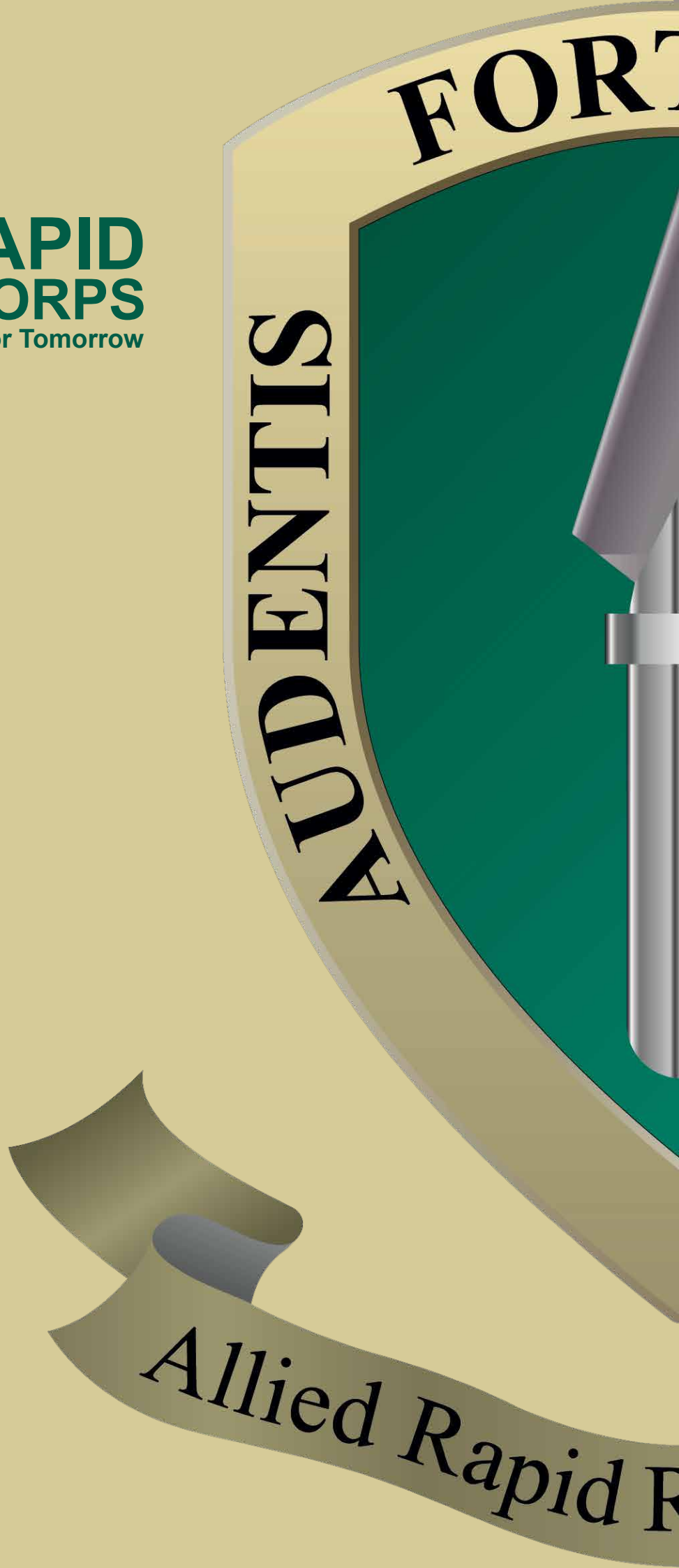
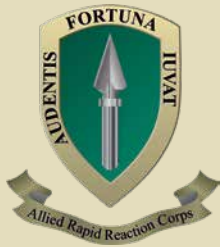


ALLIED RAPID REACTION CORPS

Ready for Today - Evolving for Tomorrow

Journal
2019





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FOREWORD

Welcome to the 2019 ARRC Journal. 2018, with its focus on the Corps Deep Battle, was the second year in a five-year plan aimed at recalibrating the ARRC back to a warfighting role. This plan sits as part of the ARRC's broader Capabilities, Development and Experimentation (CD&E) programme and is, in turn, nested within NATO's pioneering work on adaptation and modernisation. The articles in this journal reflect elements of that work, as well as highlighting some wider, individual conceptual thinking. Further lessons will undoubtedly emerge in 2019 as we concentrate on Corps Rear Operations and as the ARRC works towards achieving Initial Operating Capability, following Exercise ARRCAD E FUSION in November.

I'm extremely grateful for the commitment and professionalism of those, from across our 23 Participating Nations, who've found the time to turn their thoughts into words. I commend these articles to you.



Lieutenant General Tim Radford CB DSO OBE
Commander, Allied Rapid Reaction Corps

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EVERYTHING THAT'S NECESSARY, NOTHING THAT'S NOT:

Reducing the Footprint of the Deployed Corps Headquarters

Major John Westwood, British Army
Captain Miles Cuff, British Army

Exercise ARCADE FUSION 2017 (AF17) experimented with the 'Survive to Command' concept, culminating in the endorsement of a Forward Command Post (Fwd CP). This year's AF19 will see the ARRC experimenting with its Main CP as it attempts to 'Survive to Control'.

As the 'engine room' that drives operational staff work, the Main CP must be located in theatre, under the protection of theatre ballistic missile defence (TBMD), and out of reach of the enemy. However, the Main CP that deployed on AF17 has a physical and electromagnetic footprint that is distinct and immediately identifiable as a corps headquarters. The only way to reconcile these two factors is to reassess what the Main CP is, how it operates and what its essential outputs are.

Survive to Control

The Concept. It is impossible to make the Main CP invisible, so survival in a modern battlespace is achieved by reduction, dispersal and concealment in plain sight amongst the noise of other headquarters, enemy and civilian activity. Not only does this reduce the probability of being seen, targeted and struck, it also reduces the impact of such a strike on essential operational outputs.

Reduction. It is tempting to reduce the size of the Main CP by cutting positions in the deployed establishment or splitting personnel amongst a greater number of smaller work spaces. However, if the Survive to Control concept is to be innovative, as opposed to an iteration of the current status quo, the basic principles of the Main CP must be questioned.

Dispersal and concealment. The dispersal and concealment of the Main CP across multiple cells is currently being investigated by the Command and Control Working Group (C2WG) and will not be examined further in this essay.

This essay seeks to outline the basic principles that should be used to reduce the footprint of the Main CP and increase survivability. It will go on to propose practical solutions, with real-world examples of how this can be applied in time for AF19. Ultimately, the aim is to raise questions that stimulate deeper thought about the nature and operation of the headquarters. As all proposals are invitations to discussion rather than

solutions to be shot down, it is hoped that this article will be read with this in mind.

A note of caution

Many of the suggestions presented here are intended to encourage thought and discussion. In a multinational headquarters it is understood that national sensitivities, the strength of the Alliance and manning priorities may mean that the ARRC might not be able to make the same efficiencies as a national headquarters.

Basic Principles

The Method. To successfully reduce the size of the Main CP, we need to



The ARRC deployed at RAF St Mawgan as a JTF HQ. Note that the living accommodations and cookhouse cover the same area as the headquarters working area. Additionally, no attempt has been made to disperse, camouflage or conceal its footprint.

understand why it exists, establish how it must operate to justify this existence, and, finally, what resources are needed to facilitate its operation. To try and reduce the 'what' without understanding the 'how' or 'why' will lead to a failure of tactical control, which is the essential purpose of the Main CP.

Outputs (Why). The Main CP holds tactical control over the Corps, delivering essential functions that can only take place in the battlespace: Planning, sustainment, enabling and assessment. All activity within the Main CP must service these functions. Any activity not essential to these functions or could occur outside theatre should be reduced or eliminated. This should be extended to functions that are performed by higher or lower formations.

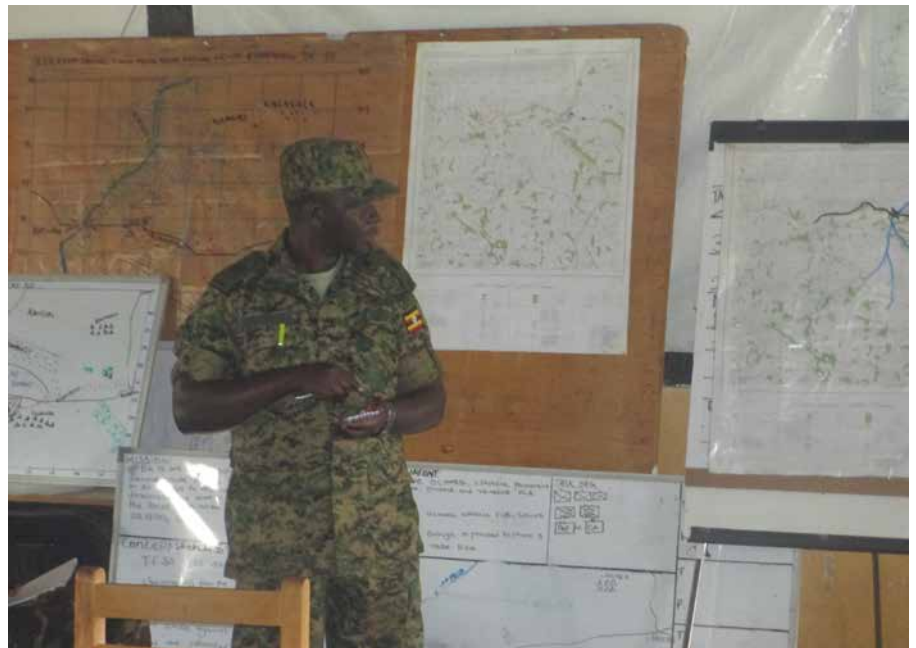
Processes (How). The processes that drive the battle rhythm of the Main CP must be effective in the first instance. If a process does not deliver an essential function then it must be eliminated. Once unnecessary processes have been removed, what remains must be refined until they are the most efficient way of delivering effective output. Specifically, processes must use as few resources as possible (time, space, personnel, power and bandwidth).

Physical requirements (What). The physical requirements of the Main CP must be the minimum required to enable processes to deliver essential outputs. Any physical assets beyond this must be eliminated.

Proposals

Outputs. The ARRC has been naturally influenced by the last 18 years of counterinsurgency operations. Accustomed to thinking like a joint task force (JTF) operating from a fixed base, there are many functions and outputs that are simply not necessary. This has led to a bloated establishment and replication of JTF and divisional activities that are not needed within a tactical corps headquarters. Of the many examples that come to mind, strategic communication (STRATCOM) is arguably not a corps function as the corps implements STRATCOM from the higher formation. Another example is G2 analysis, which is a corps function, but does not have to be in theatre. The C2WG is currently working on identifying functions that can be performed out of theatre using a 'reach-back' model and reducing unnecessary functions.

Processes. The headquarters undertakes many processes to deliver its essential outputs. Nearly all of



The UPDF planned and executed the deployment of a brigade to South Sudan using only maps, whiteboards, notebooks and two mobile phones.

these are technologically enabled, but as processes have been adapted to meet the requirements of advancing technology, both effectiveness and efficiency have suffered.

Computers were designed to perform calculations that were too time consuming for a human to perform manually. They are very good at maintaining a high level of accuracy when conducting repetitive tasks, however they are often not utilised in this way.

The negative impact of email on productivity and trust has been well documented. Unfortunately, this has had little impact on the headquarters; despite acknowledging that face-to-face communication is optimal and preferred, email remains the most prevalent method – even between people working in the same tent.

The use of PowerPoint as a briefing, planning, and working tool has grown exponentially in the last decade, yet many of the tasks it is used to perform could be achieved better by other means. Increasingly, the veneer of good presentation is over-valued when the same or better effect could be achieved with a concise verbal brief and sketch. Too much time is spent perfecting slide packs that add little value and receive cursory attention. Planning teams can work much more effectively around a map with a scribe producing a set of written orders, rather than getting bogged down in slides, templates and software. Doubtless, other processes would benefit from a similar approach.

The desire for an 'all-informed net' has utility to a point, however, this has led

to tents full of people staring at JCHAT or navigating SharePoint rather than adding value to the operational outputs of the headquarters. Maintaining situational awareness can be as simple as a watchkeeper calling out issues as they arise or a regular verbal SITREP.

This essay seeks to outline the basic principles that should be used to reduce the footprint of the Main CP and increase survivability.

Additionally, providing continuous operations does not mean that the headquarters must be fully manned 24/7. The close battle is being conducted by the divisions and the corps has limited ability to affect anything in real time. Most branches do not need to be physically represented during silent hours. For example, planning teams are looking beyond 96 hours and should not routinely need to work beyond normal working hours. Periods of high tempo may require longer days, but this should be the exception rather than the rule. Other outputs may not require representation outside key battle rhythm events and can therefore release personnel to conduct rest and personal administration activities.

The UK has delivered a number of Short Term Training Teams (STTT) to support the Uganda People's Defence Force (UPDF) in their brigade planning processes. Early STTTs saw brigade headquarters with a single laptop to create Operational Staff Work (OSW). However, this did not prevent them from planning, publishing OSW and deploying the whole brigade to Southern Sudan in 48 hours using nothing more than maps, notebooks and two mobile phones. Later STTTs were struck by the decline in attention to detail and tempo as the technological footprint of the brigade grew; 'cut and paste' OSW became the norm to the detriment of the output of the headquarters. While the bare bones model may not be something that the ARRC should seek to replicate, it does show that technology is not as essential as we like to think it is.

Physical Requirements. Once unnecessary functions and processes have been removed, and what remains has been optimised, the physical requirements of the headquarters can be addressed. While concurrent and collaborative working adds considerable value, there is an opportunity to reduce the number of laptops in the headquarters. In teams where such work is not essential, this could be as simple as having only two computers; one for the team lead and one for a scribe. The remainder of the team is released to focus on adding value and supporting output, creating an associated saving in desks and tent-space. Additionally, questioning the comfortable nature of the fixed base model could bring substantial reductions. For example, not all personnel need to have a hot shower every day. There is nothing preventing the provision of hot water for personal hygiene, with a showering facility held in the rear area to be brought forward on a regular basis or rotated through as individuals require. A fully established cookhouse and dining facility is similarly not necessary. The Danish and German contingents have deployable field kitchens that operate from an intermodal container (ISO) or trailer that can support a company-sized element, with individuals finding their own space to eat. Looking at the physical footprint of the headquarters, the use of large 'Rubb' tents for work spaces (purchased for semi-permanent locations during insurgency campaigns) are difficult to camouflage and conceal. Dispersed 18 x 24-footers, either under a camouflage net or hidden in buildings of opportunity, are far easier to hide, even if they are in the same general location. Accommodation tentage presents an even larger footprint,

which could be broken up and hidden in buildings of opportunity or removed entirely. Personnel could sleep on camp cots under ponchos or on roll mats in a treeline. It must be recognised that however unpleasant living in cold, wet and austere conditions is, it is preferable to dying in comfort.

Balance. Clearly there are balances that need to be found between comfort and survivability, effectiveness and efficiency. Living under a poncho may be survivable, but over time it would degrade the ability of the headquarters to be effective. Similarly, living in a comfortable tented city may be very effective until it is struck by the enemy. The aim of this article is not to strip out everything in the service of efficiency, but rather to raise questions over how we do business as a corps headquarters. As a multinational organisation, cultural change can be a slow and potentially contentious process, but we need to be willing to take risks and see if we are capable of rebalancing our comfort, survivability and efficiency with an acceptable level of effectiveness.

Conclusion

While it is argued that form follows function, the assumption that the headquarters will naturally find an effective and efficient configuration is flawed. While it is true that it is relatively easy to introduce new ideas, it is very hard to get rid of the old ones. Indeed, staff officers can fall victim to the temptation to follow the path of least cognitive resistance in an attempt to maintain current working practices and support a familiar status quo. Often this leads to greater levels of exertion to produce lower quality output. This is not to say that officers are intellectually lazy, rather they are the product of their experience. Fifteen years of counterinsurgency in Afghanistan is not helpful. The ARRC must be bold and work from basic principles rather than rely on the inherited wisdom of 'this is how we do things'.

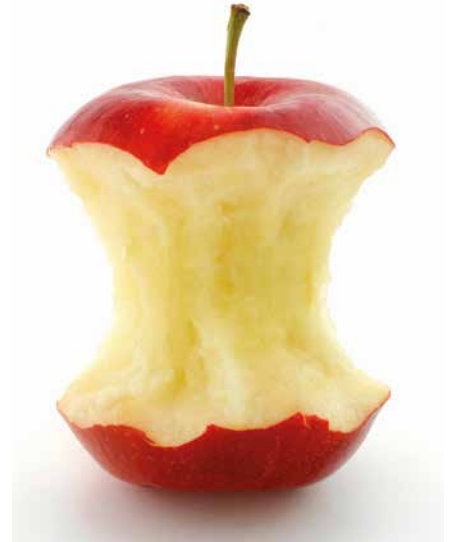
The ARRC is one of the most influential innovators across NATO; rewriting corps doctrine has sparked the interest of many countries across NATO. The Survive to Command concept was a welcome leap forward in the return to corps warfighting. Exercise ARRCAD E FUSION 19 is a rare opportunity to experiment without the spectre of CREVAL hovering at our shoulder. With many countries looking at the ARRC to give insight into the future of modern warfare, the ARRC has a responsibility to show that the status quo does not limit our thinking and should not limit theirs.

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ON CORE



Major Charlie Sprake, British Army

This article considers the Allied Rapid Reaction Corps's (ARRC) journey through 'Corps Recalibration', 'Survive to Command' and 'Survive to Control'. Its purpose is to encourage thought, discussion and debate.

The Context

Tomorrow's adversaries are becoming more unpredictable in nature as technology allows them to resource deception in innovative ways. To compound this problem, 15 years of counter insurgency (COIN) campaigning has fertilised the wrong seeds in the thinking of many western countries. Our doctrine and capabilities tend to have a distinct, sandy colour and we have gown fat where we need to be agile and dexterous (Command and Control (C2)), and thin where we need muscle and sinew (Manoeuvre and Command Support).

Like many militaries, the British Army has been finding ways to reduce the scale of its force while retaining 'seed corn' capabilities in order to regrow as the threat increases. Driven by financial recession and the resulting polarisation of values and ethics, our assumption of long-term stability is being undermined. Unexpected threat and opportunity vectors emerge ever more rapidly through the proliferation of disruptive technologies. The Allied Rapid Reaction Corps (ARRC) has not been impervious to this.

"No matter how clearly one thinks, it is impossible to anticipate precisely the character of future conflict. The key is not to be so far off the mark that it becomes impossible to adjust once that character is revealed".¹

The Question

The moment of epiphany for the ARRC occurred during Exercise TRIDENT JUNCTURE 2016. It was here that we realised our main headquarters (MAIN) was in superb shape to conduct operations as a Land Component Command (LCC) headquarters, with all our functional branches, firing like the pistons of a well-oiled machine and churning through complicated tasks safe under the umbrella of theatre ballistic missile protection (TBM(P)).² Justifiably, we congratulated ourselves for a job well done and staff officers, connecting with their colleagues around them from the comfort of their desk, couldn't see it - they were 'standing too close to the wall'. Approaching the headquarters from the outside, a fresh set of eyes could immediately identify the problem; we

had become too big. The question was simple: How long will the ARRC survive if TBM(P) is removed?

The answer to this problem has been a journey of discovery and mostly rediscovery. Principles, processes and procedures that were disregarded as being outdated in the 1990s are being resurrected and incorporated with cutting edge technologies (and in some cases, well established CIS) under what has been termed 'Corps Recalibration'.

The Journey

Corps Recalibration is a methodical, four-year return to corps warfighting, one we are all now familiar with. Survivability is the guiding principle upon which a C2 estimate was conducted in late 2016. In November 2016 the Principle Planning Group (PPG) were presented

¹ Future Character of Conflict (FCOC), DCDC 2018.

² Complicated. Difficult to analyse, understand and explain.

with options and a roadmap was agreed to enable us to 'Survive to Command'; this was to be a sequential process with a focus on the Command (Forward (FWD)), then Control (MAIN) over the next four years.

'Survive to Command' accepted MAIN's inability to deploy outside of TBM(P) and aimed to create a command post (CP), which could provide the ARRC commander with a physical and sustainable presence in the area of responsibility (AOR). The guiding principles for 'Survive to Command' were:³

- Make maximum use of distributed command in an agile, small CP that supports decision making.⁴
- Unconstrained by current headquarters models.
- Minimise electronic and physical signatures. Hide with a low-profile deployment.
- Use a building of opportunity (BOO) and move to enhance survivability.

The result was a small FWD CP, which was to be austere and reduced in manning to the point of discomfort. After some preliminary testing and many questions about its validity, FWD was deployed on Exercise ARRCAD E FUSION 2017. With experimental communications techniques and equipment, the CP was able to move regularly and provide the ARRC's commander with the situational awareness (SA) he required. A healthy appetite for risk, acceptance of failure, trust and delegated authorities were all essential to the success of this experiment.

Attention now turned to MAIN. The ARRC's commander (via Chief G3) directed the C2 working group (C2WG) to use, where applicable, the assumptions, lessons and principles of the FWD CP to address the vulnerabilities of MAIN. There was one key change: MAIN would no longer be under TBM(P). This project inevitably became known as 'Survive to Control'.

In early 2018 those brave enough attended the Exercise ARRCAD E THOR C2 sub-group. The question posed was, "During corps warfighting, what is the minimum number of staff the ARRC needs in the AOR in order to maintain MAIN's functionality?" The extant figure was too large, mobility

would be impossible without prohibitive equipment acquisition and our signature, by any recognisable metric, would be immediately identifiable. A new approach was needed without bending the laws of physics or sticking our heads in the sand.

The corps study period (CSP) saw the C2WG return to the problem. Lessons from Exercise ARRCAD E Fusion 2017 (FWD and CJOC), and the 3rd (UK) Division's Exercise IRON RESOLVE 2017 among others, had pointed towards the use of 'integrated cells' as a way of maximising staff effort and resolving complexity on the modern battlefield. Indeed, our own doctrine relies upon the integration of staff on the basis of planning horizons as shown in Army Field Manual (AFM) Command (Figure 1).

Encouraged by this, the C2WG conducted some introspection. In the ARRC the staff come together and integrate during battle rhythm events, returning to their branches to conduct day-to-day business. The doctrine and emerging battle management systems (a CIS cocktail of C2, SA, BSM) gave us a thought: What if we turned this on its head? What if we permanently established as integrated cells? Would the CIS allow us to communicate with our branches? Many briefs were already being carried out on the network. Surely it was possible. Our thoughts were echoed by the UK's Joint Concept Note on Future Command and Control (JCN 2/17, Sep 17).

"Structures in our current operational headquarters are, often stove-piped,

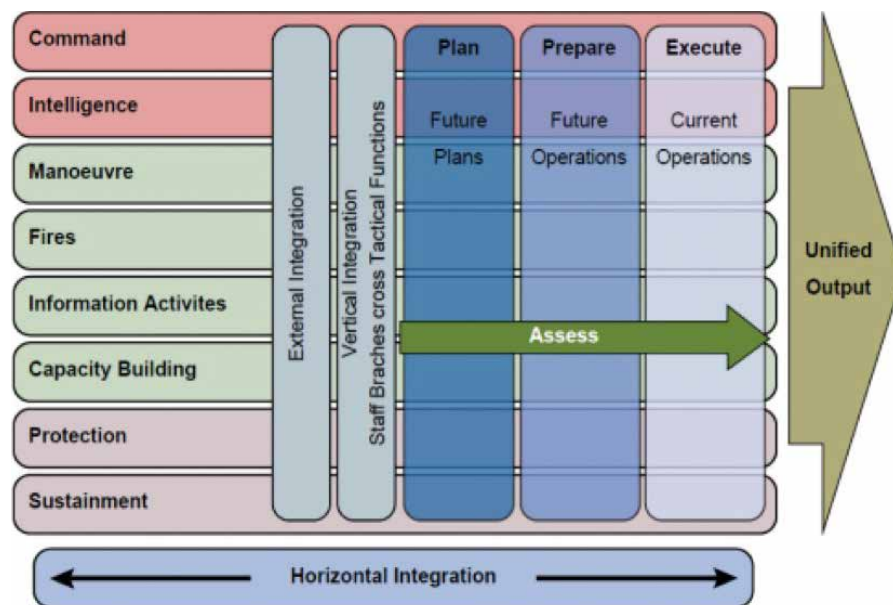


Figure 1 – Synchronising Functional Branches across Integrating Cells

Functional Cells. *The staff branches ... should be organised into Functional Cells based upon the 'Tactical Functions'.*

Integrating Cells. *Each of the Functional Cells provides staff to the Integrating Cells during the Operations Process.*

CP Considerations for the Integrating Cells. *A CP should be organised into Integrated Cells. The integration is based on the traditional G staff as well as specialist capabilities.*

*Army Field Manual (AFM) Command.
May 2017*

J1 - J9 staff branches. These structures are maintained for ease of cooperation with similarly organised staff branches in other operational headquarters, rather than for addressing the full breadth of full spectrum activity and associated missions and tasks. This may be addressed with a structure that is more outcome focused⁵, rather than functionally organised. Breaking out of the J1-J9 structure will be challenging".

"Alternatives to J1-J9 structures, may bring about greater benefits in managing complex interrelated and dynamic problems. Different options should be considered including the decentralisation of decision-making where appropriate,

3 Situational Awareness and SME knowledge, from which the commander could take 3-star decisions, as well as longevity.

4 Draft UK AFM 3: Command dated 2017. Distributed command is broadly the deployment of bespoke functionality to one location whilst using reach back/ reach forward communications to the non-deployed Main CP. Dispersed command sees the HQ staff deployed forward by functional grouping but not centrally located.

5 The Standing Joint Forces Headquarters structure based on understand, design, operate and enable offers one alternative model.

as demonstrated in Figure 2. By placing authority for action close to the source of the complexity, de-centralised and adaptive C2 processes provide the most flexible and effective mechanisms for improving synchronisation and maintaining the drive towards unity of purpose. Such ideas and approaches are essential components of mission command. However, we should not underestimate the remaining challenges, such as achieving sufficient commonality of intent in a diverse grouping or coalition” (JCN 2/17).

If we were able to create a MAIN made up of integrated staff cells, with all the tactical functions represented, and then knit it together with robust CIS – wouldn't that create a powerful core? The CSP concluded with the drafting of specialised integrated cells. From here we could sense opportunities to deploy in flexible, innovative ways.

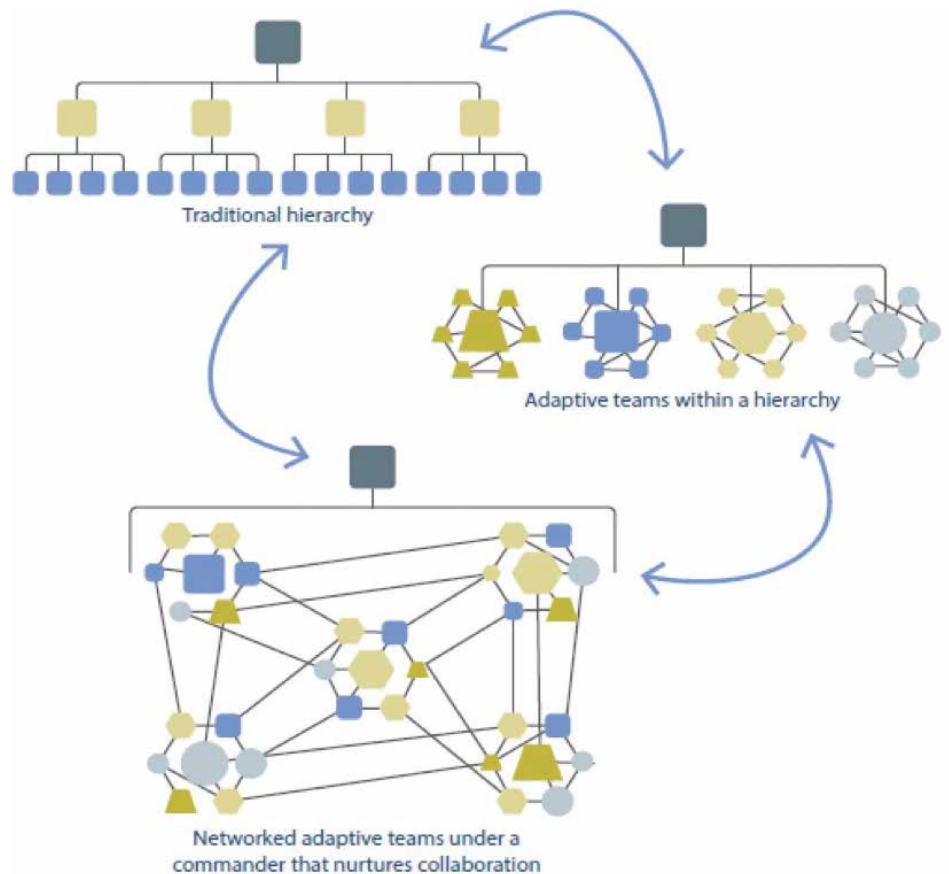


Figure 2 – Transitioning between different models of command and control

The Next Steps

After a change to the Long-Range Training Plan (LRTP) and the ARRC's re-rolling as a corps headquarters, some adjustments have been made to the C2WG timeline – this 'slow burner' has had a little petrol poured onto it! There remain many unanswered questions, with particular regard to protection, which includes the electromagnetic environment, manoeuvre and mobility, staff ways of working and interoperability, the connection between C2 and

Information Manoeuvre and deep and rear operations. The Chief G3 will be the headquarters' lead on this work and the C2WG, under the Assistant Chief of Staff (ACOS) G3, will drive forward from January 2019 with a surge of activity in order to inform the CSP and subsequent testing on Exercise ARRCAD EGE. In the end, there is no end. Of course, one will be posted, new faces and fresh bodies will pick up the mantel, but the ARRC must strive to continually change, adapt and develop. Our structures must enable this adaptation.

ABOUT THE AUTHOR

Major Charlie Sprake is a 10-year veteran of the British Army and currently serves as the ARRC's lead on Digitisation. In his previous assignment he completed the Intermediate Command and Staff Course (Land) at the Defence Academy of the United Kingdom in Shrivenham, England. Maj. Sprake has led platoon-level combat and counterinsurgency operations in Afghanistan. A native of the United Kingdom, Maj. Sprake holds a Bachelor's Degree from Oxford Brookes University and is currently completing requirements for a Master's Degree in Business Administration.

At the heart of the answer to this survivability challenge has to be: What is the staff's centre of gravity? In other words, what is at the ARRC's CORE? If we can find this, and protect it, we will survive. If we can replicate it we will generate resilience and if we can leverage it for operational effect we will control the battlefield. If we can achieve all three, we will win.

“...the difference between command and control on the one hand, and adapt and collaborate on the other, was the difference between success and failure.”

Gen. Stanley McChrystal, US Army (Retired)

ENABLING NATO SURFACE-TO-SURFACE DEEP FIRES IN HIGH INTENSITY WARFIGHTING

Developing New Synergies at Corps and Theatre level

Lieutenant Colonel Timothy Iddon, British Army

Exercise DYNAMIC FRONT 2018 (DF18) was an exceptional exercise for the concept development and experimentation (CD&E) of new ideas and confirming existing fires strategies.

The Allied Rapid Reaction Corps (ARRC) Joint Fires and Influence Branch (JFIB), along with additional support personnel from within the headquarters, served as the primary training audience and were well exercised by US Army Europe's (USAREUR), 7th Army Training Command. Also participating in the exercise in support of the ARRC and placed under its command were the experimental UK Corps Air Defence Cell (CADC), the 138th (US) Field Artillery

Brigade (FAB) and the 1st (US) Air Cavalry Brigade (ACB)).

The exercise allowed the ARRC to conduct a limited comparison between UK and US Force Field Artillery Headquarters (FFAHQ), experience the intricacies of commanding corps troops, work with theatre special operations forces (SOF) and USAREUR's Theatre Surface Fires Command (TSFC), and integrate Grey Eagle Unmanned Aerial Systems operators into the headquarters, who operated in direct support of the ARRC via the 1st ACB.

The ARRC's JFIB learned several valuable lessons during DF18. The exercise also sparked considerable debate between members of the JFIB's joint fires staff. This debate led, in part, to: A review of and subsequent changes to the existing fires elements of the Command and Control Technical Arrangement (C2TA – an arrangement that identifies relationships and responsibilities founded on affiliations for training purposes only); a discussion on the role of the TSFC and how the ARRC interacts with it; and, most importantly, it led the joint fires staff to consider how the ARRC can replicate the functionality and various attributes and assets associated with a US corps-level FAB.

Aim

This short essay is not designed as a guide on how to fight the corps deep battle. Rather, it is focussed on examining the capabilities required of a scalable multinational (MN) FFAHQ designed to support the ARRC in all three of its roles as either a joint task force (JTF), a land component command (LCC) or a corps headquarters. Additionally, this essay will discuss Surface-to-Surface (S2S) fires and associated assets required to establish a multinational FAB (MN FAB), capable of delivering S2S fires in high intensity warfighting against a peer enemy. Finally, this essay will provide an overview of USAREUR's TSFC concept and insight into the existing C2TA.

TSFC Overview²

The 19th (US) Battlefield Coordination Detachment (BCD) designed the TSFC concept in order to fill the gap in NATO's theatre fires capability, which resides squarely at LCC level. The purpose of the TSFC is to deter aggressors within the European Theatre of Operations, provide protection for currently deployed NATO enhanced Forward Presence (eFP) battlegroups and, during hostilities, counter any adversary overmatch in S2S fires assets and command and

“In time of war, a commander always demands more artillery than he is allocated and, sadly, in times of peace the value of artillery and the lessons learned through history are nearly always forgotten.”¹

¹ J.B.A. Bailey, Field Artillery and Firepower (Oxford: Routledge, 1989).

² Reference: European Theatre Surface Fires Command Operational and Organisational Concept Paper - Draft V3

control (C2) systems. The TSFC's critical capabilities are designated as 'Plan, Integrate and Deliver' (Figure 1). The TSFC's identified critical requirements are the need for a common doctrine, a suitable and sustainable multinational manning model, integrated communications, an integrated fire control solution (likely to be based on Artillery Systems Cooperation Activities (ASCA)) and suitable common training opportunities.

