and dissemination. Eventually, the validity of this knowledge must be accepted by a sufficient portion of the organizational leadership to become institutionalized. In a study on how the United States Marine Corps adapted to combating insurgencies in the years preceding the Second World War, Keith Bickel shows how these experiences were institutionalized in doctrine by officers who advocated the necessity for a conceptual foundation for fighting “small wars”.<sup>24</sup> These officers were ultimately successful in spite of resistance by the higher echelons of the US Marine Corps that promoted other competencies, in particular amphibious warfare against a conventional adversary. Informal learning is therefore necessary to overcome operational challenges. However, acceptance and dissemination by the wider organization can ensure that the knowledge is available to all units and individuals that can benefit from it. Furthermore, some challenges supersede the competencies of a single unit or commander, thereby requiring additional resources or analytical capacity. Such challenges should prompt a wider organizational response.

#### 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 acknowledge 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

22 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.

23 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.

24 Keith B. Bickel (2001). *Mars Learning: The Marine Corps' Development of Small Wars Doctrine, 1915-1940*. Boulder: Westview Press, p. 235-236.

project can be deemed only relevant to that specific context, which will lead to the evaporation of knowledge, prohibiting future use.<sup>25</sup>

A telling example 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.<sup>26</sup>

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. An example of this 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 process and analyze the intelligence data acquired by the units.<sup>27</sup>

Other examples of organizational adaptation during conflict include drafting of (interim) doctrinal publications and altering or augmenting the organization of deployed units. Again, the publication of FM 324 by the United States military serves as a useful example. The operational challenges in Iraq formed the direct incentive to draft this document. Furthermore, it was in large part inspired by the informal lessons learned by deployed units.<sup>28</sup> The subsequent "Surge" in resources and troop levels, while concurrently employing concepts from FM 324 were a, if not the, prototypical case of organizational adaptation in conflict.

The described American organizational responses were shaped by the pressures the war in Iraq exerted on the U.S. military and the 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 be lost. 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

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25 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.

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

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

28 See for example: Conrad Crane (2016). *Cassandra in Oz*. Annapolis: Naval Institute Press; David Ucko (2009). *The New Counterinsurgency Era*. Washington DC: Georgetown:James Russell (2011). *Innovation, Transformation and War: Counterinsurgency Operations in Anbar and Ninewa Provinces, Iraq, 2005-2007*. Stanford: Stanford University Press.

strategic challenges have arisen and the lessons are deemed detrimental to the core competencies of fighting conventional opponents.<sup>29</sup>

#### 4.1.3 Institutional inter conflict learning

The third, and final, strand of learning is that when armed forces retain lessons beyond a conflict. When the strategic context of a military organization has changed, the hard-won experience of the previous war can be viewed from a different 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 interest taken by 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, although the conflict in Afghanistan is far from resolved, large Western commitments to the country have ended and the role of the residual troops has changed significantly. Moreover, the American disentanglement from Iraq in 2011 has turned out to be premature. Knowledge pertaining to this theatres will likely remain relevant for the foreseeable future.<sup>30</sup> 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.<sup>31</sup>

The main question here is how the 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 on 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 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.<sup>32</sup>

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

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

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

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

32 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: ; Raphael Marcus (2018). *Israel's Long War With Hezbollah: Military Innovation and Adaptation Under Fire*. Washington D.C.: Georgetown University Press, p. 12.

knowledge can, and should, be reflected in the curricula of military academies and command, and staff colleges. Furthermore, the knowledge should be put into practice in training scenarios, so officers and enlisted personnel can get acquainted to it in controlled environments.

Institutionalization of lessons learned can be manifested through the procurement of new materiel and the implementation of associated concepts and organizational structures. For example, the Royal Netherlands Air Force has acquired Unmanned Aerial Vehicles (UAV's) of the MQ-9 (Reaper) type. These flying platforms have proven their worth for Intelligence, Surveillance and Reconnaissance (ISR) tasks in Afghanistan, where Dutch forces were on occasion supported by such platforms during operations. Although the requirement for these UAV's for the purpose of intelligence collection had been noted since the Dutch commitment to Southern Afghanistan (2006-2010), the acquisition has been postponed repeatedly due to strained budgets. Beyond the introduction of the new materiel, new organizational elements had to be established to operate the equipment, and to process and analyze the data collected by the UAV's. Naturally, this had consequences for the education and training of the associated personnel.<sup>33</sup>

Another example of institutionalization of lessons from previous conflicts is the establishment of Security Force Assistance Brigades (SFABs) by the United States Army. The purpose of the brigades is to “develop the capacity and capability of foreign security forces to facilitate the achievement of US strategic objectives, in coordination with joint, interagency, and multinational forces”.<sup>34</sup> The personnel complement of the SFABs consist of approximately 600 officers and senior non-commissioned officers (NCOs), who are specifically selected and trained for this task. Furthermore, each brigade is regionally aligned to ensure that the unit can accumulate extensive local knowledge on culture, geography and language.<sup>35</sup> Whether these units will be more successful in training local security forces can be subject to debate. Nevertheless, the United States Army has recognized a deficiency in its performance during its engagements in Afghanistan and Iraq, and has responded by establishing six new brigades with a specific role. As such, this example reflects institutional learning.

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 in future wars. However, institutionalization of knowledge is not a normative prescription in the sense that institutional learning is 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

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33 Ministry of Defence. (2018). *Letter to Parliament, nr 30806-47: Unmanned Aerial Vehicle (UAV)*. The Hague: Ministry of Defence.

34 United States Army. (2018, April). *Security Force Assistance Brigade: Operational and Organizational Concept*. Retrieved from fortbenningusa.org: [https://fortbenningusa.org/wp-content/uploads/2018/04/TCM\\_SFAB\\_2018.pdf](https://fortbenningusa.org/wp-content/uploads/2018/04/TCM_SFAB_2018.pdf).

35 Department of the Army (2018). *Army Techniques Publication 3-96.1: Security Force Assistance Brigade*. Washington D.C.: Department of the Army.

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.

## 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. Where 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.

### 4.2.1 Steps of learning

In the first and second chapters of this paper several models have been introduced that are derived from organizational learning theory. These are comprised of several steps, as shown in the tables in chapters 1 and 2. Evidently, these models have inspired the ideas underpinning this paper to a large extent. Dissecting the process of learning in discrete steps can help analyzing learning in military organizations. Nevertheless, I propose that some modifications in these steps are in order. To incorporate the three strands of learning, six steps are identified: evaluation, identification, response, adaptation, contemplation, and institutionalization (see table 7).

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 7: 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).<sup>36</sup> The adaptation step implements and integrates the solutions for the duration of the conflict.<sup>37</sup>

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. 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.

#### 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.<sup>38</sup> The perception of these experiences will be shaped by the tacit knowledge that resides in the organization and its members.

Individual members can contribute to such evaluations. In part, this contribution can differ according to rank, specialty and unit level at which the operation was conducted. For instance, after a patrol by a squad, every squad member can theoretically provide input to the evaluation. An operation by a battalion will likely be curtailed to input by the commanders of subunits and senior staff. In practice, the individual contributions to this step in the process are less relevant than the combined outcomes. While individual experiences are indeed relevant, from the perspective of organizational learning research the collective evaluations are more germane as starting point of the process.

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

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

38 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#](https://othjournal.com/2020/06/22/war-is-a-learning-competition/amp/?__twitter_impression=true#)

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.<sup>39</sup> Obviously, this requires clear objectives that are to be reached, and identifying 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.<sup>40</sup> 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. In such missions, the objectives can include: stabilization, economic reconstruction, security sector reform, humanitarian aid, and assisting host-nation governance.<sup>41</sup> 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. As many of the other objectives can be considered to be beyond the routine tasks of the military, it can be hard to assess the developments in these non-military spheres.<sup>42</sup> 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 information in a timely fashion will be beyond operational staffs.<sup>43</sup>

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.<sup>44</sup> Therefore, quantitative metrics must be grounded in a qualitative understanding of the conflict and the environment.<sup>45</sup>

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39 Ben Connable (2012). *Embracing the Fog of War: Assessment and Metrics in Counterinsurgency*. Santa Monica: RAND Corporation, p. 24. Connable provides a helpful distinction between campaign assessment and intelligence on p. 3.

