

The Military as a Learning Organisation:

Establishing the Fundamentals of Best-Practice in Lessons-Learned

The post-Cold War era has witnessed the rapid expansion of organisational learning initiatives within NATO militaries, especially formal ‘lessons-learned’ processes. The effectiveness of national lessons-learned processes in recalibrating military activity to the demands of ongoing operations has been highly-differentiated. However, the academic literature on military change and practitioner guidance, notably the NATO Lesson-Learned Handbook, has been slow to investigate the key features of best-practice in military learning. This article breaks new ground by drawing upon the literature on dynamic organisational capabilities to explore the fundamental organisational processes and activities which are necessary to implement successful lessons-learned. It examines, in particular, the organisational features which facilitate ‘knowledge transformation’: the effective combination of new knowledge gained from intra- and inter-organisational learning with existing organisational knowledge. The article concludes by highlighting several potential future empirical and theoretical research agendas in military learning and the importance of engagement between lessons-learned practitioners and organisational learning scholars.

Keywords: dynamic organisational capabilities; knowledge transformation; lessons-learned; military learning; NATO Lessons-Learned Handbook.

Introduction: exploring the organisational processes and activities which facilitate military learning

Technological and conceptual advances in organisational learning have enabled the establishment of formal, permanent learning processes within NATO militaries since the end of the Cold War (Dyson 2012, Foley *at al.* 2011, Marcus 2015, 2017). These so-called ‘lessons-learned’ processes have the potential to improve adaption, innovation and emulation by allowing the institutional military to more effectively tailor key areas of activity to the demands of the operational environment (Marcus, 2015, 2017, Serena 2011, p.161).¹ However, national lessons-learned processes display differentiation in terms of their organisational features and their effectiveness in recalibrating military activity in the light of operational experiences (Dyson 2012).

This article breaks new ground by examining the insights of the literature on organisational learning about the central features which should characterise best-practice in such formalised military learning processes. It establishes an ‘ideal type’ of the organisational processes and activities which should underpin lessons-learned at the tactical and operational levels of conflict. The concept of the ideal type was first developed by Max Weber (1922). As the Oxford Dictionary of Sociology notes: ‘ideal types are worked out with reference to the real world, but involve a selection of those elements that are most rational or which fit together in the most rational way’. The ideal type allows us to consider ‘...what course human action of a certain kind would take, if it were strictly purposive-rationally oriented, undisturbed by error or emotions’ (Weber 1922, p.4).

¹ Militaries can be conceived of as consisting of two main organisational components: the ‘institutional military’, which refers to the military organisations involved in training, equipping and ensuring the readiness of the military and the ‘operational military’, which consists of the organisations and personnel prepared for deployment.

In developing an ‘ideal type’ of military learning the article explores, in particular, the insights of the literature on dynamic organisational capabilities. The concept of dynamic organisational capabilities refers to an organisation’s ability ‘to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments’ and thereby ‘achieve new and innovative forms of competitive advantage’ (Teece et al 1997, p.516). It allows us to add greater detail to existing academic scholarship on military learning by uncovering the key processes and activities which facilitate effective formal organisational learning processes. In particular, the literature on dynamic organisational capabilities helps sheds light on how military adaptation in the field can be encouraged while simultaneously ensuring the integration of bottom-up learning into wider institutional military activities.

The article does not claim that lessons-learned provide a panacea for the failure of military organisations to adapt, innovate and emulate effectively. As the literature on military change demonstrates, variables such as bureaucratic politics, organisational culture and socio-psychological factors can form powerful impediments to the integration of new knowledge arising from operational experiences (Davidson 2011, p.26, Farrell 2005, Posen 1984, Rosen 1991). However, recent scholarship on military learning (Catignani 2014, Foley *et al* 2011, Marcus 2015, 2017, Serena 2011, p.161) demonstrates that well-organised learning processes can provide an important means to introduce disruptive thought to militaries and challenge existing orthodoxies. Well-organised lessons-learned also provide an essential opportunity to ensure that learning does not remain ‘siloes’ within communities of practice, but can be disseminated across the wider military organisation where appropriate (Kollars et al 2016, pp.1061-62). Understanding the fundamental features of effective formal learning mechanisms is, therefore, a vital first step towards improving the capacity of military organisations to adapt, emulate and innovate (Hoffmann 2016, p.138).

The article begins by exploring the potential of formal learning processes to improve adaptation, innovation and emulation and identifies a neglect by existing scholarship on military change of the organisational processes and activities which support learning. It proceeds by examining the insights of organisational learning about how an organisation can facilitate knowledge transformation: the ability of an organisation to effectively combine new and existing organisational knowledge. The article concludes by reflecting upon the avenues for future empirical and theoretical research on military learning and points in particular, to the importance of improved engagement between academics and practitioners involved in lessons-learned.

Why lessons-learned processes matter: the potential to improve adaptation, innovation and emulation

As Farrell (2010, p.569) highlights, military adaptation involves ‘change to tactics, techniques or existing technologies to improve operational performance’, while innovation is characterised by ‘a major change that is institutionalised in new doctrine, a new organisational structure and/or a new technology’. Adaptation and innovation exist on a continuum (Farrell *et al.* 2013, p.7). For example, significant change can take place within a military without its formal institutionalisation as reform to existing routines through doctrinal change. Such learning can be considered ‘advanced adaptation’ (Stulberg and Salomone 2007, p.28). Furthermore, military adaptation in the field also contributes to successful military emulation

by delivering evidence which can verify the relevance of other states' experiences (Dyson 2017, p.3; Resende-Santos 2007, pp.58-61).

Military adaptation and its relationship with innovation and emulation is under-explored in the literature on military change, which also neglects the role of formal learning processes in military change (Catignani 2012, p.516, Farrell 2010, pp.591-92, Grissom 2006, p.908). For example, while Farrell (2010) explores the conditions which facilitate adaptation in the field, he does not examine the transmission belt linking adaptation and changes to the institutional military. This transmission belt is essential in avoiding an 'adaptation trap' where learning by individuals and groups is not codified as organisational learning (Catignani 2014, Farrell 2010, p.591, Serena 2011, p.163). As Day (1994, p.44) notes: 'Organizations without practical mechanisms to remember what has worked and why will have to repeat their failures and rediscover their success formulas over and over again'. Without changes to areas of institutional military activity, such as training, equipment, personnel, information, concepts and doctrine, organisational, infrastructure, logistics and operational design, adaptation in the field will have only a limited positive impact on military effectiveness.

It is possible to distinguish between two main forms of military learning. First, informal learning processes, where lessons are disseminated through informal social networks. They tend to focus on short-term, ad-hoc problem solving and seldom result in advanced adaptation or innovation (Catignani 2012, p.521, Zahra and George 2002, p.193). Second, formal lessons-learned, which involve creating institutional structures and processes to identify, manage, evaluate and implement the lessons of operations for key areas of military activity.

