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ABSTRACT

Contemporary operations are characterised by more local conflicts, more dynamic circumstances and a less predictable enemy. Besides that, commanders must be able to be present at various locations, because of the involvement of different parties. This requires a more agile command post, supporting distributed command and control. A command post with reachback facilities, in which the commander can co-operate with his staff while being on the move, could meet these demands. However, such a concept has major consequences for aspects of team work, leadership, information support and organisation. This paper describes the results of an experiment with a reachback concept within the Royal Netherlands Army (RNLA) 43 Brigade staff where the staff was equipped with collaborative tools in a changed organisational context. The results show that the reachback concept is promising, enabling the commander to operate at a distance while maintaining accurate situational awareness. However, improvements, especially in the communication with other staff members, have to be made to be successful during operations. The next step will be to enhance the concept and focus on reachback concepts enabling staff members to co-operate from outside the operational area.

INTRODUCTION

Contemporary conflicts around the world show many differences compared to the large-scale threats during the cold war. Conflicts have a more local character, in which the situation is often more dynamic and less predictable. The 'enemy' is more difficult to identify, the approach is asymmetric and confrontations take place in urban areas more frequently.

Besides conflicts, the approach of military operations is changing as well. The hierarchical structure, in which higher commanders give the orders that are performed by the lower echelons, is changing into a structure of smaller, independent teams with more responsibilities. Instead of following orders effects have to be accomplished (Alberts & Hayes, 2003). At the same time, joint and combined operations, in which force and nations work together, become more common.

Thirdly, improvements in communication and information technology are continuously taking place. This has effect on military action and Command & Control. For example, network structures become serious alternatives for hierarchical structures. In this context, major developments are found in *Network Centric Warfare* (NCW) and *Network Enabled Capabilities* (NEC).

The developments mentioned above have consequences for the military command post. The contemporary command post has to meet the requirements of the new situation. Besides that, the technical developments also offer new opportunities to improve the command post, resulting in more effective Command & Control.

We think that the use of a reachback concept, in which staff members are physically separated, can meet the demands of the future command post. However, dislocating staff members can also cause drawbacks that have to be overcome. In this paper, we discuss the advantages of a reachback command post concept. Second, we identify possible risks of reachback. These are described in four focus areas. Based on these areas we developed a reachback concept for the future command post. This concept was tested during an exercise of the 43 Brigade of the Royal Netherlands Army (RNLA). The test and results are described as well. Finally, we discuss the next steps to take to improve the reachback command post concept. But first we will define reachback.

DEFINITION REACHBACK

In general, reachback refers to a situation where resources, capabilities and expertise are at a physical distance from the area of interest, supporting the people in the area to perform their tasks. For example,

the US Joint Doctrine defines reachback as the process of obtaining products, services, and applications, or forces, or equipment, or material from organisations that are not forward deployed (Joint Doctrine Division, J-7, Joint Staff, 2001). Neal (Neal, 2000) emphasises technology by defining reachback as ‘the *electronic ability* to exploit organic and non-organic resources, capabilities and expertise, which by design are not located in the theater’. Indeed, technological developments enhance the possibilities of applying reachback. This is acknowledged by Lackey (Lackey, 2003). He states that reaching back to higher headquarters, which traditionally enjoy larger staffs and larger reservoirs of knowledge, experience, and information, is not a new concept. New is the array of information resources available in real time or near real time. Also new are the electronic networks used to deliver information from knowledge repositories, whether human or electronic, to those requesting knowledge. However, reachback is more than technology alone. Custer (Custer, 2003), for example, defines reachback as a virtual and *collaborative strategy* to access, share, and disseminate information in support of intelligence, manoeuvre, and logistics regardless of distance, time, or echelon. It shows that reachback is not only an ability, but can also be a strategic choice to accomplish the mission.

THE ADVANTAGES OF REACHBACK

Reachback facilities have advantages, that can improve the operational performance of a military command post. The most important advantages are the following.