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

41 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. 335-336.

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

43 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.

44 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

45 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.

The complexity of assessing counterinsurgency campaigns is illustrated by the American efforts in Vietnam. 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. 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.<sup>46</sup> Concerning the “body-count”, this metric had by itself relatively little informative value of 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”.<sup>47</sup> 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 that missions. Metrics that supposedly conveyed progress without qualitative context and gave an overoptimistic account of the conflict. Essentially such metrics were affected by political considerations and held little operational value.<sup>48</sup>

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.<sup>49</sup> 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 units’ performance.

#### 4.2.1.2 Identification

By assessing the conduct of tactical activities, operations or the progression of a campaign, commanders can obtain insight whether their organizations are performing in accordance to 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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46 Ben Connable (2012). *Embracing the Fog of War: Assessment and Metrics in Counterinsurgency*. Santa Monica: RAND Corporation, p. 111-131.

47 Ibidem, p. 107-108.

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

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

For this, 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 for 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.<sup>50</sup> One commonly recognized deficiency is when the organization does not sufficiently understand the operational environment as its intelligence is inadequate.<sup>51</sup>

Identifying performance gaps informs the units and organization whether these deficiencies can be addressed by units 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 in 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 of 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.<sup>52</sup> 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 applying more firepower. However, the causes of the violence can be different than analyzed, 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.

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

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

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

### 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).<sup>53</sup> At the same time, entirely novel approaches might be experimented with. This 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 various 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 a different 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.<sup>54</sup> Conversely, if experimentation and risk taking is rewarded, and authority is devolved to the lower levels, both individuals and units will be more keen 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.<sup>55</sup> This can both be 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 experiences of other armed forces. This form of emulation 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.<sup>56</sup>

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

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

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

56 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.

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”.<sup>57</sup>

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 back to the identification step to conduct further analysis of the deficiency.

#### 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 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 an organizational culture that 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 pre-deployment training, doctrinal publications or establishing new organizational structures.<sup>58</sup>

The formal and informal learning processes towards adaptation in conflict can be concurrent and independent, reflecting 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 will subsequently disseminating it formally to other units that are involved in the current campaign, thereby implementing it throughout the institution. Conversely, as formal adaptations are diffused, they will affect the deployed units who can 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, if the lower echelons

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57 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.  
58 John Nagl (2002). *Learning to Eat Soup with a Knife: Counterinsurgency Lessons from Malaya and Vietnam*. Chicago: Chicago University Press, p. 7.

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.<sup>59</sup>

The adaptations will subsequently affect the *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 making further adaptations, spurring another cycle of learning. A prominent effect can be that the adversary is forced to react on one's own adaptations. When, on the other hand, no impact is discernible, this warrants making adjustments to the performance of both the organization as the units. In sum, this underwrites the primacy of the *evaluation* step.

#### 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 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.

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 by a thorough reappraisal of the conflict.<sup>60</sup> Furthermore, new potential responses to similar responses may be found. Finally, a campaign evaluation can assess the effect that the adaptations had during conflict.<sup>61</sup> Theoretically, a thorough and candid evaluation benefits from the absence of operational pressures.<sup>62</sup> In practice, other considerations such as new campaigns or reorganizations will often form distractions to such evaluations. Ultimately, a campaign evaluation can yield an array of lessons from the last conflict for the organization.

Unquestioningly implementing knowledge from the latest conflict is of course not enough. Instead, the relevance of lessons and concepts must be weighed against a thorough examination

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59 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.

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

61 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.

62 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.

of the current and future strategic context.<sup>63</sup> States, and their armed forces, often engage in strategic analysis, and forecasts.<sup>64</sup> Such strategic assessments often include threat perceptions and guidance for defense policy. The perceived threats in the strategic environment will shape the vision on what military capabilities are required to meet them.<sup>65</sup> Evidently, predicting the future of warfare is a tall order. Nevertheless, trends and developments can be discerned by the keen observer.

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.<sup>66</sup> Some 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.<sup>67</sup> This does not augur well for retaining the lessons from the previous conflicts, as Western militaries are prone to revert back to their normal concepts, and organizational structures.<sup>68</sup>

In a more general sense, Western armed forces prepare for the most dangerous strategic scenario's and seek to prevent surprise attacks that results in an instantaneous defeat.<sup>69</sup> 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.<sup>70</sup> 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 neglecting the continuities. Furthermore, this exploration is usually focused on exploiting their core competency: fighting conventional wars.<sup>71</sup> Emphasizing on technological developments tends to disregard explorations in other competencies that are needed for

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

64 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.

65 Murray (1996). *Military Innovation*, p. 304-306.

66 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.

67 Porch (2013). *Counterinsurgency*, p. 318-345.

68 Hasselbladh and Yden (2019). *Military Organizations*, p 15-17.

69 Freedman (2017). *Future of War*, p. 277-279.

70 Nolan (2017). *Allure of Battle*, p. 572-577.

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

peacekeeping and stabilization operations.<sup>72</sup> 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.<sup>73</sup>

In sum, lesson retention beyond conflict requires both evaluation and strategic analysis. Candid evaluation of the last campaign can offer pertinent insights in the military's performance and how to enhance it. The resulting lessons must then be weighed against a thorough analysis of the future environment to assert their relevance and how they can be incorporated.

#### 4.2.1.6 Institutionalization

The sixth and final 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 lead to change in the 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 TTP's, 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 to ostensibly institutionalize the knowledge without it being internalized by its members, hence losing its value.<sup>74</sup>

The main difference with adaptation (step 4) is that the knowledge retained in the contemplation step is assessed as being of enduring relevance. It 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.<sup>75</sup> 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 forms 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.