The key function of lessons-learned is succinctly expressed by the NATO Allied Joint Doctrine for the Conduct of Operations. It should, if implemented successfully, allow a military to 'learn efficiently from experience and to provide validated justifications for amending the existing way of doing things, in order to improve performance, both during the course of an operation and for subsequent operations (Dyson 2017, p.3).² Lessons-learned allows a military to identify individual lessons-learned which, as Secchi *et al* (1999, p.58) highlight, involve:

'...a knowledge or understanding gained by experience. The experience may be positive, as in a successful test or mission, or negative, as in a mishap or failure. A lesson must be significant in that it has a real or assumed impact on operations; valid in that it is factually and technically correct; and applicable in that it identifies a specific design, process, or decision that reduces or eliminates the potential for failures and mishaps, or reinforces a positive result.'

Lessons-learned are not a new development. Semi-formal and informal learning processes have been established during military campaigns throughout history: by the German Army in WW1, the German Ostheer, US 12th Army Group and British 8th Army during WW2 (Foley 2014, pp.287-90, Mains and Ad Ariely 2012, p.166). These lessons processes were discontinued following the end of the campaigns in which they developed. They were also undermined by deficits in their conceptual organisation and practical difficulties associated with gathering and disseminating lessons in the pre-digital era (Dyson 2017, p.4; Mains and Ad Ariely 2012, pp.166-67).

² AJP-3 (B), Allied Joint Doctrine for the Conduct of Operations, NATO, March 2011, 0454.

However, during the 1980s and post-Cold War era, improvements in Information Technology have established the foundation for more efficient transmission, storage and retrieval of information (Mains and Ad Ariely 2012, p.168). Furthermore, the potential of new military technologies can only be properly exploited when accompanied by innovation in operational concepts and organisational change (Krepinevic 1994, p.30). Since the late 1970s the development of the literature on organisational learning has dramatically improved our understanding of the key organisational processes and activities which facilitate adaptation and learning. This context of conceptual and technological innovation led to the establishment, for the first time, of permanent lessons-learned processes within NATO states from the early-2000s (Catignani 2014, Dyson 2012, Foley *et al.* 2011, Lis 2012, 2014).

Despite these developments, NATO militaries have encountered significant difficulties in reflecting upon the implications of operational experiences and in implementing change (Catignani 2014, Dyson 2012). These problems have led some scholars to be dismissive about the capacity of lessons-learned to contribute to military change. Farrell (2010, p.572) posits that lessons-learned simply reinforce organisational routines and discourage exploration of new ideas, while Grissom (2006, p.926) argues that lessons-learned can only assist with information gathering.

However, several scholars demonstrate that effective intra-organisational learning through formal learning mechanisms is possible during conflict. As Marcus (2015, 2017) highlights in his research on Israeli Defence Forces lessons-learned, it is possible to establish a smooth transmission belt from adaptation in the field to reforms to doctrine, training and operational design. Downie (1998, pp.260-65) also makes several recommendations about how the US military might improve its organisational learning capability. Furthermore, Russell (2010) demonstrates the importance of effective lessons-learned in US Army and Marine Corps adaptation during the Iraq War, while Catignani (2012, p.537) recognises how lessons-learned can create the conditions for effective bottom-up adaptation and innovation. Egnell (2011, p.313) also notes how a 'well-oiled system for capturing and distributing lessons-learned' can facilitate military adaptation and innovation. Finally, in their scholarship on knowledge management in militaries, Jones and Mahon (2012) demonstrate the vital importance of formal structures to develop, maintain and transfer tacit knowledge.

The importance of effective individual, group and organisational learning has been magnified by the experiences of NATO militaries in contemporary counterinsurgency operations. A number of variables during ISAF conspired to make it more difficult for militaries to 'learn at their own pace' through informal processes (Ucko and Egnell 2013, pp.14-15). These factors include the growing intensity of media coverage, dwindling home- and host-country patience with expeditionary operations, as well as the capacity of insurgents to exploit technological advances to decentralise, network and adapt. In short, a military which is unable to undertake effective intra-organisational learning faces likely defeat in contemporary operations (Foley *et al.* 2011, p.254, Russell 2010, pp.88-89).

Inter-organisational learning is also a vital dimension of military effectiveness. Learning from organisations confronting similar problems forms an important means to overcome reliance on existing organisational knowledge (Pedler *et al.* 1989, p.7, Sheremata 2000, p.396). It provides a vital opportunity to draw upon a richer experience base and encounter novel and emerging ideas (Foley 2014, p.297). The importance of knowledge acquisition from foreign militaries is

well-recognised in accounts of military change (Resende-Santos 2007, p.73). However, emulation is not automatic and should be cultivated by an institutional commitment to systematically gathering information from alliance partners about proven success in different areas of military activity. Yet, the role of lessons-learned as a tool for enhancing the effectiveness of inter-organisational learning at the tactical and operational levels of conflict remains underexplored in the academic literature on emulation (Coticchia and Moro 2016, pp.710-12; Horowitz 2010).

Hence dismissing formal learning processes on the basis of the difficulties that NATO and coalition militaries have encountered in developing and exploiting lessons-learned in Iraq and Afghanistan is misguided. It is too early in the development of lessons-learned to reject their potential. Moreover, failing to study military learning processes would not only be to the detriment of military studies, but would also deny the growing academic literature on learning processes in public organisations an important case study (Piening 2013).

The fundamental features of military lessons-learned have received limited attention in the academic literature. Catignani (2014), Foley et al (2011) and Marcus (2015, 2017) provide fascinating case studies of the development of contemporary military learning processes, but spend relatively little time considering the core features of lessons-learned best-practice.³ A significant body of scholarship exists which examines the relationship between organisational learning and military effectiveness.⁴ Yet, these scholars do not engage sufficiently with the rich literature on organisational learning. Crucially, they do not exploit its full potential to provide insights into the organisational processes and activities which support effective learning.

As Catignani (2014, p.60) recognises, further research is necessary to:

‘...explore what institutional configurations could help improve the Army’s ability to extrapolate more efficiently the operational experiences that have been shared by personnel through informal networks and transform them into more enduring organizational knowledge and, thus, achieve higher-level learning’.

