Sharing Mission Experience in Tactical Organisations

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ABSTRACT

A tactical organisation can be seen as an adhocracy designed to perform missions in uncertain, ambiguous and complex environments. *Flexibility*, *adaptability*, *resilience*, *innovation*, *creativity* and *improvisation* have all been identified as key skills for successful outcome of these missions. To learn skills associated with such abilities previous research has shown that knowledge acquired through experience plays an important role. It is important that organisations share and learn from experiences to improve their ability to cope with novel situations. In literature there is a lack of consistency in how these abilities are discussed, we therefore propose the FAIRIC model. By unravelling some of the similarities and differences we create a common vocabulary to discuss knowledge gained from experience. This can help classify different experiences and provide a systematic way of gathering and modelling knowledge on situational factors to enable sharing of mission experience over boundaries of time and space.

Keywords

tactical organisation, adhocracy, SECI, flexibility, adaptability, improvisation, resilience, innovation, creativity, tacit knowledge, vicarious learning, mission history

INTRODUCTION

King (2005) reported that "Tacit knowledge in humanitarian aid organisations is often not documented, but rather derived from expertise, collaboration and field experience and imparted through briefings, discussions and first hand observations". This means that humanitarian aid organisations rely heavily on their personnel to conduct or observe missions and exercises to acquire the necessary knowledge for their work, in other words, they need experience. This is consistent with Klein's theory on naturalistic decision-making, Recognition-Primed Decision (RPD) model (Klein, 1989), which models decision-making as a process of recognising and mapping situations to pre-existing knowledge rather than through careful decision analysis of alternative approaches (Howard, 1966; 1968). Although analytical approaches such as decision analysis can certainly be applied in humanitarian aid, Klein and others have reported their limited ability to encompass operational features such as reacting to dynamic environments (e.g. Klein, 1989) and therefore argue the need of experience for efficient decision-making in complex operations.

Argote and Miron-Spektor (2011) recently published a framework for analysing organisational learning based on experience and context. They claim that "experience is what transpires in the organisation as it performs its task" (ibid, p1124). It seems that Argote and Miron-Spektor agree with King that tacit knowledge is primarily acquired through hands-on experience, which is typically expensive in organisations that are designed to perform complex or comprehensive tasks in the field. Examples of such organisations include emergency response, humanitarian aid and military organisations. Such organisations are typically designed and trained to handle a set of standard scenarios using standard operating procedures, but they are also the ones society relies on when emergencies occur that are either unforeseen or underestimated in terms of consequence; such as the WTC attack, the Hurricane Katrina, the Indonesian tsunami, the Haitian earthquake or the Japanese triple disaster. Although the importance of experience is explicitly stated in aforementioned research, neither what constitutes that experience is very clear, nor how organisations can utilise the experience and learn from it.

In this study focus is primarily put on organisations that are designed to perform tactical operations in complex and dynamic environments; such as emergency response- and military organisations. These organisations are often governmental public service organisations including police, military, health care and fire brigades. For simplicity, we shall refer to these organisations as tactical organisations. Also included (and therefore in our definition of tactical organisations) are non-governmental organisations (NGOs) that perform tactical missions in humanitarian operations, e.g. International Red Cross/Crescent, United Nations. In this paper we set out to theorise about what constitutes mission experience, beginning with what is needed to enable sharing of mission experience within and between organisations. In the final section, we analyse literature on how tactical organisations cope with the dynamic situations that they are often facing, arguing that a significant part of the tacit knowledge gained through missions consists of understanding of how to deal with these situations.

MISSION EXPERIENCE

Mintzberg's (1979) typology of organisations elaborated on the work of Toffler (1970) on adhocracies. He described adhocracy as an ad-hoc operative organisation that relies on specialised teams to perform its tasks. Adhocracies represent contemporary collections of teams that "operate in an environment that is both dynamic and complex, demanding innovation of a fairly sophisticated nature" (Mintzberg and McHugh, 1985, p.160). With the previous definitions, a tactical organisation can be seen as a special case of an adhocracy, one that is specifically focused on performing tactical operations, or missions.