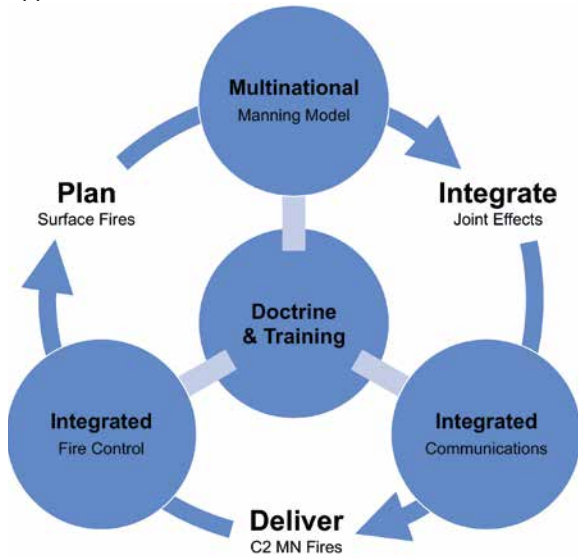


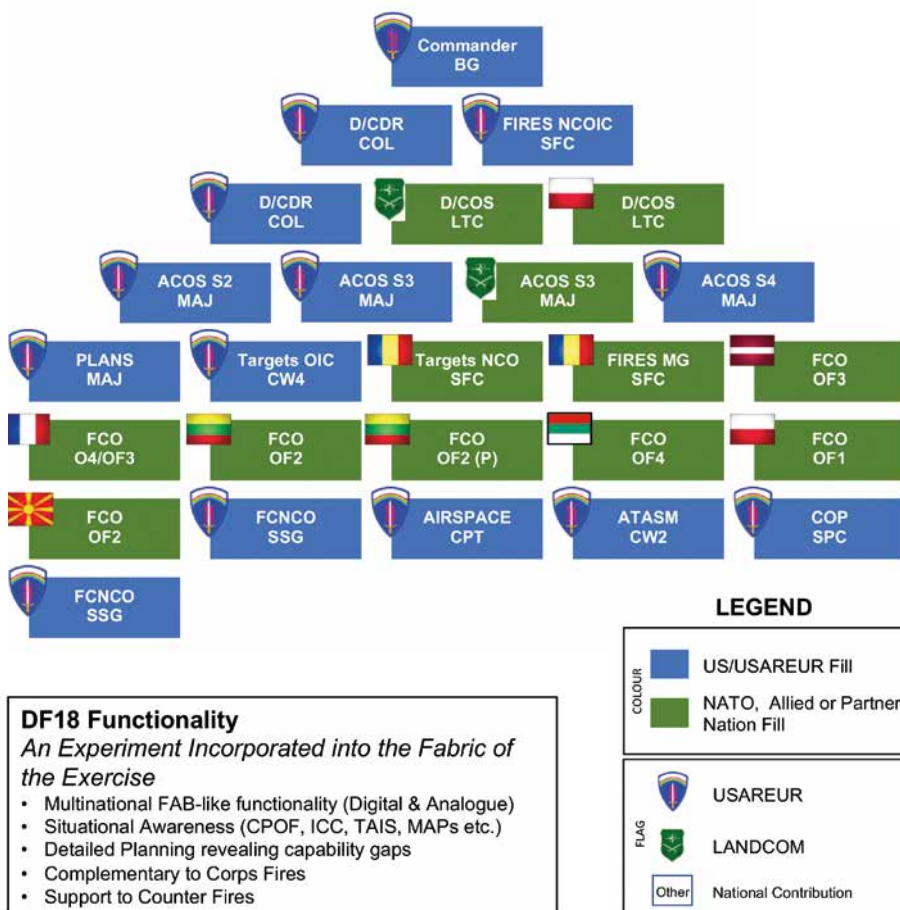
Figure 1. TSFC Critical Capabilities and Requirements

The TSFC's first proof of concept was DF18. Its structure was based on a US FAB headquarters and headquarters battery (HHB), but the manning was a representative skeleton of 26 personnel as opposed to the HHB's standard 170. The stated manning liability for a fully functional TSFC headquarters is 271 personnel. The outputs of the HHB and, therefore the TSFC, is equivalent to a MN FFAHQ. However, the number of personnel, their roles and responsibilities, capabilities, and working practises may differ. The representative manning of the TSFC during DF18 was provided by a mixture of personnel from the USAREUR fires staff and 19th BCD (framework manning), as well as artillery staff officers from across NATO and its partners (Figure 2).

The communications infrastructure was pooled from various sources (mainly US/UK) and ably configured to form Mission Secret (MS) and NATO Secret (NS) Federated Networks (FN). These FNs allowed NATO and US systems and services to run in parallel and, where required, integrate and interoperate. The level of understanding and the outputs from the HQ were amplified by the efforts of:

1. The 2500th (US) Digital Liaison Detachment (DLD), which provided liaison officers (LOs) and integrated systems (Command Post of the Future (CPOF), Air and Missile Defence Workstation (AMDWS), Advanced Field Artillery Tactical Data System (AFATDS) and Tactical Airspace Integration System (TAIS)) within the ARRC's operations centre (OPSCEN).
2. The 138th (US) FAB, which provided a fires LO party and was positioned in the OPSCEN in order to enable digital fires.
3. The 1st (UK) Signals Brigade, which provided NATO common services across the force down to divisional level.

These systems and their supporting personnel enabled the integration of air, aviation, S2S fires and air defence within the headquarters, and provided excellent situational awareness through the delivery of a combined US CPOF and NATO's Integrated Command and Control (ICC) common operating picture. This combination of systems and level of integration and cooperation provided unparalleled fires C2 connectivity. When coupled with excellent situational awareness, the result was the effective delivery of LCC, corps and division fires using ASCA compliant fire control systems and JCHAT (Figure 3). So effective was this arrangement that it was possible to resource and action a call for fire (CFF) from any source within any of the exercising command levels up to the LCC level. This also included requests for counter-fires (CFs), reinforcing fires, cross-boundary fires (practised up to corps level) and CFF in support of SOF. The concept proved highly successful and enabled a true synergy of fires across the force. It is certainly the type of integration and interoperability the ARRC and its FFAHQ must replicate in its role as a JTF, LCC or corps.



DF18 Functionality
An Experiment Incorporated into the Fabric of the Exercise

- Multinational FAB-like functionality (Digital & Analogue)
- Situational Awareness (CPOF, ICC, TAIS, MAPs etc.)
- Detailed Planning revealing capability gaps
- Complementary to Corps Fires
- Support to Counter Fires

Figure 2. TSFC manning during Ex DF18

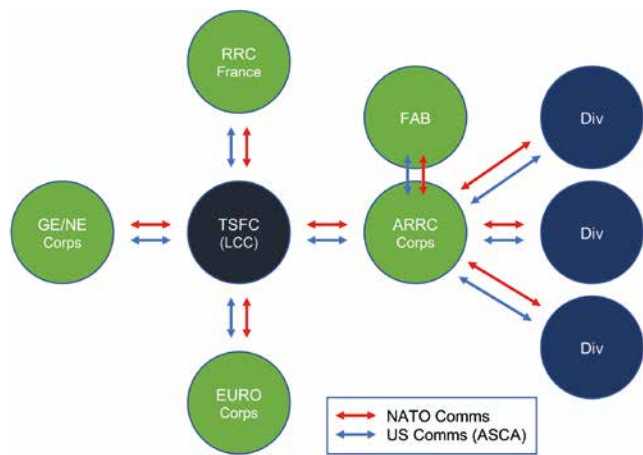


Figure 3. Surface-to-Surface Fires Network

C2TA

The C2TA is a document that establishes an agreement between the UK Secretary of State for Defence and NATO. Not only does it establish a command relationship between the ARRC and the Supreme Allied Commander Europe (SACEUR), it defines the national force elements the ARRC requires in order to deploy and identifies the participating nations (PNs) who will provide such forces. As much as this would allow for the precise composition of a MN FFAHQ and MN FAB, the reality is that the C2TA is founded on an affiliation for training purposes only and has no C2 implication for force generation within a crisis or operational setting. Until such time as changes are made to the construct of the document, from an arrangement to an agreement, requiring a commitment beyond training to include operational deployment, the ARRC will be required to scope multiple options to ensure that, regardless of PN offers, a fires C2 structure will be in place that is sufficiently flexible and has been tested in a robust training environment.

Moving Forward

The ARRC has three deliverable FFAHQ options available to it – a framework nation (UK based and tested during Exercise ARRCAD E FUSION 17 (AF17)), a US FAB (tested during Exercise DYNAMIC FRONT 2 (DF2) and DF18), and a scalable MN FFAHQ and MN FAB, which is a concept yet to be tested. The requirement for a

third option is born out of the ARRC's experience during DF18 and coupled with lessons learned from previous exercises (DF2, AF17, Exercise IRON RESOLVE 2017), and ARRC's exposure to the 19th BCD's TSFC concept. The three options are covered in detail below:

Option 1 – Framework Nation (UK-based)

The framework nation option, provided by elements of the 1st (UK) Artillery Brigade (1 (UK) Arty Bde), is limited in numbers, both in personnel and assets, but is highly capable. It is naturally suited to smaller operations or operations associated with the ARRC's JTF role where the ARRC is simultaneously functioning as a JTF and LCC headquarters with a division under its command. Unless this option is reinforced with additional manning and associated S2S fires and ISTAR assets, it will struggle to compete in a medium to high intensity warfighting environment, especially one in which the 3rd (UK) Division (3 (UK) Div) is committed. The 1 (UK) Arty Bde would find simultaneously supporting the

ARRC and 3 (UK) Div to be challenging unless significant augmentation in both personnel and equipment were provided for.

Option 2 – US FAB

The US FAB option, with its HHB providing the FFAHQ function and integrated fires, C2 and ISTAR capabilities, provides an ideal solution for the ARRC in all of its roles, especially when conducting high intensity corps warfighting or acting as an LCC headquarters with multiple corps under command. However, the commitment of a US FAB to the ARRC, although desirable, cannot be guaranteed, hence the need for a third, MN option.

Option 3 – Scalable MN FFAHQ and MN FAB

This option, if resourced correctly, provides most, if not all, of the capabilities that the US FAB option provides. However, it is streamlined to do so with fewer personnel. Depending on the ARRC's assigned task, its structure and manning can be adjusted to provide a scalable light, medium and heavy configuration. The light and potentially medium configurations could be resourced solely by the framework nation (mission dependant) with core personnel and potentially some fires and ISTAR assets. The heavy configuration, which would support a more demanding, medium to high intensity warfighting environment, would require significant augmentation from NATO. The following configurations have been suggested and are an example of what a MN FAB supporting a high intensity warfighting corps/LCC might look like.

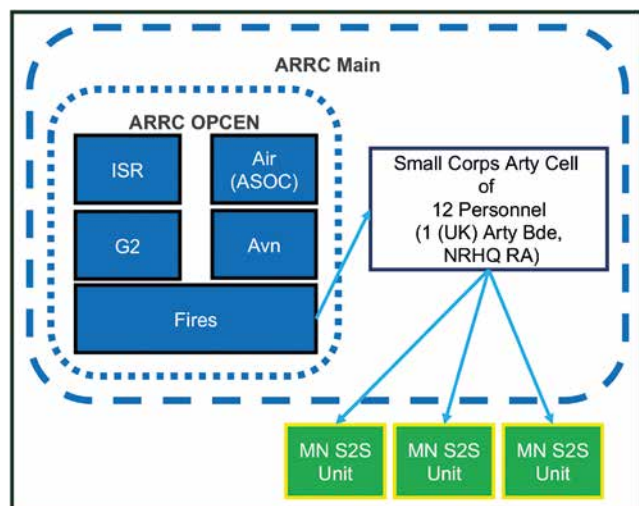


Figure 4. Framework Nation Corps Artillery HQ (UK)

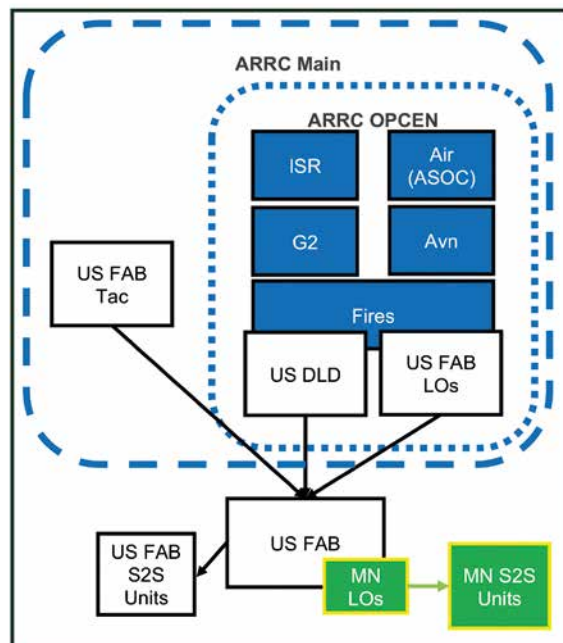


Figure 5. FFAHQ Based on US FAB

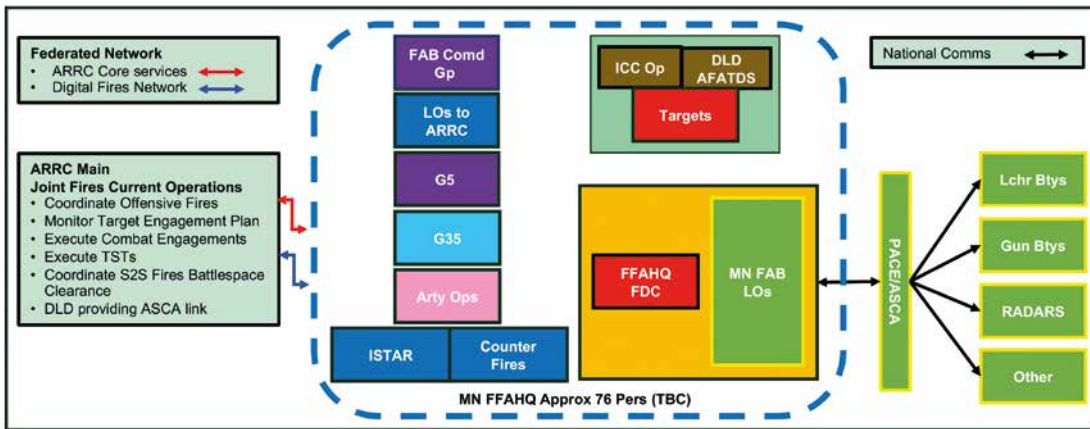


Figure 6. MN FFAHQ and FAB - Heavy Option

MN FFAHQ and MN FAB Options in detail

As the ARRC strives to maintain a headquarters that is light and agile enough to survive in a modern, high intensity warfighting environment, it is undesirable to add more C2 elements to the existing headquarters, such as a FFAHQ of 170 to 271 personnel. These additional numbers, if they were to be added to the current ARRC main headquarters, would run contrary to the intent of the ARRC’s C2 working group and specifically against the ‘Survive to Command’ and ‘Survive to Control’ concepts. However, this does not take away the need for a highly capable and scalable MN FFAHQ and an associated MN FAB.

A compromise must be found that allows both concepts to co-exist. Innovative solutions must be introduced that mitigate the excessive number of personnel required by a fully functional FFAHQ, such as collaborative working practises that allow the staff within the ARRC main headquarters to complement the overall output of the MN FFAHQ (i.e. production of and contribution to the refinement of the TEP). Doing so would reduce the FFAHQ’s manning requirement. Coupled with this is the requirement to counter the negative effects associated with dislocation by guaranteeing secure communications over sufficient bandwidth to allow staff outputs to be freely communicated and distributed between the two headquarters. This will require robust technical solutions in order to counter attacks against such communications systems.

The ARRC’s JFIB, in cooperation with the 1 (UK) Arty Bde’s 101st Regiment Royal Artillery (101 RA), are developing a MN FFAHQ and MN FAB model that can meet the challenges the ARRC will face during execution of any of its assigned roles. The proposals listed below as light, medium and heavy are bespoke to

the ARRC, but could be adopted by any other Graduated Response Force (Land) element. They have not been ratified and remain purely conceptual, but are open to frank discussions and refinements. Additionally, they consider the ARRC’s requirements and constraints, and incorporate best practises and lessons learned from working with framework nation and US FAB options on the AF and DF series of exercises over the last two years.

MN FFAHQ – Light and Medium Configurations

The light to medium configurations are designed to meet the needs of the ARRC in its role as a combined JTF and/or LCC headquarters involved in joint operations that are small to medium in scope, and are of low to medium intensity. Its scalable manning and organisation are optimised to supplement the ARRC’s JFIB existing structure. Should it maintain higher manning levels, it would have the ability to work more autonomously whilst separated geographically from the ARRC main headquarters.

The light configuration’s smaller size is not self-sustaining and would therefore require being consumed by the existing headquarters. The resulting increase in the size of the headquarters is not as problematic in the types of low threat/low intensity operations the FFAHQ light would be expected to operate in. The medium configuration, however, should expect to be self-sufficient and able to operate autonomously some distance away from the headquarters. This configuration may require additional logistical support elements and protection, dependent on the situation and threat. These configurations can be augmented as required with the core of the organisation being provided by a flexible team of approximately five to 27 subject matter experts supplied by the UK’s 101 RA, 1 (UK) Arty Bde, 26th Regiment Royal Artillery and the National Reserve

Headquarters Royal Artillery. The number of personnel and their skill sets would be dependent on the task and S2S/ISTAR assets assigned. As a guide, these personnel would be able to provide specialist advice, assign mutually agreed joint fires tasks to component commands, execute time sensitive targets (TST), and Plan-Refine-Execute (PRE) S2S fires as

the LCC. Additionally, this team could assign fires tasks to divisions and C2 a number of battery and/or battalion-sized units. These MN force elements require an accompanying national LO party to integrate into the MN FFAHQ structure to ensure effective integration and optimal use of capabilities they represent. This principle applies whenever MN elements are in play and assimilated into any of the three configurations.

MN FFAHQ – Heavy Configuration

This design concept, with additional manning, transforms a moderately sized MN FFAHQ into a heavier MN FFAHQ with increased capability and lethality. It is able to cope with the demands of high intensity warfighting against a peer adversary, but is heavily dependent on additional resources from across NATO and its partners in order to fulfil this role (including staff manning and C2 infrastructure). This configuration supports the ARRC’s role as a corps headquarters with up to five divisions under command and its role as an LCC headquarters with a number of corps underneath it (Figure 7). In the ARRC’s role as a LCC headquarters, the MN FFAHQ effectively transitions to the role of a MN TSFC light.

In the heavy configuration, the MN FFAHQ’s roles and responsibilities, and its interaction with the ARRC, is more complex than that found in a US FAB or US TSFC supporting an equivalent US formation (Figure 5). For example, the MN FFAHQ will be expected to refine and execute target engagement plans (TEPs) issued by the ARRC, as well as plan and execute integrated CFs at the level in which it is operating (corps/LCC). Any TSTs, dynamic targets, combat engagements or fires in support of any other unplanned missions or tasks would be the responsibility of the joint fires team located within the ARRC’s OPSCEN.

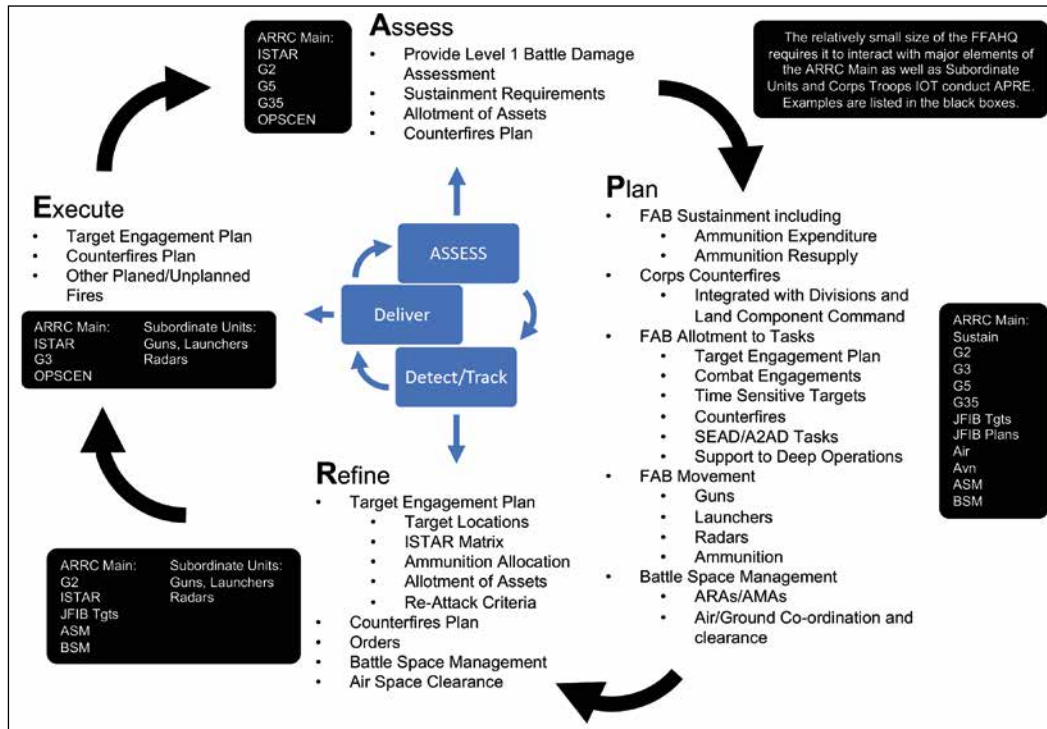


Figure 7. MN FFAHQ Heavy Option - Roles and Responsibilities

MN FAB considerations:

1. Survivability
 - a. Speed
 - b. Mobility
 - c. Protection
2. Mobility
 - a. Strategic
 - b. Tactical
 - c. Air (via strategic air lift)
 - d. Ground (Road (wheeled) and Cross-country (tracked))
3. Capabilities
 - a. Precision
 - b. Mass
4. Effects
 - a. Point
 - b. Area

By using the combination of assets listed in Figure 6, most, if not all, of the

The number of personnel within the MN FFAHQ must be kept at acceptable levels so as to make the organisation both tenable and manoeuvrable. A number of the functions that the US equivalent would be able to accomplish unaided require support from other branches within the ARRC or elsewhere within the UK. The refinement of the TEP is heavily dependent on the G2 and G2 ISR support, and the clearance of fires and battle space management will require support from the ARRC G3, G35 and OPSCEN staff.³ Where the light to medium configurations are limited in the number of battery and/or battalion-sized S2S fires units they can command, due to the limited numbers of staff, the heavy option provides greater staff capacity and the ability to command a MN FAB or even multiple FABs.⁴

The MN FAB (Supporting MN FFAHQ – Heavy Configuration)

The type of fight the heavy MN FFAHQ configuration supports requires an associated MN FAB that can shape the deep, support the close and protect the rear. It demands greater fires flexibility, additional firepower, ISTAR and integrated C2. It must be able to mass fires and strike point and area targets throughout the area of operations (AO) with precision, 24/7. This MN FFAHQ and MN FAB must also be resourced

to conduct effective pre-emptive and reactive CFs, support anti-access area denial (A2AD) operations and suppression of enemy air defence (SEAD) tasks in collaboration with combined (aviation deep strike or Joint Air-Attack Team (JAAT) activities) or joint assets (air component command (ACC), maritime component command (MCC), special operations component command (SOCC)).

The organisation of a NATO fires battalion differs depending on the country of origin. Some are integrated and consist of a number of complimentary equipment types, like the German model (UAVs, radars, sound ranging, 2 x 52-calibre gun batteries and a Multiple Launch Rocket System (MLRS) Battery plus associated combat service support (CSS)). While others like a US High Mobility Artillery Rocket System (HIMARS) battalion consist of a single equipment platform.

A potential order of battle (ORBAT) for a MN FAB is pictured in Figure 8 below.

This ORBAT meets the varied and considerably versatile criteria required by a MN FAB supporting the ARRC. The criterion listed below is not exhaustive, but it is quite comprehensive and was identified by asking the question, "What does the ARRC want its FAB to be able to do?"

considerations listed above are achieved without diluting the effects required. Most of the weapons platforms address a number of these aspects, but have a focussed advantage in a particular area.

Referring back to the organisation in Figure 8:

1. The Italian and German MLRS battalions, being both tracked and armoured, provide highly manoeuvrable and survivable deep fires precision, but arguably limited area effects capability. However, they have the additional advantage of being able to carry twice the amount of ammunition to that of a HIMARS.
2. The US HIMARS and French Caesar battalions, coupled with Q53 radars, are wheeled and therefore reduce the CSS burden. They can move quickly by road and have the advantage of strategic mobility via suitable air transport, which is particularly useful when the ARRC is acting in the role of an LCC headquarters and is required to move fires assets quickly in support of the main effort or when conducting planned artillery raids.
3. The Romanian LAROM and US Paladin battalions have the ability to execute precision point and area targets out to 45 kilometres. They are ideal to reinforce the commander's

3 At the 72-hour point the TEP will be passed to the FFAHQ for refinement. The time between the allocation of the TEP to the FFAHQ and subsequent engagement requires the ARRC G2 and ARRC G2 ISR to update the FFAHQ with refined Target Areas of Interest (TAI) and target locations. It also requires communications with the ISTAR assets linked to the TAI for engagement purposes to positively identify the target and provide Phase 1 Battle Damage Assessment.

4 The limitations of the proposed MN FFAHQ are yet to be determined. The current suggested limit is six battalion-sized units for the heavy configuration; this is based on the author's perception of the expected capabilities required by a FAB conducting high intensity warfighting.

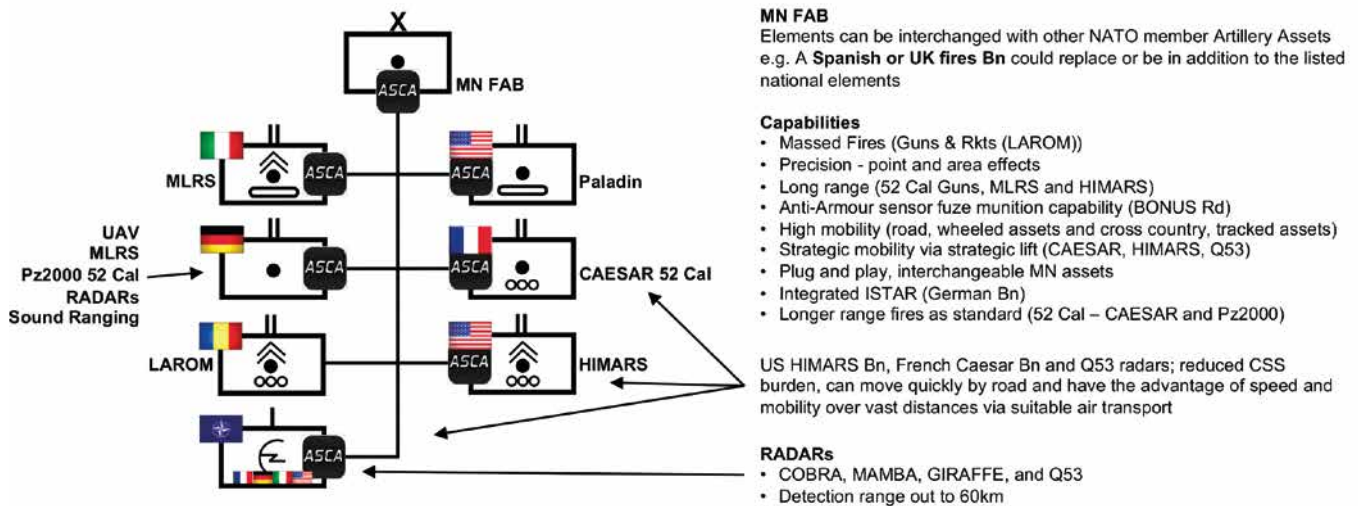


Figure 8. Sample MN FAB

main effort and provide massed tube and rocket fires as well as the ability to strike point targets (utilising the Excalibur GPS-guided projectile).

4. The suite of radars, COBRA, MAMBA, GIRAFFE and Q53, with a detection range out to 60 kilometres, facilitates reactive CFs and provides a combination of wheeled, tracked and airmobile platforms that can be used throughout the possible complexity of terrain found in an AO. This capability is reinforced and enhanced by passive sound-ranging assets to assist or conduct CFs (Advanced Sound-ranging Programme (ASP), Mobile Sound Ranging Array (MSRA)). These sound-ranging assets can be used in isolation or to queue the activation of CF radars thereby increasing survivability by reducing radiating times of individual systems and decreasing the number of survivability moves.

All of these fires assets, with the exception of LAROM, can provide a point and limited area precision strike capability through the use of precision guided munitions (PGM), which are expensive in monetary terms as well as scarce in terms of precision munitions. The French Caesar and German Pz2000 52-calibre barrel length provides longer-range fires as compared to their 39-calibre counterparts (AS90, Paladin, M777) and, when coupled with improved long-range ammunition, provide an anti-armour and high explosive capability out to 35 and 54 kilometres, respectively.⁵⁶ The development of the US 58-calibre weapon systems and associated ammunition will extend these ranges even further in the near future.⁷

This combination of assets gives the commander a flexible and responsive fires solution at both corps and LCC levels.

Benefits

In addition to the enhancements outlined above, the MN FFAHQ and MN FAB concepts present the opportunity for NATO Allies and partners to familiarise themselves with delivering fires at a corps and LCC level in support of joint operations. By taking part in this endeavour, participants gain the experience of integrating into a structure that has been developed and tested through experimentation at higher-level formation exercises (including in the near future AF19, DEFENDER 20 (DEF20) and STEADFAST LEDA 21 (STLE21)). This developed model, if successfully validated, can then be replicated by other corps to reduce the challenges of incorporating MN fires elements into future training events and operations. The employment of MN organisations (personnel and S2S fires assets) allows NATO to take advantage of a variety of complimentary S2S systems and alleviates NATO's reliance on a single country's fire support capabilities, i.e. the US. For countries that force generate augmentees or subordinate elements into such a structure, this model will promote the efficient integration of those forces.

Summary

The ARRC has exercised framework nation and US FAB options with associated corps troops assigned. The US FAB option provided more flexibility and capability across a range of actions,

but neither party are guaranteed force providers or fully meet the ARRC's requirements. A third MN option is required, which includes MN S2S fires units and associated capabilities to allow the development of an advanced warfighting MN FFAHQ and MN FAB based on optimal MN resources. This option provides a guaranteed number of UK framework personnel, which meets ARRC's JTF requirements and, when augmented by suitably qualified MN personnel, can provide the MN FFAHQ functionality required by the ARRC as a corps or LCC. These options must, however, be supported, resourced, exercised, tested and refined with a suitably sized and configured MN FAB under command. Exercises AF19 and DEF20 will provide the major refinement opportunities before this concept is comprehensively tested on STLE21.

ABOUT THE AUTHOR

Lieutenant Colonel Timothy Iddon is a 35-year veteran of the British Army's Royal Artillery and currently serves as the Chief of the ARRC's Joint Fires Current Operations cell. In his previous assignment he served as the Quartermaster for the 3rd Regiment Royal Horse Artillery at Albemarle Barracks in Northumberland, England. Lt. Col. Iddon has been engaged in various combat and peacekeeping operations in Northern Ireland, Bosnia, Cyprus, Iraq and Afghanistan. A native of Newcastle, England, Lt. Col. Iddon is a Late Entry Officer with a high level of practical experience in the realm of Field Artillery.

5 The Bofors 155mm BONUS round is an artillery-launched, fire-and-forget munition capable of successfully combating any armoured vehicle.

6 The Rheinmetall Denel Munition (RDM) Velocity Enhanced Artillery Projectile (VLAP) has a maximum range at sea level of 54 kilometres.

7 The US Army M777 58-calibre is a new variant of the M777A2 39-calibre towed 155mm howitzer. This variant is expected to fire the new XM113 projectile to achieve a maximum range in excess of 40 kilometres. The 58-caliber artillery gun is currently under development with an estimated initial operational capability planned for 2023.

CENTRE OF GRAVITY: HOW AN OLD CONCEPT IS IMPLEMENTED TODAY

Colonel Alexandris Konstantinos, Hellenic Army

**“So in war, the way is to avoid what is strong, and strike at what is weak...
First attack the enemy’s strategy, then his alliance, next his army and last his cities”**

Sun Tzu

When the Prussian officer Carl von Clausewitz decided to write his thoughts about war, nobody could imagine the impact that his unfinished work, the memorable *On War*, would have on future generations of strategists and on the way wars, campaigns and battles are conducted. One of his enduring contributions to contemporary warfare is the idea of ‘Centre of Gravity’ (CoG): The focal point of power against which all the efforts should be directed and on which the predominance-victory rests.

Moreover, no one in 19th century – Clausewitz’s era – could predict the debates that his CoG proposal would provoke in the future. The concept of CoG re-emerged onto the military scene as theory/doctrine in the 1980s. Soon after, it became a controversial issue because of its vague definition, challenging process of identification and operational utility. Since then the concept of CoG has evolved and transformed – despite receiving criticism concerning its relevance in the context of the modern operational environment – into a fundamental planning tool for campaigns and major operations.

Identifying and analysing friendly and adversary sources of power/strength is one of the most important tasks that

confront planners. Faulty analysis can have a negative impact on a campaign: Wasted effort, unacceptable cost in terms of lives, equipment and time, and an inability to accomplish military objectives that potentially leads to mission failure. However, even today – despite the long-term presence of the CoG in military life as a commonly accepted doctrinal concept, as well as an integral part of planning – planners find themselves engaged in lengthy discussions about the determination of the belligerents’ CoG. The difficulties lie in the conceptual understanding of the CoG and the application of a practical framework for its utility – the method of analysis and use of its outputs.

The purpose of this essay is to provide a more comprehensive understanding of the concept of CoG as well as its implementation. Its focus will be at the joint/operational level of war and how it contributes to the coherence and effectiveness of the planning process. The content of this essay is not meant to challenge existing NATO doctrine, but it will highlight the significance of this essential, yet controversial and oft criticised, planning tool.

Defining the CoG

Clausewitzian strategic thinking was introduced to the American doctrinal world in the 1980s in an attempt to counter overwhelming Soviet military power in a potential war in Europe. Successfully confronting the mighty Red Army could be achievable through a revision of the military theory that would focus on the effective employment of available resources. Theorists found a possible solution in Clausewitz’s original concept of CoG. Concentrating efforts and power on the adversary’s CoG could bring victory. Since the concept’s introduction to the US military in the 1980s, it has become an essential part of operational art, which has provoked perpetual discussions.¹

Clausewitz states that “out of these characteristics a certain centre of gravity develops, the hub of all power and movement, on which everything depends. That is the point against which all our energies should be directed.”² This definition of CoG could be considered generic and vague. The Prussian strategist gave a generic definition of the CoG without any further description and explanations about what he actually meant, probably because he died before the completion of his work.

1 For more information about its evolution and discussions, see Rueschhoff, Jan L. & Dunne, Jonathan. Centers of Gravity from the ‘Inside out’, JFQ, 60, 1st Quarter 2011, p.120, at http://www.au.af.mil/au/awc/awcgate/jfq/rueschhoff_dunne_cog_inside_out.pdf (accessed 31 Aug 2018).

2 Carl von Clausewitz, *On War*, Edited and Translated by Michael Howard and Peter Paret, Princeton University Press, Princeton, New Jersey, 1984, p. 595-596.

Gradually, the concept of the CoG has been adopted by various armed forces and NATO as one of the most crucial planning concepts linked to operational art. Furthermore, the term ‘CoG’ has evolved in response to a demand for better understanding and, consequently, effective use. This is evidenced by the definitions found in two different versions of AAP-06, NATO Glossary of Terms and Definitions, of 2014 and 2017 (extant definition in NATO). In the former, the CoG is defined as “Characteristics, capabilities or localities from which a nation, an alliance, a military force or other grouping derives its freedom of action, physical strength or will to fight.”³ In the latter, the CoG is “The primary source of power that provides an actor its strength, freedom of action and/or will to fight.”⁴ A possible explanation of the amendments follows:

- The primary source of power has replaced characteristics, capabilities or localities. It could be said that this change simplified and broadened the term, enabling its use at the political-strategic level. For example, characteristics, capabilities and localities primarily imply relevance to military forces or power. In this case, what about the economy, as an instrument of national power, which can be used as leverage against an adversary (political-strategic domain)?
- The use of actor instead of nation, alliance, military force or other grouping. It could be said that the word ‘actor’ has broad meaning, including all the players, who are involved in a crisis (Non-Article 5 Crisis Response Operations, NA5CRO) or war (Article 5 Operations), at all levels (tactical, operational-joint, strategic) in the context of the comprehensive approach of the operations.
- Last, but not least, in the final part of the definition, the ‘freedom of action, physical strength or will to fight’ that was replaced by its strength, freedom of action and/or will to fight. Actually, it is a minor change – the physical strength has become strength in general. This adjustment could be imposed in an attempt to simplify and expand the term, enabling incorporation of moral strength in the definition. Yet this phrase could be replaced by the simpler ‘freedom

of action’, because without ‘strength’ and ‘will to fight’ there is no freedom of action.