Dynamic organisational capabilities and lessons-learned: best-practice in military learning

The purpose of this section is to fill the gap in our understanding of military learning processes by mapping the key organisational activities and processes underpinning effective lessons-learned. In doing so, it draws upon the peer-reviewed academic literature on organisational learning in the business and military contexts. As McIntyre et al (2003, p.38) note, the theory of knowledge management differs little between the business and military contexts. Militaries and firms both operate in competitive, fast-changing contexts where the failure to adapt, emulate and innovate can be punished with severe penalties. For a firm, these penalties can take the form of job losses and bankruptcy. In the case of the military, they are harsher: the loss of civilian and military lives, a decrease in the relative power of the state and its possible destruction (Thomas and Allen 2006, p.124). There are also parallels to be drawn between the governance of military and business organisations, particularly between the principal/agent

³ Marcus (2017, pp.5-9) provides an interesting, but brief examination of the core features of ‘organisational learning capacity’ which relies heavily on the existing literature on military learning.

⁴ See, for example, Downie (1998), Davidson (2011), Fitzgerald (2013), Nagl (2002), Russell (2010) and Serena (2011).

relationship of shareholders and managers/employees and the relationship of civilian and military actors. Hence, while the literature on dynamic organisational capabilities has developed predominantly in the business context, it provides a rich foundation for considering the organisational activities and processes which can foster adaptation, advanced adaptation or innovation within militaries (McIntyre *et al.* 2003).

This section also examines guidance on lessons-learned best-practice contained in the third edition of the NATO Lessons-Learned Handbook, released by the Joint Analysis and Lessons Learned Centre (JALLC) in February 2016. The JALLC opened in 2002 and attained full operational capability in 2006. It is NATO's main organisation for the Joint analysis of operations, exercises, training and experiments and the NATO-wide dissemination of Joint lessons. The JALLC is also tasked with assisting NATO states in developing their lessons-learned capabilities. Its Lessons-Learned Handbook attempts to address the main processes and activities which permit military organisations to capture, analyse and share lessons (NATO Lessons-Learned Handbook 2016, p.8). This section incorporates the key guidance contained within the Handbook and points to several very important organisational processes and activities which do not receive attention in the document.

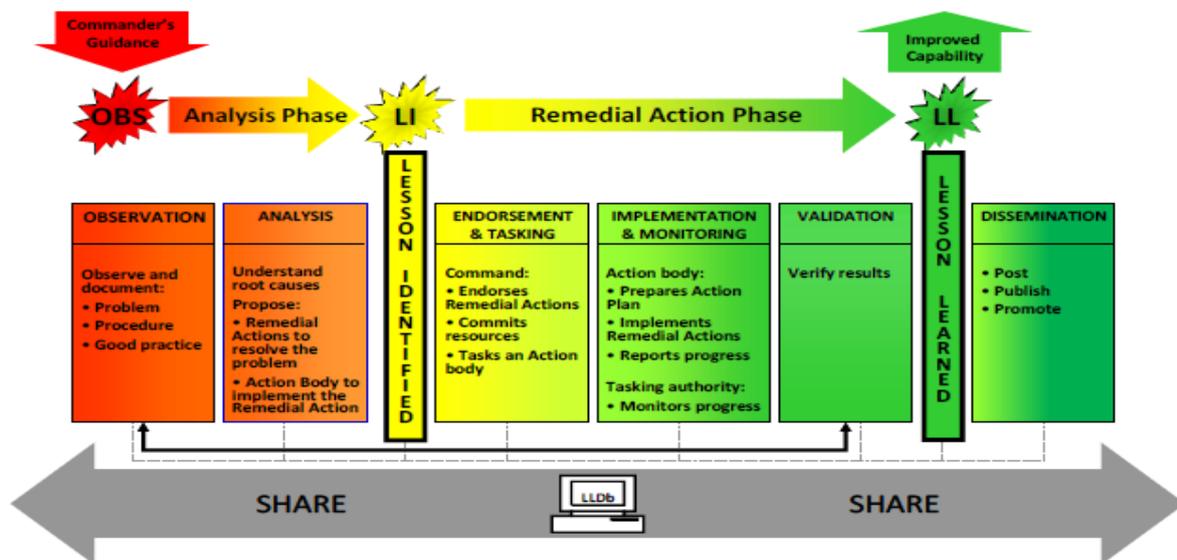
Finally, this section includes the insights of interviews conducted with British and German Service and Joint level lessons-learned personnel, as well as the broader intellectual architecture of the British and German armed forces. These interviews are used to supplement the academic literature by shedding light on areas of best-practice in lessons-learned not addressed by existing scholarship on dynamic organisational capabilities and military affairs.

The capability to acquire, manage, disseminate and transform knowledge

The concept of dynamic organisational capabilities focuses on the effective use of resources and competencies by an organisation to generate greater value than its competitors and attain a competitive advantage (Zahra and George 2002, p.188). The scholarship on dynamic organisational capabilities overlaps with the literature on 'absorptive capacity' which explores an organisation's ability to 'identify, assimilate and exploit knowledge from the external environment' (Cohen and Levinthal 1989, pp.569-70).

Dynamic organisational capabilities recognises that the human elements of an organisation are central to its success. It explores how knowledge acquisition and the management of knowledge and learning processes enhances an organisation's ability to adapt to its strategic environment. Furthermore, dynamic organisational capabilities examines the role of formal and informal organisational assets, such as organisational routines, norms and practises, in bolstering organisational performance (Dyson 2017, p.6; Teece *et al* 1997, pp.514-15). It provides an excellent framework to explore the key organisational activities and processes which are necessary to stimulate learning at the individual, group and organisational levels.

Figure 1: The NATO Lessons-Learned Process⁵



As the NATO Lessons-Learned Handbook (2016, pp.10-13) highlights, lessons-learned are characterised by four basic stages (Figure 1). First, the creation of an observation that highlights an area of military activity that may be improved. An observation is defined as: ‘a comment based on something someone has heard, seen or noticed that has been identified and documented as an issue for improvement or a potential best-practice’ (NATO Lessons-Learned Handbook 2016, p.11). An observation then enters the second stage of lessons-learned: the analysis stage where the seriousness of the problem is ascertained and, if necessary, solutions for improvement are identified (known as a ‘remedial action’). This stage also identifies the appropriate body/bodies which should be tasked with addressing the problem (Dyson 2017, p.5-6).

Once these tasks have been completed, a Lesson Identified (LI) has been achieved. As the Handbook (2016, p.12) notes, a LI forms ‘a mature observation with a determined root cause of the observed issue and a recommended remedial action and action body, which has been developed and proposed to the appropriate authority’. In addition to LI, a best-practice may also be identified by the lessons-learned process. A best-practice is ‘a technique, process or methodology that contributes to the improved performance of an organization and has been identified as a best way of operating in a particular area as compared to other good practice(s)’ (NATO Lessons-Learned Handbook 2016, 12). Best-practices are often only relevant to a specific operation and can rapidly become obsolete (NATO Lessons-Learned Handbook 2016, p.12). Hence they may not necessitate formal organisational change (i.e. change to doctrine), but rather adaptation among certain individuals or groups within the military and are especially relevant for pre-deployment training (Dyson 2017, p.5).