72 Tim Sweijts and Frans Osinga (2020). Maintaining NATO's Military Edge, the Challenge for Europe. Forthcoming

73 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>

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

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

### 4.2.2 The model

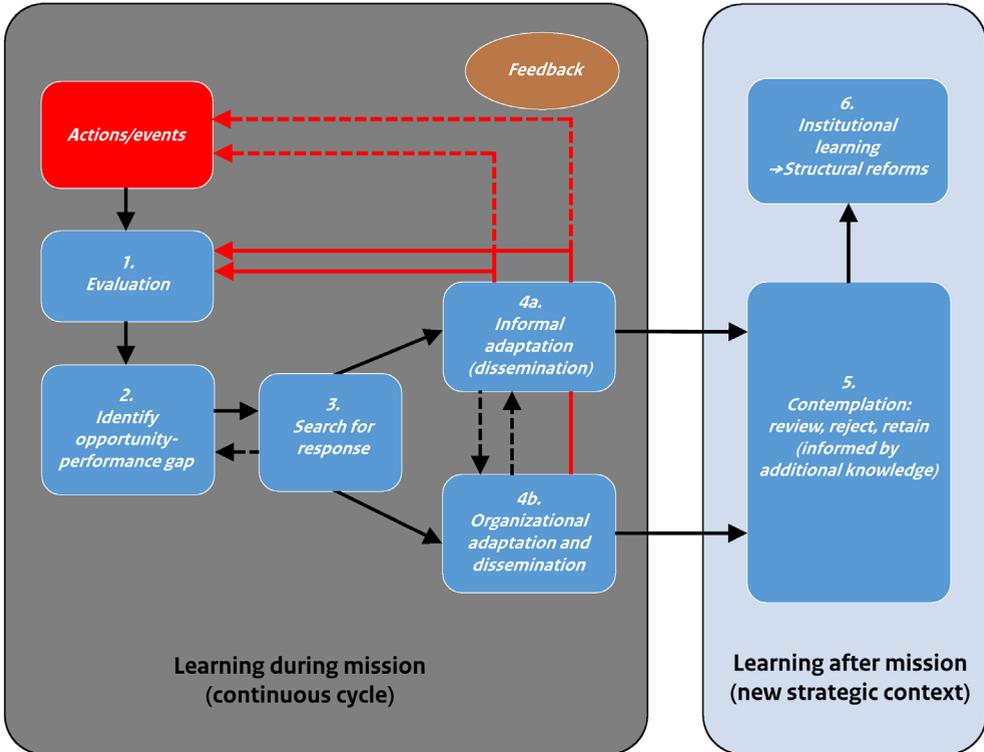


Figure 3: The model for institutional learning

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 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 the constituent steps. For 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 references 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 is that it recognizes the distinct dynamics of learning in conflict, and retaining those lessons afterwards. However, 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 regard of the dynamics of learning in relation to conflict. What the model cannot convey is therefore that multiple learning processes can occur simultaneously, whether formal or informal. 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 International Security Assistance Force in Afghanistan (ISAF). After its end in 2014, it was succeeded by the Resolute Support Mission (RSM). This new mission focuses on Security Force Assistance, rather than direct population centric counterinsurgency operations. The majority of the lessons learned during ISAF will be relevant to the operations of RSM as the conflict for all practical purposes is the same. Moreover, the Western dichotomy of the missions will probably be lost on the Afghan population in general, and the adversaries in particular. A final consideration is 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 been continuously been deployed to one expeditionary 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.

### 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. First of all, 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, that 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 analyses are necessary.

## 5. Conclusion

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Learning from conflict is a pertinent subject, as the vast amount of literature attests. However, as of yet how armed forces learn and change based on experience is not clearly understood. For instance the field of military innovation studies encompasses more than just learning from wartime experience. An important element of this literature is how armed forces incorporate new technology and concepts. Although these topics can be related, there is no overarching explanation of how armed forces change. Increasingly, organizational learning theory is applied to the study of military learning during conflict. Still, it can be argued that this field has not been utilized to its potential. Moreover, a relevant question is whether learning processes in relation to combat operations have unique attributes, compared to those in other organizations. This research paper'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. As the chapter shows, this process can be visualized in various models. Although these models and their constituent steps diverge, they emphasize different aspects of the process and can be used as analytical tools to study organizational learning. 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 scholars who contend that organizational learning is too deterministic and technocratic seems to be based on a cursory glance on the literature and the models of learning.

By assessing the state of the art of military innovation studies, the second chapter shows that there is a wealth of literature on how militaries adapt and change. Despite the justified theoretical critique on the field, the empirical research on wartime adaptations yields considerable insight in the process of learning by military organizations. In recent years the field saw several topics of particular interests. A first noticeable trend is the increased attention for learning that originates at grass-roots level ("bottom-up" adaptation). This ties in with a second trend, in which organizational learning is increasingly utilized to study wartime adaptation. Another facet of the recent literature is the emphasis on the influence of culture on adaptation and change in militaries. A final notable element is the consideration for adaptation by non-Western military organizations, both in regular armies as in non-state actors. The contribution of this field is

that it demonstrates how armed forces adapt to their environment. From this, the attributes of military organizations can be distilled.

The third chapter elaborates on the attributes 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. Technology forms another incentive, both as a threat and as an opportunity. 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. 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 various factors. Moreover, the influencing factors have a dynamic interplay, making isolation of one shaper artificial. Potentially, these factors can be consolidated in broader categories as more empirical research is conducted. The final part of this chapter describes impediments of learning. These can be categorized in obstructions that are fueled by organizational politics, and those that are a result of faulty analysis.

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 research paper establishes an analytical model comprising of six steps. The first four identified steps are evaluation, identification, reaction and adaptation, and 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. Ultimately, the process of learning does not inevitably lead to increased proficiency or strategic success. The adversary can learn and adapt as well, thereby potentially mitigating any improvements. Moreover, the incorporated adaptations might not work well as a result of faulty analysis of the campaign, the performance gap or the proposed solution. 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 synthesis of organizational learning theory and military innovation studies thus leads to a new analytical model and a comprehensive frame of reference. To examine learning processes in relation to conflict, both elements must be applied in conjunction. For further research, conflicts and their legacies can be studied by using both aspects, in order to reconstruct the learning processes and how they were shaped. In the last decades, Western armed forces have predominantly been engaged in counterinsurgency campaigns, stabilization operations, and peacekeeping missions. As a result, empirical data on high-intensity conventional war is scarce. The majority of knowledge underpinning this research has consequently been drawn from the more recent "small wars". Nevertheless, the proposed analytical model and frame of reference have been constructed regardless of conflict type. Of course, in-depth case study can prove that the dynamics of learning can differ in conventional wars from counterinsurgency campaigns, and vice-versa. Ultimately, this research paper contributes to the conceptual thinking on learning processes by armed forces in relation to conflict. Utilizing the model and frame of reference in case studies can lead to refinement or even refutation of these elements.

## Bibliography

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- Adamsky, D. (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.
- Adamsky, D., & Inge Bjerga, K. (Eds.). (2012). *Contemporary Military Innovation: Between anticipation and adaptation*. Abingdon: Routledge.
- Alderson, A. (2009). *The Validity of British Counterinsurgency Insurgency Doctrine after the War in Iraq 2003-2009*. Cranfield: Cranfield University.
- Alderson, A. (2012). Influence, the Indirect Approach and Manoeuvre. *The RUSI Journal*, 157(1), 36-43.
- Alderson, A. (2012). The British Approach to COIN and Stabilisation: A Retrospective on Developments since 2001. *The RUSI Journal*, 157(4), 62-71.
- Alderson, A. (2014). 'Learn from Experience' or 'Never Again'. *The RUSI Journal*, 159(1), 40-48.
- Altman, Y., & Iles, P. (1998). Learning, leadership, teams: corporate learning and organisational change. *The Journal of Management Development*, 17(1), 44-55.
- Angstrom, J., & Honig, J. W. (2012). Regaining Strategy: Small Powers, Strategic Culture, and Escalation in Afghanistan. *Journal of Strategic Studies*, 35(5), 663-687.
- Aragon, M. I., Jimenez, D. J., & Valle, R. S. (2013). Training and performance: The mediating role of organizational learning. *Business Research Quarterly*, 17, 161-173.
- Argote, L., & Miron-Spektor, E. (2010). Organizational Learning: From Experience to Knowledge. *Organization Science*, 22(5), 1123-1137.
- Argyris, C. (1977). Double Loop Learning in Organizations. *Harvard Business Review*, 55(5), 115-124.
- Askonas, J. D. (2019). *A Muse of Fire: Why the U.S. Military Forgets What It Learns in War*. Oxford: St Cross College.
- Avant, D. A., & Lebovic, J. H. (2002). U.S. Military Responses to Post-Cold War Missions. In T. Farrell, & T. Terriff (Eds.), *The Sources of Military Change: Culture, Politics, Technology* (pp. 139-160). Boulder: Lynne Rienner.
- Avant, D. D. (1993). The Institutional Sources of Military Doctrine: Hegemons in Peripheral Wars. *International Studies Quarterly*, 37(4), 409-430.

Bacevich, A. J. (1986). *The Pentomic Era: the US Army between Korea and Vietnam*. Washington DC: National Defense University Press.

Bailey, J. B. (2006). Military history and the pathology of lessons learned: the Russo-Japanese War, a case study. In W. Murray, & R. H. Sinnreich (Eds.), *The Past as Prologue: The Importance of History to the Military Profession* (pp. 170-194). Cambridge: Cambridge University Press.

Bailey, J., Iron, R., & Strachan, H. (Red.). (2013). *British Generals in Blair's Wars*. Farnham: Ashgate.

Barno, D., & Bensahel, N. (2020). *Adaptation under Fire: How Militaries Change in Wartime*. New York: Oxford University Press.