The CoG is always an entity and exists at all levels of war: Political/strategic, operational and tactical.⁵ Different level, different CoG. Thus the level should precede any discussion about CoG.

- **Political-Strategic CoG:** This could be a moral and physical/strength CoG, such as one or a set of leaders (political-military), an alliance, a military force, a set of critical functions or national will.⁶ However, these CoGs could be challenged in the next section.
- **Operational CoG:** Usually, it is the military capabilities/elements of armed forces or capabilities (characteristic) of the operational environment.⁷
- **Tactical CoG:** It is often a force element/critical capability (e.g. tactical reserve or bridging assets).⁸ We could add that at the tactical level the CoG can also be a key terrain (e.g. a bridge over the river linking a bridgehead to the far side with the near side; without a bridge for the crossing of reinforcements and supplies the bridgehead is doomed).

Moreover, for Clausewitz the purpose of war is the attainment of political objectives. In this sense the CoG at the political level provides freedom of action, which in turn leads to the achievement of the political objectives. Therefore, it could be said that the strategic CoG is linked with the strategic objectives by undermining, neutralising or destroying an adversary’s strategic CoG, which allows one to achieve his strategic objectives in an easier way. Consequently, planners should always bear in mind that CoG are linked to objectives at every level. Having defined the concept of CoG, the next step is

the search for a process that provides better understanding of it and enables its identification.

Analysing and Identifying the CoG

According to Clausewitz, the CoG can be found in the location “where the mass is concentrated most densely.”⁹ He continues identifying the CoG under different circumstances: In civil war – ‘domestic strife’ – it is the capital of the country; in small countries, dependent on the power of large ones, it is the army of the protector; in an alliance the CoG lies in the community of interest; and in the case of popular uprisings, it is the personality of the leaders and public opinion.¹⁰ Nevertheless, there is not a description about the conceptual background and method that Clausewitz used in determining the above CoGs (possibly because he died before he has finished his work). This ambiguity due to lack of a specific process in identifying the CoG has been, and sometimes still is, one of the most challenging problems facing planners.

One solution to the problem was proposed in 1996 by Dr. Joe Strange, a professor at the US Marine Corps War College. Through his analytical framework he introduced the concept of Critical Factors – namely comprised of Critical Capabilities (CC) and Critical Requirements (CR) – linked with the CoG and its Critical Vulnerabilities (CV).¹¹ In a few words here is his way of thinking: By exploiting CVs, a force can deny or degrade CRs essential for CCs. Degrading or denying CCs leads to denial or degradation of the CoG. Dr. Strange’s CG-CC-CR-CV process is summarised in the table below (Figure 1):¹²

Steps	Activities
1	Identify friendly-enemy’s CoG
2	Identify CC inherent to each CoG
3	Identify CR which enable the CC to be realised
4	Identify CRs that are deficient or vulnerable
5	Devise a Strategy, campaign Plan or plan an attack, which takes the maximum advantage of the CVs

Key Considerations – Remember:

- Steps 1-4 do not have to be conducted in a precise, rigid sequence.
- Steps 4-5 require superior creativity and judgement
- Insights related to higher-numbered steps may have impact at a lower-numbered step and vice versa.

Figure 1 – The CG-CC-CR-CV process

3 AAP-06, NATO Glossary of Terms and Definitions, NATO, NSO, 2014.

4 AAP-06, NATO Glossary of Terms and Definitions, NATO, NSO, 2017.

5 AJP-5, Allied Joint Doctrine for the Planning of Operations, (A) V1, Draft Edition (SD 3), 12 Aug 2017, p. 3-5. As for the definition of CoG, the new AJP-5 is in line with the above most updated version of AAP-06. .

6 Joint Publication (JP 5-0), Joint Planning, US Joint Staff, 16 June 2017, p. IV-23.

7 JP 5-0, Ibid.

8 APP-28, Tactical Planning for Land Forces, Edition A, Version (Draft) 1, January 2018, NATO, NCO, p.2-22.

9 Rueschhoff, Jan L. & Dunne, Jonathan, Ibid, p.485.

10 Rueschhoff, Jan L. & Dunne, Jonathan, Ibid, p. 596.

11 Dr. Joe Strange, Centers of Gravity & Critical Vulnerabilities: Building on the Clausewitzian Foundation So That We Can All Speak the Same Language, Respectives on Warfighting, Number 4, Marine Corps University, 1996, online at <https://archive.org/stream/centersofgravity00stra#page/146/search/141> (accessed 3 Sep 2018).

12 Dr Strange uses for the Centre of Gravity the abbreviation of CG instead of CoG. Joe Strange, Ibid, p.146.

Even in this case, following Dr. Strange’s model in identifying and analysing the CoG, the problem still exists. Strict application of the CG-CC-CR-CV method meant that, if starting with the identification of the CoG, it could shift the process to a long term wrangle over what is and is not the COG. Normally, this argument comes to an end when a decision is made by the officer with the strongest personality or highest rank, if not the commander. It could be said that ignoring the first key consideration of the aforementioned method, namely steps 1-4 do not have to be conducted in a rigid sequence, many planners could fall into the trap of the past: Misconception, wasted energy and time due to absence of a clear process of identifying the CoG. This would prove to be the key to solving the problem.

In 2004, Colonel Dale Eikmeier (US Army, Retired) highlighted the importance of first identifying the objectives of actors and then Critical Factors (CG-CC-CR-CV). In essence, he improved Dr. Strange’s model, changing the sequence of the steps, starting the process at the designated (or estimated for adversaries) goal and introducing a validity test, as depicted below (Figures 2 and 3).¹³

In fact, Dr. Strange and Col. Eikmeier set the foundations for the CoG analysis method that is used today not only by NATO, but also by the armed forces of many countries.

NATO’s Model: Due to the complexity of the operational environment and the presence of multiple actors and agencies, NATO seeks to achieve its objectives through a comprehensive approach.¹⁴ In this context of the comprehensive approach to operations, the CoG analysis model analyses an actor as a system in order to identify strengths and vulnerabilities or even better conditions and effects that need to be established in achieving the objectives. Operational CoGs are normally a dominant capability, which allows the actor to achieve operational objectives. The NATO CoG Analysis Matrix (Figure 4) allows analysts to choose the starting point (first identification of the CoG and then CC or the opposite).¹⁵

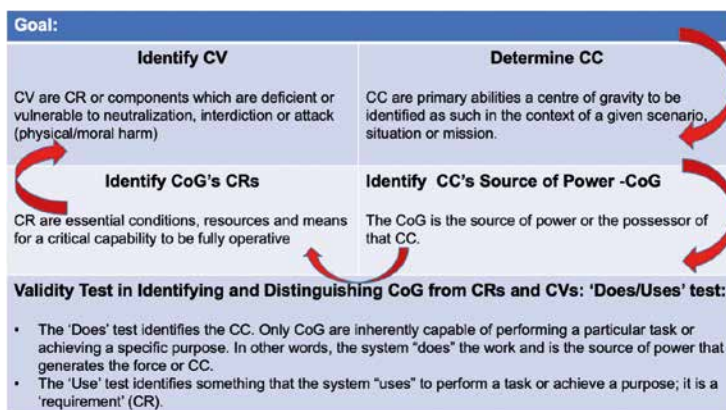


Figure 2 – Col. Eikmeier’s CoG Analysis

Validity Test: Eikmeier’s Railroad Example			
A railroad has tracks, fuel, operators, cars, locomotives, and administrative and support activities (we could add that the objective-mission is the transfer of freight from one place to another)			
CC	CoG	CR	CV
Ability to move freight	Locomotive (inherent capability to move freight-CC). Only locomotive can create the force to accomplish the mission	Tracks, fuel, cars, operators and other activities (the locomotive uses them)	CR vulnerable to interference (for example, fuels are vulnerable to sabotage)
Determining 'Does/Uses' Criteria			
Item	Does/Uses	Explanation	
Tracks	No	Tracks do nothing. Locomotive uses them	
Fuel	No	The fuel does nothing. Locomotive uses fuel.	
Cars	No	The cars carry the freight, but they cannot move it on their own. Locomotive moves the cars.	
Operators	No	Operators are critical, but they do not have the inherent capability to move freight by themselves	
Locomotive	Yes	The locomotive is the doer. It has the inherent CC to perform an action	

Figure 3 – Col. Eikmeier’s Validity Test Example

Actor	
Deduced Aim and Desired Outcome What is the actor’s main goal and what conditions does the actor seek to establish by his actions? (Actor’s main objectives and potential COA for achieving them -at the analysed command level).	
<p>CoG</p> <ul style="list-style-type: none"> ...is a principal source of strength of power for achieving one’s aim. What is the primary element of power upon which an actor depends to achieve objectives –at his level? To be targeted in an opponent and protected in a friend. A noun; an entity; a complex system; a thing. <p>- Determine the condition of the CoG that must exist as well as the conditions that must be avoided in order to achieve the objectives - The required condition should be reflected in own objectives; if not, revise as required. - Conditions to be avoided must be reflected in ROE and other restraints.</p>	<p>CCs</p> <ul style="list-style-type: none"> ...is the primary ability (abilities) that gives the CoG its strength. What are the primary means that enables the CoG to gain and maintain dominant influence over an opponent or situation, such as threaten or coerce an opponent, or to control a population, or a political system. To be influenced/denied to an opponent and exploited in a friend. Key phrase – ‘the ability to...’ <p>- Identifying the CoG’s CC serves as a validation of the CoG – does it possess the primary abilities required to achieve the objectives for the actor? - Weak abilities, associated with CV must be identified - If a CC, essential to achieve the actor’s objective, is missing and this CC is provided by an entity that possesses, then the missing ability becomes a CR.</p>
<p>CVs</p> <ul style="list-style-type: none"> ...exists when a CR is sufficient, degraded or missing and exposes a CC to damage or loss. What are the weaknesses, gaps or deficiencies in the key system elements, capabilities, relationships and influences through which the CoG may be influenced or neutralised? To be exploited in an opponent and protected in a friend. A noun with modifiers. 	<p>CRs</p> <ul style="list-style-type: none"> ... are specific conditions, components or resources that are essential to sustaining those CC What are those key system elements and essential conditions, characteristic, capabilities, relationship and influences required to generate and sustain the CoG’s CCs, such as specific assets, physical resources, and relationships with other actors? To be denied to an opponent and provided to a friend Noun, Things. <p>- Each of the CoG’s CCs must be considered in regard to what the CR (conditions, resources, means) are for the CoG to perform it. - There will be normally an overlap of CR to perform the various CCs, but it is useful to note which CC each CR relates to</p>
Conclusions	
<ul style="list-style-type: none"> Which weaknesses, gaps, or deficiencies in the key system elements and essential conditions, characteristics, capabilities and influences could be exploited in an opponent and protected in a friend to change the capabilities, relationship and behaviour that would lead to improved conditions in the engagement space? The conclusions should be formulated as elements for further planning: objectives, DCs, Effects, Actions, CCIR etc. 	

Figure 4 – NATO CoG Analysis Matrix

13 Col. Dale C. Eikmeier, US Army, Center of Gravity Analysis, Military Review, July-August 2004, p.3-4, at <http://www.au.af.mil/au/awc/awcgate/milreview/eikmeier.pdf> (accessed 4 Sep 2018).

14 NATO’s experiences in Afghanistan, Kosovo and elsewhere have shown the complexity of the crises today. Military means are insufficient to deal with such crises alone. These challenges demand a holistic-comprehensive approach, a coordinated action of military and non-military actors. This actually is the meaning of the comprehensive approach. Effective comprehensive approach requires all actors to contribute to solving crises-conflicts. From military perspective, a comprehensive approach is based on a common situational understanding and recognition that non-military actions may support military and vice-versa. AJP-01, Allied Joint Doctrine, Edition E, Version 1, February 2017, p.2-4.6

15 AJP-5, Ibid, Annex B, p.5-8 and Allied Command Operations, Comprehensive Operations Planning Directive (COPD), V2.0, 4 October 2013, p.4-46. The model is described as Joint Model in the US Air Force Doctrine, Center of Gravity Analysis Methods, Operations and Planning, Annex 3-0, Curtis E. Lemay Center, Last Updated: 04 November 2016, at https://www.dctrine.af.mil/Portals/61/documents/Annex_3-0/3-0-Annex-OPERATIONS-PLANNING.pdf (accessed 4/9/2018).

Strategic Ring Model: The model is also known as the 'five-rings model' and as 'Warden's Rings' (named for its developer, Col. John Warden, US Army). The structure of this model resembles a living organism, depicted in the Strategic Ring CoG Model (Figures 5 and 6). According to this, there are one or more CoGs within each ring of the system (a tool for analysis of systems and CoG). The functions that are necessary for every system to function are:¹⁶

- Command and Control (C2) and information processing system (leadership, C2 apparatus) – the central nervous system of a human body.
- The processes necessary for the survival of the system, such as communications, food production and distribution, financing, and manufacturing in a state – respiration and blood circulation in a living body.
- System of infrastructure, like the electrical power distribution or transportation systems of a country – the bone – vascular systems of a body.
- Population within a country or military – the cells within a body.
- Fighting or defence mechanism, such as the fielded armed forces of a country – immune system of a body.

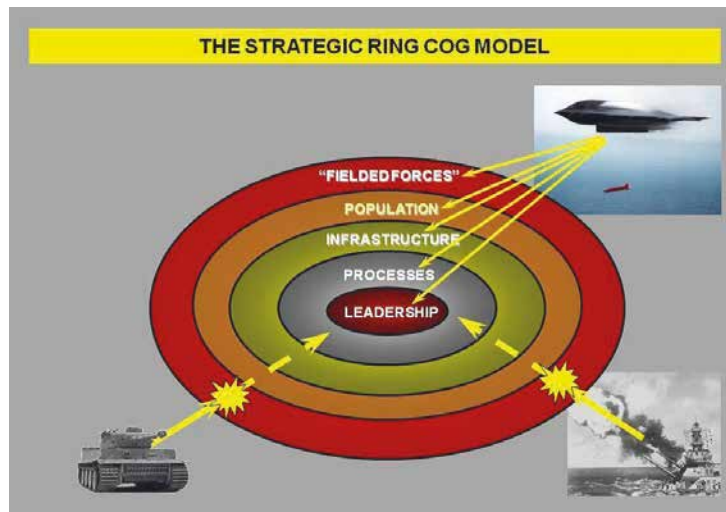


Figure 5 – The Strategic Ring CoG Model

Iraq 1991: Finding Centers of Gravity

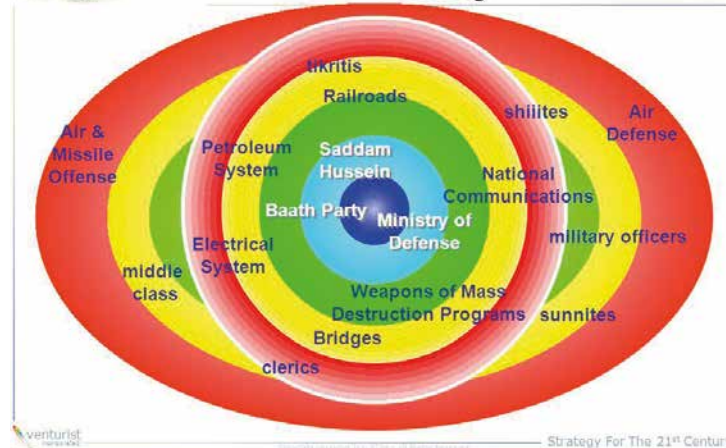


Figure 6 – Example of the Strategic Ring Model¹⁷

The National Elements of Value (NEV) Model: The model is also known as Barlow's Model (named for its developer, Col. Jason Barlow, US Army). It is similar to the above ring model, but seeks a greater interconnectivity and connectivity to external systems (Figure 7). The national elements are interdependent and self-compensating, and function as a critical means of a system. They include:¹⁸

- Leadership: The political and military decision-makers within the government.
- Industry: All of a country's manufacturing, agriculture, research and technical enterprises as well as those parts necessary to support them, such as power production, water supply and raw materials.
- Armed forces.
- Population: A country's important resource, but hard to categorise and

quantify; e.g., nationalism, morale, the will of the people, esprit de corps, ethnocentrism, ability to endure hardship and religious conviction or fervour.

- Transportation: All modes.

- Communications: The physical means thereof.
- Alliances: The friends, trading partners and neighbours from which a country receives support for continuing the conflict.

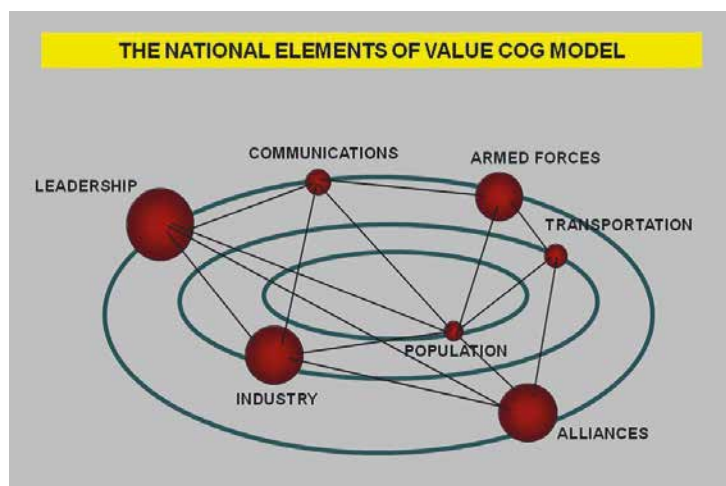


Figure 7 – The National Elements of Value CoG Model

16 US Air Force Doctrine, Ibid.

17 Strategy and Centers of Gravity in Modern War, Strategy for the 21st Century, Prometheus Process, Venturist Incorporated, slide player, at <https://slideplayer.com/slide/8235952/>

18 US Air Force Doctrine, Ibid.

The CARVER Method: This method could be used by special operations forces in planning and targeting, but it can also be used in evaluating CoGs. CARVER stands for criticality, accessibility, recuperability, vulnerability, effect and recognisability. These elements are the basis for analysis and comparative assessment, as listed below:¹⁹

- **Criticality:** How essential is this element to the successful functioning of its parent component, complex or system?
- **Accessibility:** How susceptible is this element to attack given its defences and friendly offensive capabilities?
- **Recuperability:** How quickly and easily can this element recover from inflicted damage or destruction?
- **Vulnerability:** How susceptible is this element to neutralisation, damage or destruction given friendly offensive capabilities?
- **Effect:** What is the confidence that successfully prosecuting this element as planned will create the overall desired effect of the mission?
- **Recognisability:** How easily recognisable is this element (i.e., differentiated from surrounding nodes) considering sensor capabilities, employment conditions (weather, etc.) and time available to analyse the situation and take action?

Synthesis Model: This model, a combination of different methods, is considered more effective and efficient. In fact, it is a combination of Dr. Strange’s CG-CC-CR-CV, Strategic Rings, NEV’s and CARVER’s models, described above, as follows:²⁰

- Identify adversary COGs.
- Starts with the Strategic Ring model.
- Use NEV model for better understanding.
- Identify CVs, through CG-CV-CR-CV model.
- Validate and Prioritise CVs using CARVER’s model.

Godzilla Method: This method, introduced by James Butler, professor of Joint Military Operations at the US Naval War College, got its name from the Japanese mythical monster Godzilla. The process is used in identifying the CoGs and consists of the following steps:²¹

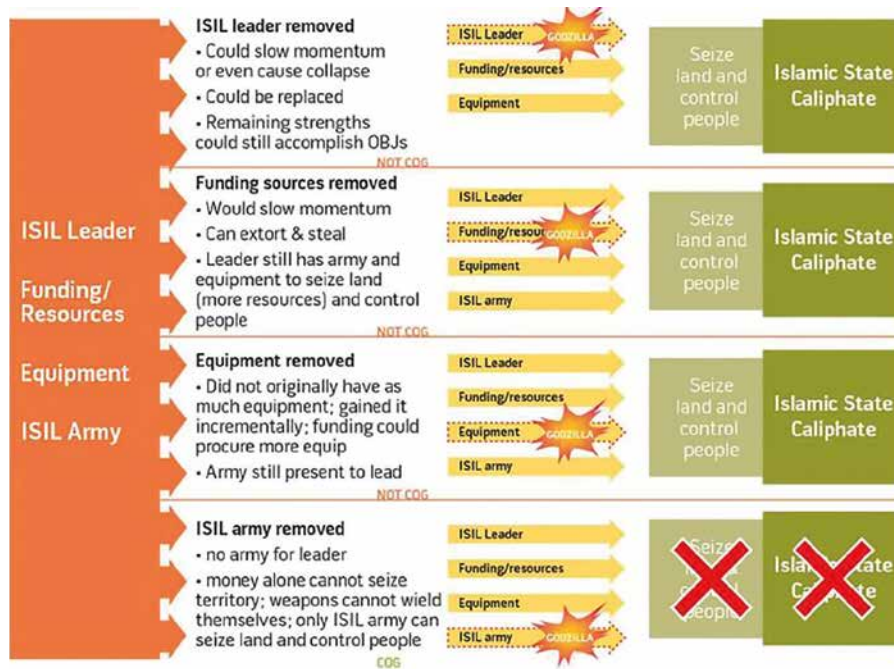
Determine an actor’s objective based on the desired (friendly) or estimated (adversary) end state.

- Identify critical strengths for achieving the objective.
- Remove the strengths one at a time whilst answering the following question after each removal: “Can the objective still be achieved without this strength?” If the answer is ‘Yes’, that strength is not the CoG.
- The removed strength is replaced by another and so on.
- Once the answer is ‘No’, the CoG has been identified (removal of the strength precludes accomplishment of the objective).

Note: Butler defines critical strengths as the “primary sources of physical or moral potential/power or elements that integrate, protect, and sustain specific sources of combat potential/power.” Moreover, strengths are considered critical if they affect or potentially affect achievement of the objective. It can be argued that critical strengths are equivalent to CCs (key ability that gives the CoG its strength).

An example of identifying the CoG of the Islamic State of Iraq and Levant (ISIL) using the Godzilla method is provided below (Figure 8):²²

- **ISIL Strategic Objective:** Establishment of an Islamic caliphate in the Levant region (Syria, Jordan, Israel, Palestine, Lebanon, Cyprus, and part of southern Turkey).
- **ISIL Operational Objective:** Seize and control land and people.



ISIL leader, funding, and equipment are certainly critical strengths, but these strengths are applied to ensure ISIL has a capable army to accomplish its objectives. The leader needs an army. Critical to amassing a capable army is adequate funding. Only its army can physically seize and control people—other strengths are enablers to this. Just because the ISIL army is the COG as per the Godzilla method does not mean planning excludes focus on the other critical strengths. Contrarily, if unable to kinetically destroy the army, then focusing on some or all of the identified strengths may be the only way to dismantle the ISIL army.

Figure 8 – Example of Godzilla

19 US Air Force Doctrine, Ibid.

20 US Air Force Doctrine, Ibid.

21 Butler B. James. Godzilla Methodology. Means for Determining Center of Gravity, JFQ, 72, 1st Quarter 2014, p. 28-30, at http://ndupress.ndu.edu/Portals/68/Documents/jfq/jfq-72/jfq-72-26-30_Butler.pdf?ver=2014-03-13-152408-330 (accessed 6 Sep 18).

22 Daniel J. Smith, Kelley Jeter, and Odin Westgaard, Three Approaches to Center of Gravity Analysis. The Islamic State of Iraq and the Levant, JFQ, 78, 3rd Quarter, 2015, 130-133 at http://ndupress.ndu.edu/Portals/68/Documents/jfq/jfq-78/jfq-78_129-136_Smith-Jeter-Westgaard.pdf

A comparison of the above methods/models provides a hint as to the most efficient and effective way of conducting CoG analysis. NATO's model is the winner by far because it concentrates more positive and less negative points than other methods.

ADVANTAGES	DISADVANTAGES
NATO Analysis Model/Planning Concepts (COPD)⁶	
Analytical method linking the Critical Factors through a logical sequence	It requires holistic-comprehensive and detailed understanding of the adversaries (System of Systems Analysis –SOSA)
Provide tangibles CoG	
Provides useful planning concepts such objectives, Decisive Conditions (DCs), effects, actions, restraints etc. ²³	
Warden's Five Rings	
Identifies the central role of leadership (degrade or dislocation of the external rings has impact on leadership)	It does not identify strengths and weaknesses of the adversary (CCs, CVs)
	Oversimplification – It draws the planners to targeting without paying attention to conditions and effects
	Lack of analysis process for the rings – It requires detailed analysis of the rings to identify their components but missing the relationship-interaction between them; and analysis method
	It refers mainly to the strategic level, not operational
	It refers basically to state-actors, not insurgent groups, terrorist organisations etc.
Barlow's NEV Model	
Provides more detailed analysis than the ring model but not so much as the NATO model	As per Five-Ring Model
It accounts the relationship-interaction between elements and external actors	
CARVER	
It focusses on vulnerable essential elements of adversary (vulnerable CR) and their CV	Partial CoG analysis tool (link between CC, CR and CVs) without paid attention to interdependence-relations with external actors (system)
	It is not used in determining the CoG
	It constitutes a useful tool only if it is used in conjunction with other methods in identifying the most lucrative elements for targeting
	It requires detailed understanding of the adversaries
Synthesis Model	
It provides a detailed analysis contributing to a better targeting of CVs	It needs time and personnel
	It is more complicated than NATO
Godzilla Method	
It is simple and provides an effective way of identifying the CoG in precise.	It requires intelligence efforts in better understanding of the adversary
It has an inherent validity test (...if the answer is 'No', then the removed strength is the CoG)	It does not link CoG, CRs and CVs.
	It focusses only on the identification of the CoG without any other planning outputs (objectives, DC, effects or actions)

²³ Decisive Condition (DC) is 'a combination of circumstances, effects, or a specific key event, critical factor, or function that when achieved allows commanders to gain a marked advantage over an opponent or contribute materially to achieving an operational objective'. Effect is defined as 'a change in the state of a system (or system element), that results from one or more actions, or other causes'. COPD, Ibid, p. L-2.

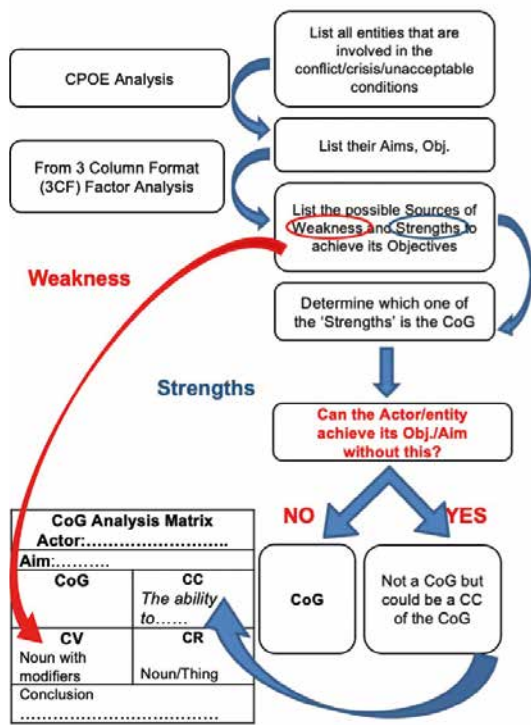


Figure 9 – ARRC CoG Analysis 1st Method

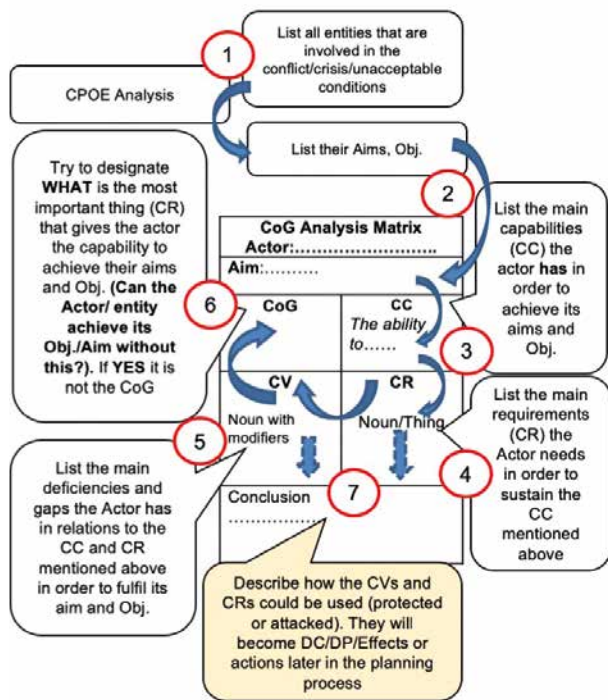


Figure 10 – ARRC CoG Analysis 2nd Method

ARRC NATO-based Analysis Methods: The ARRC employs two methods of analysis, which in fact is a combination of the aforementioned methods.²⁴ The first method follows the process below (Figure 9) using NATO's COG Analysis Matrix (Figure 4) though starting with Actor's Objectives/Aim like Eikmeier's method (Figure 2). In addition, it uses elements of Godzilla (listing 'Strengths' and adopts its validity test).

As for the second method, ARRC uses as its basis NATO's Matrix starting from the Objectives/Aim of the actor/entity and the validity test of Godzilla model, as depicted below (Figures 10, 11,12, 13):

Battle of the Atlantic (German Operational CoG)	
German Political Objective: Force Great Britain to capitulation	
German Strategic Objective: Prevent transportation of supplies-equipment to Great Britain (in support of Political Objective)	
Aim/Operational Objective: Disruption of SLOCs in the Atlantic	
CoG German submarine fleet	CCs 1. Ability to sink surface units of Royal Navy and any kind of transport ships (sea control-denial). 2. Ability to support sea operations by air (Luftwaffe). 3. Ability to collect info. 4. Ability to replace casualties
CVs 1.1.1 Superiority of Royal Navy (surface units). 1.1.2 Inability to affect the building capacity (production) of ships to replace already sunk. 1.3.1 Inability to prevent sea blockade by superior British navy (use of naval bases in Germany). 1.5.1 Interception of communications (after the breaking of Enigma code, all the movements of submarines were known by the Allies). 1.6.1 Dependence only on submarines' patrols 1.6.2 Lack of air patrols. 1.7.1 Resupply in the sea (rendezvous points). 1.9.1. Expose to surveillance, location and sinking. After the entrance of US in the War and use of air patrols (short-long range, radars and searchlights) the German casualties increased. 2.1.1. Insufficient air power: to support naval operations in the Atlantic (Luftwaffe focused on Battle of Britain and support of ground forces). 3.1 Dependence on one source (submarines). The surface units had no hope against the Royal Navy. 4.1. From 1942 onwards, there was no capacity to replace casualties. 4.2. Increased demands, low access to raw materials.	CRs 1.1. Sufficient number of surface units (defeat superior Royal Navy) 1.2. Sufficient number of submarines. 1.3. Naval bases – access to Atlantic. 1.4. Protection of naval bases. 1.5. Centralised control from land (Kriegsmarine) – secured communications systems. 1.6. Intel collection system. 1.7. Logistic support of submarines ('cow'-resupply submarines). 1.8. Advanced submarine technology (avoid location by convoys' escort). 1.9. Submarines should stay surfaced for hours (resupply, batteries, communications). 2.1 Air supremacy (Luftwaffe)-Sufficient air power 2.2. Air support to naval operations. 2.3. Use advanced airfields 3.1. Sea patrols 3.2. Air patrols. 4.1. Industrial capacity. 4.2. Access to raw materials. 4.3. Protection of industrial areas.
Conclusions • German navy surface fleet inferior Royal Navy. Sea control in North Sea-access to North Germany. • Submarines can be identified and sunk in surface (night). Secure sea LOCs (DC)	

Figure 11 – Example of CoG Analysis (2nd Method)

Malign Actor in the JOA	
Overview: The incentive is the wealth. But its actions benefit the insurgency by undermining the legitimacy of the HN's government. In this way, this actor impede friendly objectives.	
Aim/Objective: Personal profits (wealth-status) with no risk of arrest or punishment	
CoG Criminal Patronage Network	CCs 1. Ability to create/maintain a low risk, high reward environment. 2. Ability to control political authorities (government, police, Justice).
CVs 1.2.1 Interdiction of illicit money. 1.2.2 Account for illicit money. 2.1.1 Effective oversight. 2.1.2 Accountability of civil servants. 2.2.1 Remove protection	CRs 1.1. Criminal patronage network. 1.2. Illicit and unaccounted money. 2.1 Government officials look the other way (discretion). 2.2. Protection from prosecution.
Conclusions • Interdict illicit money. • Account for licit money • Provide effective oversight • Make civil servants accountable • Remove protection from individuals committing illegal activities Note: The above Actions are mainly Complimentary Non-Military Actions (CNMA) that need to be executed in close coordination and cooperation with HN.	

Figure 12 – Example of CoG Analysis (Non-military actor-Corruption)²⁵

"Corruption = monopoly + discretion – accountability"
(Dr. Robert Klitgaard, 1988)

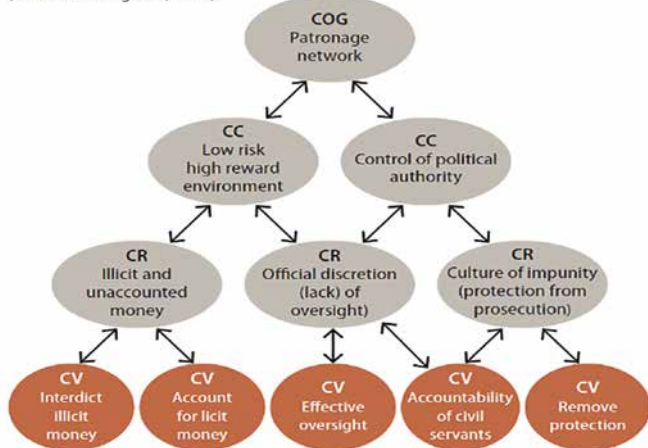


Figure 13 – Example of CoG Analysis (Non-military actor-Corruption)²⁶

24 SOP 3010, Planning Process, Revised Edition, 2018.

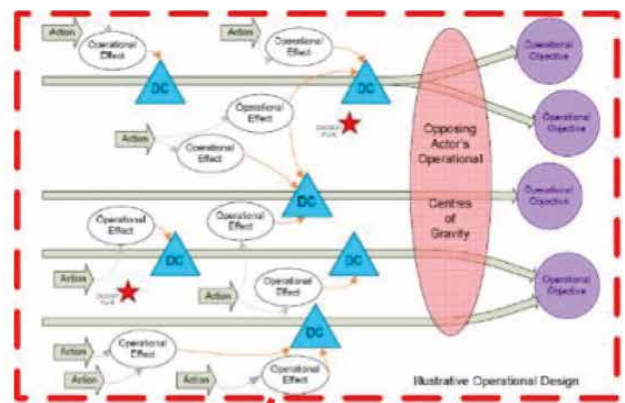
25 Christopher M. Schnaubelt, Eric V. Larson, Matthew E. Boyer. Vulnerability Assessment Method (VAM) Pocket Guide. A Tool for Center of Gravity Analysis, RAND Corporation, Arroyo Center, 2014, p.19-12, at https://www.rand.org/content/dam/rand/pubs/tools/TL100/TL129/RAND_TL129.pdf

26 Christopher M. Schnaubelt, et al. Ibid, p.22.

Utilising the CoG and Key Considerations

In general, a mission is considered complete once the designated objectives have been achieved. Given that the CoG is the source of power that provides freedom of action in achieving the objectives, it could be argued that the CoG is linked with the objective(s). Once the 'ends' (objectives) have been determined, the planning efforts focus on the 'ways' (CCs) of employing the available 'means' (CRs). This explains how the concept of CoG is linked with Operational Art and Operations Design. In this sense, the CoG functions as a bond between all the levels of war – strategic, operational, tactical – ensuring coherence (Figure 14).