Following the identification of a LI, the ‘remedial action stage’ begins, which involves, first of all, endorsement and tasking, where a LI is formally endorsed by the leadership of the lessons-

⁵ (NATO Lessons-Learned Handbook 2016, p.11)

learned organisation. One or more ‘action bodies’ (i.e. military branch/organisation) are tasked with implementing a remedial action. The action body must then prepare a plan of action for the implementation of the LI and provide regular updates on its progress to the lessons-learned organisation. Validation will then take place, which should ensure that a measurable improvement has resulted from the remedial action phase (NATO Lessons-Learned Handbook 2016, pp.12-13). Once validation is completed, a LI become a lesson-learned (LL), defined as ‘an improved capability or increased performance’ (NATO Lessons-Learned Handbook 2016, p.13). The LL then enters the final stage of the lessons-learned process: dissemination among relevant stakeholders within (and sometimes outside) the military.

Building upon Zahra and Georges’ (2002, pp.189-90) four dimensions of absorptive capacity, the article argues that four dynamic organisational capabilities are necessary to effectively accomplish the above stages of the lessons-learned process. First of all, knowledge acquisition capability, which involves the capability to effectively acquire information and knowledge from the operational environment and alliance partners. Second, knowledge management capability, which refers the capability to exploit advances in IT hardware and software to facilitate the acquisition, storage, retrieval and dissemination of information and knowledge. The third capability is knowledge dissemination, which denotes the practical capability of a military to distribute individual lessons-learned or best-practices to key stakeholders within and outside the military.

Knowledge acquisition, management and dissemination capabilities are essential components of formal learning processes and collectively establish ‘Potential Absorptive Capacity’ (PACAP) where an organisation is able to acquire and assimilate knowledge (Zahra and George 2002).⁶ However knowledge transformation, which refers to an organisation’s ability to exploit knowledge by effectively combining existing organisational knowledge with new knowledge, is the key determinant of whether an organisation will fully realise its potential to absorb knowledge (Zahra and George 2002, p.190). Hence the following section focuses on the key features of a well-developed knowledge transformation capability.

Knowledge transformation: establishing an organisational culture of experimentation and creativity

The capability to transform knowledge by establishing and improving the processes which allow an organisation to successfully combine new and existing knowledge is essential to the remedial action phase of lessons-learned (Zahra and George 2002, 190). It helps an organisation bridge the gap between knowing that change is required and enacting change (de Long and Fahey 2000, Pfeffer and Sutton 2000, Wilson *et al.* 2007, pp.1045-46). As Dawson (2000, p.326) highlights: ‘People may have the infrastructure and ability to share knowledge and work effectively with others within knowledge processes, however they also require the motivation to do so, and ultimately this depends on the organisational culture...’.

An organisation should, therefore, be capable of ‘unlearning’ by persistently challenging organisational knowledge (Hjalager 1999, p.24). As Nagl (2002, p.219) argues:

⁶ For an exploration of best-practice in knowledge acquisition, management and dissemination, as well as further detail about the organisational activities and processes which underpin knowledge transformation in a military context, please see Dyson (forthcoming, 2019).

‘The very organisational culture that makes an institution effective in one area may blind it to the possibility that its strengths in the field are crippling deficiencies in a different situation, the more debilitating for being so deeply rooted in the culture that they are never even recognised, much less questioned’.

Hence, effective knowledge transformation is critically dependent upon the efforts that an organisation makes to establish a culture of experimentation and creativity which can challenge existing orthodoxies (de Long and Fahey 2000, p.125, Harvey and Wilkinson 2009, p.30, Hoffmann 2016, p.138; Murovec and Prodan 2009, p.862, Pedler *et al.* 1989, p.7, Weber 2007, p.336). In the absence of a culture of experimentation and creativity, knowledge acquisition, management and dissemination activities are likely to be underused or to reinforce existing organisational knowledge and routines (Dawson 2000, p.326, de Long and Fahey 2000, Pfeffer and Sutton 2000).

The creation of a culture of experimentation and creativity is important not only in facilitating advanced adaptation and innovation, but also in encouraging adaptation in the field. For example, Farrell (2010, p.573) and Harkness and Hunzeker (2015, p.6) argue that frequent personnel turnover in the field is an important driver of adaptation by providing an opportunity for the influx of new ideas. However, personnel turnover alone does not improve adaptation. Rather, it can undermine adaptation as new personnel may attempt to demonstrate their ability to apply existing organisational knowledge more effectively (King 2010, p.325). Only where a wider culture of experimentation and creativity is present, particularly one which encourages inter-organisational learning, will personnel turnover lead to the influx of new ideas (Foley 2014, p.297, Hjalager, 1999, pp.23-33). Moreover, regular personnel turnover during stabilisation and counterinsurgency operations, creates a risk that personnel have insufficient time to establish the relationships with local leaders required for effective intelligence-gathering (Marston 2010, pp.77-78).

The development of an effective knowledge transformation capability receives little attention in the NATO Lessons-Learned Handbook. It recognises the difficulty of establishing a culture where individuals feel comfortable sharing knowledge (2016, p.2) and highlights some barriers to lesson sharing, including embarrassment or blame (2016, p.38). However, the Handbook focuses on highly-technical guidance, rather than the wider steps that military organisations can take to establish an organisational culture that is supportive of lessons-learned. It contains no systematic analysis of the insights that organisational learning literature can shed on how military organisations might overcome knowledge-sharing difficulties by fostering a culture of experimentation and creativity.

Building upon the survey of literature on organisational culture and learning undertaken by Martins and Terblanche (2003), this sub-section argues that four key dimensions of organisational culture promote experimentation and creativity. First, it is important that the values of creativity and experimentation are clearly embedded within organisational strategy and that such values are internalised by personnel (Lis 2012, p.22, Marsick and Watkins 2003, Martins and Terblanche, 2003, p.69, Pedler 1989, p.4, Senge 1990, p.139). Hence education and training should develop officers’ capacity to think in a creative and critical manner (Jones and Mahon 2012, pp.78-81, Murovec and Prodan 2009, p.861).

The qualities traditionally understood as essential to tactical level military activity include discipline, obedience, loyalty and conformity (Kiszely 2013, p.129). However, the need to

apply mission command – especially relevant in scenarios encountered in counterinsurgency, stabilisation and hybrid warfare – requires that tactical-level military personnel exhibit qualities traditionally viewed as necessary for the operational level of conflict: creativity, initiative, intellect and critical thought (Kiszely 2013, p.129).⁷ Consequently, officer education and training should strike a careful balance between these competing qualities. Education and training must endow officers and soldiers with the capacity to demonstrate critical thought and initiative, and recognise when it is appropriate to do so.