The very nature of unforeseen events suggests that standard procedures may not be sufficient to deal with them, hence these organisations must respond to new situations as they occur and find ways to deal with them without relying on standard operating procedures. This has been emphasised in a study of three Swedish Response Team missions where the responders reported that they in some cases were assigned roles outside of their field of competence, and had to rely on improvisation (Rankin, Lundberg and Dahlbäck, in press; Trnka, Rankin, Jungert, Lundberg, Granlund, Granlund and Johansson, 2009). Although positive effects have been associated with this improvisation, it has a negative effect on the "quality of the conducted tasks" and "transparency of the team organisation in terms of who does what" (Trnka et al., p.15). Discovering and managing dysfunctional improvised roles is therefore important and in practice the team members need to look out for each other and report if team members are too exhausted, overloaded, or lack the necessary competence for their tasks (ibid, p.17).

Argote and Miron-Spektor (2011, p.1124) argues that experience can be measured as "the cumulative number of task performances". However, they also claim that learning can be done from experience, both from the own organisational unit or acquired from another unit, in the latter case they refer to as *vicarious learning* (ibid, p.1126). Thus, they argue that knowledge can be gained both from own mission experience and from others' ditto. Regardless of how the experience is gained, it can help an operator analyse and recognise a situation in a dynamic environment (Endsley, 1995) and therefore guides the decisions-making process (Klein, 1989).

How can mission experience be transferred or acquired?

Although unforeseen disasters are infrequent, many are not unique in a global perspective, e.g. earthquakes and hurricanes are common; the WTC attack can be compared to structural collapse of buildings; the disaster in Fukushima can be compared to Chernobyl, etc. Thus, there are lessons to be learned from history. Their rarity makes it difficult to maintain hands-on experience, so in order to maintain such knowledge there is a need to transfer it over the boundaries of time and space. As the knowledge discussed here is mainly tacit, there are two ways to share it according to the SECI model (e.g. Nonaka, 1991; Nonaka and Takeuchi, 1995), through *socialisation* or *externalisation*, which is consistent with Argote and Miron-Spektor's (2011) thoughts on hands-on practice versus vicarious learning. The SECI model describes a spiral of knowledge conversions between tacit and explicit knowledge: *Socialisation*, *Externalisation*, *Combination* and *Internalisation*. Socialisation is described as "the process of converting new tacit knowledge through shared experiences" (Nonaka, Toyama and Konno, 2000, p.9). In the words of King (2005) socialisation in humanitarian aid organisations occurs primarily through first hand observation and externalised through briefings and discussions. It becomes apparent that the actual knowledge transfer of such expertise according to King is limited.

Socialisation seems applicable on frequent events as the learner can easily get access to and participate in new missions, but how can tacit knowledge from non-routine operations be shared, such as the ones first responders or

military units often deal with? Socialisation does not yield an answer, externalisation on the other hand is defined as "the process of articulating tacit knowledge into explicit knowledge" (Nonaka et al., 2000, p.9). Externalised knowledge can thus be shared without having to rely on first hand observations or experience. The SECI model implies that experience from a rare event is not different from a frequent event in terms of knowledge transfer once externalised to explicit knowledge. In other words, mission experience can at least partly be articulated and made explicit, using some knowledge representation. The success of such externalisation is dependent on the sequential use of metaphor, analogy and model (ibid, p.9), thus the context is essential, meaning that a knowledge representation designed to externalise mission experience should be able to represent relevant context. The externalised mission experience, or mission history, can be used to help other operators' gain tacit knowledge through internalisation, i.e. embodied by individuals (ibid, p.10). In the case of a written mission history, the internalisation process consists of reading and trying to interpret and understand the document, although Nonaka and colleagues do not restrict the knowledge representation to text and neither shall we. Combination of mission histories with other explicit knowledge can also be thought of as a process of disseminating and generating more systematic explicit knowledge.