- At the political-strategic level, the CoG can be identified by applying NATO's analysis model and starting with the estimated (adversary's) or established (friendly) aim (ends). Then the efforts are stacked against the identified 'ways' (CCs), 'means' (CRs) and CVs, taking into account all the instruments of national power. Then, the Military Strategic Objectives (MSOs), along with DCs and Effects, can be determined, focussing then on use of military instruments of power, its CCs (e.g. defeat, destroy, occupy etc.), CRs (e.g. logistics, sufficient ground forces) and CVs (e.g. low military morale, civil-military relationship). The other instruments of national power can contribute to the achievement of the MSOs through Complimentary Non-Military Actions (CNMA) that will be requested by the Supreme Allied Commander Europe (SACEUR).
- At the operational level, analysis uses as a starting point the outputs of analysis conducted at the strategic level. The efforts focus on military ways and means in achieving the operational objectives by joint forces. The friendly mission is considered complete once Operational Objectives (OE) has been achieved. In doing so, the operational command – a joint task force (JTF) or one of the Joint Force Commands (JFC) – contributes to the achievement of the MSOs, which, in conjunction with the CNMAs, lead to the achievement of the NATO End State. Analysis of the



Operational Planning Process

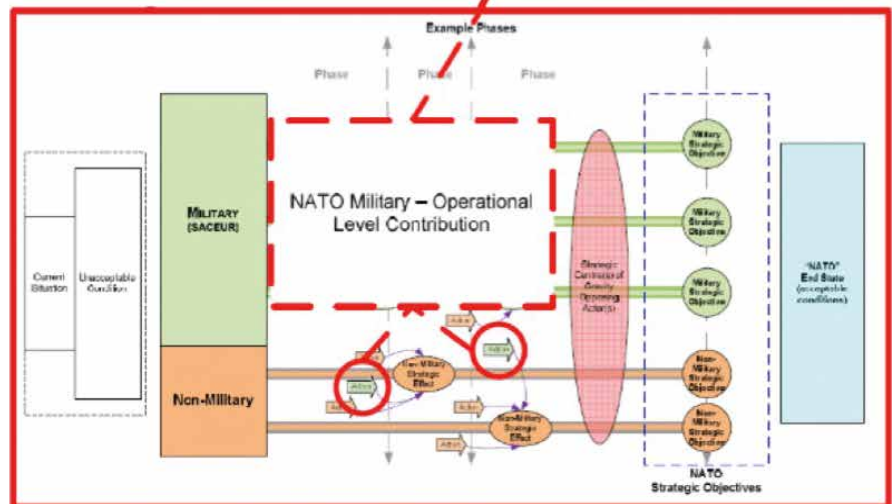


Figure 14 – Relationship between Operations Design (Strategic, Operational), CoGs and Objectives³¹

CoGs (adversary's, friendly) assists in identifying CCs (ways), CRs (means) and CVs. Degrading, neutralising or undermining the adversary's CoG and protecting the friendly one contributes to achieving the Operational Objectives (OOs) and accomplishing the mission. In fact, the outputs of the CoG analysis feed the Operational Design with DCs, Operational Effects (OEs) and Operational Actions (OAs), which translate to objectives, mission and actions for the subordinate component commands (tactical level). It can be argued that CoG analysis is complementary to Factor Analysis (Mission Analysis). At the tactical level (component commands), the process is repeated in the same way the basis of the outputs of the analysis at the joint-operational level are.

Moreover, the utility of CoG at each level depends on the type of operation/conflict. Thus, in conventional operations the concept of CoG's usefulness is limited at brigade level and below. At this level military forces execute tactical tasks/actions assigned by the higher command. In this way, smaller tactical forces contribute to OAs, OEs and, finally, to the establishment of DCs. However, in complex operations (counterinsurgency, stability and hybrid) the concept of CoG can be a useful tool because of the involvement of non-military actors in the conflict and the requirement for a comprehensive approach to operations. In these situations the guidance of the higher headquarters is usually less specific, providing the lower level with more flexibility – initiative.

27 Operational Art is 'the employment of forces to attain strategic and/or operational objectives through the design, organisation, integration and conduct of strategies, campaigns, major operations and battles' AAP-06, Ibid. Furthermore, the Operational Art includes the concepts operations design and operations management. AJP-5, Ibid, p. 1-1.

28 Operations Design frames the environment and the problem, and then develops an operational approach that gives a comprehensive logic to the campaign or operation, while synchronising the joint functions with the objectives. AJP-5, Ibid, p. 1-2. Depending on the reference level, at political level there exists 'International Design' (COPD, p. 1-12), at strategic, 'Strategic Design' (COPD, p. 1-13); and at Joint-Operational level, 'Operational Design' (COPD, p. 1-13).

29 The Instruments of (national) Power are: Military, Political, Economic and Civil. COPD, Ibid, p. 1-9.

30 NATO End State is the NAC statement of conditions that defines an acceptable concluding situation for NATO's involvement. COPD, Ibid, p. 1-10.

31 COPD, Ibid, p. 1-17.

32 Christopher M. Schnaubelt, et.al, Ibid, p. 2, 3.

Centre of Gravity analysis reveals strengths (CRs) and weaknesses (CVs) of an adversary. In this way the concept of CoG contributes to how the commander of the JTF can accomplish his mission. The commander has to choose how he can approach and 'neutralise' the CoG: He can adopt either a direct or indirect approach (Figure 15).³³

- A direct approach attacks an adversary's COG by applying combat power directly against it. This approach is selected when the JTF possesses superior forces, a qualitative advantage in leadership and/or technological superiority over an adversary's weapon systems.
- However, COGs are normally well protected and not vulnerable to a direct approach. Thus, the commander usually chooses an indirect approach and attacks CVs that lead to the defeat of the COG, while avoiding enemy strengths. The identified CRs and CVs can be potential DCs in the Operational Design (Ops Design). If a direct approach is not a reasonable solution, the JTF should consider an indirect approach until conditions are established that permit successful direct attacks. In addition, the JTF can plan simultaneous and/or synchronised actions, following both direct and indirect approaches.

Note: At the operational level, an indirect approach includes a series of attacks against selected aspects of an adversary's combat power, aiming to divide its forces, destroy its reserves or other force elements, prevent or hinder the deployment of its major forces or reinforcements into the Joint Operations Area (JOA). This kind of approach could entail reducing an adversary's operational reach, disrupting its Command and Control (C2) structure and destroying or suppressing key protection functions such as air defence. Moreover, in counterinsurgency operations (COIN), an indirect approach could enable a legitimate and capable local partner to address the conflict's causes and to provide security, good governance and economic development.

Additionally, the CoG analysis can be a useful planning tool in describing the OEs that are needed to solve an operational problem through the 'defeat' and 'stability' mechanisms.³⁴

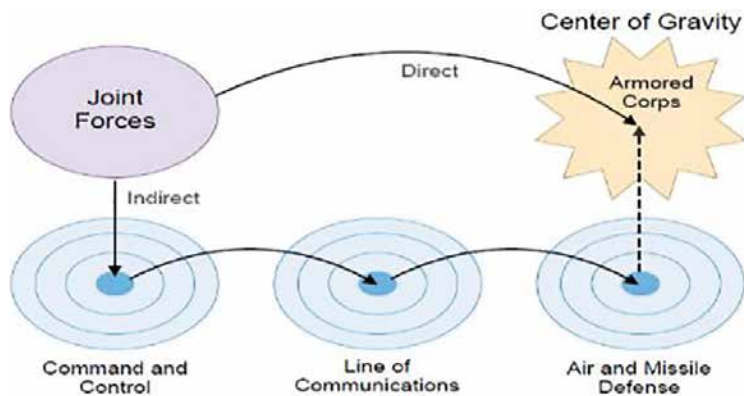


Figure 15 – Direct and Indirect Approach

- **Defeat Mechanisms:** Defeat mechanisms primarily apply in combat operations against an active adversary, aiming to defeat its armed forces. There are two main types of defeat mechanisms: Attrition and disruption (Figure 16).

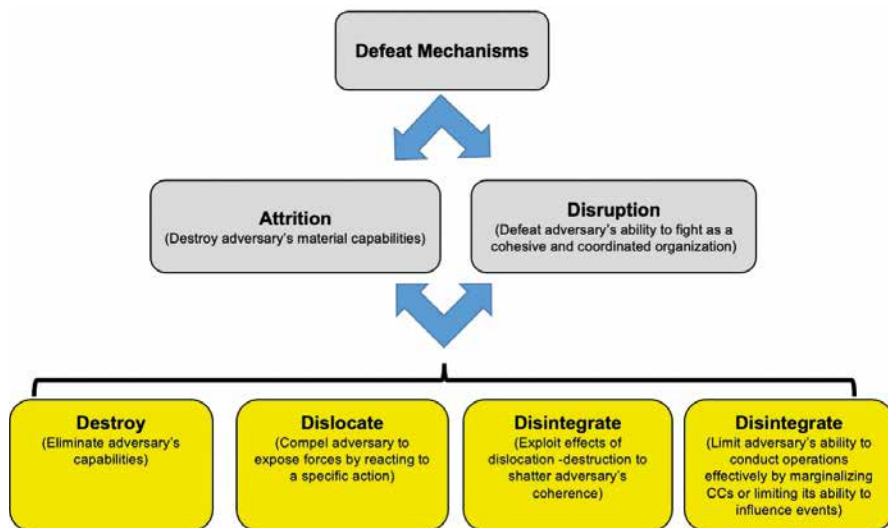


Figure 16 – Defeat Mechanisms

- **Stability Mechanisms:** Stability mechanisms are the primary methods through which friendly forces can affect civilians in order to attain conditions (DCs) that support establishing a lasting, stable peace. Combinations of stability mechanisms produce complementary and reinforcing effects rather than a single mechanism in isolation. They apply mainly to stability operations and include four types of mechanisms: Compel, control, influence, and support (Figure 17).

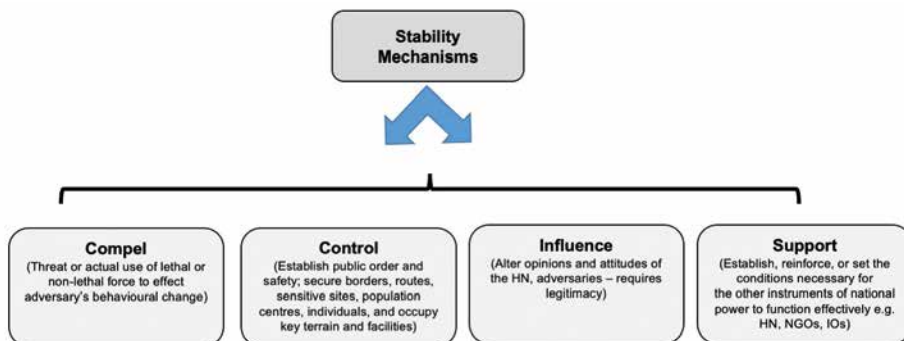


Figure 17 – Stability Mechanisms

33 JP 5-0, Ibid, IV-33, 34.
34 JP 5-0, Ibid, IV-31, 34.

Furthermore, the vulnerabilities of a CoG could be divided into two broad categories: Inherent and external. The former refer to weaknesses that may exist within a strength-CoG and are vulnerable to attack. The latter include external factors or conditions, which actually neutralise its impact on the battle or degrade the strength-CoG, undermining its supporting elements-CRs (Figure 18).³⁵

Greek Strength - CoG (Trojan War): Achilles (He was feared by the entire army of Troy, as an invincible warrior. He was also the source of Greek morale and combat power)	
Inherent Vulnerabilities	External Vulnerabilities
Achilles' heels: the only part of him that was vulnerable.	Achilles' Ship: It may have never been arrived at Troy (blown off course, sunk)
	Battering Ram: to break down the gates of Troy, get inside and defeat the Trojan army. Killing the crew of the ram we protect the gates and prevent Achilles to enter Troy.

Figure 18 – Achilles' Inherent and External Vulnerabilities

Given the inherent and external vulnerabilities of a CoG, it could be said that there are three principal ways of defeating or neutralising a CoG: Make the CoG irrelevant; strip the CoG of the support it needs to be successful; and defeat the CoG by exploiting its weaknesses. In this sense, when we look for CVs in CoG Analysis we look for intrinsic vulnerabilities and external vulnerabilities (Figure 19).³⁶

Ways of Defeating or Neutralizing a CoG		
Make the CoG Irrelevant	Strip the CoG of the Support it Needs to be Successful	Defeat the CoG by Exploiting its Weaknesses
Try not to let Achilles' ship land at Troy	Stop those who will let him into your city. Shoot the crew of the battering ram	Fight Achilles, aiming your arrows at his heels
In 1944 an Allied deception froze the German Fifteenth Army in the Pas de Calais, where it was unable to reinforce the German Seventh Army in the battle for Normandy until it was too late. The Fifteenth Army was a German operational CoG that was made irrelevant through the use of deception.	In 1940 the German Army waited to invade Britain (Operation Sea Lion). But the German Air Force was unable to defeat the Royal Air Force in the Battle of Britain, and the Royal Navy stood ready to intercept the motley array of German transports and landing craft that would have carried the German Army across the English Channel. Thus, the German Army, the German CoG, was effectively neutralized.	During the Battle of Atlantic, German U-boats were vulnerable to Anti-Submarine Warfare (ASW) technologies and capabilities of both short-range and long-range aircraft. Very Long Range aircraft carried a combination of airborne radar, bombs and depth charges, and powerful search lights to light up and attack surfaced U-boats at night, exploiting the systemic weaknesses of the German U-boat fleet (another German CoG).

Figure 19 – Ways of Defeating or Neutralising a CoG

An efficient analysis of an actor's critical factors (CCs, CRs, CVs) requires the best available knowledge about its structure, training, organisation, doctrine, decision-making process, physical and psychological strengths, and weaknesses. The more one understands the more effective the analysis will be. Wrong estimates regarding an

adversary's aim/objectives, CCs and CRs can lead to shortfalls in analysing its CoG, which will have a negative impact on friendly operations. For example, if the adversary's estimated aim is to occupy an island, the operational CoG could be the amphibious task force. If the estimated aim is to occupy a piece of land, in this case the CoG could be his operational reserve.

As described above, CVs are derived from the vulnerable or deficient aspects of CRs. However, to get the most out of the analysis, the efforts should put not only focus on determining if a CR is vulnerable, but also how the CR is vulnerable. The

'how' leads to OEs, OAs and joint tasks to subordinates. In addition, the steps of the analysis do not always need to be in a specific order. There may be times when discovering a vulnerability or requirement may result in the identification of a CC. For example, an actor has acquired amphibious landing craft from an ally. In this case, landing craft could be a CR for a new CC, the ability to conduct amphibious operations. In turn, this may

indicate that the adversary may also be adjusting his objectives.

The CoG analysis should be a constant process. Changes of the conditions/systems may have implications on the CoG analysis. In this sense, the change of an actor's stance can lead to different course of action or aim/objectives (e.g. the entrance of the USA

in the Second World War changed the course of the Battle of the Atlantic due to its overwhelming sea and air power along with technological advancement – radar and long range aircraft led to a different approach/strategy and, consequently, Germany's defeat). In addition, alteration of the friendly Course of Action (COA) can cause shifts to the source of power or its critical elements, which depends on the mission because the changes in priorities and importance of capabilities (e.g. occupation of an island can be achieved by Amphibious Task Force (amphibious assault) or an Airborne Brigade (air assault)) may result in different ways, means and CoG. Therefore, the planners should periodically revise the CoG analysis.

In the above context, the CoG may change from phase to phase. For example, during counterinsurgency operations, during the preparation of the revolution the CoG may be the leadership or insurgent cells that motivate and train the personnel for the upcoming insurgent fight. When the revolution starts the CoG is usually the insurgent fighting force. This is normal. A change of the objective is translated to a change of the ways (CCs) and means (CRs). In the pre-revolutionary phase the objective is the preparation – set the conditions for insurgency through ideological motivation, recruitment, procurement of equipment and training. Once the revolution begun the goal is the removal of the existing government and establishment of a new one – the change of a state's order.³⁷

Moreover, by analysing a CoG the efforts are directed to identifying the current CCs, CRs and CVs. Focussing on a present adversary's capabilities undermines the friendly future threats and operations. Once friendly objectives have been achieved, the defeated adversary may change its objectives or other actors may decide to exploit the opportunity within it. In this case, the estimated adversary's future objectives are the starting point in identifying the CCs and the CRs that would be needed in achieving his aim. Planners mitigate this gap of knowledge through risk management and developing branch plans as well as sequels.³⁸ During the development of branch plans and sequels, planners revisit the CoG analysis, based on the changes of the conditions/actors.

35 Dr. Strange Joe & Col. Iron Richard (UK Army). Understanding Centers of Gravity and Critical Vulnerabilities, Part 2, p.5-6, at <http://www.au.af.mil/au/awc/awcgate/usmc/cog2.pdf> (accessed 10 Sep 18).

36 Dr. Strange Joe & Col. Iron Richard (UK Army), Ibid.

37 Christopher M. Schnaubelt, et.al, Ibid, p.17-18.

38 Planners should identify potential risks to the achievement of operational objectives or risks to the force that result from the operational environment or the capabilities and actions of the main actors in the Joint Operations Area (JOA). COPD, Ibid, 4-49,4-50. Branch plans address the question 'what if', while the sequel 'what next'. COPD, Ibid, 4-57.

Last, but not least, failure in identifying a specific entity as a CoG – what the CoG is, in terms of name – does not mean the end of the world. There may be times when a COG is clear. Yet, often the real COG will be difficult to determine due to a tendency to identify a single source of power for all the identified CCs. Most of the time, particularly in a complex operational environment, planners link the CCs with more than two CRs. In situations like this, planners can find themselves involved in long lasting discussions and arguments about what the CoG is. However, even under these circumstances there is no issue. We could recommend ‘do not pay so much attention to the name of the CoG’ – ‘Don’t waste your valuable time’. The aim of CoG analysis is not to provide a name for a CoG by which the enemy will be defeated. Rather, the crucial purpose of the process is to identify CRs and CVs. Through these two critical factors the commander can avoid strengths and exploit vulnerabilities, and select an operational approach to degrade an adversary’s capabilities and minimise the exposure of his own. Besides, a revision of the analysis later may have better and more accurate results in terms of the CoG name, if one believes it a problem.

Challenging the CoG

Although the concept of CoG has been adopted by NATO and various other militaries, it is a controversial issue. It has received a lot of criticism related primarily to its relevance. How can a 200-year-old concept, with reference to warfare tactics, equipment and conditions completely different from our modern operational environment, be relevant today? Military theorists and planners are debating over the utility and relevance of the CoG, even after more than 30 years after its introduction into military doctrine and implementation.⁴⁰

In fact, the criticism of CoG could be viewed as an outcome of its ‘experimental’ use in the modern operational environment (e.g. Iraq). The lack, or the vagueness, of CoG’s definition as well as the absence of an efficient and effective analysis method led to operational shortfalls, a waste of time and resources and, consequently, to arguments about the utility of the CoG concept in the modern operational environment.

A Source of Criticism

- Operations Desert Shield and Desert Storm (1990-91): A lack of common and clarified COG definition resulted in shortfalls in unity of effort and synchronisation. General Norman Schwarzkopf selected three CoGs rather than focus on one. They were: leadership and C2 nodes, weapons of mass destruction (WMD), and the Republican Guard Forces. The leadership and C2 CoG fit the Air Force’s airpower. The Republican Guard CoG fit the Army’s understanding of the COG so that was their focus. Both services considered the WMD COG necessary, albeit a distraction. The result was separate service/domain fights that independently focussed on different CoGs and produced needless friction.
- Iraq 2005: The lack of a practical COG identification process led General George Casey to misidentify the true COG. Planners briefed him on two CoGs: the Iraqi government and the population. One planner, using a then-current doctrinal method, recommended the Iraqi government. Col Eikmeier proposed the population as the COG. Using a “not in doctrine” method of ends, ways, and means analysis, he concluded that the population would decide the outcome of the insurgency; they were the “doer” and the COG. General Casey selected the Iraqi government as the COG. Months later in 2006 the insurgency rose to new levels of violence. In 2007, General David Petraeus took command and implemented a population-centric counterinsurgency strategy. His strategy saw significant elements of the population turn against the insurgents, resulting in coalition and Iraqi security forces rolling back the insurgency.

Eikmeier Dale. The Center of Gravity, Still Relevant After All These Years?

Colonel Dale Eikmeier recognises two trends of criticism about the irrelevance of CoG: ‘Practitioners’ and ‘philosophers’. Both reject the concept of CoG, but for different reasons.

- The so-called ‘practitioners’ consider the CoG an abstract concept with vague, unclear definition and thus is not useful. After many years of discussions about what a CoG is – changes of definition – and how a CoG can be identified and used in planning (an overview provided above) led to confusion and denial. How could such an unsettled theory underpin the development of a plan? Thus, they reject the CoG as a planning tool, primarily due to its poor definition, doctrinal shortfalls and lack of clear method of analysis.

- ‘Philosophers’ reject it because it is an old concept that is not relevant today. Their main argument is based on the tactical, technological and philosophical differences between the 18th century and our era. They argue that a pre-industrial military concept is not applicable to our technologically advanced age of the complex operational environment of hybrid or insurgency warfare. It is not relevant anymore. It is too simple a concept to assist in understanding a contemporary, rapidly changing and complicated operational environment with non-state actors involved in conflicts.

Nevertheless, the relevance of the CoG theory should be seen through the lens of its utility. It could be said that if something is useful then it is still relevant. Planning develops viable options to achieve an acceptable outcome from an unacceptable situation. The results of planning articulate how actions (ways) and resources (means) are used to achieve objectives (ends).⁴¹ In these two last sentences lies the usefulness of CoG as a planning tool. As long as planning remains relevant, regardless of technological advancements and tactics, the CoG is also relevant. As briefly explained at the beginning of this essay, since the introduction of CoG in modern military doctrine/planning, its definition and implementation has conceptually evolved. Its definition has been simplified and an analytical methodology has been developed. The CoG has become a useful planning tool as it is explained below:

- First, no matter how complex the operational environment is, it contributes to understanding of the operational problem. The CoG analysis method through the Critical Factors (CCs-CRs-CVs) promotes understanding of complex systems – with state and non-state actors – reaching reasonable conclusions about the interdependence and interaction of the different actors involved in a conflict. The CoG links the aim/objectives of actors, the ways or actions each actor will use to achieve the objectives (CCs), the means – what gives each actor the ability to support its ways (CRs – CoG), and finally vulnerabilities (CVs). In this way, planners acquire a clear picture of the trends in the operational environment, focussing on specific actors and relationships. The CoG concept mitigates the complexity of the

³⁹ Rueschhoff, Jan L. & Dunne, Jonathan. Ibid, p.121-122.

⁴⁰ The concept of CoG provokes discussions about its utility and relevance today. The following articles and the respective comments by readers give an idea of the ongoing debate. Col. Dale C. Eikmeier, US Army, Retired. Give Carl von Clausewitz and the Center of Gravity a Divorce, Small Wars Journal, July 2, 2013, at <http://smallwarsjournal.com/jml/art/give-carl-von-clausewitz-and-the-center-of-gravity-a-divorce> and Col. Dale

systems in the JOA/Area of Operation (AO). The CoG analysis supplements the factor analysis during the mission analysis, enabling the planning process to go further, even with no complete understanding of the systems.

- Second, the CoG concept focusses planning efforts and efficiency of operations. Planners using the outputs of CoG analysis are able to focus on strengths and weaknesses –protect friendly forces and attack the adversary’s key nodes. The identified CRs and CVs translated into DCs effects and objectives or tasks for subordinates. In this way, the CoG contributes to building an operational approach (operations design) to solve the operational problem. Actually, it functions as a bond between objectives, DCs, effects with (subordinates’) missions and tasks. Planners thus can concentrate efforts on specific elements/targets, prioritising actions and resources in achieving the objectives. Consequently, the CoG improves the efficiency of operations. Focussing on an adversary’s key elements and then prioritising available resources, it enables the prudent use of the combat power. In fact, it prevents a waste of resources (lives-materiel-money) and time.

Conclusion

This essay seeks to give a holistic view of the famous, yet controversial, concept of CoG. It started with a brief overview about what CoG is. Initially, it was introduced into US Military doctrine during 1980s. Since then its definition has evolved over the time, aiming to become more ‘digestible’. Today, it could be said that, in simple words, the CoG is the main source of power that provides an actor freedom of action at the political/strategic, operational and tactical levels of war. Different levels mean different CoGs.

The key question regarding the CoG has been – and in some cases still is – how can the CoG be identified and then exploited? A variety of models have been developed in an attempt to find a logical path to identify and use the CoG. Warden’s Strategic Ring, Barlow’s (NEV) model, CARVER’s and the Godzilla methods are some of them. However, the existing model in NATO originates from Dr. Strange’s – refined by Col. Eikmeier – ‘revolutionary’ method of critical factors (CG-CCs-CRs-CVs). This method, adapted slightly, is used by the ARRC in identifying and, most importantly, analysing the CoG.

As for the utility of the concept, the CoG has proved to be a useful planning tool. It is strongly related to the concepts of Operational Art and Operational Design. It links objectives, DCs, effects, mission and tasks. In this way it functions as a focal point for all levels of warfare and ensures coherence. Its analysis – through aim/objectives, CCs, CRs and CVs – reveals strengths and weaknesses, which in turn contribute to an understanding of the problem and in developing an efficient operational approach (protect friendly forces and attack an adversary’s vulnerabilities in a direct/indirect manner, defeat/stability mechanisms, operations framework/design). However, planners should keep in mind that:

- CoG analysis requires the best knowledge that we can get for the actors/system (operational environment).
- Changes to the situation/conditions or actors’ objectives/capabilities entail repetition of CoG analysis and potential plan amendments.
- The purpose of CoG analysis is not the identification of a name for the name itself. The usefulness of the concept lies in identifying possible ways (CCs), means (CRs) and weaknesses (CVs). Don’t waste time fighting each other over a name.

While the CoG has been an integral part of planning for almost 30 years, it still provokes discussions and debates over its use. How can an old and so vague concept be used today? How can an 18th century idea possibly be relevant in our high-tech age and in a highly complex modern operational environment? The answer to those who consider the CoG obsolete could be given by the CoG itself: ‘I’m still relevant, because I’m still useful’. As already explained, the CoG contributes to understanding, focusses planning efforts and increases efficiency.

To conclude, despite the challenging aspects of the concept and the debates that may arise, the CoG is still on the ‘scene’ in support of planning. Undoubtedly its definition and implementation has been improved over time thanks to the contribution of Dr. Strange and Col. Eikmeier. It may not be the perfect tool that some of us want, but it works. The reality is that the CoG is part of the planning process (mission analysis) and is complementary to factor analysis. It supports planners and commanders in finding the most effective way to defeat an adversary. It underpins planning through framing problems and approaching solutions. It is

a problem solving tool. We should keep in mind that sometimes the problem is not the tool itself, but how it’s used. Here in the ARRC G5 cell we hope this essay persuades the reader that CoG, while not necessarily cutting through the Gordian Knot on its own, can help untangle the strands and thus still has utility as a planning tool.

ABOUT THE AUTHOR

Colonel Konstantinos Alexandris is a 30-year veteran of the Hellenic Army and currently serves as team leader for the ARRC’s Future Plans (G5) cell. As an Armour officer he has served in tank units for more than 10 years; in his previous two assignments he served as the Commander for an armoured reconnaissance unit and as the Operations Officer for a Hellenic Army division. A native of Rhodes Island, Greece, Col. Alexandris is a graduate of the Hellenic National Defence College and is currently working towards a Master’s Degree in Applied Strategy and International Security at the University of Plymouth.

MARITIME SUPPORT TO DEEP OPERATIONS

Lieutenant Scott Sabin, Royal Navy

“Since men live upon the land and not upon the sea, great issues between nations at war have always been decided - either by what your army can do against your enemy... or else by the fear of what the fleet makes it possible for your army to do.”

Sir Julian Stafford Corbett

As water covers 70 per cent of the world’s surface, it stands to reason that 90 per cent of the world’s trade is carried by ships, 80 per cent of the world’s population lives within 100 miles of the sea and more than 70 per cent of the world’s megacities (>8 Million inhabitants) are located within coastal regions. These figures speak volumes and highlight how reliant we, as nation-states, are upon the sea. With that in mind, this essay will touch on a number of maritime capabilities that are able to support forces ashore, in particular focussing on how maritime capabilities can affect the land component’s deep operations.

Freedom of Navigation

The utility of maritime power is in its freedom of navigation. Able to move more than 300 nautical miles per day, a carrier strike group (CSG), with its embarked air wing for example, offers a uniquely mobile, flexible, reconfigurable and truly independent platform for sustained operations, able to reach well beyond the horizon and strike into the deep.



A coalition carrier strike group. Pictured here are the USS John C Stennis, Charles de Gaulle (French Navy), USS John F Kennedy and HMS Ocean.

The aircraft carrier, through its ability to project tactical air power, independent of access, basing and overflight rights, endures as an essential force multiplier in an era of expeditionary operations where host nation support may be unavailable or comes with significant political and/or military constraints and risks attached.

With the increase in anti-access, area denial (A2AD) weapons, countries are trying to push the envelope of what they can control or deny to their adversary, especially within the air and maritime spheres. At sea however, this only delays, rather than prevents, a maritime task force the freedom of entering a region. A task group is generally afforded its own integral area air defence (AD) capability

and a single ship or smaller task group can often hide within the clutter of the congested waterways where A2AD systems are arguably less effective. Once the risk is considered tolerable, commanders can exploit this tactical flexibility to great effect, maintaining a force presence and freedom of navigation, whilst extending its reach into the enemy’s area of operation (AOR).

Deep Strike

The embarked air wing of an aircraft carrier can be tailored to offer a full range of capabilities. Today’s US Navy air wing, which forms the core of NATO’s follow-on forces (FFG), typically numbers 60 aircraft and comprises a mix of warfare capabilities that can have an effect on deep operations including long-range airborne early warning and control, air defence, deep strike, reconnaissance and electronic attack. The task group also typically includes a ship-launched land attack capability, whether that is direct fire used to suppress enemy coastal batteries, such as tactical land-attack missiles or naval gunfire, and the use of long-range Land Attack Cruise Missiles (LACM), such as the Tomahawk, which was most recently used in Syria by the United States in 2017.



The guided-missile destroyer USS Porter conducts strike operations while in the Mediterranean Sea.

Littoral Manoeuvre

As well as the carrier strike group, amphibious task groups (ATG) can manoeuvre from the rear to the deep relatively quickly, again covering approximately 300 nautical miles per day giving a 600 nautical mile area of uncertainty for the enemy. Self-sustaining with its own logistics support and integral force protection, ATGs can poise at sea for extended periods of time ready to strike when called upon by the joint task force commander. Within NATO, six countries (France, Italy, Netherlands, Spain, the UK and US) operate a variety of specialist amphibious shipping capable of putting troops, vehicles (anything up to and including main battle tanks) and equipment ashore using a variety of landing craft, amphibious vehicles and aviation assets during a single period of darkness.



Royal Marines conduct an amphibious demonstration in Cornwall as HMS Bulwark floats offshore.

Whether used during a withdrawal (Dunkirk), assault (Normandy), raid (Dieppe), demonstration (Sierra Leone) or as part of a joint deception plan (Desert Storm), the amphibious capability is one that, within the littoral region, should be considered as a means of affecting the deep.

“Lying offshore, ready to act, the presence of ships and Marines sometimes means much more than just having air power or ship’s firepower, when it comes to deterring a crisis. The ships and Marines may not have to do anything but lie offshore. It is hard to lie offshore with a C-141 or C-130 full of airborne troops.”

Gen. Colin Powell, US Army (Retired)

Into the Deep from the Deep

Whilst we have covered the elements of what the maritime component can contribute to the deep from the surface, the sub-surface should likewise be considered. A submarine, able to penetrate far into the adversary’s waters, is an ideal intelligence, surveillance and reconnaissance (ISR) platform. If, as in the case of a nuclear powered submarine, it

has the potential to remain undetected for extended periods of time covertly collecting information, whilst also monitoring both military and civilian shipping, it can provide invaluable assistance in the realm of targeting or independently strike at the adversary from the deep.



Australia’s HMAS Rankin cruises out to sea at periscope depth during Rim of the Pacific (RIMPAC) 2004.

Conclusion

The future maritime force remains as flexible and versatile as ever. It provides a commander with a variety of tools that can be used effectively in a land campaign. Whilst modern land commanders look to the sky for support, in the right circumstances, they should also be looking towards the sea for support to deep operations.

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SITUATIONAL AWARENESS: A POORLY UNDERSTOOD CONSTRUCT?

Major Guy Cheesman, British Army

Doctrine concerning understanding and decision-making emphasises the importance of situational awareness (SA), yet stops short of satisfactorily explaining the construct.¹

The author describes SA using Mica Endsley's model of dynamic decision-making, referenced in Joint Doctrine Note 3/11, and shows why team and shared SA (SSA) is not derived simply from the sum of individuals' SA.²

Origins of SA

Oswald Boelke is generally attributed as the first person to chronicle SA as a construct, recognising the "importance of gaining an awareness of the enemy before the enemy gained a similar awareness."³ Academic research came much later, its rising prominence driven by attempts to better understand the ability of people to perform complex tasks in dynamic environments.^{4,5} A commonly agreed definition does not exist, although the construct is commonly accepted as extending from individual SA (to Team, then to Shared SA (SSA)) and is described both as a product and a process.^{6,7} Situational Awareness is defined within NATO doctrine as the "knowledge of the elements in the battlespace necessary to make well-informed decisions."^{8,9}

Importance of SA to Decision Making and Military outputs

Within NATO, SA is deemed vital to generating desired military outputs, linked together by the commander's primary

duty: Decision making.¹⁰ Research supports this notion, emphasising SA as being the key feature dictating the success of the decision process, which is a pre-condition for the commander to achieve execution superiority.^{11,12,13}

Individual SA

Three classifications of individual SA stand out: Definitions based upon how individuals process information, definitions that emphasise an individual's mental representation of reality (dynamic reflection) and those that centre on the interactions between the individual and the world around them.¹⁵ Since the tidal point of research seeking to define SA, Mica Endsley's explanation appears more than any other since its publication in 1987 and informs influential books on the construct.¹⁵

Endsley defines SA as "the perception of the elements in the environment within a volume of time and space, the comprehension of their meaning, and the projection of their status in the near future."¹⁶ Her definition comprises three

levels: Perception, comprehension and projection, which are situated in her dynamic decision making model (Figure 1). She argues that an individual must first perceive the elements within a situation, derived through an individual's senses. The next step is to comprehend what elements mean through their synthesis and, importantly, in the context of their task or mission. The third stage is the short-term projection of what might happen based on achieving Level 1 and Level 2 SA, from which a decision is made and an action follows. The observe-orient-decide-act (OODA) loop can be mapped across this model, making it entirely relevant for use by commanders at the tactical level. There are critics of Endsley's model, although the merits of this and other SA research fall outside the scope of this essay.¹⁷

1 JDP 04 Understanding and Decision Making, JDN 3/11 Decision Making and Problem Solving: Human and Organisational Factors

2 JDN 3/11 para 221.

3 Gilson 1995, p.3.

4 Endsley & Jones 2012 p.13, Salmon et al 2009 p.8, Panteli & Kirschen 2014, Durso and Gronlund 1999.

5 Smith & Hancock 1995, p.137, Sarter & Woods 1991 p.47.

6 Salmon et al 2009 p.8.

7 Endsley and Jones 2012 p.19, Salas et al 1995 p.124.

8 JDP 01.1.1.

9 AAP 06 2017 p104.

10 AJP 01, para 5.2, MoD 2016 para 0606.

11 Endsley, 1995 p.34, Salas et al 1995 p.123, Smith and Hancock 1995 p.140, Bedne & Mesiter 1999 p.64, Flach 1995 p.151.