Barry, B. (2017). *Harsh Lessons: Iraq, Afghanistan and the Changing Character of War*. Abingdon: Routledge.

Basten, D., & Haamann, T. (2018). Approaches for Organizational Learning: A Literature Review. *SAGE Open*, 1-20.

Belle, S. (2016). Organizational learning? Look again. *The Learning Organization*, 23(5), 332-341.

Bennett, C. J., & Howlett, M. (1992). The lessons of learning: Reconciling theories of policy learning and policy change. *Policy Sciences*, 25, 275-294.

Berends, H., & Antonacopoulou, E. (2014). Time and Organizational Learning: A Review and Agenda for Future Research. *International Journal of Management Reviews*, 16, 437-453.

Berends, H., & Lammers, I. (2010). Explaining Discontinuity in Organizational Learning: A Process Analysis. *Organization Studies*, 31(8), 1045-1068.

Berman, E., Felter, J. H., & Shapiro, J. N. (2018). *Small Wars, Big Data: The Information Revolution in Modern Conflict*. Princeton: Princeton University Press.

Berman, L. (2012). Capturing Contemporary Innovation: Studying IDF Innovation against Hamas and Hizballah. *Journal of Strategic Studies*, 35(1), 121-147.

Betz, D., & Cormack, A. (2009). Hot War, Cold Comfort: A Less Optimistic Take on the British Military in Afghanistan. *The RUSI Journal*, 154(4), 26-29.

Bhat, A. B., Verma, N., Rangnekar, S., & Barua, M. K. (2012). Leadership style and team processes as predictors of organisational learning. *Team Performance Management*, 18(7/8), 347-369.

Bickel, K. B. (2001). *Mars Learning: The Marine Corps' Development of Small Wars Doctrine, 1915-1940*. Boulder: Westview Press.

Biddle, S., Friedman, J. A., & Shapiro, J. N. (2012). Testing the Surge: Why Did Violence Decline in Iraq in 2007? *International Security*, 37(1), 7-40.

Bjerga, K. I., & Haaland, T. L. (2010). Development of Military Doctrine: The Particular Case of Small States. *The Journal of Strategic Studies*, 33(4), 505-533.

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

Broekhof, M., Kitzen, M., & Osinga, F. (2019). A Tale of Two Mosuls: the resurrection of the Iraqi armed forces and the military defeat of ISIS. *Journal of Strategic Studies*.

Brun, I. (2010). 'While You're Busy Making Other Plans' - The 'Other RMA'. *Journal of Strategic Studies*, 33(4), 535-565.

Burnes, B., Cooper, C., & West, P. (2003). Organisational learning: the new management paradigm? *Management Decision*, 41(5/6), 452-464.

Burton, B., & Nagl, J. (2008). Learning as we go: the US army adapts to counterinsurgency in Iraq, July 2004–December 2006. *Small Wars & Insurgencies*, 19(3), 303-327.

Byrne, B., & Bannister, F. (2013). Knowledge Management in Defence. *Defence Forces Review*, 71-93.

Carley, K. M., & Harrald, J. R. (1997). Organizational Learning Under Fire: Theory and Practice. *The American Behavioral Scientist*, 40(3), 310-332.

Catignani, S. (2012). 'Getting COIN' at the Tactical Level in Afghanistan: Reassessing Counter-Insurgency Adaptation in the British Army. *Journal of Strategic Studies*, 35(4), 513-539.

Catignani, S. (2014). Coping with Knowledge: Organizational Learning in the British Army? *The Journal of Strategic Studies*, 37(1), 30-64.

Causey, T. (2020, June 22). *War is a Learning Competition: How a Culture of Debrief Can Improve Multi-Domain Operations*. Opgehaald van Over the Horizon Journal: [https://othjournal.com/2020/06/22/war-is-a-learning-competition/amp/?\\_\\_twitter\\_impression=true#](https://othjournal.com/2020/06/22/war-is-a-learning-competition/amp/?__twitter_impression=true#)

Chiva, R., Ghauri, P., & Alegre, J. (2014). Organizational Learning, Innovation and Internationalization: A Complex System Model. *British Journal of Management*, 25, 687-705.

Clark, J. P. (2019, March 29). "Good Allies": International Perspectives on Afghanistan. Retrieved from The War Room: <https://warroom.armywarcollege.edu/articles/good-allies/>

Clemis, M. G. (2009). Crafting non-kinetic warfare: the academic-military nexus in US counterinsurgency doctrine. *Small Wars & Insurgencies*, 20(1), 160-184.

Cohen, E. A. (2004). Change and Transformation in Military Affairs. *The Journal of Strategic Studies*, 27(3), 395-407.

Cohen, E. A., & Gooch, J. (2006). *Military Misfortunes: The Anatomy of Failure in War*. New York: Free Press.

Cohen, W. M., & Levinthal, D. A. (1989). Innovation and Learning: The Two Faces of R&D. *The Economic Journal*, 99, 569-596.

Connable, B. (2012). *Embracing the Fog of War: Assessment and Metrics in Counterinsurgency*. Santa Monica: RAND Corporation.

Connable, B., & Libicki, M. C. (2010). *How Insurgencies End*. Santa Monica: RAND Corporation.

Cordesman, A. (2015). *Afghanistan at Transition: Lessons of the Longest War*. Lanham: Rowman & Littlefield.

Coticchia, F., & Moro, F. N. (2016). Learning From Others? Emulation and Change in the Italian Armed Forces Since 2001. *Armed Forces & Society*, 42(4), 696-718.

Crane, C. C. (2016). *Cassandra in Oz*. Annapolis: Naval Institute Press.

Crane, C. C., & Terrill, W. A. (2003). *Reconstructing Iraq: Insights, Challenges, and Missions for Military Forces in a Post-Conflict Scenario*. Carlisle: Strategic Studies Institute.

Crawford, V. P., & Sobel, J. (1982). Strategic Information Transmission. *Econometrica*, 50(6), 1431-1442.

Crossan, M. M., & Apaydin, M. (2010). A Multi-Dimensional Framework of Organizational Innovation: A Systemic Review of the Literature. *Journal of Management Studies*, 47(6), 1154-1191.

Crossan, M. M., Lane, H. W., & White, R. E. (1999). An Organizational Learning Framework: From Intuition to Institution. *Academy of Management Review*, 24(3), 522-537.

Crossan, M. M., Maurer, C. C., & White, R. E. (2011). Reflections on the 2009 AMR Decade Award: Do we have a theory of organizational learning? *Academy of Management Review*, 36(3), 446-460.

Darling, M. J., Sparkers Guber, H., Smith, J. S., & Stiles, J. E. (2016). Emergent Learning: A Framework for Whole-System Strategy, Learning, and Adaptation. *The Foundation Review*, 8(1), 59-73.

Davidson, J. (2010). *Lifting the Fog of Peace: How Americans Learned to Fight Modern War*. Ann Arbor: The University of Michigan Press.

De Coning, C., & Friis, K. (2011). Coherence and Coordination: The Limits of the Comprehensive Approach. *Journal of International Peacekeeping*, 15(1), 243-272.

De Long, D. W., & Fahey, L. (2000). Diagnosing cultural barriers to knowledge management. *The Academy of Management Executive*, 14(4), 113-127.

de Wijk, R., & Osinga, F. (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* (pp. 108-143). Stanford: Stanford University Press.

De Winter, S. (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).

Defense, D. o. (2018). *National Defense Strategy*. Washington D.C.

Department of the Army. (2018). *Army Techniques Publication 3-96.1: Security Force Assistance Brigade*. Washington D.C.: Department of the Army.

Di Schiena, R., Letens, G., Van Aken, E., & Farris, J. (2013). Relationship between Leadership and Characteristics of Learning Organizations in Deployed Military Units: An Exploratory Study. *Administrative Sciences*(3), 143-165.