The SECI model is highly cited and often questioned, sometimes critiqued for resting on Japanese management cultural practices (e.g. Glisby and Holden, 2003). Other critique include the notion of tacit and explicit knowledge as something separable in Nonaka's model, which is not in line with the definition of Polanyi (1966) who argued that the two must co-exist and are meaningless without the other, as emphasised by e.g. Adler (1995). Stacey (2001) similarly attacked the notion of knowledge as something that can be stored, measured or managed. Accepting this critique against SECI, it is still valid to argue that information can be generated from externalised knowledge; likewise that knowledge creation can be stimulated by internalising information. Similarly combination and socialisation are undoubtedly ways of stimulating knowledge creation, although Cilliers (2005) warns that "knowledge cannot be fixed in a representational way but is always contingent and contextual". This reasoning is similar to "if an organisation is to learn anything, then the distribution of its memory, the accuracy of that memory, and the conditions under which the memory is treated become crucial characteristics" (Weick, 1979, p.206).

It seems that, according to Nonaka, Weick, Cilliers and their colleagues, contextual information is important when sharing knowledge by means of externalising the experience and making it explicit, e.g. through a knowledge representation, in order to facilitate knowledge creation when internalising it. The memory Weick refers to has since been labelled *Organisational Memory*, and formally defined as "stored information from an organisation's history that can be brought to bear on present decisions" (Walsh and Ungson, 1991). Organisational Memory has since been redefined, e.g. as "the means by which knowledge from the past is brought to bear on present activities, thus resulting in higher or lower levels of organisational effectiveness" (Stein and Zwass, 1995). Thus it is recognised that history, or experience, does affect decision-making in organisations which therefore motivates the need for mission histories. In the military domain this type of information is often referred to as *Lessons Learned* (e.g. Weber, Aha and Becerra-Fernandez, 2001), and likewise systems that are designed to facilitate lesson sharing are often referred to as lessons learned systems. These systems are not infrequent; however there seem to be a lack of solutions that address the need for representing contextual information and actively supporting the process of internalising the information to stimulate knowledge creation.

As an example of internalisation of mission experience, consider fire commander training, where the commander may be exposed to a situation in which he/she must fight a burning building. The purpose of such training is to prepare the commander for duty by exposing him/her to situations that simulate real missions, and thereby generating experience. Such experience is valuable to the commander if it can positively influence decisions made in the future. Commanders often experience that the real-life situations are much more chaotic and dynamic than the scenarios they have been trained for, meaning that the training scenarios cannot substitute other learning mechanisms such as socialisation. To improve the mission history and create better training scenarios, and thus possibly reduce the need for socialisation, contextual information about the environment and the situation should be incorporated into the mission history, i.e. in the burning building scenario a commander could be exposed to mobs, panicked people, bad weather conditions, accidents at work, etc., all to prepare the commander for the dynamic environments in which real missions occur.

Recent crisis management literature suggests that resilience, adaptability, flexibility and improvisation are key abilities that must exist in tactical crisis management teams (e.g., Manyena, 2006; Rankin et al., 2011; Vera and Crossan, 2005). However, there is a lack of systematic methods to capture the situational conditions underlying these behaviours, and a lack of vocabulary to do so. To better be able to externalise and support these abilities it is important to differentiate between them and have a common language to do so. A unified vocabulary is a first step

toward identifying conditions leading to successful or less successful performance. For instance, the ability to successfully adapt a team's work performance as time pressure increases might require different set of skills and different organisational support than having generally flexible teams. The ability to differentiate between these concepts is thus a key to understanding how to capture and model such experience for inducement by internalising knowledge, e.g. through training.