Safety

Command posts and the compounds in which they are located are vulnerable to attacks. For example, mortar attacks, car bombs or suicide bombers can cause serious damage or casualties. By using reachback facilities less personnel has to be present in the area of operations. As a result less people are exposed to these attacks. This means not only the staff members, but also the personnel needed to support them.

Mobility

When the command post has to move to another place, less people in the area of operations have to be relocated. The reachback outside the area of operations can stay in its place. The command post can be moved faster and easier, which increases its mobility. Thereby, reachback facilities make it more easy for staff members (for example, the commander) to move while keeping informed about the situation.

Flexibility

Because situations are often dynamic and hard to predict, all possibilities have to be kept open and anticipated. All possible situations have to be identified and plans have to be made to cope with them. A command post that is able to anticipate every situation is able to operate more flexible. However, it takes more staff capacity to create all these alternative plans. It is easier to expand the number of staff members outside than inside the area of operations. The limitations of a military command post or compound are less relevant with reachback facilities.

Specialist support

Specialists are often scarce in military operations. Specialists can only be at one place at the same time. When a specialist is needed at different places at the same time, choices have to be made. As a result, one of the locations will have to proceed without the needed expertise. Another problem arises when expertise is needed fast, but not available in the area of operations. By using reachback facilities specialists can give their support at different locations from a distance.

Logistics

Less people and material have to be transported to and within the area of operations. Therefore, it takes less logistical effort to deploy, maintain and remove a command post.

Detection

The larger a command post area, the more easy it is to be detected by enemy forces. By reducing the size of it in the area of operations the chances of being spotted and attacked by the opposing forces or other parties decrease.

RISKS OF REACHBACK

There are also risks involved when using a reachback concept. For example, staff members are not at the same location anymore, which has its consequences on information sharing, communication,

discussing, etc. In our study, we focus on four areas, in which possible risks may occur. These areas are described below.

Team work

Implementing and utilising the concept of reachback to keep major portions of staff personnel outside the combat area is not without difficulties. The fact that staff personnel is distributed across different locations and time zones raises questions about the possible negative implications and effects on team processes and outcomes. For example, the use of electronic communication tools can hamper collaboration between dispersed team members, due to difficulties in communicating information and conducting conversations (Driskell, Radtke, & Salas, 2003; Strauss, 1997; Siegel, Dubrovsky, Kiesler, & McGuire, 1986; Lea and Spears, 1991). Alongside the potential benefits for its members and the organisation as a whole, teamwork in a reachback concept brings several drawbacks that can constitute major barriers to team effectiveness (of a staff)(Gibson & Cohen, 2004). Challenges for virtual team effectiveness are: (1) failure to develop effective interpersonal relationships, (2) communication mishaps, and (3) lack of awareness of team members' endeavours (Thompson and Covert, 2006, Priest et al., 2006, Gibson & Cohen, 2004)). These challenges will pose a threat to the effectiveness of a reachback command concept.

Leadership

A reachback command concept also has consequences for leadership. The virtual character of a reachback command concept requires effective distanced and distributed forms of leadership (Fair, Connaughton and Daly, 2004). *Distanced leadership* concerns leadership from afar or leadership that is geographically separated from the team. Distanced leadership often implies distributed leadership as well. Distributed leadership involves the sharing of leadership roles and activities between leaders and team members because the environment is too complex and dynamic for one single leader to operate effectively. Distributed leadership may have different forms, for example delegated leadership, co-leadership or peer leadership (Brown & Gioia, 2002). Although leadership needs to be distanced and more distributed, leadership issues will remain more or less the same: leaders will still be confronted with the same problems and must be competent in the same leadership activities as effective leaders in a traditional command and control organization (Fisher & Duncan Fisher, 2001; Kayworth & Leidner, 2002; Brown & Gioia, 2002). However, leadership activities need to be executed with different methods (Fisher & Duncan Fisher, 2001) and within the more complex and dynamic environment of a reachback command concept. In other words, leadership is exercised at a distance in time and place, in different organisational contexts and cultures, and with the use of information and communication technologies. Therefore, several leadership activities need to be redefined from face-to-face expression to virtual expression. These leadership activities are roughly related to two leadership functions: team development and performance management (Bell & Kozlowski, 2002).