The structure of an organisation forms the second main dimension of encouraging an organisational culture of experimentation and creativity (Martins and Terblanche 2003, pp.69-70). Several values and norms related to organisational structure impact upon creativity and experimentation. Organisations which promote values such as flexibility, autonomy and cooperation between and within teams display greater levels of creativity and adaptation than organisations which inculcate values of order, predictability and hierarchy (Farrell 2010, pp.572-73, Marsick and Watkins 2003). As Judge et al (1997, pp.72-85) note, a learning organisation should be characterised by ‘chaos within guidelines’.

Delegating authority for problem-solving to the lower levels of an organisation allows it to take decisions at levels where knowledge about problems is most developed (Harkness and Hunzeker 2015, 6, Sheremata 2000, p.395). Furthermore, empowering leaders at the lower levels of organisational hierarchy is also important as they play a vital role in promoting creativity and adaptation (Sheremata 2000, p.399). They are especially well-placed to motivate individual and group creativity and adaptation, to acquire information from their team and disseminate it within an organisation (Sheremata 2000, p.399).

These observations reinforce the importance of mission command (DiBella 2010, p.121, Macrus 2017, p.7). As Serena (2011, p.172) notes of leadership in counterinsurgency: ‘Empowering leaders to experiment with TTPs to appropriately adapt to local conditions is a staple element of successful operations...this capability is crucial in operations where the spectrum of tasks is nearly infinite and timely guidance is likely to be in short supply’. Russell (2010, pp.200-01) also demonstrates the importance of flat organisational hierarchies and the delegation of authority for effective individual and group adaptation in the field.

However, the delegation of problem-solving to lower levels of command can create a situation where important instances of adaptation with wider relevance remain informal and do not translate into advanced adaptation or innovation (Catignani 2014, Farrell 2010, p.591, Sheremata, 2000, p.396). Hence, a commitment to a degree of ‘chaos’ should be accompanied by engagement with lessons-learned (Judge et al 1997, pp.72-85, Ucko and Egnell 2013, p.146). In particular, soldiers should be taught about the importance of lessons-learned throughout their training and officer education (Lis 2012, p.22, Lis 2014, pp.71-74, Sheremata 2000, p.397).

Such training also contributes to a sense of personal ownership of doctrine across the military, which is vital in facilitating critical engagement with existing organisational knowledge. As Downie (1998, p.262) notes of doctrine development: ‘...military institutions should make

⁷ The principle of mission command involves the delegation of a significant level of responsibility for tactical-level decision-making to lower-levels of command, particularly to platoon and company commanders in order to enhance flexibility in realising their commander’s intent.

their members feel that their personal experience is an integral part of the process. Doctrine cannot be seen only as a set of ideas or concepts written by the agency responsible for publishing doctrine'. A sense of ownership of doctrine is not only important in ensuring that doctrine remains relevant to current operations, but also in ensuring that soldiers and officers perceive it as such (Harvey and Wilkinson 2009, p.29, Marsick and Watkins 2003).

The third dimension of organisational culture which supports experimentation and creativity is support mechanisms, especially reward and time (Edmonson 1999, p.356, Martins and Tereblanche 2003, pp.71-72, Yong-Mi *et al.* 2012, p.481). It is important that a military provides employees with sufficient time to be creative and innovate (Pedler *et al.* 1989, p.7). As Garvin *et al.* (2008, p.3) note: 'Supportive learning environments allow time for a pause in the action and encourage thoughtful review of the organization's processes'. Hence personnel not only require time between tours for reflection, but it is also important that sufficient personnel are deployed in the field to reduce the operational tempo for units and permit engagement with lessons-learned knowledge acquisition activities.

Creative behaviour by individuals, including experimentation and risk-taking, should also be rewarded by an organisation's promotion framework (Byrne and Bannister 2013, pp.83-84, Lis 2012, p.25, Pfeffer and Sutton 2000). Linking promotion with experimentation and risk-taking plays an important role in reducing the personal risk that individuals feel they are exposing themselves to through creative behaviour and knowledge-sharing (Edmonson 1999, p.351). Furthermore, knowledge can confer power upon individuals and groups and form a powerful disincentive to knowledge-sharing (Byrne and Bannister 2013, p.91). Hence military organisations should ensure that individuals and groups responsible for serious instances of information and knowledge-hoarding are held to account.

Fourth, organisational culture should support behaviour that encourages soldiers in the field to report problems and successes (Martins and Terblanche 2003, p.72, Pedler *et al.* 1989, p.7). Effective feedback from personnel, especially tacit knowledge-sharing, helps to promote innovation within and between teams (Pedler *et al.* 1989, p.7, Thomas and Allen 2006, p.126). Participation in knowledge-sharing activities can be encouraged through a number of means.

The use of online and face-to-face fora allowing sub-communities of practice to interact and holding intermediary after-action reviews are key activities in facilitating the socialisation of tacit knowledge. In addition, troops should be encouraged to communicate with platoon and company commanders their positive and negative experiences of the utility of existing doctrine, in both individual and group discussions (Wilson *et al.* 2007, p.1047).

Military education and training must, therefore, endow soldiers with a solid command of existing doctrine. Farrell (2010, p.571-73) and Harkness and Hunzeker (2015, p.7) argue that poor organisational memory facilitates adaptation. However, limited doctrine leads to the poor institutionalisation of key principles of warfare and does not equip personnel with the knowledge necessary to identify potential solutions to problems. As Høiback (2016, p.192) demonstrates, higher-tactical and operational level doctrine provides a foundation for a common understanding about operational concepts, operational design and tactical-level decision-making.

Crucially, poor organisational memory can promote ignorance of historical experiences, forcing soldiers to relearn important lessons in the field, sometimes at great cost (Catignani

2014, pp.41-42, p.59). The core role of doctrine should, therefore, be to provide a foundation for critical thinking (Harvey and Wilkinson 2009, p.30). Militaries should encourage the parallel emerge of a strong organisational memory alongside a culture of experimentation and creativity in order to ensure that doctrine is adapted to operational circumstances (Kiszely 2006, p.19) Lessons-learned processes which facilitate inter-organisational learning are especially important in ensuring an appropriate balance between the exploitation of existing organisational knowledge and experimentation (Coticchia and Moro 2016, pp.710-12, Hjalager 1999, pp.23-33).

If soldiers and officers are to feel comfortable sharing knowledge about problems in the field, organisational culture must also tolerate mistakes and opportunities should be created to take risks, communicate mistakes and learn from them (Byrne and Bannister 2013, p.82, DiBella 2010, p.121, Edmonson 1999, Garvin *et al.* 2008). As Mintzberg *et al.* (1998, p.214) highlight, a key dimension of a learning organisation is that it ‘fights the natural tendency to bury failure’ through open and frank discussion of shortcomings. In addition, personnel should be trained in how to provide constructive confrontation, which is important in supporting continuous learning (De Long and Fahey 2000, p.122, Martins and Terblanche 2003, p.72).