Dimitriu, G., Tuinman, G., & van der Vorm, M. (2016). Formative Years: Military Adaptation of Dutch Special Operations Forces in Afghanistan. *Special Operations Journal*, 2(2), 146-166.

Dixon, P. (2009). 'Hearts and Minds'? British Counter-Insurgency from Malaya to Iraq. *The Journal Of Strategic Studies*, 32(3), 353-381.

Dixon, P. (2020). 'Lions led by donkeys'? Britain's war in Afghanistan, 2001-2014. *Capital & Class*, 1-21.

Doubler, M. D. (1994). *Closing with the Enemy: How GIs Fought the War in Europe, 1944-1945*. Lawrence: University Press of Kansas.

Dougherty, D. (1999). Organizing for Innovation. In S. R. Clegg, C. Hardy, & W. R. Nord (Eds.), *Managing Organizations* (pp. 174-189). London: SAGE Publications.

Downes-Martin, S. (2011). Operations Assessment in Afghanistan is Broken: What Is to Be Done. *Naval War College Review*, 64(4), 103-125.

Downie, R. D. (1998). Learning from Conflict: The U.S. Military in Vietnam, El Salvador, and the Drug War. Westport: Praeger.

Duarte Aponte, S. P., & Castaneda Zapata, D. I. (2013). A model of organizational learning in practice. *Estudios Gerenciales*, 29, 439-444.

Dyson, T. (2012). Organizing for Counter-insurgency: Explaining Doctrinal Adaptation in Britain and Germany. *Contemporary Security Policy*, 33(1), 27-58.

Dyson, T. (2019). The military as learning organisation: establishing the fundamentals of best-practice in lessons learned. *Defence Studies*, 1-23.

Dyson, T. (2020). Organisational Learning and the Modern Army: a new model for lessons-learned processes. Abingdon: Routledge.

Edwards, A. (2010). Misapplying Lessons Learned Analysing the utility of British counterinsurgency strategy in Northern Ireland, 1971-76. *Small Wars & Insurgencies*, 21(2), 303-330.

Eggereide, B., Rutledl, F., & Hennem, A. C. (2010). *Lessons Learned in the Norwegian Defence - Who Learns What, and Why?* Kjeller: Norwegian Defence Research Establishment.

Egnell, R. (2011). Lessons from Helmand, Afghanistan: what now for British counterinsurgency? *International Affairs*, 87(2), 297-315.

Fang, C., Lee, J., & Schilling, M. A. (2010). Balancing Exploration and Exploitation Through Structural Design: The Isolation of Subgroups and Organizational Learning. *Organization Science*, 21(3), 625-642.

Farrell, T. (1998). Culture and Military Power. *Review of International Studies*, 24(3), 407-416.

Farrell, T. (2008). The dynamics of British military transformation. *International affairs*, 84(4), 777-807.

Farrell, T. (2013). Back from the Brink: British Military Adaptation and the Struggle for Helmand. In T. Farrell, F. Osinga, & J. A. Russell (Eds.), *Military Adaptation in Afghanistan* (pp. 108-134). Stanford: Stanford University Press.

Farrell, T. (2013). Introduction: Military Adaptation in War. In T. Farrell, F. Osinga, & J. A. Russell (Eds.), *Military Adaptation in Afghanistan* (pp. 1-23). Stanford: Stanford University Press.

Farrell, T. (2018). Unbeatable: Social Resources, Military Adaptation, and the Afghan Taliban. *Texas National Security Review*, 1(3), 59-75.

Farrell, T., & Giustozzi, A. (2013). The Taliban at War. *International Affairs*, 89(4), 845-871.

Farrell, T., & Gordon, S. (2009). COIN Machine: The British Military in Afghanistan. *The RUSI Journal*, 154(3), 18-25.

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

Farrell, T., & Terriff, T. (Eds.). (2002). *The Sources of Military Change: Culture, Politics, Technology*. Boulder: Lynne Rienner Publishers.

Farrell, T., Osinga, F., & Russell, J. A. (Eds.). (2013). *Military Adaptation in Afghanistan*. Stanford: Stanford University Press.

Finkel, M. (2011). On Flexibility: Recovery from Technological and Doctrinal Surprise on the Battlefield. Stanford: Stanford University Press.

Fiol, C. M., & Lyles, M. A. (1985). Organizational Learning. *The Academy of Management Review*, 10(4), 803-813.

Fitzgerald, D. (2013). Learning to Forget: US Army Counterinsurgency Doctrine and Practice from Vietnam to Iraq. Stanford: Stanford University Press.

Foley, R. T. (2014). Dumb donkeys or cunning foxes? Learning in the British and German armies during the Great War. *International Affairs*, 90(2), 279-298.

Foley, R. T., Griffin, S., & McCartney, H. (2011). 'Transformation in contact': learning the lessons of modern war. *International Affairs*, 87(2), 253-270.

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

Freedman, L. (2013). *Strategy: A History*. Oxford: Oxford University Press.

Freedman, L. (2017). *The Future of War: A History*. London: Penguin.

- Friedman, B. A. (2017). *On Tactics: A Theory of Victory in Battle*. Annapolis: Naval Institute Press.
- Fuller, J. W. (2008). What is a military lesson? In T. G. Mahnken, & J. A. Maiolo (Eds.), *Strategic Studies: A Reader* (pp. 34-49). New York: Routledge.
- Galula, D. (1964). *Counterinsurgency Warfare: Theory and Practice*. Westport: Praeger Security International.
- Ganz, S. G. (2018). Ignorant Decision Making and Educated Inertia: Some Political Pathologies of Organizational Learning. *Organization Science*, 29(1), 39-57.
- Gentile, G. (2013). *Wrong Turn: America's Deadly Embrace of Counterinsurgency*. New York: The New Press.
- Gentile, G. P. (2009). A Strategy of Tactics: Population-centric COIN and the Army. *Parameters*, 39(3), 5-17.
- Giustozzi, A. (2015). *The Army of Afghanistan*. London: Hurst.
- Giustozzi, A. (2019). *The Taliban at War, 2001-2018*. London: Hurst.
- Goldman, E. O. (2002). The Spread of Western Military Models to Ottoman Turkey and Meiji Japan. In T. Farrell, & T. Terriff (Eds.), *The Sources of Military Change* (pp. 41-67). Boulder: Lynne Rienner.
- Goldman, E. O., & Andres, R. B. (1999). Systemic effects of military innovation and diffusion. *Security Studies*, 8(4), 79-125.
- Gompert, D. C., Kugler, R. L., & Libicki, M. C. (1999). *Mind the Gap: Promoting a Transatlantic Revolution in Military Affairs*. Washington D.C.: National Defense University Press.
- Grah, B., Dimovski, V., Snow, C. C., & Peterlin, J. (2016). Expanding the Model of Organizational Learning: Scope, Contingencies, and Dynamics. *Economic and Business Review*, 18(2), 183-212.
- Gray, C. (2001). The RMA and intervention: A sceptical view. *Contemporary Security Policy*, 22(3), 52-65.
- Griffin, S. (2011). Iraq, Afghanistan and the future of British military doctrine: from counterinsurgency to Stabilization. *international Affairs*, 87(2), 317-333.
- Griffin, S. (2017). Military Innovation Studies: Multidisciplinary or Lacking Discipline. *The Journal of Strategic Studies*, 40(1-2), 196-224.

Grissom, A. (2006). The future of military innovation studies. *The Journal of Strategic Studies*, 29(5), 905-934.

Gudmundsson, B. I. (1989). *Stormtroop Tactics" Innovation in the German Army, 1914-1918*. New York: Praeger.

Gupta, A. K., Smith, K. G., & Shalley, C. E. (2006). The Interplay between Exploration and Exploitation. *Academy of Management Journal*, 49(4), 693-706.

Haaland, T. L. (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), 999-1022.

Hammes, T. X. (2012). The Future of Counterinsurgency. *Orbis*, 56(4), 565-587.