COPING WITH DYNAMIC SITUATIONS

The dynamic and changing environment that tactical organisations are constantly facing requires preparation to alter existing plans and procedures when encountering new situations. We argue that one of the primary skills that operators acquire during task performance is the ability to analyse and cope with dynamic or unfamiliar situations that may arise when in duty, a knowledge that can categorised as tacit (Polanyi, 1966). In order to further understand how such skills are acquired and determine how the knowledge can be shared we decided to conduct an unstructured literature review on the topic. We found that how these operators' analyse the environment and make decisions in such dynamic and uncertain environments has received plenty of attention over the last decades in the fields of resilience engineering, improvisation and decision-making. A major problem of the investigated literature is that much of it contains vaguely defined terms such as *flexibility*, *adaptation*, *improvisation*, *resilience*, *innovation* and *creativity*. These concepts are often used interchangeably and do not have uniform definitions, making it difficult to identify and interpret knowledge required to successfully achieve these abilities. In an attempt to start unravelling similarities and differences between each concept and to create more unified interpretations of these six concepts we present a brief overview of literature relating to each of them. This review enables us to better understand related work and thereby how organisations deal with dynamic situations. Table 1 shows that synonyms for flexibility, adaptability and resilience form one cluster of cross-referencing words; while improvisation, innovation and creativity constitute a second cluster. We present a short review of each of the aforementioned terms and its' usage in the reviewed literature below.

Table 1. Selected terms related to managing changing environments and conditions, from a) The American Heritage Dictionary of the English Language; b) Collins English Dictionary – Complete and Unabridged; or c) WordNet 3.0.

	Explanation	Synonyms
Adaptability	ability of becoming suitable to a particular situation[c]	variable[b], versatile[b], changeable[b]
Flexibility	responsiveness to change[a]	adaptable[a], resilient[b], elastic[a]
Resilience	the ability to recover quickly from illness, change, or misfortune[a]	buoyancy[a], flexibility[b], adaptability[b]
Improvisation	to invent, perform or compose something extemporaneously[a]	extemporise[b], ad-lib[b], invent[b], get by[c], deal[c]
Innovation	act of introducing something new[a]	invention[c], conception[c], creativity[c]
Creativity	the ability to create[a]	productivity[b], innovation[c]

Flexibility

Flexibility is a concept that is applied in many contexts. Despite its popularity flexibility in literature today is multi-faceted and means different things to different people, e.g. Sethi and Sethi (1990) identified over 50 definitions of flexibility in a manufacturing context. Due to this extensive use in different fields it lacks a unified definition. In a review of its use it research literature it has been noted that although it is often recognised as an important trait it is an academically immature concept (Saleh, Mark and Jordan, 2009). Disciplines where the term has had a large impact include decision theory (Mandelbaum and Buzacott, 1990), managerial flexibility (i.e. financial value of flexibility) (Fricke, Schulz, Wenzel and Negele, 2000) and manufacturing systems (Sethi and Sethi, 1990). Other areas where the concept of flexibility is central are, for instance, role flexibility, relating to flexibility in the composition of teams (e.g. Stewart and Barrick, 2000) and the emerging field of engineering systems design (e.g. Saleh et al., 2007). In literature of crisis management and for tactical organisations flexibility is often acknowledged as a critical aspect to meet the demands of dynamic, uncertain and constantly changing work environments.

It is suggested that one of the main difficulties in defining the concept is due to the fact that it is about the *potential to change* and, hence, it is difficult to observe, measure and define (Saleh et al., 2007). This view that holds flexibility as a proactive trait that prepares an organisation for foreseen events is intermittent in the literature (e.g. Hitt, Keats and DeMarie, 1998; Molleman and Slomp, 1999; Priest, Burke, Munim and Salas 2002; Saleh et al., 2007). However, definitions of flexibility as a reactive trait are also available, for instance Hitt el al. (1998) distinguish between strategic flexibility (proactive) and a firm as ability to constantly rethink every aspect of the firm's operation (i.e. reactive).