A learning culture should also extend to the highest levels of an organisation (Foley *et al.* 2011, p.267-68). As Weber (2007, p.336) demonstrates, lessons-learned are likely to fail if they do not have the support of an organisation’s leadership, which should act as a ‘role model’ in knowledge-sharing (Edmonson 1999, p.356, Lis 2012, pp.24-25, Marsick and Watkins 2003, Yong-Mi *et al.* 2012). Russell (2010, 201-02) also highlights the importance of the support of leaders on the battlefield for the free-flow of information.

However, ensuring an organisational hierarchy’s commitment to lessons-learned is often difficult. Organisational hierarchies tend to be composed of individuals who are liable to defend approaches and concepts in which they have expertise, especially because their success in climbing the organisational hierarchy means that senior personnel have limited experience in coping with failure (Argyris 1991, 1). As Argyris (1991, 1) highlights: ‘whenever their single-loop learning strategies go wrong, they become defensive, screen out criticism, and put the “blame” on anyone and everyone but themselves’. Hence coaching may be necessary to help senior personnel recognise when they exhibit defensive reasoning (Argyris 1991, Edmonson 1999, p.356, Garvin *et al.* 2008).

The role of officers in coaching, counselling and mentoring subordinates is also vital in facilitating tacit knowledge socialisation (Harvey and Wilkinson 2009, p.30, Hoffmann 2016, p.138; Lis 2014, p.62-3). It is especially important in establishing a culture where mistakes can be learned from through constructive feedback (Lis 2014, p.63). Moreover, coaching, counselling and mentoring encourages personnel to take greater personal responsibility for their professional development and education (Harvey and Wilkinson 2009, p.30). The role of officers in encouraging continuous self-education among their subordinates is important during periods of high operational pressure, when there is less time for formal education (Kiszely 2006, p.21, Marsick and Watkins 2003).

Furthermore, a demonstrable commitment of the civilian and military leadership to open debate and constructive criticism is important in establishing an organisational culture that permits the communication of problems (Foley *et al.* 2011, p.267-68, Garvin *et al.* 2008, Harkness and Hunzeker 2015, p.7, Kiszely 2013, p.129). It helps to establish an environment of

‘psychological safety’ where thoughts can be expressed without fear of punishment (Edmonson 1999, Garvin *et al.* 2008). As Foley *et al.* (2011, p.267) highlight: ‘soldiers need to believe that the army is taking the lessons-learned system seriously or they will be less likely to engage positively and honestly with the process’. The support of the civilian and military leadership for open debate can be demonstrated in three main ways.

First, as Jensen (2016) and Marcus (2017, p.7) recognise, ‘incubators’ play a key role in sustaining a culture of experimentation and creativity by providing officers with the intellectual freedom and time to reflect critically upon current doctrine. Incubators are ‘informal subunits outside of the organisational hierarchy’ and take the form of study groups or working groups at the Service or Joint level (Jensen 2016, p.214). While incubators are, by their informal nature, difficult to include in a lessons-learned process, military organisations usually have internal think-tanks devoted to doctrine development and concept development and experimentation. Hence the senior military leadership should ensure that such organisations receive sufficient financial support and also support the dissemination of their intellectual activities.

Second, the civilian and military should hierarchy provide explicit support for military-wide professional publications to provide a forum open debate about tactical, operational and strategic level issues (Fitzgerald 2013, p.16, Foley *et al.* 2011, pp.267-68). Professional publications should also include contributions from academics, alliance partners, NGOs and other government departments, where relevant (Foley *et al.* 2011, pp.267-68). Hence the editorial team of such publications should include personnel most exposed to ‘disruptive thought’, such as officers from the lessons-learned organisation, military think-tanks and academics (Kiszely 2013, p.129).

Finally, although a military requires space for experimentation and failure, failure resulting from unwillingness to learn should not be tolerated. It is important that the Service and Joint-level senior leaderships can be held to account for failure to develop an environment where critical thought is welcomed, or for intransigence in dealing with LI. These observations reinforce the importance of ensuring that the military promotion process evaluates an individual’s commitment to self-education and values activities which contribute to the military’s intellectual dynamism.

Establishing a strong culture of experimentation and creativity within an organisation improves overall levels of trust, which has a positive impact on knowledge-sharing (De Long and Fahey 2000, 119). As De Long and Fahey (2000, p.119) highlight: ‘The level of trust that exists between the organisation, its subunits, and its employees greatly influences the amount of knowledge that flows both between individuals and from individuals into the organisation’s databases, best-practice archives, and other records’. Numerous studies of organisational learning demonstrate that when organisations are characterised by teams which value shared trust and open communication, they are more likely to innovate (De Long and Fahey 2000, p.119, Martins and Terblanche 2003, pp.72-3).

The institutional architecture of lessons-learned: making learning severe, immediate and personal

The institutional architecture of lessons-learned also plays a vital role in fostering knowledge transformation (Garvin *et al.* 2008, Jones and Mahon 2012, pp.782-83, Yong-Mi *et al.* 2012,

pp.488-89). Bureaucratic politics, organisational culture and perceptions of potential personal reputational damage form significant obstacles to knowledge transformation (Davidson 2011, p.26). The institutional architecture of lessons-learned can, if designed correctly, allow an organisation to take important steps towards overcoming these obstacles. As one interview partner noted, it has the potential to make issues ‘severe – [i.e. important], immediate [i.e. temporally pressing] and personal [i.e. to put professional reputation at stake for failing to act upon emerging lessons]’ for officers or military branches/organisations.⁸

The first key feature of the institutional architecture of lessons-learned is the establishment of a high-level review team to oversee the ‘observation’ and ‘analysis’ phases of lessons-learned (Gupta and McDaniel 2002, Mullin 1996, see Figure 1). Its role includes establishing the accuracy, relevance and value of information arising from knowledge acquisition initiatives, such as reports from lessons-learned staff officers in the field, after-action reviews, post-operational interviews, post-operational reports and allied liaison officer reports (Sheremata 2000). The team also considers the causes of problems, suggests possible remedial actions and decides which branches/organisations will take responsibility for resolving LI.

The high-level review team has to make difficult decisions about the trade-off between the benefits of acting on an observation and the cost of action in terms of financial resources and time. It should, therefore, include personnel with seniority and experience who are capable of evaluating the accuracy, relevance and value of information in the context of current and future operational objectives (Foley *et al.* 2011, p.286). Hence personnel on the team should be carefully selected to maximise their breadth of expertise and experience. Ideally, substantial knowledge of the institutional military should be accompanied by recent operational experience.