Hao, Z., & Yunlong, D. (2014). Research on the relationship of institutional innovation, organizational learning and synergistic effect: An emperical study of Chinese university spin-offs. *Journal of Industrial Engineering and Management*, 7(3), 645-659.

Harkness, K. A., & Hunzeker, M. (2015). Military Maladaptation: Counterinsurgency and the Politics of Failure. *Journal of Strategic Studies*, 38(6), 777-800.

Harris, R., & Yan, J. (2019). The Measurement of Absorptive Capacity from an Economics Perspective: Definition, Measurement and Importance. *Journal of Economic Surveys*, 33(3), 729–756.

Hashimi, A. (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.

Hasselbladh, H., & Yden, K. (2019). Why Military Organizations Are Cautious About Learning? *Armed Forces & Society*, 1-20.

Haun, P. (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), 1-27.

Hill, A., & Gerras, S. (2016). Systems of Denial. *Naval War College Review*, 69(1), 109-132.

Hoiback, H. (2011). What is Doctrine? *The Journal of Strategic Studies*, 34(6), 879-900.

Hoiback, H. (2016). The Anatomy of Doctrine and Ways to Keep It Fit. *The Journal of Strategic Studies*, 39(2), 185-197.

- Holmqvist, M. (2003). A Dynamic Model of Intra- and Interorganizational Learning. *Organization Studies*, 24(1), 95-123.
- Hooker Jr, . R., & Collins, J. J. (Eds.). (2015). *Lessons Encountered: Learning from the Long War*. Washington DC: National Defense University Press.
- Horowitz, M. C. (2010). The Diffusion of Military Power: Causes and Consequences for International Politics. Princeton: Princeton University Press.
- Horowitz, M., & Rosen, S. (2005). Evolution or Revolution. *The Journal of Strategic Studies*, 28(3), 437-448.
- Howard, M. (1963). The Use and Abuse of Military History. *RUSI Journal*, 107(625), 4-10.
- Huber, G. P. (1991). Organizational learning: the contributing processes and the literatures. *Organization Science*, 2(1), 88-115.
- Hughes, G., & Tripodi, C. (2009). Anatomy of a surrogate: historical precedents and implications for contemporary counter-insurgency and counter-terrorism. *Small Wars & Insurgencies*, 20(1), 1-35.
- Huysman, M. (2000). An organizational learning approach to the learning organization. *European Journal of Work and Organizational Psychology*, 9(2), 133-145.
- Jensen, B. (2016). Escaping the iron cage: the institutional foundations of FM 3-24. counterinsurgency doctrine. *The Journal of Strategic Studies*, 39(2), 213-230.
- Jensen, B. M. (2016). *Forging the Sword: Doctrinal Change in the U.S. Army*. Stanford: Stanford University Press.
- Johnson, D. (2014, January 24). *Failure to learn: Reflections on a career in the Post-Vietnam Army*. Opgeroepen op August 23, 2019, van War on the Rocks: <https://warontherocks.com/2014/01/failure-to-learn-reflections-on-a-career-in-the-post-vietnam-army/>
- Johnson, J. L. (2018). *The Marines, Counterinsurgency and Strategic Culture*. Washington D.C.: Georgetown University Press.
- Jungdahl, A. M., & MacDonald, J. M. (2015). Innovation Inhibitors in War: Overcoming Obstacles in the Pursuit of Military Effectiveness. *The Journal of Strategic Studies*, 38(4), 467-499.
- Karlsrud, J. (2018). From Liberal Peacebuilding to Stabilization and Counterterrorism. *International Peacekeeping*, 1-21.

- Katagiri, N. (2014). *Adapting to Win: How Insurgencies Fight and Defeat Foreign States in War*. Philadelphia: University of Pennsylvania Press.
- Kier, E. (1997). *Imagining War: French and British Military Doctrine between the Wars*. Princeton: Princeton University Press.
- Kilcullen, D. (2009). *The Accidental Guerilla: Fighting Small Wars in the Midst of a Big One*. London: Hurst & Company .
- Kilcullen, D. (2013). *Out of the Mountains*. Oxford: Oxford University Press.
- Kilcullen, D. (2019). Strategic Culture. In P. R. Mansoor, & W. Murray (Eds.), *The Culture of Military Organizations* (pp. 33-52). Cambridge: Cambridge University Press.
- Kilcullen, D. (2020). *The Dragons and the Snakes: How the Rest Learned to Fight the West*. London: Hurst & Company.
- Kim, D. H. (1993). The Link between Individual and Organizational Learning. *Sloan Management Review*, 35(1), 37-50.
- King, A. (2012). Operation Herrick: the British Campaign in Helmand. In N. Hynes, & P. Marton (Eds.), *Statebuilding in Afghanistan: Multinational contributions to reconstruction* (pp. 27-41). Abingdon: Routledge.
- Kirwan, C. (2013). *Making Sense of Organizational Learning: Putting Theory into Practice*. Farnham: Gower Publishing.
- Kiszely, J. P. (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.
- Kitzen, M. (2012). Western Military Culture and Counterinsurgency: An Ambiguous Reality. *Scientia Militaria*, 40(1), 1-24.
- Kitzen, M. (2016). *The Course of Co-option: Co-option of local power-holders as a tool for obtaining control over the population in counterinsurgency campaigns in weblike societies*. Breda: Netherlands Defence Academy.
- Kitzen, M. (2019). The Netherlands' Lessons. *Parameters*, 49(3), 41-53.

Kitzen, M., Rietjens, S., & Osinga, F. (2013). Soft Power, the Hard Way: Adaptation by the Netherlands, Task Force Uruzgan. In T. Farrell, F. Osinga, & J. A. Russell (Eds.), *Military Adaptation in Afghanistan* (pp. 159-191). Stanford: Stanford University Press.

Kjellstrom Elgin, K., & Gilbert, P. (2019, September 25). *How the Army is (not) Preparing for the Next War*. Retrieved September 26, 2019, from The War Room: <https://warroom.armywarcollege.edu/articles/the-next-war/>

Knox, M., & Murray, W. (Eds.). (2001). *The Dynamics of Military Revolution, 1300-2050*. New York: Cambridge University Press.

Kollars, N. (2012). *By the Seat of Their Pants: Military Technological Adaptation in War*. Columbus: The Ohio State University.

Kollars, N. (2014). Military Innovation's Dialectic: Gun Trucks and Rapid Acquisition. *Security Studies*, 23(4), 787-813.

Kollars, N. (2015). Organising Adaptation in War. *Survival*, 57(6), 111-126.

Kollars, N. (2017). Genius and Mastery in Military Innovation. *Survival*, 59(2), 125-138.

Kollars, N. A. (2015). War's Horizon: Soldier-Led Adaptation in Iraq and Vietnam. *The Journal of Strategic Studies*, 38(4), 529-553.

Kraft, P. S., & Bausch, A. (2016). How Do Transformational Leaders Promote Exploratory and Exploitative Innovation? Examining the Black Box through MASEM. *Journal of Product Innovation Management*, 33(6), 687-707.

Krepinevich, A. F. (1986). *The Army and Vietnam*. Baltimore: The Johns Hopkins University Press.

Krepinevich, A. F. (1994). Cavalry to Computer: the Pattern of Military Revolutions. *The National Interest*, 37, 30-42.

Kronval, O., & Petersson, M. (2016). Doctrine and Defence Transformation in Norway and Sweden. *The Journal of Strategic Studies*, 39(2), 280-296.

Kuhn, T. S. (1962). *The Structure of Scientific Revolution*. Chicago: Chicago University Press.

Lane, P. J., Koka, B. R., & Pathak, S. (2006). The Reification of Absorptive Capacity: A Critical Review and Rejuvenation of the Construct. *Academy of Management Review*, 31(4), 833-863.

Lawrence, T. B., Mauws, M. K., Dyck, B., & Kleysen, R. F. (2005). The Politics of Organizational Learning: Integrating Power into the 4I Framework. *Academy of Management Review*, 30(1), 180-191.