12 Endsley and Jones 2012, p.10.

13 ARRC SOI 0070.

14 Stanton, Chambers and Piggot 2001, Salmon et al 2009.

15 Wickens 2008 p.397, Salmon et al, 2009 p.8.

16 Endsley, 1995 p.36.

17 Salmon et al 2009 p. 18, Bedny and Meister 1999 p.65.

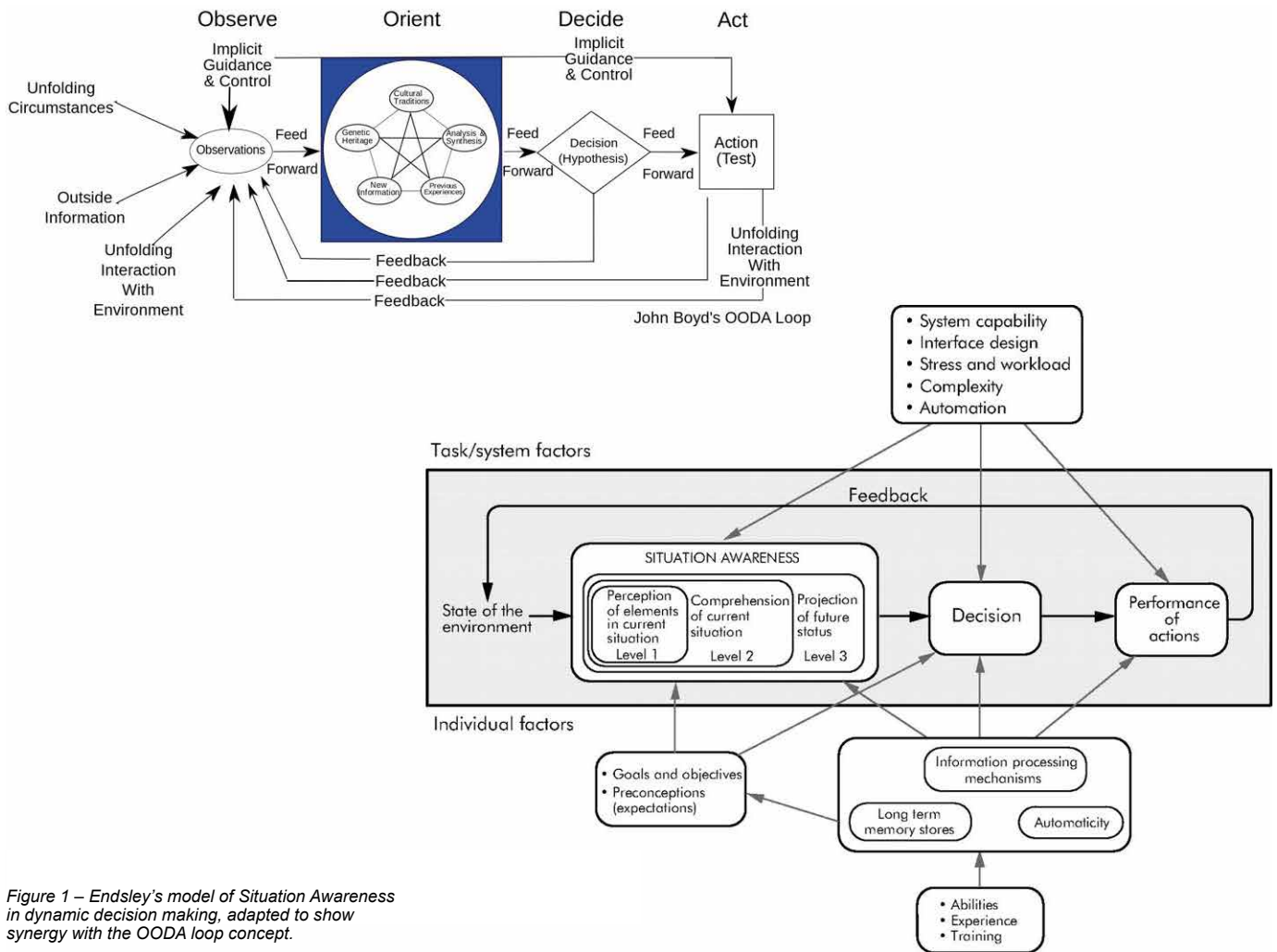


Figure 1 – Endsley's model of Situation Awareness in dynamic decision making, adapted to show synergy with the OODA loop concept.

Endsley's model recognises that external factors, including human stressors, complexity, workload and experience, affect SA, decision-making and the execution of actions. This is important when considering the context of the Allied Rapid Reaction Corps (ARRC) operating in austere, climatically challenging and high-pressure environments. In contrast to Endsley's peer reviewed and evidence-based definition and model, the author posits that our NATO (and UK) definition is not underpinned by sufficient research, fails to articulate how SA contributes to decision making or how information processing systems (cognitive and automated) support both these constructs.¹⁸ Using Endsley's model as a framework would enable us to identify points where SA can break down, from which we can derive solutions to deal with the cause(s) through training or system design.¹⁹

Team and Shared SA

Team SA is more complex than the sum of individuals' SA within a team, yet it is the author's experience that 'SA' is used ubiquitously to mean all things.²⁰ Just as we are concise in our use of task verbs, we must be concise in the use of SA. Endsley extends her thinking to include Team SA, which she defines as "the degree to which every team member possesses the SA required for his or her responsibilities."²¹ Endsley emphasises that SA is a cognitive construct, which individuals within a team possess. It follows, then, that team SA cannot be replicated or presented on a local or common operating picture (LOP/COP). These displays are limited to providing data, which informs the cognitive process of situation assessment.

Endsley and Jones define Shared SA (SSA) as "the degree to which team members have the same SA on shared

SA requirements."²² They contend that in pursuit of SSA the goal must not be achieving the same SA amongst each member, or wholesale information sharing, but a shared understanding of the subset of information necessary for each individuals' task(s) within the team. In the context of the headquarters, can we claim that the ARRC's information management (IM) achieves this?

Decision Making

Durso and Grunland reviewed research on decision-making and concluded an appropriate course of action is usually chosen without deliberate or lengthy consideration as a consequence of the situation assessment, termed 'recognition primed decisions'.²³ These decisions are only made when the current situation has similarities to past experiences. Endsley and Jones describe how mental models support this notion, as schema and scripts together

18 The UK defines SA the "understanding of the operational environment in the context of a commanders (or staff officers) mission (or task)," JDP 01.1.1.

19 Wickens 2008 p.398.

20 Salas et al 1995 p.125, Endsley 1995 p.39, Endsley & Jones 2012 p.195, Salmon et al 2009 p.21.

21 Endsley 1995 p.39, Endsley & Jones 2012 p.195.

22 Endsley & Jones 2012 p.196.

23 Applied Cognition 1999 p.300.

provide a “direct, single-step link between recognised situation classifications and typical actions, enabling very rapid decisions to be made.” Adams, Tenney and Pew also highlight the importance of schema, in particular for anticipating specific types of information pertinent to a situation, which assists individuals to subconsciously filter out unhelpful information and actively seek out what is important. The author posits that the training frequency for the ARRC staff is too insufficient to expect them to have an adequate bank of scripts and schema from which to deal with the volume of data being presented to them.

Threats to SA and Decision Making

Threats to good SA, and a correspondingly higher probability of making a poor decision, exist predominantly in the limitations of the human mind and within human-machine interfaces. Arguably the most prevalent threat is attention tunnelling where an individual locks their interaction with specific aspects of the environment and ceases interaction with others. The risk here, then, is ignorance of important information that presents itself. Compelling evidence has shown that presenting growing volumes of information to those in complex systems will increase the risk of this phenomenon, as individuals attempt to identify the same ‘critical cues’ amongst a growing volume of data. Researchers argue that interaction with the environment can be better attended to if spread across all the sensory nodes and not, as an example, just through the visual band. Human capacity is bounded, yet what can be presented to them is theoretically unbounded. An analytical set of information requirements, complimented by well-designed human-machine interfaces, is therefore essential to avoid overmatching the ability of human working memory to attending information presented.

Endsley and Jones found that skewed mental models resulted in very poor SA and dangerously poor decisions. Often cited examples are those in aviation where pilots used mental models of the wrong aircraft to process information, resulting in the wrong perception of information, the wrong projection of the future and an inappropriate decision.

In the context of the ARRC, staff must invest greater effort (training) to become knowledgeable on the impressive breadth of multinational capabilities, which could be task-organised to the commander from participating nations, in order to process information within an accurate mental model.

User Confidence

Linked to threats is uncertainty, which pervades throughout the SA and decision making continuum. Doctrine makes clear that achieving decision superiority comes with risk and commanders should never expect to make decisions based on perfect information, although they must base decisions on some degree of certainty and confidence. McCloskey determined that missing data is arguably the greatest source of uncertainty, although the reliability of data is another notable factor. Research has found that military commanders request more data before making decisions if the means to do so is available, often to the detriment of timeliness. United Kingdom doctrine graphically represents this and describes the notion as ‘decision superiority’, which is essential in order for the commander to seize and hold the initiative. It can be argued that the introduction of more technology, with more ISR feeds, may not increase tempo; the author’s experiences in Iraq and Afghanistan reinforce this view.

Conclusions

Researchers are in agreement that SA is an individual cognitive process and product, which cannot be generated or replicated by technology. Moreover, SSA is accepted as the shared understanding of the subset of information necessary for each individual’s task(s) within the team and is not the sum of individual SA. This SSA is, therefore, unlikely to be achieved across a large organisation, such as the ARRC, and will be limited to smaller groups, such as the ARRC’s individual branches. Consideration should also be given to codifying Endsley’s model in applicable doctrine or selecting an alternative in order to better portray how SA is linked to decision making. Additionally, as part of our relentless pursuit of improved SA and decision-making, we should examine the balance of investment between technologies and training; evidence exists that suggests greater investment in, and frequency of, training would deliver more benefits.

ABOUT THE AUTHOR

Major Guy Cheesman currently serves as the ARRC’s Engineer Plans officer. In his previous assignment he commanded the 61st Field Support Squadron Royal Engineers, 36th Engineer Regiment at Rock Barracks in Woodbridge, England. Maj. Cheesman has deployed on a variety of operations in Sierra Leone, Iraq, Afghanistan and Cyprus and he holds a Master’s Degree in Battlefield Technology from Cranfield University.

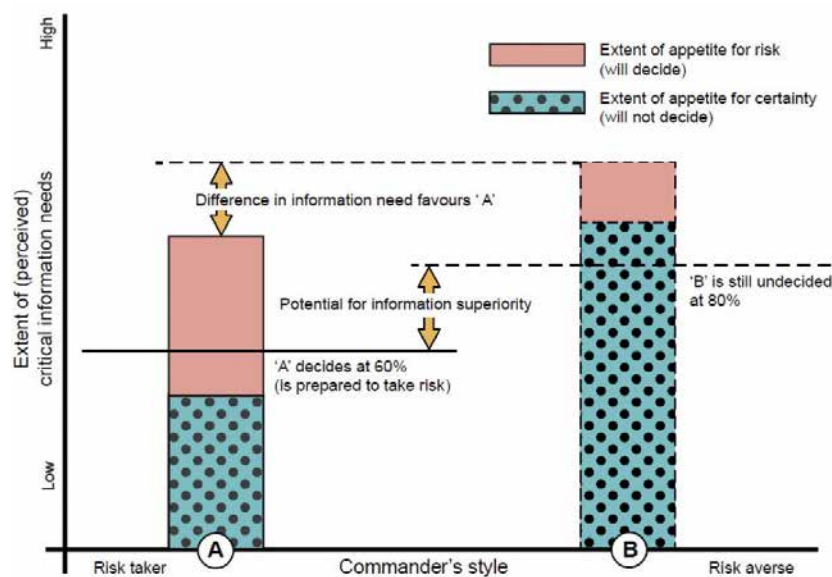


Figure 2 – Risk Appetite and Information Superiority

24 2012 p.24.

25 Mental models describe an individual’s understanding of a given system, schema describe the framework of pre-conceived ideas of the system used to make sense of new information, and scripts are a sequence of expected events for a given situation which may occur within the system. Schema and scripts are generated through experience of operating within the system.

26 Human Factors Journal 1995 p.88.

27 Endsley & Jones 2012 p.33.

28 Rafferty, Stanton & Walker, Safety Science 2013 p.64.

29 2012 p.39-40.

30 UK MoD 2013, para 315.

31 1996 pp.195-196.

32 Lalbahsh, Sohrabi and Fesharaki 2009, Robertson 2014.

33 Kott 2008, Bates 2010 p.8.

34 Troop Commander 26 Engr Regt on Op TELIC 6, BGE/IO for 1 PWRR BG on Op TELIC 8, Senior Watch Officer (SWO) for I and II Marine Expeditionary Force, United States Marine Corps, Regional Command (South West) Nov 11 - May 12.

THE ALLIED RAPID REACTION CORPS RECEIVES ACCOLADE FOR ITS RISK MANAGEMENT PROCESS

Major Derek Thornton, United States Army

This essay outlines how the Allied Rapid Reaction Corps (ARRC) received an ‘Operational Analysis Award’ at the United States Army Operations Research Symposium on 18 October 2018 for combining alternative analysis approaches and a Bayesian probability model to organise the thinking of a modern British-led corps headquarters.



Why did HQ ARRC need to update its risk management process?

The ARRC’s commander had a problem. During Exercise ARRCAD E FUSION 2015 multiple staff sections presented impactful issues that could undermine his ability to conduct operations. Examples included medical resource limitations, logistics constraints and unforeseen threat activities. Risk assessments were created based on the situational awareness and military judgement of

“COMARRC views all his decisions through the lens of risk and therefore, in order for him to make informed decisions he needs to be reassured that his staff understand the process that the HQ uses to identify and manage risk.”

Lt. Cdr. Charlotte Yemm, Royal Navy
ARRC Journal 2018

Major Seth Pruett receiving the Operational Analysis Award at the Army Operations Research Symposium)

a few staff officers. Assessments were conducted once during each battle rhythm cycle prior to the commander’s situational update brief. The results were neither comprehensive nor timely. The staff lost the initiative by presenting issues to the commander as they arose because timely and relevant information had not been presented earlier. This deficiency was attributed to the lack of integration between risk management and decision-making processes. What was later discovered, however, was that the headquarters needed a new risk assessment process that incorporated relevant information related to risks as it became known across the headquarters.

Identifying potential solutions

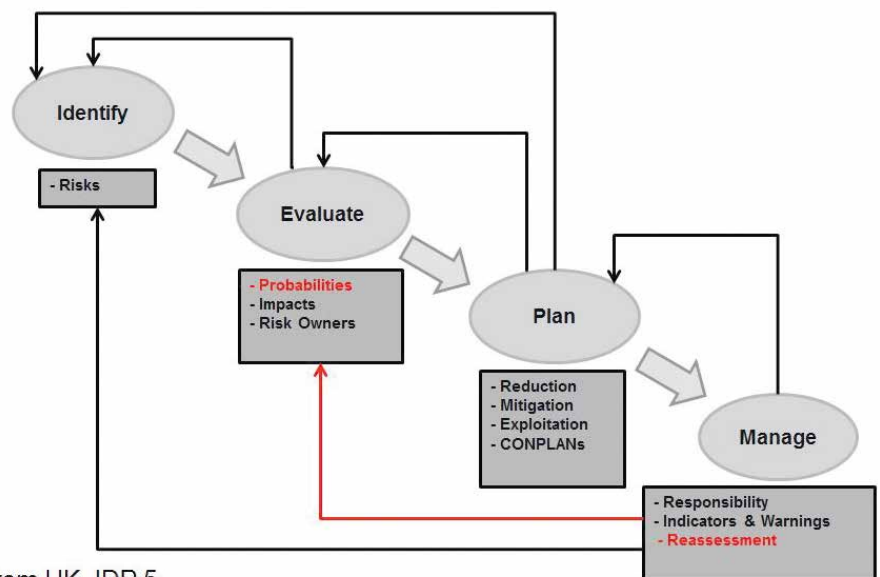
Bottom line up front, there is no cure-all solution, and never will be, to producing accurate, precise and timely forecasts on the likelihood and impact of future events. The root causes to this impossibility include uncertainty, individual bias and subjectivity. At the ARRC we decided to mitigate these impediments by combining alternative analysis approaches and probability models like Bayes’ Theorem to close the gap between the unknown and known as new information is discovered.

An alternative approach to group sourcing

One of the main issues with the previous traditional approach was relying on the judgement of only a few staff officers to make organisational assessments. A departure from the norm was needed and thus a pan-organisational risk assessment group was formed to assess risk likelihood by following a process designed to solicit individual likelihood estimates from group members from across the staff. This risk assessment group ensures an in-depth and relevant understanding of the operational environment, while simultaneously serving as risk detectors because of their disposition within the headquarters.

In practise, risks are identified by the risk group, either through pre-condition decomposition or discovery of new information, and the information is shared amongst the group. Groupthink now becomes an obstacle, as does positional influence. Alternative analysis approaches, such as ‘brain writing’, mitigate these concerns by having each group member generate their estimate separately, away from the group, to reduce the influence of other members’ position or personality. Each member evaluates the risk and provides their

The Problem



From UK JDP 5

Figure 1 – Reassessment Process

risk likelihood estimate not knowing how other members have responded.

Comparing responses and asking the right questions

Normalising data is difficult to accomplish under normal conditions, but it is near impossible without common evaluation metrics. Therefore, risk likelihood estimates must be reported as a percentage so that a systematic approach can be applied to provide insightful feedback. This resulted in the creation of the ‘ARRC Risk Likelihood Yardstick’. Risk analysts are asked to independently develop a number that represents their subjective assessment of the effect a specific event has on a defined risk’s likelihood, using categories that correspond to percentage probability values.

Predictably, the range of outcomes varies greatly from individual to individual, especially when considering their perspective of the problem within the headquarters. Alternative analysis techniques are used to mitigate these biases by asking the risk member to

consider multiple alternative futures, such as one in which the risk develops and one in which it does not. In each of these futures they look back into the past and assess the probability that the event they are considering occurred. These questions are often overlooked in risk analysis because the primary focus of risk analysis is on causes of risk. Asking other questions breaks our natural inclination to foresee the worst case and forces the analyst to consider: What else could this mean? This process could capture the context and reasoning underpinning an individual conditional probability estimate or provide a relevant and detailed analysis of the identified risks. These individual assessments are used to produce a single risk likelihood update in relation to an observed event.

ARRC Risk Likelihood Yardstick						
Highly Unlikely	Unlikely	Plausible	Possible	Probable	Likely	Almost Certain
0 - 10%	11 - 25%	26 - 45%	46 - 54%	55 - 74%	75 - 89%	90 - 100%

Figure 2 – Risk Likelihood Yard Stick

Two Questions

Question 1- What is the probability that the pre-condition occurred given that the risk did occur?

Question 2- What is the probability that the pre-condition occurred given that the risk did not occur?

Figure 3 – Risk Likelihood Yard Stick

Baysean Probability Theory in practise

$$P(Risk|Event) = \frac{P(Event|Risk) \times P(Risk)}{P(Event|Risk) \times P(Risk) + P(Event|Not Risk) \times (1 - P(Risk))}$$

Figure 4 – Bayes' Formula

Bayes' Conditional Probability Theorem estimates the likelihood of an event occurring when we encounter new data. The value of Bayes' Theorem is that if it is continually updated as more evidence is gathered it brings us closer and closer to the truth.

For instance, if the initial risk probability of a missile strike is 31 per cent, what is the resultant risk probability if the adversary relocates a static radar site during the operation? In practise, the risk group answers two questions. First, what is the probability that the adversary would relocate the radar site with intent to launch a missile? Second, what is the probability that the adversary would relocate the radar site without intent to launch? The risk group responds respectively with 40 per cent and 60 per cent, respectively, and the risk of a missile strike given the radar relocation is calculated as 23 per cent likely. This oversimplified example illustrates that the risk analyst must consider whether the observed event means something different from their initial estimate.

The results and value of the process

The outputs derived using Bayes' Theorem are still subjective, but informed. Therefore, risk likelihood is reported using the descriptions on the yardstick, not the corresponding percentages. For example, a 22 per cent initial risk percentage probability value that later results in a posterior probability of 29 per cent would be reported as a risk likelihood increase from unlikely to plausible.

The value of the process is twofold. First, this is a defensible solution that removed layers of subjectivity and social pressures to update the risk likelihood of an event occurring using an academic process. Second, this method can be used to quickly re-evaluate risk likelihood as conditions change in the operational environment. In practise, the opinion of the risk group will converge toward the truth as ideas are debated and new evidence is uncovered. However, we must provide the process with new information and that is a pan-headquarters responsibility.

Implementation

Over the past two years the ARRC has restructured and validated the headquarters risk management processes to ensure that operational risks were well defined, assessed based on changing conditions and managed by those with appropriate resources and authority. The process was validated and approved shortly after demonstration during Exercise TRIDENT JUNCTURE 2016. Subsequently, it has been integrated into the wider headquarters risk management process. It has been presented at two NATO Operational Assessment Conferences and has informed the risk management processes of the German-Netherlands Corps and Multinational Division Northeast.

This concept is applicable to any question relating to future conditions, such as intelligence estimates, future resource availability or internal capability projections. This process is also scalable and can be used to assist organising and consolidating group input. Future

work in this area should test this process to assess real world risks, examine alternative methods to aggregate individual input and incorporate additional safeguards against bias.

Conclusion

This process works for a corps headquarters at both the operational and tactical levels of combat. The Allied Rapid Reaction Corps has tested and iteratively updated its procedures to ensure the process provides useful input to tactical decision-making. However, we will struggle to match the quicker pace of the tactical battle without pan-headquarters support in prioritising the risk group's efforts.

ABOUT THE AUTHOR

Major Derek Thornton is a 14-year veteran of the United States Army and currently serves as an Operations Research Analyst for the ARRC. In his previous assignment he served as a Military Analyst for the Joint and Coalition Operational Analysis section within the US Department of Defense's Joint Staff in Washington, DC. Maj. Thornton has led combat construction and engineer operations in support of Operation Iraqi Freedom and served as a Brigade Battle Captain in support of Operation Enduring Freedom in Afghanistan. A native of San Antonio, Texas, Maj. Thornton holds a Bachelor's Degree in Engineering from the Colorado School of Mines and a Master's Degree in Industrial Engineering from New Mexico State University.

	Highly Unlikely	Unlikely	Plausible	Possible	Probable	Likely	Almost Certain
Extremely High	Yellow	Yellow	Yellow	Red	Red	Red	Red
High	Green	Green	Yellow	Yellow	Red	Red	Red
Moderate	Green	Green	Green	Yellow	Yellow	Red	Red
Low	Green	Green	Green	Green	Yellow	Yellow	Yellow

Figure 5 – Updated risk likelihood estimate

THE ARRC'S GROUND LIAISON ELEMENT ON EXERCISE TRIDENT JUNCTURE 2018

Colonel Richard Head, British Army

“We are the best Ground Liaison Element in all the HRF(L)s in NATO...” we confidently announce to anyone who is briefed on the role of the Allied Rapid Reaction Corps’s (ARRC) Ground Liaison Element (GLE). This is always followed up, with a wry smile, “...because we are the only HRF(L) Ground Liaison Element in NATO!”

However, things are changing and for the better. On the recent Exercise TRIDENT JUNCTURE 2018 (TRJE18) command post exercise (CPX), a newly trained team of five staff from the 1st German-Netherlands Corps (1GNC) teamed up with the two-person ARRC GLE team to provide the Land Component, played by 1GNC, with its own GLE inside the Air Component. The aim of this essay is to provide a brief overview of what the ARRC’s GLE does and look at the key themes that arose from this recent exercise as we worked alongside our comrades from 1GNC.

GLE: A brief overview

The GLE is comprised of land officers, embedded in the Air Component, who are placed in key roles within the various Air Component divisions to ensure that not only is the Land Component’s requirements met, but also, conversely, that any support that the Air Component requires is resourced by the Land Component. The GLE’s mission is to act as the Land Component Commander’s direct representative in the Air Component. They articulate his intent, priorities and provide advice across all functional areas both in the planning and execution phases of the Air Tasking Order, which is the mechanism through which the Air Component conducts its campaign. The numbers required to staff a GLE can vary, however at present it is



Exercise Trident Juncture 2018 logo

assessed that seven to 13 officers are required.

Exercise TRIDENT JUNCTURE 2018

Following Exercise RAMSTEIN AMBITION 2018, an internal NATO Allied Air Command (AIRCOM) training event, which the ARRC GLE support on an annual basis by representing the Land Component, an invitation was extended by both AIRCOM and 1GNC who were due to play the role of the LCC on TRJE18 to be part of their own developing GLE capability. The offer was promptly accepted, particularly as it gave the opportunity to work as a GLE with a fully functioning 3-star Land Component.

The element of TRJE18 that the ARRC’s GLE took part in was the CPX piece of NATO’s major 2018 exercise. Based on an Article 5 scenario in Norway, a joint campaign was conducted with AIRCOM; 1GNC; a maritime component headquarters based in Taranto, Italy with two members embedded as a Maritime Liaison Element (MLE) in the JFAC; a SOF component; and a significant Joint Logistic Support Group all working for JFC Naples. The exercise scenario was complex, multi-faceted, had significant depth to it and was suitably long (12 days) to provide the joint commander with a number of decision points where the competing priorities of the components could not all be aligned, and so prioritization and tough decisions were required at the highest level.

Themes

As can be imagined there were many lessons identified on the exercise. These often focused on low-level processes and the functionality of individual posts, as well as where GLE staff could be better placed within the Air Component. More importantly, though, a number of themes either emerged during the exercise or reinforced lessons from previous exercises. The top five were particularly key to understanding the role of the GLE and the underlying importance of cross component integration:



The Air Component Combat Operations Division

• **You cannot exchange business cards whilst in contact.** So much of the GLE's role is about relationships. There is the personal side and clearly it is advantageous to work alongside people you have met in the past, especially so if you have exercised alongside them previously or on operations. Selecting the right personnel to work in the Air Component is also vital as there is no room for egos or a land-centric approach. For the Chief GLE the relationships he develops involve a large element of trust and credibility. Given a prominent place in the JFAC command group, he has access to a number of senior officers ranging from the Commander (4-star) to the Deputy Commander (3-star), to

the JFAC Director (1-star). In addition, at OF-5 level his key interlocutors are the Chiefs of the Strategy Division (SD) and Combat Plans Division (CPD), together with their main sub-branches, the Master Air Operation Plan (MAOP), Guidance Apportionment and Targeting (GAT) and Combat Operations Division (COD). He is involved in all key meetings and discussions. Knowing these people well plays a large role in how business is conducted and how both components maintain a clear understanding of what the other is trying to achieve, and what their respective limitations are. However, there is also the 'professional' side to relationships. Understanding which staff officer in the JFAC covers which role is critical in

isolating and solving issues before they become problems. This is something the whole GLE team became experts on during TRJE18.

• **It's a two-way street.** Air-land integration is usually viewed as Air supporting Land. This is often the case. However, during TRJE 18 it became clear very early on that, particularly as Air strove to gain control in a challenging environment, Land and Maritime had capabilities (predominantly stand-off weapons) that could support Air in its aims. The processes for such support to be resourced from Land were not always clear and certainly not well practised – an area that requires further development on the process as well as the cultural side.



Allied Air Command Headquarters, Ramstein, Germany



Joint Force Air Component Staff

- **Less a Liaison Officer, more a Joint Coordination Officer.** One could argue the only staff officer conducting genuine liaison is the Chief GLE. The rest of the GLE team are fully embedded members of their respective divisions in the Air Component. They play an active role in developing and preparing the ATO, and then executing it. They are regarded by Air as part of their own team, notwithstanding the fact they have an eye firmly on the needs of Land. This is a critical distinction. It is this role of joint coordination that defines the GLE team, which means that the amount of influence the GLE has within the Air component is out of all proportion to the number of staff officers deployed. But...
- **The GLE are only as good as the Land Component allows them to be!** The agility, flexibility and capabilities that the Air Component offers to Land are impressive. The Land Component should always look to maximise these capabilities and effects. The GLE must be fed the appropriate direction and guidance from the LCC as often and as quickly as possible. If the LCC wishes to maximise the opportunities that the ACC has at its disposal, then staff horsepower must be dedicated to servicing the requirements of the GLE. When this was done on TRJE18 the results were impressive. When information slowed or failed to materialise, planning was rushed at best and at worst the results were frustrating.
- **ATO inflexibility? No, simply book early to avoid disappointment!** This brings us onto the last, and perhaps most important, point that was reinforced during the exercise. There are many misconceptions from the Land perspective about the ATO and its flexibility. By its very nature and

complexity the ATO takes time to build. Planning begins three days in advance of execution, with refinement constantly taking place through to the moment of execution. Within that process, which is ruthlessly followed by the Air staff, there is ample opportunity to be flexible. However, Land requirements need to be earmarked as early as possible. It is better to make a broad assessment that a capability will be required and cancel it, than to make a last minute bid. There can be a tendency for Land to only look approximately 48 hours out (or less) in its requests for assets. This is late insofar as the Air Component is concerned and can result in a build-up of frustration from both sides as they strive to achieve their respective commanders' intents. On the other hand, if the Air and Land Components builds up credibility and trust it is extraordinary what Air can deliver at extremely short notice.

Next Steps

So, we are seeing the development of a GLE capability within 1GNC. While they are not dedicated GLE staff officers, as is the case with the ARRC, this growth and commitment to the GLE capability is welcomed. Already we are looking to utilise this cooperation to refine the ARRC's GLE SOPs into wider NATO SOPs for all future GLEs. In addition, Allied Land Command (LANDCOM) has charged the ARRC with pursuing improved coherence across NATO and Air-Land Integration doctrine, training or procedures. The GLE in the ARRC is presently in the 'Understand' phase of this demanding task. If you are reading this article and believe you have a role to play in how we as an Alliance handle this challenge, please get in touch. Air-Land Integration and Cross Domain

Integration as a whole require all parties to be fully engaged. It takes time and effort, but eventually those efforts are paid back many times over.

ABOUT THE AUTHOR

Colonel Richard Head is a 28-year veteran of the British Army and currently serves as Chief of the ARRC's Ground Liaison Element. In his previous assignment he served as Assistant Director at Headquarters, Standing Joint Commander (UK) in Andover, England. Col. Head has led troops across an array of operations, such as counterterrorism, peacekeeping and military aid to civil authorities in locations including Northern Ireland, the Balkans and Afghanistan. A native of Derby, England, Col. Head holds a Bachelor's Degree with Honours in Modern History from Cardiff University.

CONTRACTOR SUPPORT TO NON-ARTICLE 5 CRISIS RESPONSE OPERATIONS: THE WIDER IMPLICATIONS

Major Steve Barnard, British Army

Contractor support to operations (CSO) is not a new phenomenon. For hundreds of years defence has employed contractors to support deployed armed forces across the full spectrum of operations. In the current operating environment, we can expect to see contractors provide goods and services from food to security, and employ personnel from as local as the host nation to globally-resourced manpower.

As countries and politicians buy out risk through the use of contractors, we can expect the economic investment in CSO to have greater and wider implications for the Allied Rapid Reaction Corps (ARRC) in any crisis response operational environment. The economic impact of any such investment will have implications for all the staff functions of the headquarters whether it is directly or indirectly – one only need follow the money.

Economic investment in a region will shape how the political and social landscape develops over the duration of a military campaign. Whether peace enforcement or humanitarian and disaster relief, the operational environment will be within the people and that looks very different to warfighting. Understanding the wider implications of such investments in this type of operational environment will allow us to better inform the planning process and to analyse these factors to give sound situational awareness to the commander's plan in support of bringing stability to a region. The economic impact of a deployed NATO force will have an influence from the tactical to strategic level of any operation. This can be better understood

through facts and figures. In 2012, Allied Command Operations (ACO) and the NATO Support and Procurement Agency (NSPA) committed 79 per cent (€411 million) of the International Security Assistance Force (ISAF) common-funded budget on contracted goods and services.¹ To put that into perspective, such a figure equates to 22 per cent of South Sudan's GDP in 2016.²

“In an intervention environment, contracting is not just a technical purchasing function. It is an integral part of the mission strategy.”

TI UK Corruption Threats & International Missions, 2014

The Basics

The basic principles of resource planning and the provision of contracting remain extant throughout. First, seek a military solution or look for a country to take the lead on the provision of a capability or provide capacity. If this is not achievable then the host nation will be asked to provide. Only when these options are not attainable is a contracted solution sought. NATO defines CSO as “deployed support to operations provided by commercial entities, assured for the commander, and optimised to be the most efficient and

“It is commander's business – The commander needs to understand and be aware of the requirements for contractor support. It is not something you offload to someone because those individuals/organisations are going to operate in your battlespace.”

Lt. Gen. Michael Williamson, US Army

effective use of resources.”³ Furthermore, contracting is “the act of purchasing, renting, leasing or otherwise obtaining services or supplies from commercial or governmental sources through a legally binding contract.”⁴

1 IBAN IBA-AR (2014)11 dated 13 June 2014.

2 www.tradingeconomics as at 31 October 18.

3 EAPC (SNLC) D (2010)0005.

4 EAPC (SNLC) D (2010)0005.

Understanding the Money

This not just a 'G8 sport', but, rather, the responsibility of everyone who has ownership of an activity and a funding line. Supporting stabilisation, economically, means we need to better understand where the money is coming from, but more importantly where it is going, who it is going to, what they are using it for and where is it ending up. Detailed analysis of the human terrain and of how the A3E community is interconnected allows us to better understand the likely networks that control the flow of money in an operational environment.

The Contracting Environment

The environment will be different to how many contracting staffs are used to operating within in almost every respect. Contracts will be utilised by organised crime syndicates running companies that provide services and by insurgents using them as a source of influence, power or infiltration. Commanders at all levels should appreciate that contracting will have an impact on the operational situation. Contracting is a significant

way through which funds flow through to the local economy and can influence the political dynamics of a region. Apart from the provision of goods and services, it will also impact local employment and prosperity. A balance needs to be struck between using internationally recognised contractors, reducing the risk of corruption and a more guaranteed supply chain versus local suppliers and the unknown nature of the contractor and sustainability of the commodity. Both support stabilisation in their own way, but striking the balance of how the long-term sustainability of the economy will be affected needs to be understood.

To provide that balance, contracting is performed on a wider scale than just within theatre; how and where contractors deliver solutions is key. Contractor support to operations is becoming big business; in 2015 alone US Forces in Afghanistan employed one contractor for every soldier deployed on operations. The factors driving this are various, but CSO is now an essential element in any operation.⁵ Employment of staff is contractor business; however,

they will invariably look to strike a balance of locally employed civilians (LEC), third country nationals (TCN) and core staff.

Contractual IPB

The contracting battlespace looks very different to the operational one, but nevertheless it overlays the operational battlespace with an impact on the same actors in a crisis response operation. What differs is the focus of those actors; in the contracting space they will become economically focussed. The economic environment will be as congested and contested as the G3 battlespace. There will be competition for resources, goods and services from all actors in theatre. Whether it is the local population and industry, international organisations (IO), non-governmental organisations (NGO) or other countries – all will compete for resources in this environment and all will approach it from a differing perspective with competing priorities. This makes the market both competitive and challenging. We have to accept that we will not be the preferred bidder of choice; some of our competitors may have more freedom to operate in this space.