Information support

A main task for the military staff is to make sense of the current situation. Sensemaking is a process by which individuals and organizations reduce uncertainty or ambiguity and create an understanding of the problem situation. In practice, sensemaking is an activity in which people transform information about events into a scenario that explains the situation at hand. Weick (1995) states that sensemaking refers to how meaning is constructed at both the individual and the group level. The process of sense making is seldom performed individually. Sense making is often performed in teams, in which staff members advise and critique each other. In group sensemaking effective communication is essential (Weick, 2005). There is a serious risk that the perceived benefits of collaborative sensemaking, collaborative critical thinking and advising does not exceed the perceived costs associated with mediated communication. Critical thinking is a cognitive process based on reflective thought and intended to make decision makers aware of incomplete understanding, conflicting arguments, unreliable information and ambiguous evidence . The result of this process should be a more reliable and complete account of the situation.

Collaboration takes time and effort, especially when collaboration is mediated and when the interface and underlying functionality for interaction is not properly designed. Collaborative sense making within the command post is a process that mainly takes place between staff members. Each Principal Staff Officer has dedicated sources of information and area of expertise to assist the commander in sensemaking and decision making; hence the need for the command team to meet for the purpose of exchanging and sharing knowledge. Currently, the primary means to support the complex and interactive nature of discussions is face-to-face communication between a physically co-located team.

The question is whether modern technology and the promise of greater bandwidths for communication and data throughput allow individual dis-located staff members to communicate and collaborate as if they were physically co-located.

Organisation

The magnitude of problems with mediated communication partly depends on the organisational structure. It depends on the way tasks are allocated to different actors, the interrelations between those tasks, and the way actors are allocated to different locations. Highly interdependent tasks require more communication than tasks that can be performed independent of the other tasks. The cost of mediated communication can for instance be reduced, when highly interdependent tasks are allocated to co-located actors. Collaborative critical thinking, for instance is a highly interdependent activity. The intensity of communication for instance also depends on the dynamic with which different aspects of the problem state evolve and need to be communicated. In a situation where members of a team are physically separated, collaboration problems also depend on whether technological enablers facilitate the way staff members want to communicate.

THE REACHBACK COMMAND POST CONCEPT

Our concept contains three main parts: the command element, near reachback and far reachback. (see Figure 1). Less urgent staff activities, that don't require direct presence in the operational area, are performed in the far reachback. For example, (parts of) future plans can be made outside of the operational area, as long as the right information is available. Other tasks, however, can only be performed properly by being in the operational area. For example, being in direct contact with local authorities might be important, or estimating the situation properly is only possible by being there. Within the operational area, two entities are present: the command element and the near reachback. The command element is a moving platform (e.g. a vehicle). This increases the commander's mobility, enabling him to visit others, like lower commanders or local authorities. In the first phase of the project, we concentrated on the command element and its communication with the near reachback. The other elements will be explored in a later phase.