Lee, C. (2019). The role of culture in military innovation studies: Lessons learned from the US Air Force's adoption of the Predator Drone, 1993-1997. *Journal of Strategic Studies*.

Levinthal, D. A., & March, J. G. (1993). The Myopia of Learning. *Strategic Management Journal*, 14, 95-112.

Lis, A. (2012). How to Strengthen Positive Organizational Behaviors Fostering Experiential Learning? The Case of Military Organizations. *Journal of Entrepreneurship, Management and Innovation*, 8(4), 21-34.

Lis, A. (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), 57-78.

Loch, C. H., & Huberman, B. A. (1999). A Punctuated-Equilibrium Model of Technology Diffusion. *Management Science*, 45(2), 160-177.

Long, A. (2006). On "Other War": Lessons from Five Decades of RAND Counterinsurgency Research. Santa Monica: RAND Corporation.

Long, A. (2008). Doctrine of Eternal Recurrence: The U.S. Military and Counterinsurgency Doctrine, 1960-1970 and 2003-2006. Santa Monica: RAND Corporation.

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

Lynch, J. (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>

Madsen, P. M., & Desai, V. (2018). No Firm Is an Island: The Role Population-Level Actors in Organizational Learning from Failure. *Organization Science*, 29(4), 739-753.

Mains, S., & Ad Ariely, G. (2011). Learning While Fighting: Operational Knowledge Management That Makes a Difference. *PRISM*, 2(3), 165-176.

Mansoor, P. R., & Murray, W. (Eds.). (2019). *The Culture of Military Organizations*. Cambridge: Cambridge University Press.

- March, J. G. (1991). Exploration and Exploitation in Organizational Learning. *Organization Science*, 2(1), 71-87.
- Marcus, R. D. (2015). Military Innovation and Tactical Adaptation in the Israel-Hizballah Conflict: The Institutionalization of Lesson-Learning in the IDF. *The Journal of Strategic Studies*, 38(4), 500-528.
- Marcus, R. D. (2018). *Israel's Long War With Hezbollah: Military Innovation and Adaptation Under Fire*. Washington D.C.: Georgetown University Press.
- Marcus, R. D. (2019). Learning 'Under Fire': Israel's improvised military adaptation to Hamas tunnel warfare. *The Journal of Strategic Studies*, 42(3-4), 344-370.
- McChrystal, S. A. (2011, February 21). It Takes A Network: The new frontline of modern warfare. *Foreign Policy*.
- McClory, S., Read, M., & Labib, A. (2017). Conceptualising the lessons-learned process in project management: Towards a triple-loop learning framework. *International Journal of Project Management*, 35, 1322-1335.
- McMaster, H. (2017). Learning from Contemporary Conflicts to Prepare for Future War. *Orbis*, 61(3), 303-321.
- McMaster, H. R. (2008). On War: Lessons to be Learned. *Survival*, 50(1), 19-30.
- Miller, K. D., & Martignoni, D. (2016). Organizational learning with forgetting: Reconsidering the exploration-exploitation tradeoff. *Strategic Organization*, 14(1), 53-72.
- Miller, P. D. (2016). Graveyard of Analogies: The Use and Abuse of History for the War in Afghanistan. *Journal of Strategic Studies*, 39(3), 446-476.
- Ministry of Defence. (2018). Letter to Parliament, nr 30806-47: Unmanned Aerial Vehicle (UAV). The Hague: Ministry of Defence.
- Moynihan, D. P. (2008). Learning under Uncertainty: Networks in Crisis Management. *Public Administration Review*, 68(2), 350-365.
- Moynihan, D. P. (2009). From Inter-crisis to Intra-crisis Learning. *Journal of Contingencies and Crisis Management*, 17(3), 189-198.
- Murray, W. (1996). Innovation: Past and Future. In W. Murray, & A. R. Millet (Red.), *Military Innovation in the Interwar Period* (pp. 300-328). New York: Cambridge University Press.

Murray, W. (1996). *Military Innovation in the Interwar Period*. Cambridge: Cambridge University Press.

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

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

Nielsen, J. A., Mathiassen, L., & Hansen, A. M. (2018). Exploration and Exploitation in Organizational Learning: A Critical Application of the 4I Model. *British Journal of Management*, 29, 835-850.

Nolan, C. J. (2017). *The Allure of Battle*. Oxford: Oxford University Press.

Noll, J., & Rietjens, S. (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* (pp. 223-242). London: Routledge.

Nonaka, I. (1991). The Knowledge-creating Company. *Harvard Business Review*, 96-104.

Nonaka, I., & Konno, N. (1998). The Concept of "Ba": Building a Foundation for Knowledge Creation. *California Management Review*, 40(3), 40-54.

Nonaka, I., & Toyama, R. (2003). The knowledge-creating theory revisited: knowledge creation as a synthesizing process. *Knowledge Management Research & Practice*(1), 2-10.

Nonaka, I., & von Krogh, G. (2009). Perspective—Tacit Knowledge and Knowledge Conversion: Controversy and Advancement in Organizational Knowledge Creation Theory. *Organization Science*, 20(3), 635-652.

O'Hanlon, M. E. (2009). *The Science of War: Defense Budgeting, Military Technology, Logistics, and Combat Outcomes*. Princeton: Princeton University Press.

Osinga, F. (2005). *Science, Strategy and War: The Strategic Theory of John Boyd*. Delft: Eburon Academic Publishers.

Osinga, F. (2010). The Rise of Military Transformation. In T. Terriff, F. Osinga, & T. Farrell (Eds.), *A Transformation Gap? American Innovations and European Military Change* (pp. 14-34). Stanford: Stanford University Press.

O'Toole, P., & Talbot, S. (2011). Fighting for Knowledge: Developing Learning Systems in the Australian Army. *Armed Forces & Society*, 37(1), 42-67.

Petrelli, N. (2013). Deterring Insurgents: Culture, Adaptation and the Evolution of Israeli Counterinsurgency, 1987-2005. *Journal of Strategic Studies*, 36(5), 666-691.

Popper, M., & Lipshitz, R. (1998). Organizational Learning Mechanisms: A Structural and Cultural Approach to Organizational Learning. *The Journal of Applied Behavioral Science*, 34(2), 161-179.

Porch, D. (2011). The dangerous myths and dubious promise of COIN. *Small Wars & Insurgencies*, 22(2), 239-257.

Porch, D. (2013). *Counterinsurgency: Exposing the Myths of the New Way of War*. New York: Cambridge University Press.

Porch, D. (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.

Posen, B. R. (1984). *The Sources of Military Doctrine: France, Britain and Germany between the World Wars*. Ithaca: Cornell University Press.

Rasmussen, M. V. (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.

Rayburn, J. D., & Sobchak, F. K. (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.

Rayburn, J. D., & Sobchak, F. K. (Eds.). (2019). *The U.S. Army in the Iraq War, Volume II: Surge and Withdrawal, 2007-2011*. Carlisle: United States Army War College Press.

Riddle, B. (2018). *Essence of Desperation*. Lanham : Lexington Books.

Rietjens, S. (2012). Between expectations and reality: the Dutch engagement in Uruzgan. In N. Hynek, & P. Marton (Eds.), *Statebuilding in Afghanistan: Multinational contributions to reconstruction* (pp. 65-78). Abingdon: Routledge.

Rietjens, S., Soeters, J., & Klumper, W. (2011). Measuring the Immeasurable? The Effects-Based Approach in Comprehensive Peace Operations. *International Journal of Public Administration*, 34, 329-338.

Romme, G. A., & van Witteloostuijn, A. (1999). Circular organizing and triple loop learning. *Journal of Organizational Change Management*, 12(5), 439-454.

Rosen, S. P. (1991). *Winning the Next War: Innovation and the Modern Military*. Ithaca: Cornell University Press.