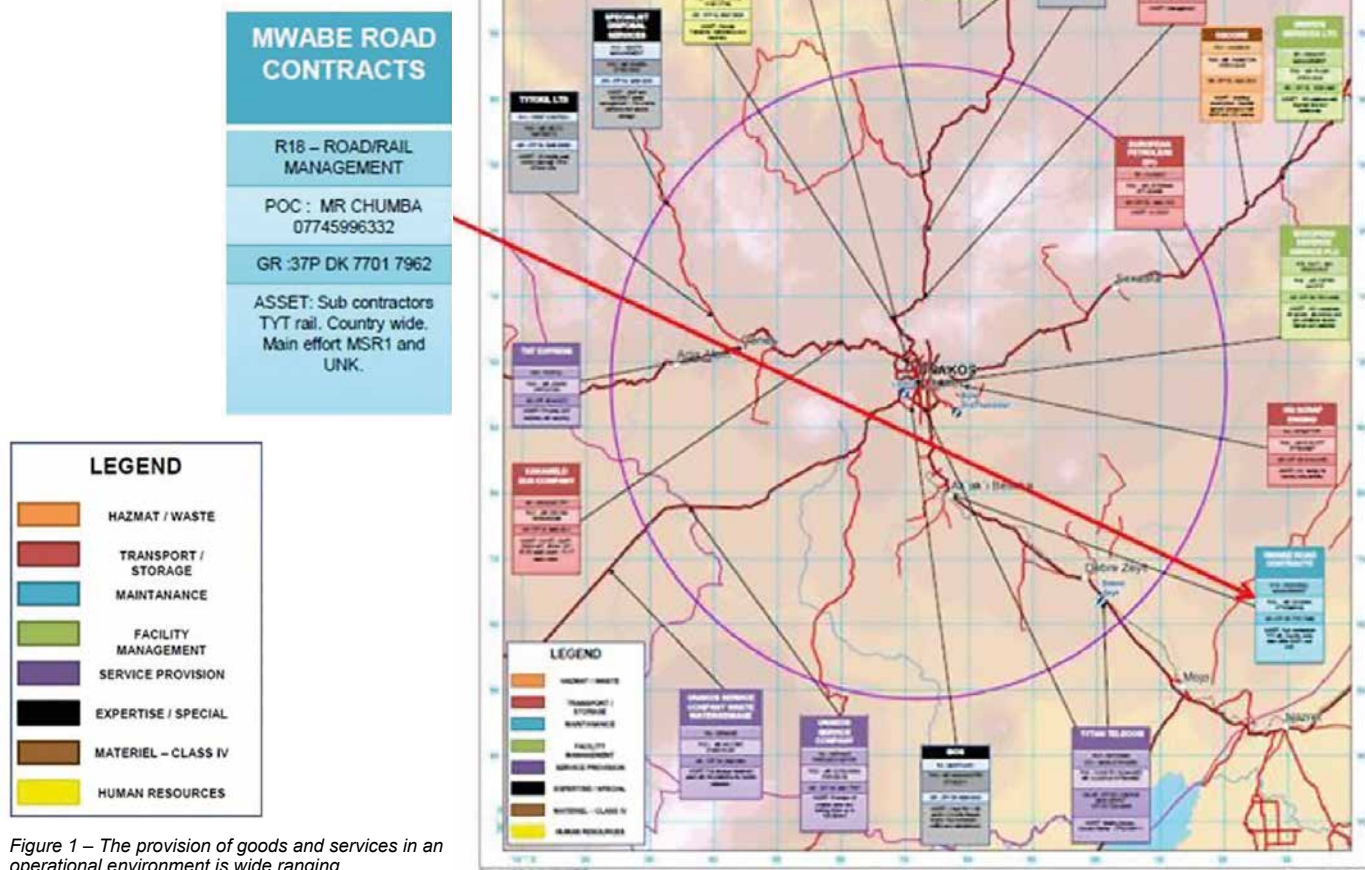


Figure 1 – The provision of goods and services in an operational environment is wide ranging.

5 LTG Williamson – RUSI LWC 2015.

Mitigation

Awareness, governance and understanding the risk can not only allow us to operate with freedom, but it will allow contracting, applied appropriately, to bring real economic benefit to a country supporting stabilisation. Governance is necessary to enable the contracting framework. Mitigating the risk of corruption to a mission’s reputation is not only an action that should focus its attention on the external effects; it also needs to consider the internal threats that can also jeopardise it. How does one mitigate this risk? Peter Appleby’s article in the January 2018 edition of the ARRC Journal discusses possible ways to address corruption and brings to the fore the Transparency, Accountability

and Counter-Corruption Working Group (TACC WG). Additionally, but from a parochial approach, governance through the contracts team and the wider supporting network of agencies across the headquarters, the host nation and international partners can greatly reduce the risk. A framework developed recently is looking at how we can protect the sanctity of CSO and the associated contracts from the external factors of the PMESII environment. Through a number of checks and balances, not only by the contracts staff of a headquarters, but also those accountable for activity and its funding, we can coordinate a level of governance that will give us a layer of assurance to support the mission’s objectives.

Summary

Contracting brings real benefits to a mission commander. It offers flexibility, freedom of manoeuvre and allows for a mission specific, focussed force with sustainability done through CSO. The commander retains responsibility; however, he is supported by the staff to deliver a sustainable solution that brings a balanced and economically viable approach to delivering contractor support to operations. Corruption is inevitable in any society and largely difficult to root out. By developing and considering the economic implications in the operating environment we can look to minimise the risk through assurance. Identifying its sources and how it impacts on mission success, regional stability and reputation is key to mitigating that risk.

ABOUT THE AUTHOR

Major Steve Barnard is a 30-year veteran of the British Army and currently serves as the lead Purchasing and Contracts Officer for the ARRC. In his previous assignment he completed the

Intermediate Command and Staff Course (Land) at the Defence Academy of the United Kingdom in Shrivenham, England. Maj. Barnard has led training and combat service support missions across combat and peacekeeping operations in Northern Ireland, Bosnia, Kosovo and Iraq. A native of Oxford, England, Maj. Barnard is currently studying for a Master’s Degree in Leadership and Strategic Studies at the University of Reading.

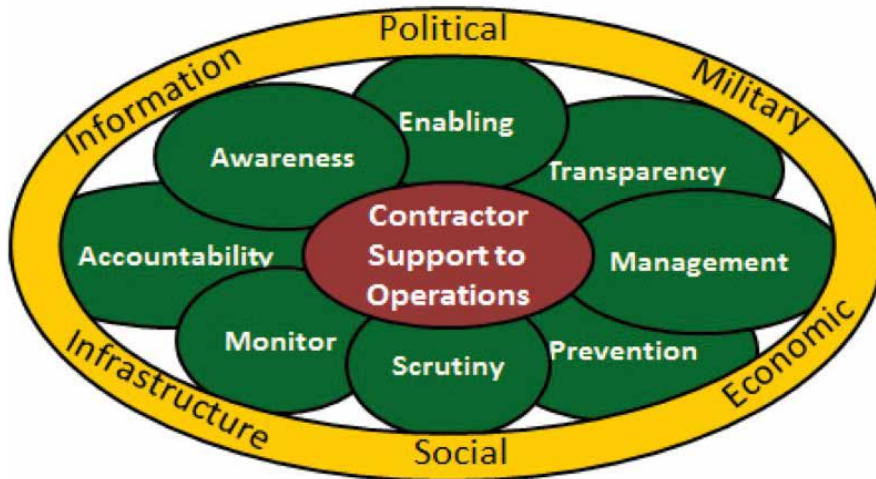


Figure 2 – Governance is not just a contractor sport; we all have a part to play.

LOGISTICS FUNCTIONAL AREA SERVICES FOR PLANNING AND EXECUTION

Major Chris Marsh, British Army

Logistics Functional Area Services (LogFAS) is NATO's suite of software (eight functional applications) programs that supports the operational planning process. The programs use a common LogFAS database (LOGBASE) so that all data can be easily shared and used for various functions, from sustainment planning to logistical reporting and movement related processes.

This essay will describe LogFAS and the usefulness of its functionality in the planning and execution of NATO operations and exercises. Key takeaways are highlighted in the accompanying shaded boxes.

Successful use of LogFAS in UK Defence

Examples for the use of LogFAS within UK Defence include the routine commitment of resources as part of NATO response planning, detailed deployment plans (DDP) for the Very High Readiness Joint Task Force (VJTF), the enhanced Forward Presence (eFP), further discrete operations and the UK's joint deployment on Exercise SAIF SAREEA 2018 (which involved a joint force of 5,500 personnel). The LogFAS program was used at the joint operational level via liaison and negotiation amongst the single services (Army, Navy and RAF) to ensure force elements were deployed correctly with efficient use of strategic lift assets. The following mini-vignettes will demonstrate the use of LogFAS.

Once committed troops are confirmed and the desired order of arrival has been set by the G/J5, DDPs can be produced very quickly. Two LogFAS operators, who were furnished with the correct data by the Joint Operational Planning Team, produced the UK's initial iteration of the SAIF SAREEA DDP in one working day. Planners elsewhere could then see the

overall deployment in graphical terms and observe the force flow movement to the point of disembarkation and the final destinations (Figure 1). This output is vital for the G/J5 and G/J4 or a Joint Logistic Support Group (JLSG) in order to design Reception, Staging and Onward Movement (RSOM) against the capacities of the local host nation (HN) infrastructure.

Paucity of strategic lift is always going to be an issue during rapid deployments. The DDPs completed in LogFAS for the UK's commitment to VJTF 2017 (the UK's standby year) were used to accurately model the impact on the UK's Defence strategic lift activity programme resulting in highlighting risk managed at the 3-star level. The UK bought out the risk against the deployment of VJTF17 in the strategic activity programme by negotiating a short notice activation contract for further strategic shipping not owned by the UK.

Iterations of the DDP, the detailed recovery plan (DRP) and sustainment packages can be run quickly within LogFAS just by altering basic information, such as numbers of strategic lift assets, capacities and speed of strategic assets, choke points for the force flow and consumption data against different mission sets. The LogFAS program was also used to send the deployment plans to the European Forces headquarters for

the operational deployment rehearsal of the reinforcement company to Bosnia using Ukrainian operated Antonov cargo aircraft.

TAKEAWAY 1:

LogFAS is a program to quickly plan and model single country or multinational strategic and intra-theatre deployments using associated sustainment packages. It is much faster than traditional planning methods and can help course of action comparison. It enables planners to realise risk against constraints and can quickly and easily provide commanders with the impact of variables within the plan.

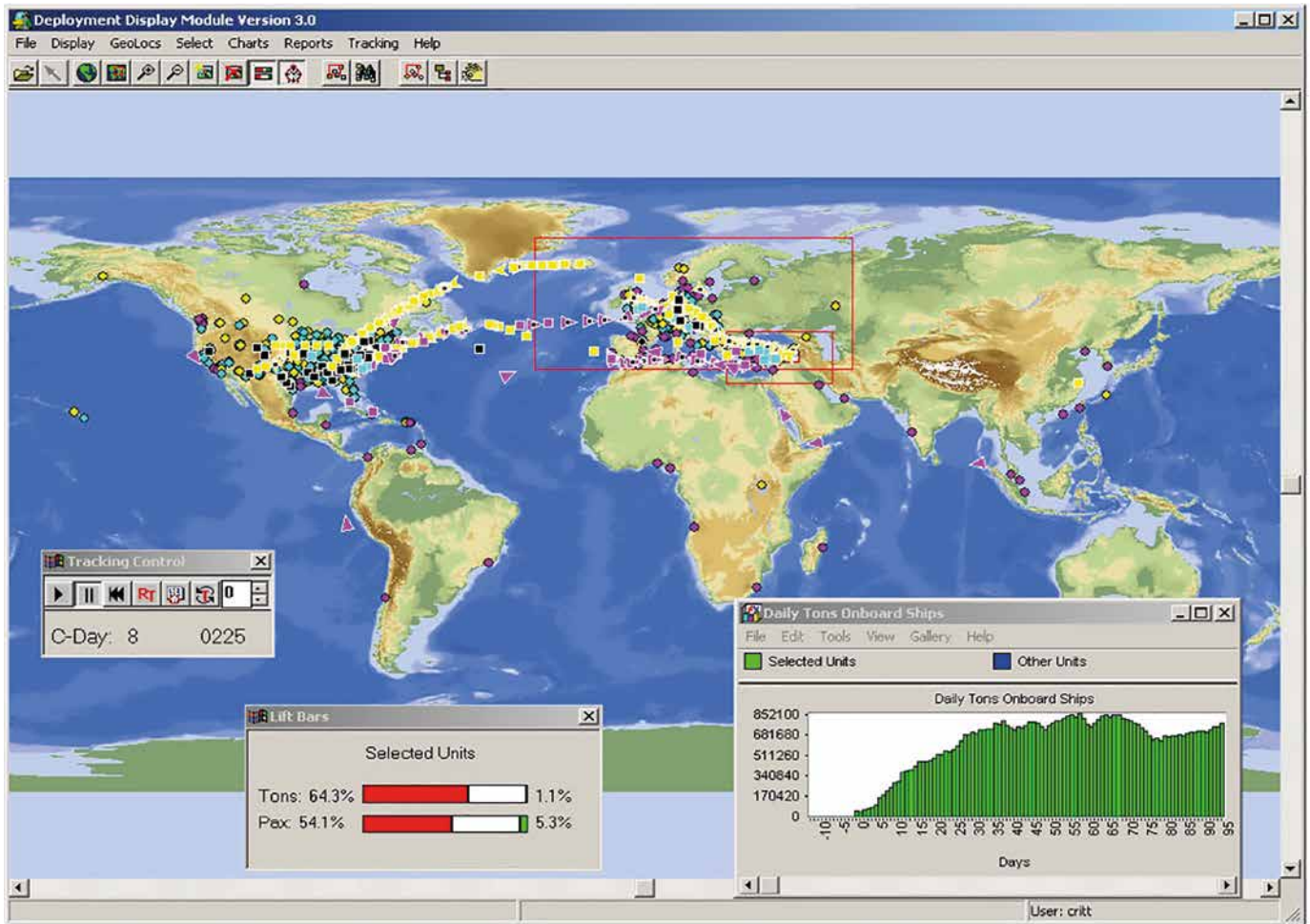


Figure 1 – A screen shot of a strategic movement animation showing force flow and individual lift assets.

Input Requirements

The LogFAS program relies on data from a common database consisting of interrelated hierarchical data (the LOGBASE). The data about the force(s) is placed against the statement of requirements, which is imported from the Tool for Operational Planning, Force Activation and Simulation (TOPFAS). So that the full utility of the programs can be applied, the basic data sets need to be accurate and understandable (in the multinational environment misunderstandings can happen due to language) in terms of abbreviations and acronyms, terminology and format. The LogFAS program uses processes and functions to help to overcome these issues and contains all the required data fields.

The LOGBASE is derived from five components. First, the Geographic Data Management Module (GeoMan) is the primary module where all data related to mapping, locations, infrastructure and networks (routes) are managed and maintained (Figure 2). The GeoMan is also the primary module used for the exporting and importing of geographic related data.

Second, the Projects (or Map Projects) can be best described as map and route network sets, which can be used for a plan or a series of plans. Projects are created within the Geographic Manager (GeoMan) and can be selected for use within, or in conjunction with, other specialist modules by the individual subject matter user.

Third, the Paths (Networks and Trails) are mainly used for movements planning,

although other subject matter users may find them useful for information or analytical purposes, particularly as the Supply Distribution Model (SDM) is progressively introduced for analysing sustainment plans. It is very important to understand the relationship between the two different types of path information available within the relevant modules.

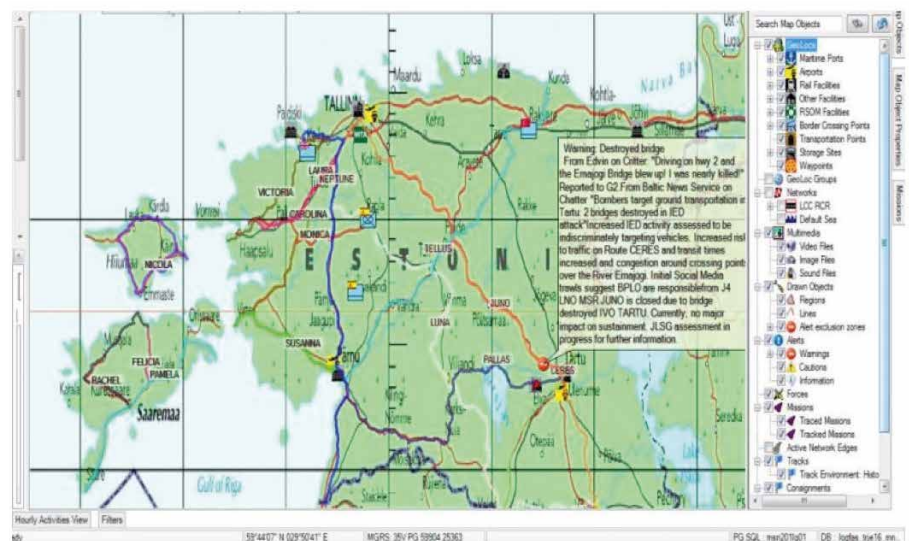


Figure 2 – GeoMan mapping used for situational updates.

Fourth, Networks are the more important of the two path mechanisms. Networks are crucial to movement planning as they provide the standard distances around which the majority of time and distance calculations are made. They also provide the ability to represent throughput constraints.

Fifth, Trails are additions made to basic networks in order to enhance map displays and add more detail. Trail distances are included in calculations, thus trails must be used with care as they can affect deployment times and other calculations.

TAKEAWAY 2:

The data required for the GeoMAN is derived from individual country capability catalogues, which contain comprehensive characteristics and capacities of HN infrastructure (roads, sea ports, airports et al) and coordinated through NCIA. Networks, if not already in a disseminated database, can be created by a LogFAS operator. The LogFAS program's functionality is reliant on accurate, basic data within LOGBASE to run all the other associated functionalities. The basic data comes from, and is authorised by, the G/J5 planning in TOPFAS and force generation processes, so that the force composition is correct. Only then can the logisticians use other functionalities to deploy, sustain and recover the force. LogFAS Data Management Module (LDM)

The LDM is the primary module where nearly all other data used by specialist LogFAS programs are managed and maintained. The LDM contains the Force Profiles and Holdings (FPH), which are unit and formation organisational structures and holdings that have been put together to meet a specific purpose (Figure 3). The LDM allows the user to create various configurations of the same units or formations tailored to a specific scenario or requirement. Force contributions to a particular plan can be drawn from a number of different profiles in order to meet the planning and/or analytical requirements for national and international users, and are agreed to in the CJSOR by the G/J5 staff. The LDM is also the primary module used to export and import data created in the LDM and other modules, such as LOGREP, for exporting LOGUPDATES, for example (Figure 4). The LOGBASE holds the overall numbers of personnel, equipment

and sustainment stocks, and can be written down for losses and added to for battle casualty replacements received. It is an extremely fast and versatile way to interrogate the data (much faster than using Microsoft Excel) in order to satisfy requests for information and equipment availability.

Sustainment Planning Module (SPM)

The SPM is used to create data specific to logistics analysis and planning for Stockpiling and Sustainment Modules, and uses the data contained in the FPH (LOGBASE). The supply packages, which can range from an individual box to pallets, from containers to an ocean tanker/pipeline parcels, are uniquely identified in LogFAS in a similar manner as forces.

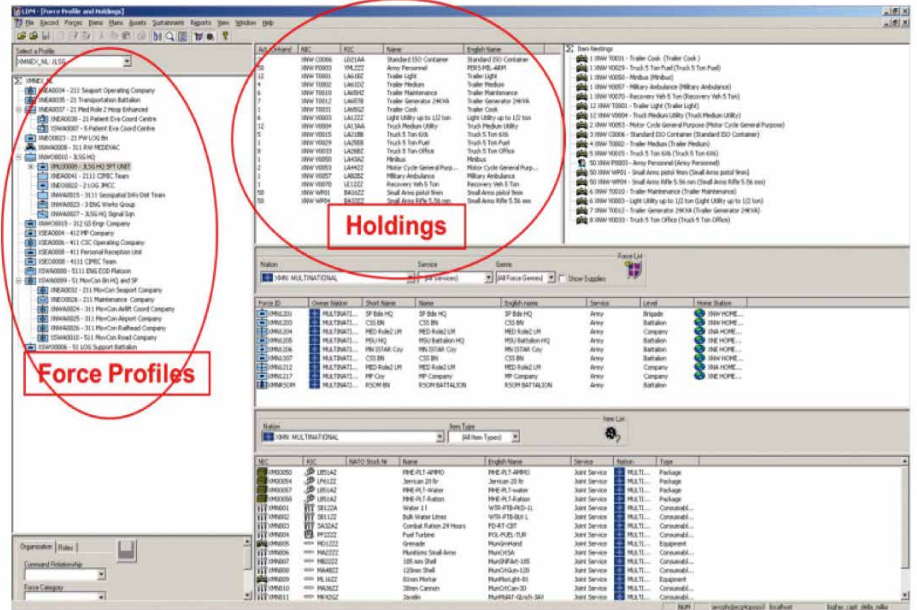


Figure 3 – The hierarchical order of battle (ORBAT) data FPH (includes equipment and sustainment data).

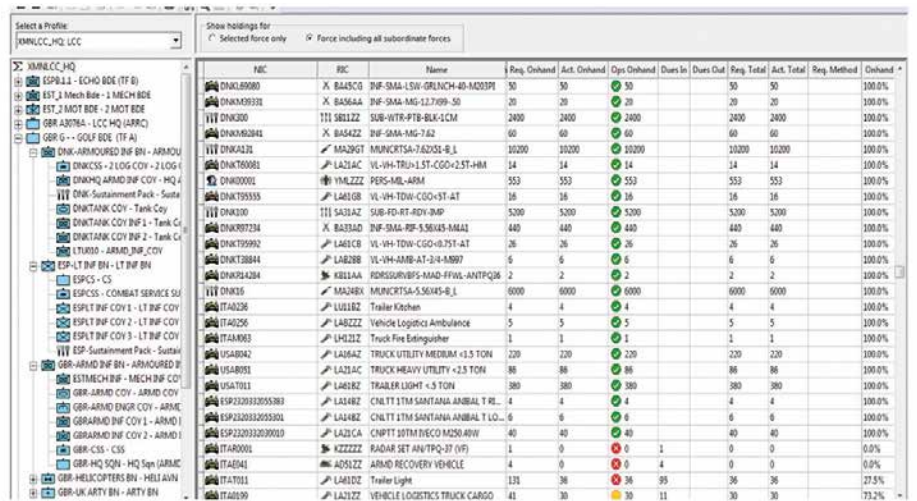


Figure 4 – The LOGBASE can be interrogated in numerous ways. The above shows equipment holdings.

TAKEAWAY 3:

All LogFAS functionalities are reliant on accurate, basic data within the LOGBASE to run all the other associated functionalities. It is an extremely fast and versatile way to interrogate the data (much faster than using Microsoft Excel) to satisfy requests for information and equipment availability. The basic data comes from, and is authorised by, the G/J5 planning in TOPFAS and force generation processes, so that the force composition is correct. Only then can the logisticians use the other functionalities to deploy, sustain and recover the force. Functionality for Movement Planning, Execution and RSOM

The standardisation of Movement and Transportation (M&T) data formats and their timely exchange is key to the success of complex movement operations, especially to facilitate the coordination between various deploying forces when transportation resources are limited and must be shared or are restricted in their use. When tools other than LogFAS are used for national purposes, countries should ensure that their system and data are either compatible or easily transferable into LogFAS. The software assists M&T planners in developing deployment plans and testing their feasibility, providing estimates on deployment timelines and potential movement bottlenecks, as well as lift resources requirements.

Allied Deployment and Movement System (ADAMS)

The ADAMS function focusses on the strategic movement planning process and the production of national and NATO DDPs or DRPs in order to be amalgamated into multinational MNDDPs/MNDRPs that represent all of the planned NATO-led force movements in a single view.

Effective Visible Execution (EVE)

The EVE function monitors the progress of a specific deployment, as well as to coordinate and display daily movement missions (Figure 5). The EVE function allows users to fine-tune arrivals and departures, and to manage transportation node capacities as well as provide both a strategic overview and a detailed forecast of arrivals in theatre by air and surface assets. It is capable of managing aircraft slots and convoy credits, and can be used to manage cargo and passenger manifest information. The EVE function's main product is the Flow

Execution Plan (FEP), which captures on-going movement missions along with all other relevant timings, such as itineraries, load details and status (e.g. planned, departed, cancelled, etc). The FEP is more or less the materialisation of the DDP, with the details of each movement mission being confirmed after adequate operational coordination has occurred. The FEP should be updated as often as possible, ideally any time a change occurs to any detail related to a specific mission. The EVE data can be displayed onto the NATO Joint Common Operational Picture (JCOP) via web services.

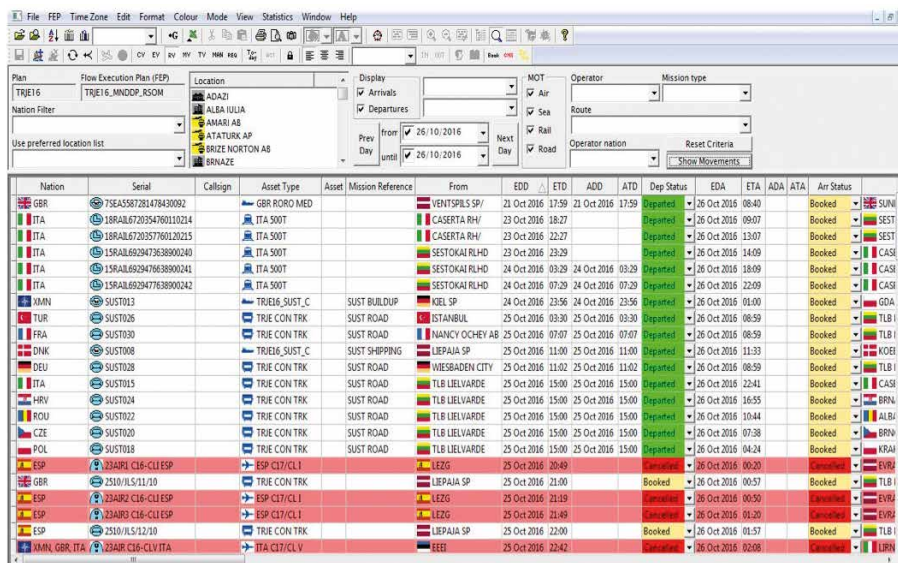


Figure 5 – EVE showing the status of individual multimodal missions in a NATO deployment.

Coalition Reception, Staging and Onward Movement (CORSOM)

The CORSOM function was developed as the primary RSOM automated tool for NATO. It enables detailed planning for RSOM to be performed and provides visualisation and oversight of theatre movements during both deployment execution and sustainment operations. CORSOM offers an excellent analysis capability by allowing the consideration of alternative routes and the assessment of the implications and results of such alternatives. The CORSOM function was designed to provide improved visualisation functionality, allowing the user to obtain a clear picture of the geography, transportation infrastructure, facilities, allowing drawing overlays on actual maps and pictures, and interface with Microsoft tools such as PowerPoint. It is also capable of tracking convoys and trains interfacing with tracking systems or through remote connections to its database.

It is important to note that all three systems used by M&T planners and operators share the same data and are made to interact with each other, allowing a seamless transition from one phase of a movement operation to another, as well as their concurrent use. While LogFAS M&T tools offer many functionalities and represent most valuable capabilities, there is a recognised need to provide the necessary awareness and guidance to foster their efficient use and maximise their potential for the benefit of all authorised users and, ultimately, NATO. It is important to understand, however, that the existing LogFAS M&T tools are at different stages of evolution and stability, which strongly influence the level to which defined processes are established, understood and accepted.

TAKEAWAY 4:

LogFAS (ADAMS/EVE/CORSOM) provides the basic capability to conduct high-level planning of movement operations through the consideration of transportation nodes and route capacities and characteristics, as well as through the establishment of road and rail transportation networks and simulated vehicle convoys and railway trains. The software can therefore be used to assess obvious limitations and to identify potential bottlenecks at the early stages of the strategic movement planning process.

Movement planning is a distinct, but integral, part of the NATO operational planning process, no matter if it is carried out at the strategic, operational or tactical level. The LogFAS M&T software can produce valuable input to every phase of the operational planning process, from initiation to plan review. While the use of these tools to produce some deliverables and to support specific processes may be directed from higher headquarters, additional planning requirements can also greatly benefit from the timely and efficient use of LogFAS M&T software.

Use of LogFAS in NATO Planning

The following will briefly describe how and what happens during NATO planning and the corresponding steps taken in LogFAS.

Initiation. The development of movement plans in support of NATO-led operations is an iterative process and LogFAS can be used for simulation and analysis in the commander's initiating directive. It is at this stage that the relevant M&T data feeding these LOGFAS tools, such as GeoMAN data, need to be updated from trusted sources to ensure that the results presented in the initiation and later phases are as accurate as possible.

Orientation. This is where mission analysis is conducted and results in one or potentially many mission analysis briefs (MAB) to the commander. The ADAMS and CORSOM functions can be used to support concept development and courses of action (COA) for the commander's consideration and provide input on related considerations, such as on the selection of strategic LOC, M&T organisations and manning requirements. The chosen COA will be further developed into a concept of operations (CONOP), which the M&T specialists will be expected to contribute

to. The CONOP should be supported by a statement of requirements (SOR), often referred to as Combined Joint (CJ) SOR in the NATO context, identifying all forces required to fulfil the operational requirements established in the CONOP. The SOR should ideally identify the commander's priorities and timelines in terms of desired order of arrival (DOA), commander's required date (CRD) and the planned final destination (FD) for the requested forces or capabilities. While the SOR should be generated from TOPFAS by the J5 staff and imported into LogFAS tools, it can also be produced in ADAMS. From the SOR, M&T planners utilising generic forces and assets, so as to provide a gross feasibility estimate of the movement concept, could generate an initial MNDDP using ADAMS. This, then, would aid in simulating various potential scenarios. The CORSOM function could also be run with the MNDDP data for a similar simulation of the RSOM process.

Plan Development. Through the force generation process, countries will offer force contributions against the requirements listed in the SOR. An Allied Force List (AFL) will be created listing all potential forces at the commander's disposition to meet its CONOP, potentially showing gaps in some capabilities and surpluses in others. Through the iterative process of plan development, the plan will firm-up to include only those available forces deemed required to realise this plan, as well as all national units planned to be deployed in support to the offered capabilities (such as National Support Elements (NSEs)), to form the Allied Disposition List (ADL)). The ADL, then, constitutes an expression of the time-phased requirements for deploying contributed forces. It is imperative at this time that the ADL include all necessary deployment parameters, such as the DOA, CRDs, PODs, and FDs, as well as all forces to be included in the overall movement plan. The development of the ADL should take into account, to the extent possible, time phasing limiting factors, such as length of LOC, strategic lift availability and throughput capacities, amongst others. It must be noted at this time that the production of an ADL may occur later in the planning process when a SOR containing the necessary movement information, mentioned above (except for force profiles and holdings), is produced and where countries are asked to produce their DDP to match their planned contribution to such a SOR.

The ADL and the national databases of forces allow countries and other contributing organisations to develop their own DDP for consolidation by the

lead headquarters, normally SHAPE, for major operations and exercises into an MNDDP. Through further bilateral exchanges with countries and the conduct of movement planning conferences, the lead movement coordination organisation will deconflict the MNDDP to best meet the commander's operational requirements. In this phase, LogFAS M&T tools will assist the JOPG M&T representatives in developing flexible and robust movement plans. The plan development phase will conclude by the production of the Operation Plan (OPLAN), and the outline of the MNDDP should be reflected into a Movement Support Plan (SUPPLAN) as an appendix to the OPLAN's Movement Annex (Annex S).

Plan Execution and Review. The plan review phase begins as soon as the OPLAN is written and any part of its content changes and needs to be modified. This phase also covers the execution phase of the operation, where the plan will need to be updated regularly to meet the evolving situation. The MNDDP is converted to an EVE multinational FEP, providing visibility over all planned missions over a given period of time, allowing the overall movement plan to be adjusted as movements occur. Similarly, CORSOM will be used to adjust the initial RSOM plan to meet any unforeseen obstacle to its realisation, allowing simulation of the use of alternate routes or any other changes that would affect ground transport operations.

TAKEAWAY 5:

The integration of LogFAS M&T software in NATO operations and exercises (including computer-assisted exercises (CAX)) should not be done in isolation or as an afterthought; a movement plan completed in ADAMS that demonstrates a specific COA is unrealistic should lead to the design or choice of a new COA, rather than to ignore the results of proper movement planning for the benefit of completing the rest of the planning process. The level of effort and related resources and expertise required to support the integration of the proper use of LogFAS M&T tools should not be underestimated.

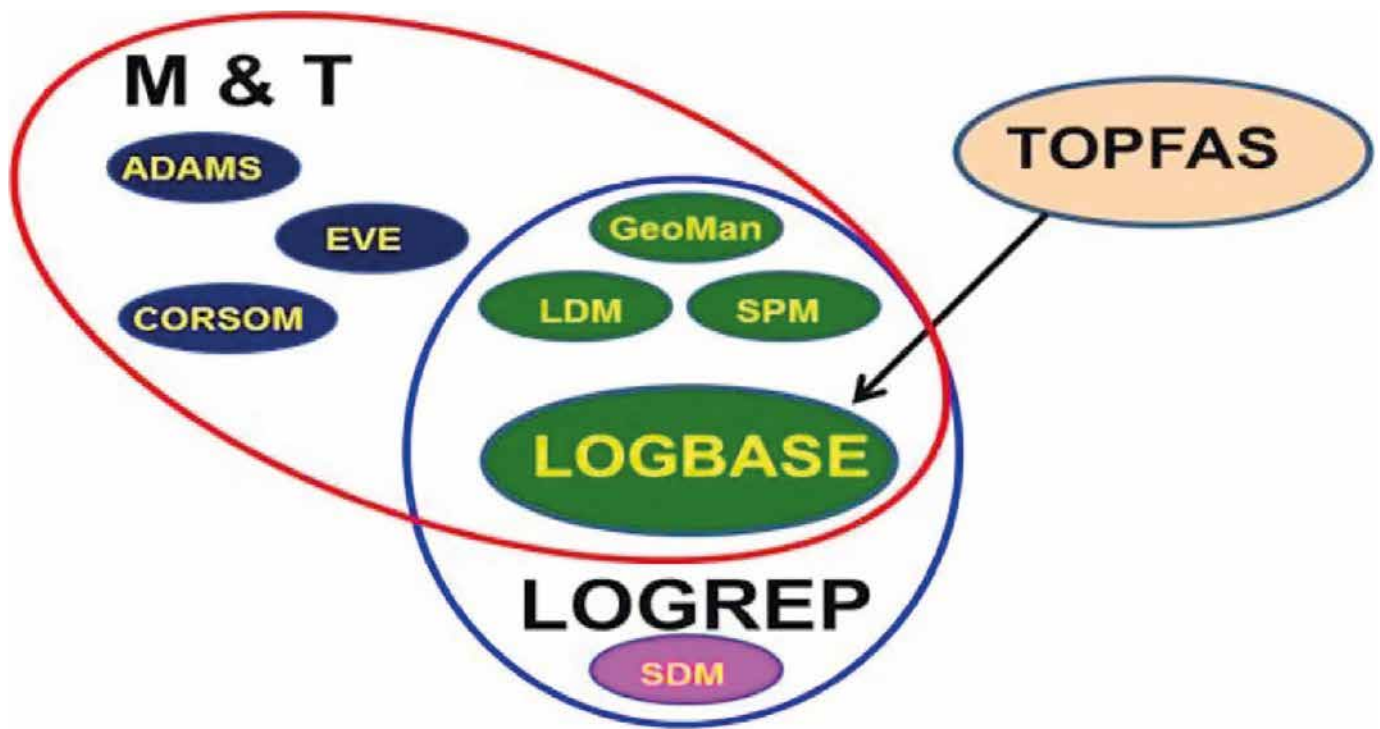


Figure 6 – The interaction of functions within LogFAS.