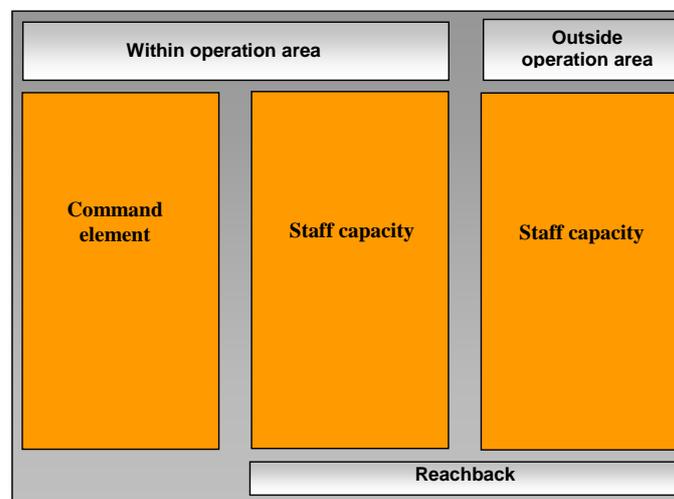


Figure 1. Reachback concept elements

A more detailed view on the command element is found in Figure 2. Two main tasks in command and control are collecting information about the current situation (intelligence) and making plans to achieve the operational goals (planning). Therefore, besides the commander, two assistants are present in the command element: the assessor and planner. The assessor is responsible for making an overview of the current situation (situation awareness) and possible future consequences. Given the situation, the planner is responsible for making plans to achieve the operational goals. The commander, assessor and planner work as a team, that is supported by a *shared workspace*. It shows a common picture of the current situation, threats and plans, which they can discuss. Also, camera shots of the reachback location are available, in order to create a sense of presence.

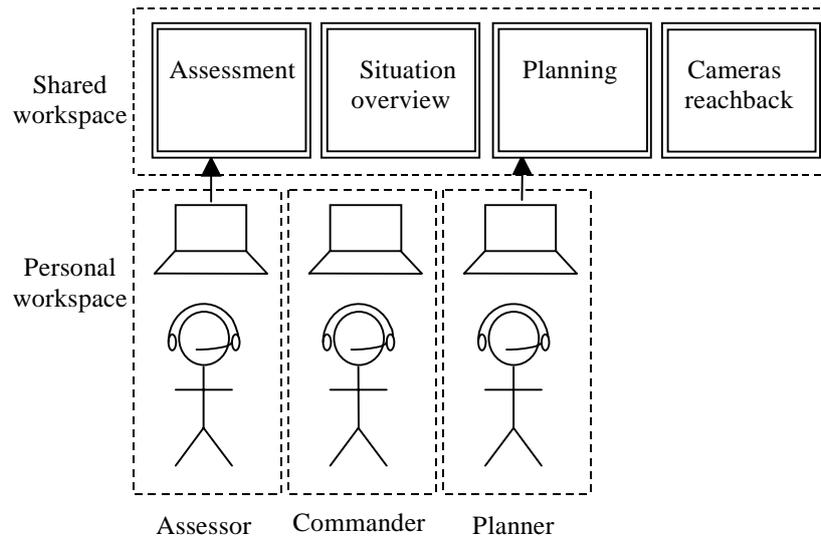


Figure 2. The command element

Individually every member has a *personal workspace*, in which they have access to information and tools they need to perform their individual tasks. Besides that, it gives them access to their counterparts in the reachback. The command element members have a voice and video connection with their counterparts. Counterparts have the role of sparring partners receiving assignments, that can be performed by other members in the reachback. Besides that, command element members and counterparts use a shared application, which enables them to work simultaneously in shared documents.

EVALUATION

Method

The concept was evaluated during an exercise of the RNLA 43 Brigade staff. A peace keeping scenario was played for two hours, while the commander and assistants were separated from the rest of the staff. The command element members were able to communicate with their counterparts by using voice, video and Microsoft Office OneNote 2003. During the exercise, observations were made by the experimenters. Right after the exercise, the staff members filled in a questionnaire. This was followed by a group discussion about the experiences of the staff members. Finally, a personal interview with the commander was performed.

Results

In general, the reachback concept was judged as a promising concept for future operations. Besides that, the staff came up with suggestions for improvements related to the four focus areas.

Team work

An important condition to work successfully with dislocated teams is team building. Team building can only take place before the operation. Staff members need to know and trust each other very well. Trust cannot easily be established during the mission. Therefore, preparation is an important issue. Second, dividing the staff can lead to differences in team awareness at the two locations. This means that the two groups may have different ideas about the situation and how to act. Staff members should be able to have face-to-face contact in order to prevent this. Third, the communication tools were not sufficiently able to support group discussions between the different locations. Group communication tools (for example, group chat) should be added. The video link with the counterparts was not considered to be useful. Voice was enough to express urgency and importance.