Although a large majority of military personnel on the high-level team will rotate on two-to-three year postings, the team should also include reservists or civilian personnel in permanent posts (Lis 2012, p.26, Sheremata 2000, p.398). Such permanent appointments permit the development of expertise in different military activities and strengthen the team’s ability to assess the quality of advice provided by other military branches/organisations during the analysis phase of a potential LI. Furthermore, civilian personnel help to weaken any impact that regimental, Service or military culture may exert on decisions about the relevance of information arising from the operational environment or inter-organisational learning activities.

Where relevant, other government departments (OGDs), non-governmental organisations (NGOs) and academics should also be involved in decision-making. The input of academics from outside the military and military history experts internal to the military helps foster greater objectivity in observation analysis (Kiszely 2012, p.129, Marston 2010, p.83). It is, however, important that a large proportion of military history experts at internal military historical institutes are civilians with long-term contracts in order to enhance academic freedom.⁹ Specific interpretations of the lessons of previous campaigns can become dominant in

⁸ Interview partner, DACOS Warfighting, British Army Land Warfare Development Centre, Warminster, 11 July 2017.

⁹ Three interviews, Centre for Historical Analysis and Conflict Research, Royal Military Academy, Sandhurst, 12 July 2017.

institutions, hence it is important that opportunities are provided for contending visions of the lessons of history to be introduced to lessons-learned (Fitzgerald 2013, p.12).

The second essential dimension of the institutional architecture of lessons-learned is the establishment of a 'cross-functional team' involving the leaders of the main functional teams within an organisation (i.e. key areas of military activity) (Piening 2013, p.229, Sheremata 2000, p.400). A cross-functional team has several roles. First, it endorses the outcome of the high-level team's analysis and formally assigns responsibility for implementing a remedial action to an action body. In addition, the cross-functional team ensures that an action body prepares and implements an appropriate plan and delivers progress reports. Finally the cross-functional team takes overall responsibility for the periodic oversight of all phases of the remedial action phase: endorsement and tasking, implementation and monitoring and validation (see Figure 1).

A cross-functional team's effectiveness is dependent upon three structural factors which enable managers to exert influence: control over scarce resources; centrality in information networks and formal authority within the organisational hierarchy (Sheremata 2000, p.400). Formal authority derives not only from the position of the lessons-learned organisation in the military hierarchy, but also from cross-functional team's membership which should include senior personnel from key areas of military activity (Downie 1998, p.263, Lis 2014, pp.70-71). For Joint-level lessons-learned, the highest levels of military leadership should participate in the cross-functional team.

Furthermore, a cross-functional team should be able to draw upon the expertise of academics, as well as retired personnel who can provide very useful historical context to discussions. It is therefore, important, that exit interviews take place with officers upon their retirement and that their contact details are retained and updated (Kothari et al 2011, p.3). The inclusion of OGD and NGO representatives is also vital when discussing issues relating to the Comprehensive Approach. Service cross-functional team meetings should also include Joint lessons-learned personnel, thus allowing any issues within implications for Joint activity to be picked up. In addition, senior officers from other Services' lessons processes should attend in order to uncover lessons which may have relevance for activity in their domain and provide an additional external perspective. Personnel from internal military think-tanks/incubators tend to be exposed to inter-organisational learning and should, therefore, also be involved in the work of the cross-functional team. Combined with external academics and experts from military history institutes these personnel have the potential to form a powerful potential 'advocacy network' on behalf of learning.

The presence of civilians from within and outside the military on both the high-level and cross-functional teams plays a key role in reducing the corrupting role that bureaucratic politics, organisational culture and perceptions of personal reputational damage can exert on learning processes. It is, however, important that external academics are senior and well-respected in their discipline. This status will not only maximise the authority of their recommendations among high-ranking officers, but will also enhance their confidence when 'speaking truth to power'.

Hence, if correctly implemented, a cross-functional team provides a mechanism to ensure that operational experiences are considered in a rigorous and critical manner. It endows change to organisational knowledge with authority, legitimacy and a sense of organisational consensus

which helps to speed the remedial action and dissemination phases of lessons-learned (Downie 1998, p.262-63, Thomas and Allen 2006, p.124). As Downie (1998, p.262) argues: ‘The process for evaluation and experimentation with doctrinal assumptions cannot be incidental; it should be established as a vital part of a systemic process’.

The effective alignment of responsibility and expertise for Service and Joint lessons

The ideal type lessons-learned process developed above is not only valid not at the Service level, but also at the Joint level, albeit with a small number of changes. First it is important that high-ranking ministerial-level civil servants and senior officers from the Services participate in Joint level cross-functional teams. Furthermore, analysts involved in a Joint high-level team should be carefully selected to ensure that Service perspectives are effectively represented.

The establishment of a separate Joint and Service lessons-learned processes is unavoidable as a single cross-Service lessons process organised at the Joint level would likely be viewed by the Services as an ‘outsider’ organisation, leading to remoteness between the lessons process and action bodies within the Services.¹⁰ However, creating separate Service and Joint level lessons-learned processes is also associated with a serious risk of misaligning responsibility and expertise for lessons. It is essential that responsibility for lessons is aligned with the authority that has the resource capability – financial, intellectual and workforce – to resolve problems. The Services must take responsibility for identifying and dealing with lessons which rightly lie within their domain, with responsibilities for the tactical and operational levels of military activity clearly delineated between the Service and Joint lessons processes (Dyson 2017, p.8).

As the Joint realm of military activity has grown in importance during the post-Cold War and operations are run increasingly by permanent joint headquarters, a tendency has emerged within NATO militaries to conflate the operational level with the Joint level and the tactical level with the Service level.¹¹ Although some operations are truly joint, many operations involve a predominance of one Service. Locating responsibility for operational lessons at the Joint level runs the risk of failing to properly align of responsibility and expertise for operational level lessons which might better lie with an individual Service. Operational level learning must therefore also be an integral part of Service lessons processes, otherwise doctrine, officer education and training are unlikely to keep pace with changes in the operational environment (Alderson 2010, p.14). Furthermore, a misalignment of responsibility and expertise in lessons undermines accountability, thereby making it difficult for the military hierarchy and Ministerial level to hold personnel and organisations to account for the failure to act on problems (Dyson 2017, p.8).¹²

The need to correctly align responsibility and expertise reinforces the importance of close coordination between Service and Joint lessons-learned, especially between their cross-functional teams. Service and Joint responsibilities for doctrine development, training and

¹⁰ Interview, Division J357, Department for Lessons Learned, Potsdam, Bundeswehr Operations Command, 13 April 2016; Interview, Joint Warfare, Operational Analysis and Learning, Joint Forces Command, Northwood, United Kingdom, 28 February 2017.