Conclusion

The LogFAS program is a versatile and powerful application, the products of which should be exploited by all staff branches (see a summary of the functionality in Figure 6 above). The quality and accuracy of the data input and guidance from the G/J5 planners (in TOPFAS) and the force generation process is key for influencing the initial directive, and then comparisons of COAs. Additionally, logistics planners/operators need to receive from the G/J5 input that answers who and what is being deployed (the AFL and FPH), where is the deployment to (the ADL) and the timeframe the deployment has to occur in (the CRD). Furthermore, the mission set will dictate the contents of the sustainment package and once all the input criteria are authorised LogFAS functionality can be used to best effect.

ABOUT THE AUTHOR

Major Chris Marsh is a 30-year veteran of the British Army's Royal Electrical and Mechanical Engineers, and currently serves in the ARRC's Maintenance Plans cell. In his previous assignment he served as the Commander of the Light Aid Detachment (Workshop) for the 6th Regiment, Royal Logistic Corps in Dishforth, England. Maj. Marsh has led equipment support activities across the spectrum of operations, primarily in Iraq and Afghanistan. A native of Burton upon Trent, England, Maj. Marsh holds a Higher National Diploma in Mechanical Engineering and is an Incorporated Engineer with the Engineering Council UK.

OPERATIONAL-LEVEL CAPACITY BUILDING IN CONTACT

Major Tyler Kennedy, Canadian Army

During mid-October 2018, ten members of the Allied Rapid Reaction Corps (ARRC) travelled to Kiev, Ukraine. Their mission was to deliver staff officer training to members of the Armed Forces of Ukraine (AFU), imparting a western approach to operational planning over a four-day period.

The team faced two significant considerations as they approached their task: First, understanding that the AFU plans and executes operations using Soviet-era planning and structures; and, second, that Ukraine is a country currently involved in an on-going conflict within its borders against Russian-backed separatists. Neither of these issues was lost on the visiting instructors.

Development and evolution of the task

In August 2017, the AFU requested training delivery support in operational level planning. In response, a UK Defence-directed training needs analysis (TNA) produced by the Field Army Training Branch identified opportunities to support the development of the Ukraine Joint Operational Headquarters (JOHQ) planning process. A visit by the ARRC's Chief of Engineer and Civil Military Interaction (ECMI) Branch was conducted to identify and recommend opportunities to support the development of AFU command and control at the operational level through the JOHQ. A second task of this preliminary venture was to consider long-term options for UK and multinational engagement with the JOHQ under the umbrella of the current UK mission in Ukraine – Operation

ORBITAL – and through the Multinational Joint Commission on Defense Reform and Security Cooperation with Ukraine.¹

term training team (STTT) engagement in Ukraine. The STTT deployed to Kiev from 14-18 May 2018 and conducted a

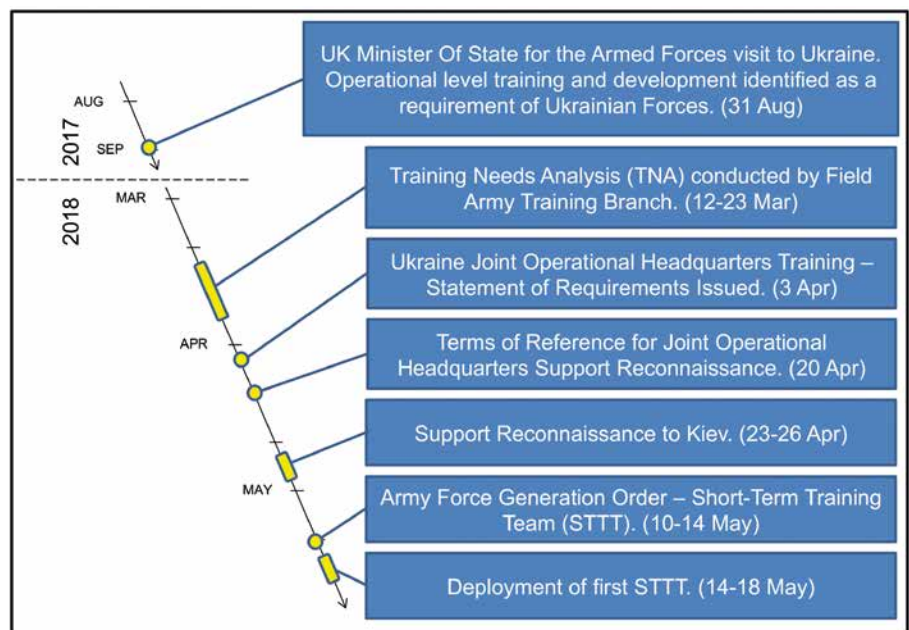


Figure 1 – Task Timeline

The UK's Permanent Joint Headquarters (PJHQ) and Army Headquarters, recognising the resident level of expertise and experience, subsequently gave the ARRC the task to generate a UK team of nine personnel to conduct an operational-level planning short-

programme of classroom-based training for the AFU at the National Defence University. The target audience was a group of approximately 120-130 AFU officers in the midst of preparing to deploy to the Joint Operations Area in Eastern Ukraine.

¹ The Multinational Joint Commission on Defense Reform and Security Cooperation with Ukraine, led by the United States in partnership with Canada, Lithuania, Poland and the United Kingdom, assesses Ukrainian requirements and prioritises training, equipment, and advisory initiatives.



Members of the ARRC training team mentor Ukrainian staff officers as part of their syndicate work at the Armed Forces University in Kiev, Ukraine.

The subjects taught were part of a bespoke syllabus based on the specific request of the hosts. They included: NATO operational-level planning, intelligence preparation of the battlefield, risk management, intelligence fusion, joint fires and influence, logistics and

operational analysis. Both the students and the AFU chain of command received the instruction positively and a request was made to conduct a second iteration of the training in the autumn, resulting in a subsequent deployment in October 2018.

Multinational vs NATO

An important nuance of this task was that it had to be seen as national-level engagement and not a ‘NATO’ or ‘ARRC’ deployment. While a UK initiative, other countries with missions in Ukraine were welcome to participate. The imperative nature of this message was reinforced by the edict that no personnel should deploy with uniforms that had ARRC or NATO insignia.

Based upon the prerequisite for existing national engagement with the AFU, this opened up participation to a group known as ‘QUINT +2’, namely the UK, US, Canada, Lithuania and Poland, with Denmark and Sweden forming the ‘+2’, as those countries have expressed an interest in joining the group. With the range of countries uniquely represented in the ARRC, a broadening of the selection process resulted in the second STTT rotation including a Canadian and a Danish officer.

Observations and lessons identified

The initial impression on how the training was being received was difficult to gauge due to the stoic nature of the audience. However, over the course of the week such obstacles were broken down and many of the instructors enjoyed impassioned and energetic discussions

Day 1	Day 2	Day 3	Day 4
Introduction - Staff - Course Overview	Review	Review	Review
Scenario Brief	Risk Management†	Joint Fires and Influence (JFI)†	HQ ARRC Operational Planning
NATO Operational Level Planning	Intelligence, Surveillance, Target Acquisition, and Reconnaissance (ISTAR) †		Conclusion and Plenary
Centre of Gravity†		Logistics†	
Counter Intelligence	Logistics Forum‡		JFI and OA Forums‡
Intelligence Preparation of the Battlefield (IPB)†		Daily Feedback	
G2 Forum‡	Daily Feedback		Daily Feedback
Daily Feedback	Daily Feedback	Daily Feedback	

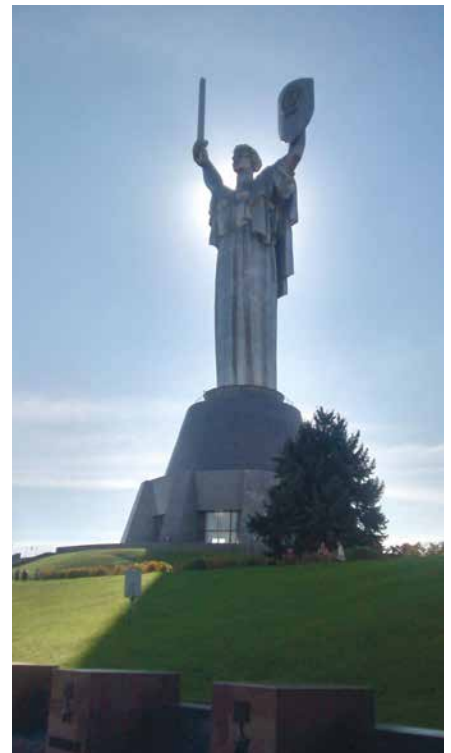
†Subject will be presented in plenary session by subject matter expert (SME), to include direction for follow-on syndicate work. SME will visit all groups during syndicate work to answer questions or provide feedback/additional direction. Depending on level of comprehension/completion, syndicate outputs will be shared and discussed at the syndicate or sub-syndicate level.

‡Subject specific daily forums will gather select persons based upon employment or interest to have a more in-depth discussion and/or question-and-answer period with SME leading.

Figure 2 – Training Programme



A member of the ARRC training team briefs Ukrainian staff officers during a plenary session at the Armed Forces University in Kiev, Ukraine.



The Rodina Mat (Motherland) Monument in Kiev, Ukraine.

on a variety of subjects, often linking back to the current situation in Ukraine. Certain topics were easier to grasp than others, based on them being rooted in theory vs practicality. Similarly, items with which the training audience potentially had some experience were more readily accepted. As such, targeting and joint fires may be an area of shared practise or understanding. Operational analysis was a foreign concept, especially when it was suggested that a civilian might be in a position to not only have direct access to the commander, but to advise the commander that he is failing or succeeding in meeting his campaign objectives.

Beyond the subject matter there was the complexity of delivering instruction in a foreign language. It doubled the time required to present any topic and shaped the structure of each piece of information presented to allow for the interpreters to break things down and restate the thought or concept for the audience. Additionally, teaching an audience with slides in Cyrillic text presented its own unique set of challenges.

All members of the training team found that the syndicate work that followed each presentation was crucial to cementing key messages, theories and processes. Additionally, this more personalised level of engagement provided the opportunity for real dialogue. One cannot forget the fact that many of the students have just

returned from, or are about to redeploy to, a peer/near-peer conflict and, as such, we learned from them as they learned from us.

Future Iterations

As the AFU aspires to become interoperable with western allies, its intent is to develop a deployable command organisation with a rear-based deploy/sustain/recover element to enable forward deployment within its borders or an expeditionary deployment beyond. It is through continued assistance via projects, such as this, that the AFU will realise its end-state. Should it be confirmed that the AFU desires further rotations of this nature, members of the ARRC, acting under their respective state flags, will continue to be a part

of the programme, seeking to refine and improve the programme with each subsequent iteration.

ABOUT THE AUTHOR

Major Tyler Kennedy is a 27-year veteran of the Royal Canadian Artillery and currently serves as a staff officer within the ARRC's Joint Fires Cell. In his previous assignment he served as the Operations Officer for the Canadian Army Doctrine and Training Centre in Kingston, Ontario. Maj. Kennedy has held artillery and mentor positions on multiple combat operations in Afghanistan. A native of Victoria, British Columbia, Maj. Kennedy holds a Bachelor's Degree in History from the Royal Military College of Canada.



The Kiev Skyline, Kiev, Ukraine.

THE INFORMATION MANOEUVRE CONCEPT TAILORED TO THE ARRC

Captain Bogdan Ionescu, Romanian Army

Modern warfare has evolved in such a way that at times it is challenging to keep pace with change. Whilst technological advances in traditional military equipment such as tanks, fighter aircraft and ships are clearly noticeable, the same insight into the progress made in the information domain is not so simple or, perhaps, as readily apparent. Today, information is omnipresent and, due to its intangible nature, it is far from clear how it should be used in such a way that the entirety of its effects, positive and negative, provide advantage to the party that possesses it.

While the Allied Rapid Reaction Corps (ARRC), as a NATO High Readiness Force (Land) (HRF (L)) headquarters, has some of the means required to achieve information superiority, it is now in the process of learning how to bring these means together to fully exploit the operational benefits they offer. The new Information Manoeuvre Concept, approved by the UK Executive Committee of the Army Board in late 2017, provides guidelines and principles, and these may now be adapted to suit the ARRC's operational culture and resources.

What is Information Manoeuvre? A UK and ARRC perspective

Information Manoeuvre is a concept that integrates and synchronises land's information capabilities to establish unity of effort for intelligence, surveillance and reconnaissance (ISR) assets, information activities and outreach (IA&O), communications and information systems (CIS), counter intelligence (CI) and cyber and electromagnetic Activities (CEMA), plus spectrum management operations. This is in order to deliver an information advantage – to shape our audience's perceptions and change or maintain behaviours. It will do so by providing primarily four outputs

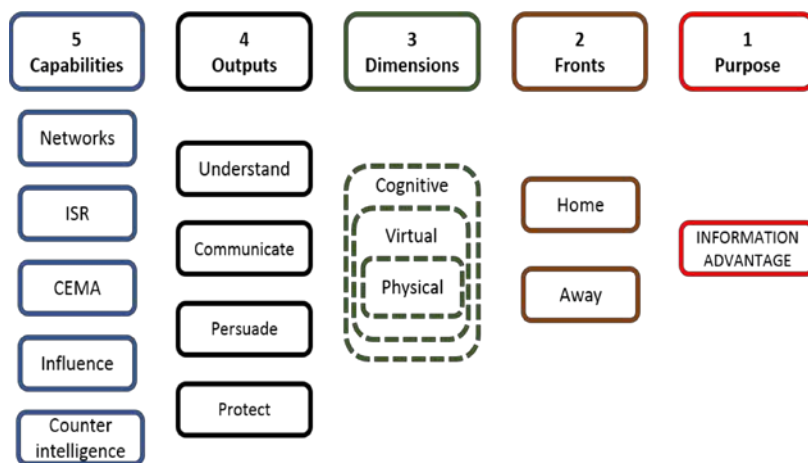


Figure 1 – Main characteristics of the Information Manoeuvre Concept.

(understand, communicate, persuade and protect) across three dimensions (physical, virtual and cognitive) over two fronts (at home and abroad).

While countries have different ways of synchronising the potential of digital technologies, it is ultimately a personal choice on how to better take advantage of information and its effects. In the UK, the implementation of the Information Manoeuvre approach may be essential to the ARRC's success in across all three of its roles. An outline of the concept is laid out in Figure 1.¹

The ARRC already has in place structures that may be adapted to

accommodate the five Information Manoeuvre requirements. Consequently, it is important that the integration of this approach result in the current system being modified rather than fundamentally overhauled.

In line with this approach, the creation of an Information Manoeuvre Integrated Board (IMIB) to synchronise functions, allocate resources and maintain continuity of purpose across the headquarters could be extremely beneficial. The composition of the IMIB would have to be carefully managed so that each relevant ARRC Branch is able to provide appropriate representation at

¹ UK Force Troops Command

each working group (WG). There could also be input from higher and subordinate formations through the presence of liaison officers (LO) and the IMIB could be co-chaired by the Assistant Chief of Staff (ACOS) G6 and ACOS Influence. Given the IMIB level of expertise and its outputs, another implication could be that the Chief G6 may have to co-chair the targeting board with Chief of the Joint Fires and Influence Branch (JFIB) in order to better synchronise the way lethal and non-lethal effects are to be achieved.

Another positive aspect of the IMIB is that it may not necessarily overburden an already busy battle rhythm. It could integrate several information centric WGs under its umbrella, such as the CIS WG, CEMA and Frequency Management (FMAN) WG, G2 FUSION WG and Information Activities (IA) WG. The IMIB could then act as a filter and feed relevant information into the ARRC main planning events, such as the Initial Planning Group (IPG), the Operations Coordination Planning Group (OCPG), the Targeting (TGT) WG and the Synchronisation Board. The Force Protection (FP) and Key Leader Engagement (KLE) WGs would also benefit from the IMIB outputs. The IMIB could formally take place every 96 hours or on call to exploit time-sensitive opportunities. Figure 2 demonstrates how the IMIB might integrate into the ARRC battle rhythm:

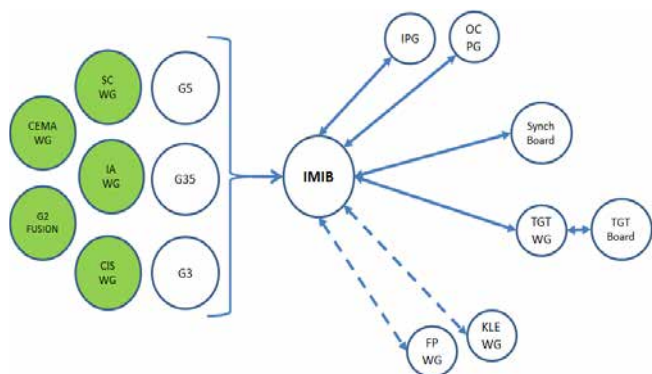


Figure 2 – The ARRC IMIB relations to other BR events.²

Information Manoeuvre Group

Another important part of the Information Manoeuvre concept is the creation of an ARRC Information Manoeuvre Group (IMG), which would execute the plans of the IMIB. The guidance presented within the ECAB paper proposes that commander of the 1st (UK) Signal Brigade (1 (UK) Sig Bde) commands

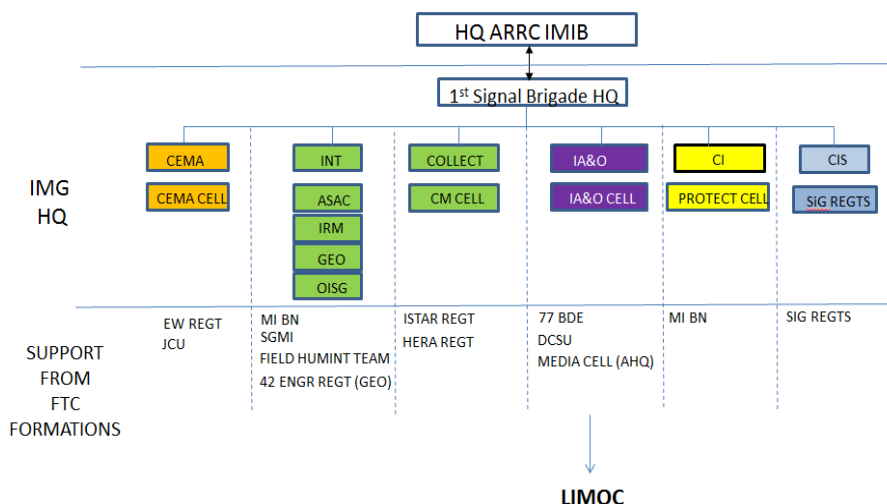


Figure 3 – Possible composition of the ARRC IMG and link with the IMIB.

the ARRC IMG with the support of specialised teams/cells from the units within UK Force Troops Command (FTC). These teams/cells would augment the 1 (UK) Sig Bde headquarters and enable the link from the ARRC headquarters to the units that would execute the orders of the IMIB. At present, as the concept is in its early stages, the ARRC IMG will be comprised of only UK units, but could have the ability to integrate other NATO units that might become available if their countries so wish.

Figure 3 above demonstrates the proposed relationship between the IMIB and the ARRC IMG. It also provides examples of UK units that would transform IMIB guidance into action. At this stage, most of the FTC units envisaged for the ARRC IMG already have in place a Command and Control Technical Arrangement (C2TA) with the ARRC, which would facilitate the initiative.

Given the sensitivity of the work that the ARRC IMG would be required to undertake (ie, offensive cyber or spectrum management operations), there is a degree of uncertainty as to who, how and when the effects required by the IMIB would be delivered. This is well understood at the ARRC and close coordination will be required between the ARRC and specialised UK units. Furthermore, due to possible legal and political repercussions of non-lethal effects that may occur during operations, the ARRC IMIB would

be supported by legal and political advisors. These individuals would set the framework for the ARRC IMG to conduct information activities both in the physical and virtual domains.

Conclusion

As with any significant change of approach, the IMIB and IMG would need careful testing and tailoring over time. The concept will be tested for the first time during Exercise ARRCAD FUSION 2019 and then it may be internationally exposed as the ARRC is placed on corps standby.

The Information Manoeuvre concept could bring the ARRC into a position of advantage compared to similar headquarters around the world and strengthen it as a corps. Whilst it will be challenging to implement the IMIB and to create the ARRC IMG, it is a worthwhile endeavour. The anticipated benefits could make a significant difference when executing operations against a near peer threat in an environment that is becoming more and more information centric.

ABOUT THE AUTHOR

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2 Communication & Information Systems (CIS); STRATCOM (SC); Information Activities (IA); Cyber and Electromagnetic Activities (CEMA); Initial Planning Group (IPG); Operations Coordination Planning Group (OCPG); Targeting (TGT); Force Protection (FP); and Key Leader Engagement (KLE).

THE KREMLIN'S TIMELESS WEAPON: AMBIGUITY

Captain Robert Atchison, British Army

Ambiguity is defined as “the quality of being open to more than one interpretation; inexactness.”¹ Numerous modern warfare journals refer to the ‘hybrid’ nature of Russia’s contemporary, full spectrum, multi-level strategies and tactics. Stating they are hybrid suggests they are new; they are not.

What is new is the way the Kremlin has harnessed modern technology to challenge the West in an area it has dominated since 1991 – the information environment.

The Kremlin’s strategic theme is more accurately described as ‘ambiguous warfare’.

When the Kremlin looks to the West it sees a centre of gravity in our ability to form military alliances to protect our vital, collective interests. The purpose of ambiguous warfare is to damage or degrade this capability. It encourages the West to view its adversaries as undefined, constantly morphing, unique entities. To effectively counter attacks, responses must be tailored and targeted to be effective. The Kremlin’s rule of Russia is authoritarian, enabling dynamic action at a geo-strategic level.^{2,3} The West, however, is ruled by consensus. Delays are common due to the democratic, ‘council’ nature of decision-making. These delays are exploited to divide public opinion, leading to a greater demand on resources from contributing countries. These extra demands lead to the degradation of public, and therefore political, consensus that manifests itself in slower political decision-making.

The West has seen in Syria over the last three years how Russian media, controlled by the Kremlin, has told untruths about its campaign, telling the

wider world one story and the Russian people another. For example, the Kremlin repeatedly highlights how accurate its weapons are via state-controlled media (RT and Sputnik). However, in reality 80 per cent of all Russian munitions dropped or fired are ‘dumb’ and have no guidance systems.⁴ Taking these two themes further, the establishment of context is vital to understand how the Kremlin divides the information domain. Control of context enables the planning of information operations, critically including the assumption that information given to one target audience will proliferate to another, rarely controlled and not always by design. There is an acceptance that the informational effect may evolve both positively and/or negatively; it is this uncertainty that is relished within the Kremlin, where the West seeks to avoid it at all costs.⁵

The Kremlin has successfully established echo chambers at every level, from the geo-strategic to tactical, simultaneously messaging into all of them.⁶ Importantly, their modern cyber soldiers are given

¹ “Ambiguity,” Dictionary, Google, <https://www.google.co.uk/search?q=define+ambiguity&oq=define+ambiguity&aqs=chrome..69l57.7279j0j8&sourceid=chrome&ie=UTF-8&safe=active&ssui=on>.

² Author Unknown, “Putin’s New Authoritarian Russia,” The Global State, February 6, 2015, <http://theglobalstate.com/currentevents/putins-new-authoritarian-russia>.

³ Luke Chambers, “Authoritarianism and Foreign Policy: The twin pillars of a resurgent Russia,” Eurasia Review, June 14, 2010, <http://www.eurasiareview.com/14062010-authoritarianism-and-foreign-policy-the-twin-pillars-of-resurgent-russia/>.

⁴ Kareem Shaheen, “Russia suspected of using ‘dumb’ bombs to shift blame for Syria war crimes,” The Guardian, March 6, 2018, <https://www.theguardian.com/world/2018/mar/06/russia-suspected-of-using-dumb-bombs-to-shift-blame-for-syria-war-crimes>.

⁵ Dennis Gibson and Stephen Moore, “Retaking the High Ground,” Booz, Allen, Hamilton, 2017, <https://www.defenseone.com/media/sponsored-info-ops-retaking-high-ground.pdf>.

⁶ Shannon Fisher, “Are you in a Social Media Echo Chamber? How to take an Objective Look,” Forbes, February 28, 2018, <https://www.forbes.com/sites/quora/2018/02/28/are-you-in-a-social-media-echo-chamber-how-to-take-an-objective-look/#193dcd261f9>.

extensive freedoms to prosecute their mission; the Kremlin is, however, not the exclusive customer.⁷ Global use is increasing, both state and non-state sponsored, as their tactical utility becomes evident through a number of countries and organisations' experimentation. They are not constrained by international law or obliged to tell the truth, something their opponents are subject to. Figure 1 depicts a personal echo chamber. Every person has one and it can be affected, if targeted correctly. Additionally, the Kremlin does not seek to convert the world to its own way, but to any other than the current. Business theory conceptualises this in FUD: Fear, uncertainty and doubt.⁸ Spread mistruths about a competitor's product to undermine consumer confidence and observe what happens. In political theory this is understood as 'divide and rule'.

The scale at which the Kremlin operates is well known, however, its behaviour in the information domain draws distinct parallels to Mao's three-phased insurgency tactics. These phases are organisation and preparation, terrorism and guerrilla warfare, and conventional warfare.⁹

Phase One

The Kremlin has created capable organisations, both nationally and internationally, that enable the preparation of the 'cyber ground'. Information is fed into echo chambers already established in targeted audiences (countries, social demographics, ages, social media channels, to name but a few), introducing, reinforcing or manipulating narratives depending on the mission and at a time of their choosing. The mission's time scale is often irrelevant as it can vary from hours to years. An enemy will seek to set conditions that are favourable in a battlespace that is yet to be realised. The preparation conducted by cyber soldiers relies on the fact that information must remain relevant to the target audience, sometimes even allowing counter information to propagate and 'trend' in the information space.¹⁰ Context is subjective and a simple example is the use or misuse of punctuation: The panda eats, shoots, and leaves versus the panda eats shoots and leaves. Context one is violent and loud, the second

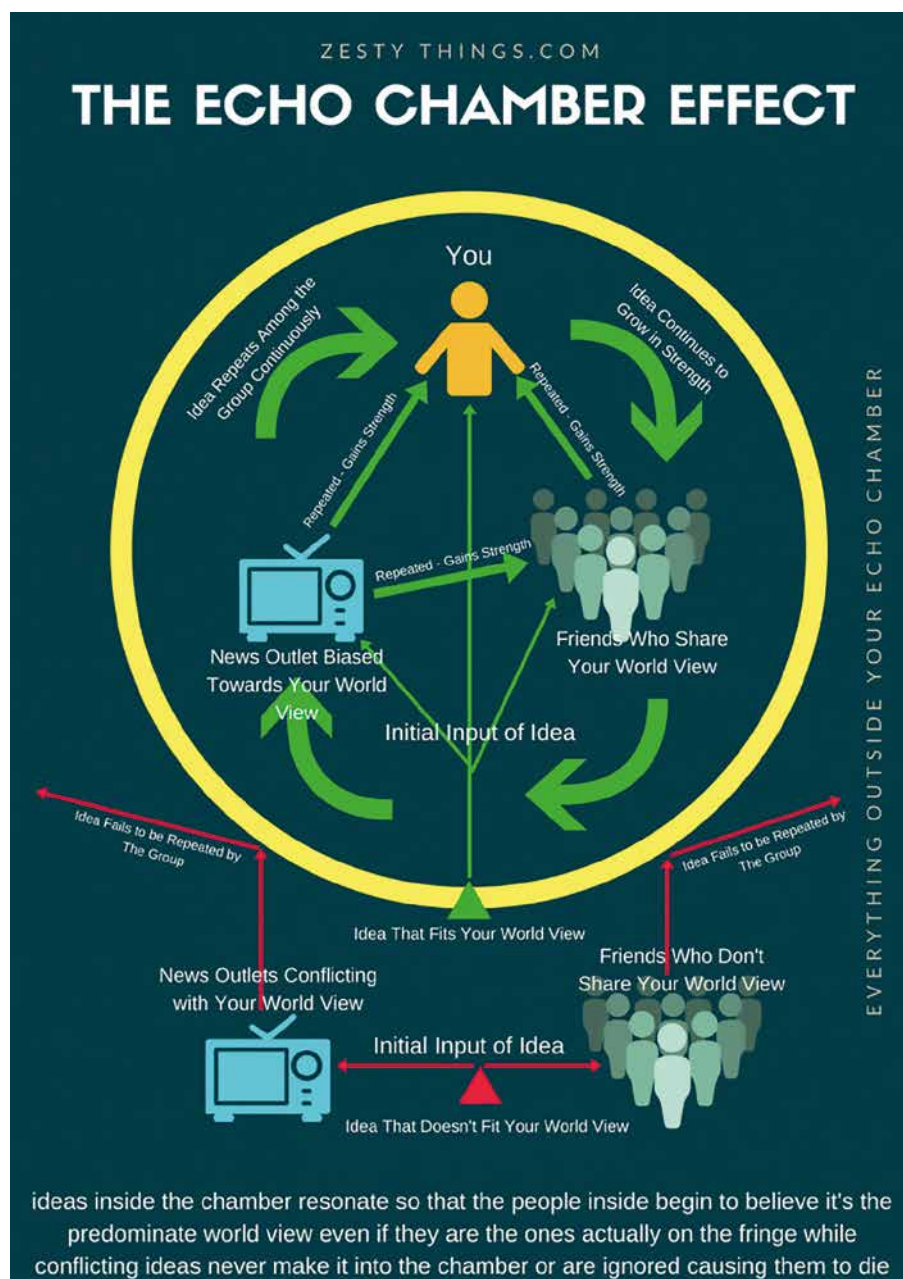


Figure 1

simply calorific consumption. Correct punctuation is now almost voluntary and, with its decay, misunderstanding spreads and leads to ambiguity.¹¹

In Syria, the Kremlin understood that, after years of conflict, many media users were ready to support anyone with a consistent and believable message no matter how abhorrent it might be.¹² The use of chemical weapons was a red line for President Obama's administration; the repercussions on those who used such weapons made clear.¹³ However,

after numerous chemical attacks on civilians little physical action followed. Furthermore, the West's diplomatic position was often too complicated to be widely understood and remained unconvincing to the Syrian population. In contrast, the Kremlin synchronised its information campaigns with compelling and convincing physical action. This linkage of the physical and informational domains gave the Kremlin more credibility and a larger share of the regional audience.

7 Simon Shuster, "This KGB Chief Rang the Alarm About Russia-U.S. Cyberwars. No One Listened," Time, March 23, 2018, <http://time.com/5210728/russia-u-s-hacking-cyberwar-kgb-soviet-union/>.

8 Author Unknown, "Fear, Uncertainty and Doubt (FUD)," Changing Minds, <http://changingminds.org/disciplines/sales/articles/fud.htm>.

9 Author Unknown, "The Three Stages of Mao's Revolutionary Warfare," Parallel Narratives, <https://parallelnarratives.com/the-three-stages-of-maos-revolutionary-warfare/>.

10 Jen Marchetti, "How Marketers Must Evolve to Remain Relevant in a 'Post-Millennial' World," Entrepreneur, March 5, 2018, <https://www.entrepreneur.com/article/309145>.

11 <http://littlecalamity.tripod.com/Text/Newspaper.html>

12 Post operation interview with Capt Richard Luckyn-Malone 77X.

13 Pamela Engel, "Obama reportedly declined to enforce red line in Syria after Iran threatened to back out of nuclear deal," Business Insider, August 23, 2016, <https://www.businessinsider.com/obama-red-line-syria-iran-2016-8?r=UK>.

Phase Two: Terrorism and guerrilla warfare

Terrorism is “the unlawful use of violence and intimidation, especially against civilians, in the pursuit of political aims.”¹⁴ The initial deployment of Russia’s ‘little green men’ during the annexation of Crimea in 2014 was, by the definition above, an act of terrorism.¹⁵ Executed at a time when the West was focused on the withdrawal from Afghanistan, the ‘ground’ was prepared.¹⁶ The West’s public had little appetite for foreign intervention, empowering the Kremlin to act in an expansionist manner towards its neighbours. Strategic action supported by the Kremlin’s cyber soldiers, using methods targeted at the tactical level (individuals or small groups), extortion, kidnapping, bribery to name a few; all are highly effective in part thanks to today’s social media influenced, information space. The ‘weaponising’ of information facilitates the continuous dynamic targeting of an adversary’s moral component; its reach is almost unlimited as global information consumption increases.¹⁷

Phase Three: Conventional warfare

The Kremlin is currently subject to UN and EU sanctions that are crippling its economy. Economic warfare is a tool for the West because it is one of its strengths; for Russia it is not.¹⁸ The virtual domain, which includes cyber activities, enables a new form of warfare, not visible to many, to be waged at scales that are unimaginable. The enduring nature of economic war indirectly affects the global population in the cyber and information domains, both of which remain conceptual.^{19 20} The modern aggressor lacks a physical presence, meaning any act is often difficult to attribute in a timely manner to an individual, let alone a state.²¹ During the Cold War there were proxy conflicts, conventional by nature, but detached from the superpowers’ populations by

geography. We see the same today in Georgia, Ukraine, Moldova, Yemen, Syria, Lebanon and Libya to name a few. The superpowers are often on opposing sides, both geographically and ideologically, however, the effect of geography is negated more than ever due to the speed at which information proliferates.

Critically, as Mao did, when the Kremlin finds a weakness in the information space, it exploits. When it finds strength, it adapts, harassing and seeking another avenue of attack (changing its narrative until it finds traction). This tactic allows the Kremlin to out-manoeuvre the West in the information space, leading to the erosion of public confidence in leaders and organisations, paralysing the enemy’s decision makers.²² The British Army’s Chief of the General Staff’s RUSI speech on 22 January 2018, spoke about the speed of recognition, the speed of decision-making and the speed of assembly: One of the first commanders to recognise this need in the information space. Without it we will give the Kremlin a victory, potentially before Western soldiers leave their barracks.

Operation CABRIT 1 saw the establishment of the UK-led enhanced Forward Presence (eFP) battlegroup Tapa, Estonia. The deployment was, according to the Prime Minister of Estonia, one of the four most important events in Estonia’s recent history and is a statement that reinforces NATO’s indivisible nature and willingness to act. The eFP BG’s understanding of Estonia was low, as expected, but what was lower was the understanding of the information environment and the role the media played. The Future Force Concept (FCC) states, “In particular we lag well behind in our ability to exploit the information environment and in the full integration of space and cyber domains.”