Adaptability

Like flexibility *adaptability* is used in a great variety of fields, often seen in articles on cognitive science, business models and economic development (e.g. Hutchins, 1991; Engert and Smith, 2009). Adaptability is one of the five cornerstones in the *Big Five* framework of teamwork (Salas, Sims and Burke, 2005) and defined as the "ability to recognise deviations from expected actions and readjust actions accordingly" (Priest et al., 2002). This definition describes adaptability as a trait that allows organisations to respond reactively to situational change. The broadness of the term often requires classifications of different types or an explanation of what it is adaptive with regards to. For instance, to describe adaptability in team performance in crisis management Trnka and Woltjer (in press) describe different dimensions: *controller adaptation*, *resource adaptation* and *adaptation to unexpected disturbances and changes*. As this example illustrates adaptation is used to describe very different abilities; the controller adaptation is defined as a self-regulation to adapt to changing goals; resource adaptation is a process of reorganising and redeploy resources by giving orders; and adaptation to unexpected disturbances and changes is reacting to unforeseen events.

Improvisation

Improvisation is also a concept found in a variety of contexts. Moorman and Miner (1998) listed 42 co-existing definitions from six different disciplines and concluded based on this that the concept of improvisation is the process of planning and execution with a narrow time gap. General models for understanding how improvisation is orchestrated have been made within the fields of theater and jazz (e.g. Vera and Crossan, 2005). These models have subsequently been applied in other domains such as organisational improvisation (for a review, see Pina e Cunha, Vieira da Cunha and Kamoche, 1999) and improvisation in crisis management (Zumel, Franco and Beutler, 2008; Mendonça and Wallace, 2004). Although the improvised activity differs depending on the context several factors influencing the quality of improvisation appear to be consistent throughout the studies. For instance, improvisation is a highly structured activity, implying that a certain amount of structure is necessary even in unpredictable situations (Pina e Cunha et al. 1999; Grøtan, Størseth, Rø and Skjerve, 2008; Lundberg and Johansson 2006; Mendonça and Wallace 2007; Vera and Crossan 2005). Also, successful improvisation requires training, resources and skills (e.g. Crossan and Sorrenti, 1997; Drabek, 2001).

Improvisation can be seen as a range of different behaviours - at one end as small deviations in intended courses of action and at the other end spontaneous actions based mainly on intuition (Crossan and Sorrenti, 1997). Some of the more recent definitions emphasise the temporal aspect of improvisation, e.g. "a combined behavioral and cognitive activity that requires serial creativity under tight time constraint in order to meet performance objectives" (Mendonça and Fiedrich, 2006). This definition allows modelling of improvisation as a separate component in problem-solving and mission execution, and the required temporal convergence differentiates it from intuition, creativity and adaptation.

Resilience

Resilience comes from the Latin word "resilio", meaning "to jump back" (Manyena, 2006). It has a history in the field of ecology (Holling, 1973) and psychology (Waller, 2001) and is today commonly referred to in crisis and disaster management (for a review see Manyena, 2006). Resilience as such is more reactive than proactive since having a resilient trait is associated with being non-susceptible to outer disturbances.

Resilience Engineering is an emerging field stemming from cognitive systems engineering and focuses largely on the ability of complex socio-technical systems to maintain control (Hollnagel, 2009; Hollngel, Woods and Leveson,

2006). Resilience is seen as ability to deal with changes that go outside of the designed- for system tolerances. Applied in control situations it can be viewed as the ability "to handle unforeseen disturbances and variations" (Trnka and Woltjer, in press). The discipline of resilience engineering is still a young field and there is an observed lack of a shared analytical framework (Furniss, Back, Blandford, Hildebrandt and Broberg, 2011; Hollnagel, 2009). One of the reasons for this may reside in the fact that it is hard to observe and measure a systems resilience as it only can be determined in hindsight. Although resilience is reactive, resilience engineering is more proactive as it is a process of preparing an organisation for outer disturbances, or taking the necessary steps to create a resilient organisation. In resilience engineering literature, resilience is often described by using abilities such as adaptability, flexibility and improvisation (e.g. Grøtan et. al., 2008; Somers, 2009). Adaptability, flexibility and improvisations are characterised as key premises for resilience although uses of these concepts are not consistent and the concepts are often used interchangeably. It is important to note though that the aim of resilience engineering is not merely to create adaptable and flexible organisations, as it targets abilities connected to a system stepping outside of its boundaries, i.e. using a strategically flexible model for normal operation does not necessarily mean it is resilient (i.e. can handle disturbances and unforeseen events), although this type of model may strengthen an organisation's resilient abilities over time.