Leadership

Like in team work, trust and social-emotional processes like teambuilding are important issues in leadership as well. It takes some time for a commander to establish leadership and to be trusted by the staff. Trust and teambuilding should take place during preparation for a mission. To maintain trust and

to manage social-emotional processes, the commander should be physically present and have face-to-face contact regularly. The effects of face-to-face contact cannot be replaced or compensated by technology completely. Therefore, the commander should not leave the staff if it is not necessary to do so.

Leadership from the command element is mainly task directed. From the command element goals, direction and vision can be communicated to the reachback and lower commanders. It is important to communicate the commander's intent to the staff or lower units. This can be accomplished easier in a situation with physical presence. The available technology in this concept is not yet sufficient to compensate for this.

Information support

The information that is supplied to the command element is sufficient to create an actual picture in the current situation under certain conditions. First, Staff members in the reachback must be well-trained. Second, the reachback must push the right information at the right time. Third, information support systems with which information is shared must be interoperable. As long as the required staff member is available and has the information needed, it is easy to get the requested information. However, this was not the case during this experiment. Because all information was exchanged through the counterparts information supply was delayed and the quality was reduced. There was no direct connection between the command element and the required specialists. Therefore, more effort was needed to get detailed information or details were ignored. Besides that, the counterparts task load was too high. This makes the information exchange slow and vulnerable. One-on-one communication should be made possible without the interception of other persons. This communication should be supported in a synchronous (e.g., radio, telephone, chat) and asynchronous (e.g. voicemail, e-mail, database) way.

Organisation

The staff showed a need for more flexibility in the size and composition of the command element. In the first place, a command element with three members did not seem to be able to work twenty-four-seven. Besides that, the composition of the command element depends on the mission. Different missions require more or less people with different expertise. Therefore the command element should be scalable and adjustable, depending on the operation.

As shown above, organising the communication between the command element and the reachback through counterparts complicated the information exchange. The counterparts created an information funnel, which had a negative effect on speed and quality. The reachback command post concept requires a more flexible, network-centric information exchange and communication, which should be supported by a organisation structure with the same characteristics.

The commander was not sufficiently able to perform his tasks. This was mainly caused by of the fact that he had to control the support tools himself. Being occupied with controlling the tools can hinder the commander from keeping a view on the overall picture. Task organisation could be improved by leaving system control to other people.

CONCLUSION

Contemporary conflicts, military operations and technological developments ask for new command post concepts that fit the modern needs. Within this context, reachback is a potential concept for modern warfare. However, a reachback concept should be carefully constructed in order to optimally support the command and control process. More is needed than technology alone to apply reachback. This study focussed on four areas and its implications on the application of reachback: teamwork, leadership, information support and organisation. The focus areas were used during the development of a reachback concept. At the same time these areas were explored during an evaluation with the RNLA 43 brigade. Reachback was considered to be a potential command post concept for future operations. However, the used concept still needs improvements. From a teamwork and leadership point of view it was shown that trust and knowing each other is an important prerequisite for the success of reachback. This can be accomplished by training and preparation. Still, face-to-face contact is needed on a regular base to maintain a shared team awareness and commanders trust. The results from the area of information support and organisation show the need for a network approach, in which staff members are able to communicate directly with each other and share the same information. However, the ability to communicate with everybody and share all information raises a new problem. First, having access to large amounts of data makes it difficult to find the information needed. Besides that, finding the right

person with the right expertise, and giving and receiving advice at the right moment remains a problem, also with a network-centric approach.

FUTURE RESEARCH

In the study described above, we focussed on the command element in relation to the near reachback. This year we will study the far reachback and its collaboration with the near reachback. The staff of the RNLA 43 brigade will be distributed between The Netherlands and the Caribbean area during a joint and combined exercise. We will study the consequences on the command and control process, focussing on teamwork, leadership, information support and organisation.

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