Russell, J. A. (2010). Innovation in War: Counterinsurgency Operations in Anbar and Ninewa Provinces, Iraq, 2005-2007. *The Journal of Strategic Studies*, 33(4), 595-624.

Russell, J. A. (2011). Innovation, Transformation and War: Counterinsurgency Operations in Anbar and Ninewa Provinces, Iraq, 2005-2007. Stanford: Stanford University Press.

Russell, J. A. (2014). Counterinsurgency American Style: Considering David Petraeus and twenty-first century irregular war. *Small Wars & Insurgencies*, 25(1), 69-90.

Rynning, S. (2013). ISAF and NATO: Campaign Innovation and Organizational Adaptation. In T. Farrell, F. Osinga, & J. A. Russell (Eds.), *Military Adaptation in Afghanistan* (pp. 83-107). Stanford: Stanford University Press.

Saideman, S. M. (2013). Canadian Forces in Afghanistan: Minority Government and Generational Change while under Fire. In T. Farrell, F. Osinga, & J. A. Russell (Red.), *Military Adaptation in Afghanistan* (pp. 219-241). Stanford: Stanford University Press.

Sangar, E. (2016). The pitfalls of learning from historical experience: the British Army's debate on useful lessons for the war in Afghanistan. *Contemporary Security Policy*, 37(2), 223-245.

Sapolsky, H. M. (1972). *Polaris System Development: Bureaucratic and Programmatic Success in Government*. Cambridge: Harvard University Press.

Scales, J. (2016, February 11). Thoughts as I watch my Army walk away from Counterinsurgency once again. *Foreign Policy*.

Schilling, J., & Kluge, A. (2009). Barriers to organizational learning: An integration of theory and research. *International Journal of Management Reviews*, 11(3), 337-360.

Schmitt, O. (2017). French Military Adaptation in the Afghan War: Looking Inward or Outward. *The Journal of Strategic Studies*, 40(4), 577-599.

Schroden, J. (2014). A best practice for assessment in counterinsurgency. *Small Wars & Insurgencies*, 25(2), 479-486.

Serena, C. C. (2011). *A Revolution in Military Adaptation: The US Army in Iraq*. Washington D.C.: Georgetown University Press.

Serena, C. C. (2014). *It Takes More than a Network*. Stanford: Stanford University Press.

- Shimko, K. L. (2010). *The Iraq Wars and America's Military Revolution*. New York: Cambridge University Press.
- Shurkin, M. (2014). *France's War in Mali: Lessons for an Expeditionary Army*. Santa Monica : RAND Corporation.
- Simsek, Z. (2009). Organizational Ambidexterity: Towards a Multilevel Understanding. *Journal of Management Studies*, 46(4), 597-624.
- Sinno, A. H. (2008). *Organizations at War in Afghanistan and Beyond*. Ithaca: Cornell University Press.
- Sinterniklaas, R. (2018). *Military Innovation: Cutting the Gordian Knot*. Breda: Faculty of Military Sciences, Netherlands Defence Academy.
- Smith, R. (2006). *The Utility of Force: The Art of War in the Modern World*. London: Penguin.
- South, T. (2018, October 25). *Army's detailed Iraq war study remains unpublished years after completion*. Retrieved September 5, 2019, from Army Times: <https://www.armytimes.com/news/your-army/2018/10/25/armys-detailed-iraq-war-study-remains-unpublished-years-after-completion/>
- Sterner, E. R. (1999). You say you want a revolution (in military affairs)? *Comparative Strategy*, 18(4), 297-308.
- Tattar, M. A. (2011). *Innovation and Adaptation in War*. Waltham: Brandeis University (Doctoral Dissertation).
- Tenenbaum, E. (2017). French Exception or Western Variation? A Historical Look at the French Irregular Way of War. *Journal of Strategic Studies*, 40(4), 554-576.
- Terriff, T., & Osinga, F. (2010). Conclusion: The Diffusion of Military Transformation to European Militaries. In T. Terriff, F. Osinga, & T. Farrell (Eds.), *A Transformation Gap? American Innovations and European Military Change* (pp. 187-209). Stanford: Stanford University Press.
- Thomas, K., & Allen, S. (2006). The learning organisation: a meta-analysis of themes in literature. *The Learning Organization*, 13(2/3), 123-139.
- Tikka, T. (2010). *The Process of Organisational Adaptation Through Innovations , and Organisational Adaptability*. Aalto: Aalto University (Doctoral Dissertation).
- Tosey, P., Visser, M., & Saunders, M. (2011). The origins and conceptualizations of 'triple-loop' learning: A critical review. *Management Learning*, 43(3), 291-307.

U.S. Army Training and Doctrine Command. (2017). *Multi Domain Battle: Evolution of Combined Arms for the 21st Century, 2025-2040*. Fort Eustis: TRADOC.

Ucko, D. H. (2009). *The New Counterinsurgency Era*. Washington DC: Georgetown.

Ucko, D. H. (2014). Critics gone wild: Counterinsurgency as the root of all evil. *Small Wars & Insurgencies*, 25(1), 161-179.

Ucko, D. H. (2019). Systems Failure: the US way of irregular warfare. *Small Wars & Insurgencies*, 30(1), 223-254.

Ucko, D. H., & Marks, T. A. (2018). Violence in context: Mapping the strategies and operational art of irregular warfare. *Contemporary Security Policy*, 39(2), 206-233.

United States Army. (2018, April). *Security Force Assistance Brigade: Operational and Organizational Concept*. Retrieved from fortbenningusa.org: [https://fortbenningusa.org/wp-content/uploads/2018/04/TCM\\_SFAB\\_2018.pdf](https://fortbenningusa.org/wp-content/uploads/2018/04/TCM_SFAB_2018.pdf)

United States Department of the Army. (2007). *FM 3-24: Counterinsurgency Field Manual*. Chicago: Chicago University Press.

Vera, D., Crossan, M., & Apaydin, M. (2011). A Framework for Integrating Organizational Learning, Knowledge, Capabilities, and Absorptive Capacity. In M. Easterby-Smith, & M. A. Lyles (Eds.), *Handbook of Organizational Learning and Knowledge Management* (pp. 153-180). Chichester: Wiley & Sons.

Visser, M. (2016). Organizational learning capability and battlefield performance: The British Army in World War II. *International Journal of Organizational Analysis*, 24(4), 573-590.

Vrolyk, J. (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/>

Waldman, T. (2018). Vicarious warfare: The counterproductive consequences of modern American military practice. *Contemporary Security Policy*, 39(2), 181-205.

Wang, C. L., & Ahmed, P. K. (2003). Organisational Learning: a critical review. *The Learning Organization*, 10(1), 8-17.

Weick, K. E., & Westley, F. (1999). Organizational Learning: Affirming an Oxymoron. In S. R. Clegg, C. Hardy, & W. R. Nord (Eds.), *Managing Organizations* (pp. 190-208). London: SAGE Publications.

Wiewiora, A., Smidt, M., & Chang, A. (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, 93-115.

Wilson, J. M., Goodman, P. S., & Cronin, M. A. (2007). Group Learning. *Academy of Management Review*, 32(4), 1041-1059.

Wong, L., & Gerras, S. J. (2019). Culture and Military Organizations. In P. R. Mansoor, & W. Murray (Eds.), *The Culture of Military Organizations* (pp. 17-32). Cambridge: Cambridge University Press.

Yang, J.-t. (2007). The impact of knowledge sharing on organizational learning and effectiveness. *Journal of Knowledge Management*, 11(2), 83-90.

Zahra, S. A., & George, G. (2002). Absorptive Capacity: A Review, Reconceptualization, and Extension. *Academy of Management Review*, 27(2), 185-203.

Zimmerman, S. R., Jackson, K., Lander, N., Roberts, C., Madden, D., & Orrie, R. (2019). *Movement and Maneuver: Culture and the Competition for Influence Among the U.S. Military Services*. Santa Monica:

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