Innovation

Adhocracies "operate in an environment that require both dynamic and complex, demanding *innovation* of a fairly sophisticated nature" (Mintzberg and McHugh, 1985, p.160). The innovation they mention is often linked to entrepreneurship (e.g. Drucker, 1985, Denning and Dunham, 2010) and thus much research on innovation is focused on business, although Denning and Dunham argue that innovation ranges from personal to planetary, i.e. that innovation is everywhere. Innovation is sometimes used to describe the previously mentioned concepts, e.g. "improvisational activity involves some degree of innovation, because it goes beyond automatically repeating a pre-existing routine" (Moorman and Miner, 1998, p.702 with reference to Crossan and Sorrenti, 1997 and Weick, 1996). Another view on innovation is given by O'Reilly and Flatt (1989) and Ancona and Caldwell (1992) who note that innovation is a process that requires creative problem-solving and flexibility.

Creativity

In academic use, the term *creativity* can be thought of as three distinguishable concepts: "personality-based", "process-based" and "outcome-based" (Suh, Bae, Zhao, Kim and Arnold, 2009). Personality-based creativity is a personal trait whereas process-based is defined as "the degree of a team's development of new knowledge in their project process" (ibid, p.213) and outcome-based as "the degree of development of new knowledge as an outcome of a project" (ibid, p.212). To further distinguish between the two they continue: "a team is [process-based] creative when team members come up with novel ideas and problem-solving skills" and "the novel ideas and innovative problem-solving skills result in [outcome-based] creative implementation and completion of a given project" (ibid, p.213).

The FAIRIC model

Figure 1 below shows the identified links (represented as edges) between research usage and definitions of the concepts of *flexibility*, *adaptability*, *resilience*, *improvisation*, *innovation* and *creativity* (FAIRIC), represented by nodes, as identified by the brief literature review presented above. The nodes have been laid out on two ordinal dimensions: proactiveness (of the team's response to the changing conditions) and the unfamiliarity of the new situation (for the team). The chosen dimensions have been selected in an attempt to create a sensible distinction between the terms, without empirical investigation of their perceived meaning, which could help validate the model. At the far right end of the model are the most proactive types of change management, i.e. adjusting the system to cope with new situations before they happen; while the other end represents more reactive change, i.e. adjusting the system to cope with new situations as they occur. In other wordings, the nodes to the left can be considered tighter coupled to event-driven control (reaction) while the nodes to the right are to a larger extent associated with precautionary measures. On the vertical axis is the (un-) familiarity of new situations, i.e. the nodes on top are more