¹¹ Interview, former Head of British Army Mission Support Group and Afghanistan Counterinsurgency Centre, London, 27 February 2017.

¹² Interview, former Head of British Army Lessons Exploitation Centre and former Army Chief Safety Officer, Warminster, 28 February 2017.

education should be clearly delineated, as far as possible. The Joint level cross-functional team should act as a venue to ensure that any ‘grey areas’ in the alignment of responsibility and expertise are quickly addressed when they stand in the way of acting on LI.

Conclusions: future empirical and theoretical research agendas on military learning

This article has filled an important gap in our understanding of the antecedents of military learning by highlighting the key organisational processes and activities and processes which encourage effective military learning processes, especially knowledge transformation. However, the article also points to several theoretical and empirical research agendas which will be essential in developing a deeper understanding of the conditions which facilitate learning within military organisations.

First, there is a need to improve our understanding of the mutually-constitutive relationship between the emergence of dynamic organisational capabilities and variables such as bureaucratic politics and organisational culture. As Piening (2013) and Zahra and George (2002, pp.195-97) note, well-developed dynamic organisational capabilities are capable of improving the performance of both public and private sector organisations. They enhance a military’s ability to uncover new trends in the operational environment and institutionalise successful adaptation as organisational learning in timely manner. Crucially, they have the potential to enable militaries to overcome the stasis that can occur as a result of organisational culture, bureaucratic politics and perceptions of potential personal reputation damage. Indeed, scholars such as Davidson (2011), Marcus (2015) and Murovec and Prodan (2009, p.862) highlight that once established, dynamic organisational capabilities can create a virtuous circle of improvement in organisational learning.

However, further research is required to establish greater precision in our understanding about the extent to which variables such as organisational culture (especially culturally-embedded understandings of military professionalism) and bureaucratic politics effect and are affected by the emergence of dynamic organisational capabilities. Exploring this mutually-constitutive relationship will necessitate deeper empirical investigation of national military learning processes and their knowledge acquisition, management, dissemination and transformation activities, which have received very limited attention in the academic literature on military change and organisational learning. Comparative research should explore the factors which have facilitated and undermined the ability of lessons-learned processes to successfully recalibrate key areas of military activity including training, equipment, personnel, information, concepts and doctrine, organisational, infrastructure, logistics and operational design.¹³

Furthermore, there is a great deal of scope for improvement in our understanding of best-practice in lessons-learned. Research is required to identify relevant lessons for militaries from other so-called ‘High-Velocity and Turbulent Environment’ (HVTE) professions and to understand the factors which can facilitate and impede the establishment and success of learning processes. For example, many British public sector organisations involved in high-risk, complex and rapidly-changing contexts, such as the fire and rescue services, National Health Service, and police forces, as well as private sector organisations including the nuclear industry and railways, have operated, or are developing, lessons-learned processes (Piening

¹³ For a comparative account of British and German Army and Joint-level lessons-learned, see Dyson (forthcoming, 2019).

2013, p.210).¹⁴ The British Army's Lessons Team has attempted to engage with several of these organisations to identify lessons-learned best-practice. However, this potentially mutually-beneficial engagement has been stymied by resource constraints.¹⁵

Comparative scholarship of HVTE professions could examine a range of issues, including best-practice in knowledge acquisition, management, dissemination and transformation. For example, one especially important area for future research is how advances in knowledge management technology and social media can improve knowledge acquisition and dissemination by helping to compensate for lessons-learned personnel shortages.¹⁶ Furthermore, future research could usefully investigate the variables which facilitate and undermine experimentation and creativity within HVTE professions.

More detailed case study research on military lessons-learned is also necessary. For example, a thorough investigation about the role of – and relationship between – factors such as length of service, seniority and promotion prospects on the willingness of individuals to support knowledge-sharing within and between teams is necessary. Surveys, focus groups and semi-structured interviews with military personnel from a variety of ranks within deployed contingents and the institutional military involved with instances of successful organisational adaptation/innovation would allow us to gain important insights into the conditions which promote learning. In addition, research from fields such as strategic management and psychology could identify best-practice in important sub-fields of knowledge acquisition, such as knowledge collection and dissemination processes.

Furthermore, inter-organisational learning between militaries requires deeper investigation. Coticchia and Moro (2016) analyse the drivers of inter-organisational learning by the Italian Armed Forces, providing a rich understanding of the mechanisms of inter-organisational learning driving military change at the macro-level: jointness/multinational interoperability, digitalisation, and the Comprehensive approach (Coticchia and Moro 2016, 702-10). Yet, the role of lessons-learned as a mechanism for improving the effectiveness of inter-organisational learning is unexplored (Coticchia and Moro 2016, 710-12). Furthermore, research is required to examine the effectiveness of NATO and EU activities to stimulate the cross-national exchange of lessons.¹⁷ Such research will not only add greater detail to the ideal type of lessons-learned established in this article, but will also help to provide greater clarity about the relative importance of the diverse components of the ideal type.

The lack of academic engagement with the organisational processes and activities which support military learning has undermined the quality of NATO guidance on national military learning processes. Personnel at the JALLC have a number of competing demands on their time and are unable to invest sufficient time in writing the NATO Lessons-Learned Handbook, which neglects critical organisational activities and processes central to military learning, especially knowledge transformation. It is important that these conceptual gaps are remedied in the next (4th edition) of the Handbook, which is presently under development. Engagement

¹⁴ Interview, Lessons Team, Land Warfare Development Centre, Warminster, 15 December 2016.

¹⁵ *Ibid.*

¹⁶ Interview, Lessons Team, Land Warfare Development Centre, Warminster, 10 July 2017.

¹⁷ For a preliminary exploration of knowledge management and lessons-learned within international organisations, see Ringel-Bickelmaier and Ringel (2010).

between scholars of military learning and JALLC practitioners will be essential in overcoming the negative impact of time constraints on the quality and depth of guidance on lessons-learned.

An improved NATO Lessons-Learned Handbook would also likely have positive implications for investment in lessons-learned by NATO member states. It is an unfortunate trend that during periods of budgetary cuts, warfare and doctrine centres, military history research centres and lessons-learned organisations, which are essential supporting institutions for knowledge transformation, often tend to suffer cuts disproportionately (Ucko and Egnell 2013, pp.126-27). The organisational processes and activities which support military absorptive capacity are not cheap to sustain, however the long-term savings which accrue from improving inter- and intra-organisational learning far outweigh the financial outlay. Clearer and more authoritative NATO guidance on lessons-learned best-practice would provide a strong foundation for civilian and military proponents of lessons-learned to secure greater financial resource investment in activities which support knowledge transformation.

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