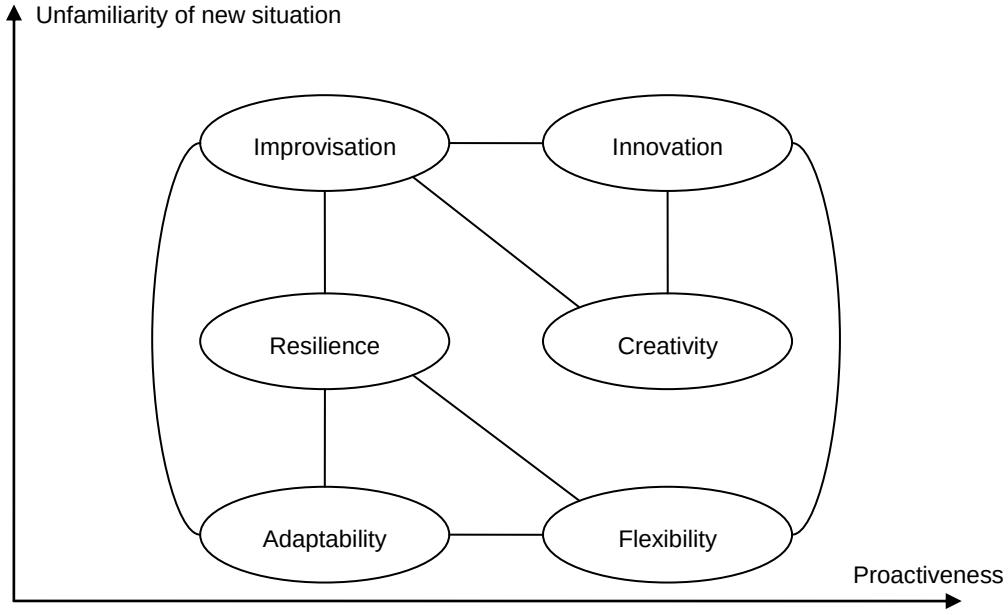

Figure 1. The FAIRIC model, relating concepts of coping with dynamic situations to each other.

associated with situations which the team has not encountered before and thus where they can be expected to have less knowledge on how to successfully deal with the new situation, e.g. for which there are no standard operating procedures. However, that does not imply that the teams do not have relevant knowledge for dealing with the new situation, on the contrary it has been argued before that improvisation and innovation can be guided by knowledge (e.g. Mendonça and Fiedrich, 2006; Drucker, 1985, Weick, 1998; Trnka and Johansson, 2011).

Distinguishing between the FAIRIC abilities, as in the proposed model above, enables a more fine-grained analysis of how to train for them. In an emergency response scenario, situations may arise that require the commander to *adapt* (reactive, low unfamiliarity) to compensate for changes in the environment; or perhaps even *improvise* (reactive, high unfamiliarity) if the new situation has never been encountered before, e.g. as reported by Weick (1993) after the Mann-Gulch disaster. Inventing such new tactics proactively is different from improvisation as the element of time pressure is not as inherent. As such, *innovation* is a different skill that often takes the form of adopting lessons learned from improvisation or experimentation. On the other hand, it could be even more important for an organisation to have the ability to deal with standard, or common, events, i.e. to have a certain degree of *flexibility* (proactive, low unfamiliarity) as they re-organise the teams based on available competencies (e.g. Rankin et al., in press). Rankin and colleagues also showed that teams can be flexible without having the ability to improvise, which further motivates the need of distinguishing between these separate abilities (ibid).

CONCLUSIONS

We argue that tactical organisations, such as emergency response or military organisations, fit the description of adhocracies (Mintzberg, 1979) designed to perform missions. With this definition it becomes clear that tactical organisations operate in dynamic environments and are often exposed to unexpected situations (Mintzberg and McHugh, 1985). Much knowledge associated with dealing with such situations is tacit, making it difficult to share without externalisation or socialisation processes. However, the SECI model (Nonaka, 1991) shows that tacit knowledge can indeed be used to generate explicit knowledge through *externalisation*, and therefore King's (2005) observation that "tacit knowledge in humanitarian aid organisations is often not documented" tells a story of a problem in humanitarian aid organisations that can be fixed using better *externalisation* processes, i.e. by having the ability to articulate the experience.

Literature has revealed six common abilities that are used to describe how operators cope with dynamic situations that arise in tactical missions: *flexibility*, *adaptation*, *improvisation*, *resilience*, *innovation* and *creativity*. We argue that their definitions are unclear, and that literature often use these terms without clearly stating what is referenced. As we could not find a uniform description of how these concepts relate to each other, and much of the literature seemed to use them interchangeably or without defining their meaning, we have proposed the FAIRIC model, detailing their relative meaning and relationships (see Figure 1). Based on an informal literature review, we argue that these six concepts are all important to the operators' ability to gain situation awareness (Endsley, 1995) and make better decisions. Although there is an overlap between aforementioned concepts they are also distinguished abilities that each requires attention. Future studies should address the similarities and differences in more detail to gain knowledge of successful performance in dynamic environments.

Successful externalisation of mission experience requires understanding of the FAIRIC abilities. By unifying our understanding about the FAIRIC abilities, we take a major step toward finding methods for representing the tacit knowledge associated with them, and thereby enabling explicit sharing of such mission experience, and therefore enabling improved learning from, and training for, missions.

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