Enabling joint action across the five domains is the baseline for operations in all future conflicts. The UK’s layered

operational design eases planning from battlegroup to army level by dividing the battlespace and giving each an area of responsibility. The key is the deep battle. The deep battle degrades a numerically superior enemy to a point at which success is likely. How does one use cyber and information in the deep battle? The controlling and manipulation of physical traffic patterns is a simple example (assuming most conflicts will be either littoral or urban due to population dispositions).²³ To hamper an enemy’s logistics, a commander may attack convoys from the air. However, fifth generation aircraft on both sides contests the air domain and attacks may be costly.²⁴ Therefore, the commander may instead choose to change traffic patterns; sowing chaos into the civilian population, consuming the enemy’s combat power and forcing him to reallocate resources to ensure supply routes are kept clear. Add a localised misinformation campaign and the enemy could face choreographed chaos amongst the population and, in some cases, amongst its troops. The enemy is subjected to ‘Black Mist’ – the temporary psychological disorientation of a group through the delivery of deliberately ambiguous information to create chaos (controlled or otherwise) giving the commander time to act.²⁵

The Kremlin’s strength lies in its patience and ability to collect information. For example, the eFP battlegroups were subjected to Kremlin misinformation after the North Atlantic Council announced they would receive the Freedom Award in 2017.²⁶ The Kremlin-controlled channel, Sputnik, released an article that stated that in one week eFP battlegroup soldiers were caught drunk, had caused damage to public property, had rolled a vehicle and, finally, had been shot at by a local farmer during a pan-NATO exercise. The events that Sputnik highlighted took place over four months, not seven days; the details of such events were, and still are, misreported.²⁷ The story gained little traction across all internal Russian

14 Google definition

15 Pamela Engel, “Obama reportedly declined to enforce red line in Syria after Iran threatened to back out of nuclear deal,” Business Insider, August 23, 2016, <https://www.businessinsider.com/obama-red-line-syria-iran-2016-8?r=UK>.

16 Author deployed on Op HERRICK 20 (2014), monitored situation.

17 Peter Pomerantsev and Michael Weiss, “The Menace of Unreality: How the Kremlin Weaponizes Information, Culture and Money,” The Interpreter, <https://www.stratcomcoe.org/download/file/fid/1739>.

18 Author Unknown, “International sanctions during the Ukraine Crisis,” Wikipedia, https://en.wikipedia.org/wiki/International_sanctions_during_the_Ukrainian_crisis.

19 Hazel Henderson, “Building a win-win world: Life beyond global economic warfare,” Ifarus, October 25, 2015, <https://books.google.co.uk/books?hl=en&lr=&id=MLIVtahDtHsC&oi=fnd&pg=PA11&dq=theory+of+economic+warfare&ots=VQoSzw0EsX&sig=1PFvbi24TpnWI6H-7ZQdWhJBsEM#v=onepage&q=theory%20of%20economic%20warfare&f=false>.

20 Nearly impossible to define in a physical sense or make easily relatable

21 Thomas Rid and Ben Buchanan, “Attributing cyber-attacks,” Journal of Strategic Studies, December 23, 2014, <https://www.tandfonline.com/doi/abs/10.1080/01402390.2014.977382>.

22 “Manipulating the ooda loop: the overlooked role of information resource management in information warfare”, thesis by Gregory M. Schechtman Captain, USAF.

23 Human, ground vehicles, aircraft, shipping, etc

24 Ministry of Defence, “Future Air and Space Operating Concept,” Ministry of Defence, September 13, 2013, <https://www.gov.uk/government/publications/joint-concept-note-3-12-future-air-and-space-operating-concept>.

25 Author defined

26 Author Unknown, “Medal for Knavery, Estonia to award rampaging NATO troops with military honours,” Sputnik News, July 6, 2017, <https://sputniknews.com/europe/201707061055293887-estonia-nato-medal/>.

27 Author was manager of event in 5 Rifles BG and tracked live media feeds.

audiences and failed to proliferate into western media. After a week it had little more than 300 shares on Facebook.²⁸ The UK Ministry of Defence and NATO did not counter the article publicly. The reason – on average, basic Kremlin botnets are between 150 and 400 ‘profiles’ in size.²⁹ It was therefore assessed that the content was circulated by a botnet with very little human interaction. Countering the story would have compounded its effect and provided the conduit for the message to reach audiences it would not have otherwise.

Information operations are the marketing of an idea.³⁰ NATO and British messaging must be timely and targeted. This granular detail enables planners to focus on incremental gains that, when planned in tandem with conventional operations, will not only enable manoeuvre, but also prepare the ground for future operations. Ambiguity will remain a part of the future battlespace as practitioners have a limited intellectual capacity and are subject to numerous physical factors – examples are emotions, fog of war and fatigue.³¹ Ambiguity is not always misinformation. Utilising ambiguity in the face of the enemy will be a significant capability in future deep operations as its utility extends from the reinforcement of tactical deception to the enabling of strategic dialogue (feints to peace talks).

Ambiguity is timeless, unconstrained and is subject to simultaneous interpretation. When information is interpreted, it is done so subjectively and based on the interpreter’s experiences, group social norms and moral state.³² The timeless and uncontrollable nature of ambiguity is at odds with peoples’ view that everything has constraints – for example, the truth is a constant. It is assumed that when the truth is established that the discussion is therefore complete. However, today the Kremlin continues narratives past this point and creates ambiguity, which can then become self-perpetuating.

Just as intelligence has counter-intelligence, so, too, must future information operations. For example, the Chinese fleet sailing to St. Petersburg to take part in joint exercises with Russia’s Baltic fleet during the summer of 2017.³³

The Kremlin chose to release articles highlighting its ‘special’ relationship with China, with whom it shares military technology and, to a degree, ideology. However, the UK has a close relationship with Beijing, too, which is focused primarily on economics, but military exercises have also taken place. The ambiguity of the Kremlin’s message in this case was that Russia has a uniquely special relationship that others do not, but without stating directly its exclusivity and just merely suggesting it. To combat this messaging, a cross government/alliance response is required. This broad response adds credibility and maximises the use of channels already open to consumer audiences. For example, the UK could highlight its operations with the Chinese Navy off the coast of Somalia.³⁴ Immediately the Kremlin’s message is diluted and consumers are encouraged to investigate alternative views. Even so, some audiences remain incredibly difficult to reach. These are populations that fundamentally believe messages they receive from the Kremlin. Through long-term planning and better targeting, the selected audiences can be equipped with the tools to look elsewhere for their alternative truths.

Ambiguity will endure, however the weaponised form used by the Kremlin can be countered in a number of ways. First, by controlling the context in which information is interpreted. For the Kremlin to succeed it does not need to convert audiences to its worldview; it just simply needs to convert them to any other than the current. Divide and rule. When the West addresses Russia it addresses Russia as a whole – all audiences, populations, ethnic groups – suggesting that the West thinks Russia is one homogenous mass. The Kremlin’s approach is more sophisticated; it singles out organisations or people, making it personal. The Kremlin succeeds in subtly signposting the audience’s attention to where they want it to be, manipulating and misinforming as needed.

Second, the West must continue its transparency when combating ambiguity. The UK and the West must avoid criticising Russia as a whole and instead target and refine responses. Failing

to do so highlights insecurities and a fundamental lack of understanding of Russia and its people. In Russian politics, a strong Russia is seen as a stabilising force in the world. They will only be content when Russia feels respected by the rest of the world.

Finally, the West must be equipped at every level to coordinate efforts and embrace the complexity of ambiguity. As the Chief of Swedish Defence Forces, Maj. Gen. Karl Engelbrektson stated, “War is a contest of will.” Gen. John ‘Mick’ Nicholson likewise stated, “War is staying power.”^{35 36} Maintaining public support is crucial as it is indivisible from political will. The five domains must act in synergy across all military, governmental and alliance levels to contest and win future conflicts. The information war manifests itself as the passage of information, by any means, to the public on both sides of future conflicts. Owning at least part of this domain will affect all future conflicts and should be a key tenant of strategic planners.

ABOUT THE AUTHOR

Captain Robert Atchison is a seven-year veteran of the British Army and currently serves as the Executive Officer to the ARRC’s Deputy Chief of Staff for Operations. In his previous assignment he served as the Influence lead for the British Army’s enhanced Forward Presence (eFP) battlegroup in Tapa, Estonia. Capt. Atchison has led influence operations across a number of different theatres to include Afghanistan and in Eastern and Northern Europe. A native of Liverpool, England, Capt. Atchison holds an Honours Degree in Physics from Aberystwyth University.

28 Author’s research during event.

29 Author worked with EST, UK and FRA OGDs on assessment

30 Ben Davis, “What exactly is marketing ops?” Econsultancy, January 18, 2017, <https://econsultancy.com/what-exactly-is-marketing-ops/>.

31 The Intellectual “Bell Curve”

32 Will Fanguy, “Seeing is believing: 5 studies about visual information processing,” Piktochart, <https://piktochart.com/blog/5-psychology-studies-that-tell-us-how-people-perceive-visual-information/>.

33 Author Unknown, “Chinese military vessels enter Russia’s Baltic for 1st time as joint drills kick off,” RT, July 21, 2017, <https://www.rt.com/news/397096-china-russia-sea-drills/>.

34 Marc Lanteigne, “Fire over water: China’s strategic engagement of Somalia and the Gulf of Aden crisis,” The Pacific Review, March 8, 2013, <https://www.tandfonline.com/doi/full/10.1080/09512748.2012.759265?src=recsys>.

35 Speech as part of the 2018 International Armoured Vehicles Conference London.

36 During Gen Nicholson’s speech on Op INHERENT RESOLVE during the 2018 International Armoured Vehicles Conference London.



THE NATURE OF NEWS AND THE MILITARY LEADER: A PRIMER

Lieutenant Colonel Adam Hallmark, United States Army

Generations of military leaders have been ingrained with Clausewitz’s theory that while war’s character changes with time its nature remains constant.¹ Whilst history demonstrates that military tactics and operational approach tend to lag behind war’s changing character, military leaders nevertheless understand Clausewitz’s theory and instinctively adapt.²

Today, where the 24-hour news cycle permeates virtually every facet of our lives, Clausewitz’s theory is equally applicable with respect to the character and nature of news. Unlike the military leader’s instinctive adaption to war’s character and nature, history lacks in demonstrating the same insomuch as the character and nature of news are concerned. Instead, it reveals a consistent clash of professions rooted in simple ignorance of one another. The chief result of these fundamental misunderstandings is a mutual mistrust that can lead to awkward interactions between commanders and the media as well as commanders and their designated Public Affairs Officers (PAO) attempting to bring the two together.³

Such misunderstandings and awkwardness are entirely avoidable. In much the same way that military leaders comprehend the nature and character of war, so, too, must they with regard to the news and, by extension, the mass media. Despite the information revolution that has redefined the character of news during the last 25 years, this essay will not address it. Although unquestionably

important, the current character of news is a separate topic entirely and one to be addressed only after the nature of news is made clear. To that end this essay will seek to familiarise the military leader – specifically those reluctant or apprehensive about engaging the media – with a brief history of military-media relations. More importantly, it will seek to impart a basic, fundamental understanding regarding the nature of news and provide an academic lens through which to view, understand and approach civilian media operations by making military leaders aware of two critical communication theories.

How Did We Get Here?

That military leaders have historically struggled to consider or contend with mass media during operations is nothing new.⁴ This is not to say, however, that history is absent of instances where they do. For example, both British Army and American rebel leadership during the American Revolution purposefully waged a war of information against one another in vying – via American colonial mass media – for colonists’ sympathies,



This 1770 engraving by Paul Revere depicts a propagandised version of the so-called Boston Massacre. The fake news of its day, it affected colonial sentiments in New England and directly contributed to commencement of the American Revolution in 1775.

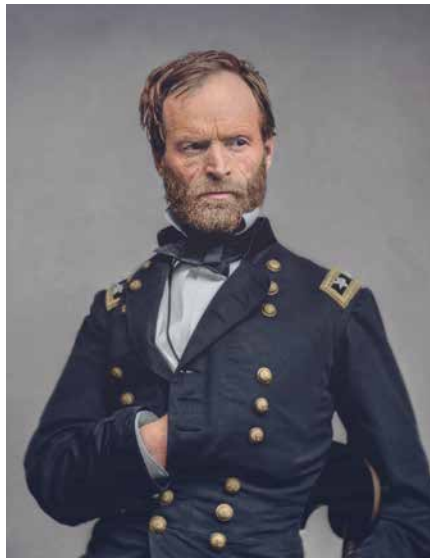
which were not, interestingly enough, wholly in favour of independence.^{5,6} Comparatively speaking, though, these efforts were more akin to psychological operations than anything resembling modern-day Public Affairs operations.⁷

1 Carl von Clausewitz, *On War*, trans. Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1989), <https://www.clausewitz.com/readings/OnWar1873/TOC.htm>.
 2 Williamson Murray, “Military Adaptation in War,” *Institute for Defense Analyses*, June 2009, http://www.au.af.mil/au/awc/awcgate/dod/ona_murray_adapt_in_war.pdf.
 3 Stephanie Oram, “Telling the Story: Impact of Military-Media Relations on the Operational Commander,” (Final, United States Naval War College, 1993).
 4 Oram, “Telling the Story.”
 5 Robert Parkinson, “Print, the Press, and the American Revolution,” *Oxford Research Encyclopaedia of American History*, September 2015, <http://oxfordre.com/americanhilstory/view/10.1093/acrefore/9780199329175.001.0001/acrefore-9780199329175-e-9?print=pdf>.
 6 Douglas Porch, “No Bad Stories: The American Media-Military Relationship,” *Naval War College Review* 55, no. 1 (Winter 2002), <http://www.au.af.mil/au/awc/awcgate/navy/art5-w02.htm>.
 7 John Snyder, “Seeing through the Conflict: Military-Media Relations,” (*Strategy research project, United States Army War College, 2003*), 6.

More recently, 1991's Operation Desert Storm demonstrated a successful operational application of Napoleonic tactics by way of continuous senior leader engagement with the mass media. During that short conflict, Gen. Norman Schwarzkopf successfully executed a feint against the Iraqi Republican Guard by inviting the media to cover and publicise amphibious assault rehearsals. The result was a massive multinational cross-border flanking manoeuvre that achieved surprise and encountered only nominal resistance as the enemy's attention was focused on the Kuwaiti shoreline.⁸ However, in the same vein as the American Revolution, this effort by senior military leaders was clearly a military deception operation; the role of Public Affairs in its execution served merely as a conduit.

These more favourable examples notwithstanding, they are overshadowed by a lengthy history of military leaders approaching the mass media with, at best, a lackadaisical attitude to, at worst, downright hostility. To be sure, Union Gen. William Tecumseh Sherman, infamous for his scorched earth tactics during the American Civil War, considered journalists as little more than spies and went so far as to symbolically court-martial one following the Battle of Vicksburg.⁹ So deep-seated was Sherman's hatred for the mass media that he supposedly remarked following an erroneous report of several journalists being killed by Confederate artillery fire, "Good! Now we'll have dispatches from Hell before breakfast."¹⁰ To Sherman's defence, though, his issues with the mass media primarily stemmed from what today's military leaders would rightly consider violations of operational security.¹¹ Nevertheless, his antagonistic interactions with journalists garnered him rebukes and slights from nearly every quarter, to include an admonishment by his own wife as well as his decisive 1864 sacking of Atlanta and subsequent 'March

to the Sea' going largely unreported in Northern papers.^{12 13}



Gen. William Tecumseh Sherman, infamous for his brutal slash-and-burn tactics during the American Civil War, loathed the media and paid for it off the battlefield.

Sherman's approach to the mass media represents a misunderstanding of the nature of news to the extreme, but his serves as a salient example of leader cognition that has managed to perpetuate itself, to a lesser degree of course, and plague generations of military leaders since. This is not simply conjecture or a statement tied solely to anecdotal experience of the author. Rather, it is a verifiable institutional problem that affects not only the US Department of Defense, but our allies as well.¹⁴

From a US perspective there was cause for hope in the immediate years prior to the post-9/11 era that military leaders were beginning to grasp the importance of considering the mass media in their operational plans.¹⁵ This was due in large part to bitter complaints and legal action by the press following the Persian Gulf War, which led senior military leaders to reconsider the use of heavy-handed tactics in accommodating the media during operations.¹⁶ As a result of the

September 11, 2001 terror attacks, multinational combat operations led by the US and her allies in Afghanistan and Iraq provided senior military leaders and their Public Affairs staffs the opportunity to implement necessary course corrections in the wake of the Persian Gulf War. Most notable was the military's expansion of, and loosening grip on, the media embed programme. Not since the Second World War had the military granted the mass media such ease of access to frontline troops and combat operations. Media agendas, slants and story framing notwithstanding, the media embed programme in these two theatres of operations was a resounding success.^{17 18}



By most accounts the media embed programme conducted during post-9/11 combat operations in Afghanistan and Iraq were successful in repairing damage done to military-media relations during Operation Desert Shield/Storm.

But along the way the progress made during the first half of the post-9/11 conflicts seemingly began to slow. Perhaps the way the mass media covered the Global War on Terror contributed, such as the nightly broadcast reminders of the American death toll (which seemingly ceased once George W Bush relinquished the presidency) and favourable coverage of anti-war protests led by Cindy Sheehan. Whatever the reason, the historic misunderstanding of the nature of news by military leaders and how they approached media relations began to surface yet again and it played out in the news.^{19 20} Not

8 Wyatt Olson, "'Left Hook' Deception Hastened War's End," Stars and Stripes, 2016, <https://www.stripes.com/news/special-reports/the-gulf-war-25-year-anniversary/deception>.

9 James Barron, "Sherman Letters Show Civil War General Regarded Reporters as 'Spies,'" The New York Times, June 21, 1987, <https://www.nytimes.com/1987/06/21/us/sherman-letters-show-civil-war-general-regarded-reporters-as-spies.html>.

10 Mark Kelton, "Dispatches from Hell Before Breakfast," The Cipher Brief, August 10, 2017, <https://www.nytimes.com/1987/06/21/us/sherman-letters-show-civil-war-general-regarded-reporters-as-spies.html>.

11 Peter Andrews, "The Media and the Military," American Heritage 42, no. 4 (July/August 1991): <https://www.americanheritage.com/content/media-and-military>.

12 Brooks Simpson and Jean Berlin, ed., *Sherman's Civil War: Selected Correspondence of William T. Sherman, 1860-1865* (Chapel Hill, NC: University of North Carolina Press, 1999), 394.

13 Johanna Neuman, *Lights, Camera, War* (New York: St Martin's Press, 1996), 34.

14 Stephen Badsey, "In the Public's Eye: The British Army and Military-Media Relations," The Royal United Services Institute, September 21, 2009, <https://rusi.org/commentary/publics-eye-british-army-and-military-media-relations>.

15 Dennis Reimer, "Army-Media Relations: An Update," in *Soldiers are our Credentials: The Collected Works of the Thirty-Third Chief of Staff United States Army*, ed. James Carafano (Washington: US Army Center of Military History, 2000), 243-244.

16 Stefanie Le, "The Relationship between the Media and the Military: Does Media Access to International Conflicts Affect Public Opinion and Foreign Policy?" (MLA thesis, Harvard University, 2016), 35-58.

17 Thom Shanker and Mark Hertling, "The Military-Media Relationship: A Dysfunctional Marriage?," *Military Review* 89, no. 5 (September-October 2009): 4.

18 Deborah Haynes, "Reporting from the Front: A Foreign Correspondent's Perspective," *The RUSI Journal* 157, no. 3 (June 2012): 40-44.

19 Snyder, "Seeing through the Conflict," 18.

20 Stars and Stripes, "Army bars Stars and Stripes reporter from covering 1st Cav unit in Mosul," Stars and Stripes, June 24, 2009, <https://www.stripes.com/news/army-bars-stars-and-stripes-reporter-from-covering-1st-cav-unit-in-mosul-1.92692>.

only has this misunderstanding played out in the news, but it has manifested itself elsewhere – to the extent of being acknowledged and addressed by military and non-military members alike – by appearing in trade, academic and third-party publications.^{21 22 23}

Perhaps there is hope yet again, however, at least within the US Department of Defense. In 2017, then-US Secretary of Defense James Mattis directed senior military leaders to start engaging the mass media. He stated, “Communications (sic) is the job of the commander, not just the PAO,” seemingly acknowledging a trend of some commanders avoiding media engagements altogether.²⁴ While a relevant point, every service member should – and must – be ready to engage the media in order to communicate their organisation’s key themes and messages to all audiences, not just senior leaders. Training is obviously central in this regard; PAOs are not absolved of their duty to educate members of their formations regarding the nature of news and how to engage the mass media. Likewise, commanders and leaders at all levels should support their PAO in this effort for the sake of readiness and not simply dismiss such training as trivial or a waste of time.²⁵

The Nature of News

There are two essential elements the military leader must consider in order to understand the nature of news. First, one must ask the question, “What is news?” Of course, there are dictionary definitions of the term, but something more insightful is required to understand it. One sentiment of what news is holds that if “...‘a dog bites a man’ – that’s a story; ‘A man bites a dog’ – that’s a good story.”²⁶ Another asserts that news is “women, wampum and wrongdoing,” or more simply put, “sex, money and crime.”²⁷ Thought-

provoking as these and other efforts to wax philosophical about what news may be, there is a more straightforward and practical answer: News is whatever the editor-in-chief says it is.²⁸



The mass media industry is first and foremost a money-making business that relies on attention grabbing headlines to generate profit by way of advertisers and subscribers.

Second, the military leader must understand that the mass media business is just that – a business.²⁹ Notwithstanding state-funded organisations such as the British Broadcasting Corporation, mass media organisations exist to make money and they do so, primarily, through the sale of advertising space.³⁰ It is all well and proper that individual journalists may accept the daily stress of deadlines for an average, meagre salary of \$40,000 (£24,000 in the UK) per year out of some noble sentiment of keeping the general public informed.^{31 32 33} However, their corporate leadership did not go into business with the monetary objective of breaking even or tolerating losses; noble sentiments do not pay the bills or achieve the bottom line of generating profit no matter how much some journalists may complain.^{34 35}

The nature of news, then, is a concept that is easily understandable and allows the military leader to see it for what

it is, and to not view the mass media as some sort of entity to be feared or avoided. Mass media organisations exist to make money primarily through the sale of advertising space. In order to sell advertising space, they must give advertisers a reason to buy such space. That reason comes by way of the readers, listeners and viewers that mass media organisations strive to attract who will consume advertising as a by-product of consuming news and associated programming (a mutually beneficial relationship for advertisers and the mass media). In order to attract a followership,

the mass media run headlines that grab one’s attention and entice them to read, listen or view. This leads us back to the question of ‘what is news?’ Because women, wampum and wrongdoing never fail to attract an audience, editors-in-chief will always assign their journalists to cover such stories thereby dictating what news is. In the era of the 24-hour news cycle, controversial headlines are what sell and good news rarely features for good reason – audiences have little interest in it.³⁶ It is perhaps human nature to gravitate toward stories of controversy, murder, scandal, gossip and the like, and news editors are acutely aware of – and capitalise upon – this fact.³⁷

Knowing that mass media is a business should, theoretically, put military leaders at ease. When a journalist requests to cover a military unit’s operation, exercise, etc., nine times out of 10 all that the journalist really cares about is

21 Company Commanders, “Why Bother with the Media?,” Army Magazine, July 2010, [https://www.usma.edu/caldol/siteassets/armymagazine/docs/2010/CC_ARMY_10-07%20\(JUL10\)-Media.pdf](https://www.usma.edu/caldol/siteassets/armymagazine/docs/2010/CC_ARMY_10-07%20(JUL10)-Media.pdf).
 22 Steven Boylan, “The Military-Media Relationship: An Exercise in Strategic Patience,” Military Review 91, no. 5 (September-October 2011): 5-6, https://www.armyupress.army.mil/Portals/71/military-review/Archives/English/MilitaryReview_20111031_art001.pdf.
 23 Thomas Day, “The Media is Failing to Communicate the Military to Civilians,” Task & Purpose, February 17, 2015, <https://taskandpurpose.com/the-media-is-failing-to-communicate-the-military-to-civilians/>.
 24 Kevin Baron, “Mattis to Generals: Start Talking to the Press,” Defense One, October 9, 2017, <https://www.defenseone.com/politics/2017/10/mattis-generals-start-talking-press/141639/>.
 25 Meghann Myers, “The Army just dumped a bunch of mandatory training to free up soldiers’ time,” Army Times, April 24, 2018, <https://www.armytimes.com/news/your-army/2018/04/24/the-army-just-dumped-a-bunch-of-mandatory-training-to-free-up-soldiers-time/>.
 26 Jesse Williams, The Stolen Story and Other Newspaper Stories (New York: Charles Scribner’s Sons, 1899), 223.
 27 Kathy English, “English: Who decides what’s news,” Toronto Star, May 1, 2010, https://www.thestar.com/opinion/public_editor/2010/05/01/english_who_decides_whats_news.html.
 28 Carole Howard and Wilma Mathews, On Deadline: Managing Media Relations (Long Grove, IL: Waveland Press, Inc., 2000), 33.
 29 Howard and Mathews, On Deadline, 36.
 30 Stephen Quinn, “An Intersection of Ideals: Journalism, Profits, Technology and Convergence,” Convergence: The International Journal of Research into New Media Technologies 10, no. 4 (December 2004): 1.
 31 “Average Journalist Salary,” PayScale, accessed December 7, 2018, <https://www.payscale.com/research/US/Job=Journalist/Salary>.
 32 Average Journalist Salary,” PayScale, accessed December 7, 2018, <https://www.payscale.com/research/UK/Job=Journalist/Salary>.
 33 Jay Harris, “News and Profits,” The Nation, May 10, 2001, <https://www.thenation.com/article/news-and-profits/>.
 34 Christine Lagorio, “Does Media’s Profit-Quest Harm Democracy?,” CBS News, February 8, 2007, <https://www.cbsnews.com/news/does-medias-profit-quest-harm-democracy/>.
 35 Victor Pickard, “Take the profit motive out of news,” The Guardian, July 23, 2009, <https://www.theguardian.com/commentisfree/cifamerica/2009/jul/23/newspapers-internet-advertising>.
 36 Adam Epstein, “Here’s what happened when a news site only reported good news for a day,” Quartz, December 5, 2014, <https://qz.com/307214/heres-what-happened-when-a-news-site-only-reported-good-news-for-a-day/>.
 37 Jacob Burak, “Outlook: Gloomy,” Aeon, September 4, 2014, <https://aeon.co/essays/humans-are-wired-for-negativity-for-good-or-ill>.

doing his or her job and meeting their deadline.³⁸ For whatever reason, though, many military leaders at all levels wrongly assume that any media engagement will be nothing more than a proverbial minefield of 'gotcha' type questions meant to make the service member and their organisation look bad. It is a fair point that journalists attempt this on occasion, but such tactics are rare and usually tied to the emotional appeal of the subject matter in an effort to make a good story. Gotcha-type questions aside, military leaders should expect tough questions (there is a difference), which is completely fair and does not necessarily mean a journalist has an ulterior motive. Assuming the military leader is confident in his or her PAO's ability to do their job, shying away from media engagements is not recommended. Regardless of the story subject matter and the potential questions to be asked, with proper training and preparation the military leader will be able to successfully respond and speak to the organisation's mission.

The Power of the Press

The military leader must also understand and appreciate beyond the surface level the intrinsic power of the mass media to set and influence the public agenda, which is second in importance only to making money (first for state-funded news organisations). American folk icon Will Rogers once mused, "All I know is just what I read in the papers." Although meant as a quip, Rogers articulated succinctly the extent of source knowledge most people rely on to discuss or debate current events and who do not know, or do not bother, to think critically and ask if they are getting the whole story. Walter Lippmann devoted an entire book to the matter in 1922 and wrote, "The only feeling that anyone can have about an event he does not experience is the feeling aroused by his mental image of that event...The world that we have to deal with politically is out of reach, out of sight, out of mind." To fill such a void, Lippmann credited the mass media with creating 'pictures in our heads' that serve to fill a vacuum resulting from our not having direct knowledge of any given

subject. This point concerned Lippmann enough to conclude that "public opinions must be organised for the press if they are to be sound, not by the press as is the case today."

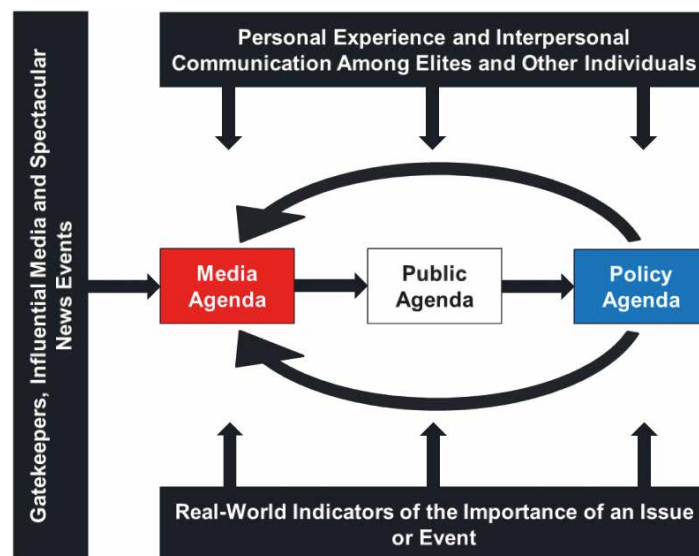
That the mass media is able to influence on a large scale the public's perception of events – putting 'pictures in our heads' – is not debatable when it has been admitted to. For instance, former New York Times executive editor Max Frankel wrote of his own organisation's influencing power,

"It is the 'house organ' of the smartest, most talented, and most influential Americans at the height of American power. And while its editorial opinions or the views of individual columnists and critics can be despised or dismissed, the paper's daily package of news cannot. It frames the intellectual and emotional agenda of serious Americans."

The question then becomes 'how do the media do it?' For that academia offers two communication theories in particular that serve as a lens through which the military leader can analyse and, more importantly, recognise the mass media's effect on the public in order to plan accordingly.

The first is Agenda Setting Theory (AST). In 1963 Dr. Bernard Cohen posited that the mass media "may not

be successful much of the time in telling people what to think, but it is stunningly successful in telling its readers what to think about." This piqued the interest of Dr. Maxwell McCombs who, along with retired US Army officer Dr. Donald Shaw, theorised that the mass media purposely dictates the day-to-day public agenda by reporting on issues that it deems salient, which directly influences public opinion regarding those issues. To test this theory McCombs and Shaw conducted a content analysis of media products distributed in the vicinity of Chapel Hill, North Carolina and noted what was reported as salient during the 1968 US presidential campaign. Simultaneously, they conducted a survey of undecided voters in the same area and asked each voter what they deemed as important campaign issues. What McCombs and Shaw found was a strong correlation between what the mass media reported as salient campaign issues and the campaign issues the surveyed audience stated was important to them. This breakthrough became known as the 'Chapel Hill Study' and gave birth to AST; the study was published in 1972 and has been replicated to date more than 400 times in various settings by academics around the globe.^{46,47} To say that the mass media has a direct psychological effect on the general public is an understatement.



Agenda Setting Theory's simultaneous linear and cyclic concept as postulated by Drs. Maxwell McCombs and Donald Shaw.

38 Howard and Mathews, On Deadline, 70-71.

39 Staff Writer, "Vice News reporter tries to bait Army officer into undermining the POTUS," Popular Military, November 16, 2018, https://popularmilitary.com/vice-news-reporter-tires-bait-army-officer-undermining-potus/?utm_source=The+Salty+Soldier&fbclid=IwAR3Jx5DELXddkB_SpCpEhXRjCRWM_f1-g7On-xj4osoEzxyRe4zTz7Omkq.

40 Will Rogers, "Mr. Rogers announces a plan to write on topics he knows," in Will Rogers' Daily Telegrams, Volume 3: The Hoover Years, 1931-1933, eds. James Smallwood and Steven Gragert (Stillwater, OK: Oklahoma State University Press, 1979), 219.

41 Walter Lippmann, Public Opinion (New York: Free Press Paperbacks, 1922), 9, 18.

42 Lippmann, Public Opinion, 19.

43 Max Frankel, The Times of My Life and My Life with the Times (New York: Random House, 1999), 414-415.

44 Bernard Cohen, The Press and Foreign Policy (Princeton, NJ: Princeton University Press, 1963), 13.

45 Maxwell McCombs and Donald Shaw, "The agenda-setting function of mass media," The Public Opinion Quarterly 36, no. 2 (Summer 1972): 176-187.

46 McCombs and Shaw, "Agenda-setting," 176-187.

47 Maxwell McCombs, Setting the Agenda: The Mass Media and Public Opinion (Cambridge, UK: Polity Press, 2004), x.



TWO RESIDENTS WADE THROUGH CHEST-DEEP WATER AFTER FINDING BREAD AND SODA FROM A LOCAL GROCERY STORE AFTER HURRICANE KATRINA CAME THROUGH THE AREA IN NEW ORLEANS, LOUISIANA. (AFP/GETTY IMAGES/CHRIS RAYTHEN)



A YOUNG MAN WALKS THROUGH CHEST DEEP FLOOD WATER AFTER LOOTING A GROCERY STORE IN NEW ORLEANS ON TUESDAY, AUG 30, 2005. (AP PHOTO/DAVE MARTIN)

HURRICANE KATRINA, 2005

Framing Theory in action. These two captions by mainstream mass media organisations during 2005's Hurricane Katrina describe virtually the same event, but with vastly different attributes.

The second is Framing Theory, which is concerned with the attributes the mass media uses to tell a story during its presentation to audiences. Dr. Robert Entman defines framing as “to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation and/or treatment recommendation for the item described.”⁴⁸ Moreover, frames ultimately “highlight some bits of information about an item that is the subject of a communication, thereby elevating them in salience” and that these bits of information are made “more salient by placement or repetition.”⁴⁹ Practically applied one can observe framing in action by the way the mass media thematically covers the American gun control debate. From regular and codified use of the politically manufactured and nonsensical term ‘assault weapon’ to the way the media largely highlights the pro-control narrative favourably whilst shutting out opposing arguments, the manner in which the mass media frames this debate does a bit more than just tell audiences what to think about.^{50 51 52}

Conclusion

The intent of this piece was to provide the military leader with an introduction to the history of how, as a military profession, we have inconsistently approached media relations. By additionally providing a look inside the nature of news from one PAO's perspective it is hoped that those military leaders who have traditionally avoided, or feel reluctant about, engaging the mass media will have gained some measure of reassurance that doing so is not as fraught with danger as one may think it to be.

Compared to history prior to the first half of the 20th century, our world since the mid-1950s has experienced a relative peace not seen by our ancestors. That said, Western militaries are busier than ever with small-scale commitments around the globe supporting a variety of combat, peacekeeping and humanitarian operations all the while conducting an array of training exercises with allies and partners. As such these operations will invariably attract a certain amount of mass media attention. It is therefore incumbent upon commanders and their PAOs, as part of executing these

operations, to responsibly tell the story of their formations and, by extension, their parent military as a whole. As the old saying goes in the public relations profession, “If you don't tell your story, someone else will.”⁵³

ABOUT THE AUTHOR

Lieutenant Colonel Adam Hallmark is an 18-year veteran of the United States Army and currently serves as the Deputy Chief PAO for the ARRC. In his previous assignment he served as the Chief PAO for the 4th Infantry Brigade Combat Team (Airborne), 25th Infantry Division at Fort Richardson, Alaska. Lt. Col. Hallmark has led Public Affairs operations across combat, humanitarian and peacekeeping operations from Afghanistan to Haiti to Kosovo as well as corps-level media relations efforts following the 2009 Fort Hood, Texas terror attack. A native of Tusculumbia, Alabama, Lt. Col. Hallmark holds a Bachelor's Degree in History from the University of North Alabama and a Master's Degree in Communication from Auburn University.

48 Robert Entman, “Framing: Toward clarification of a fractured paradigm,” *Journal of Communication* 43, no. 4 (December 1993): 52.

49 Entman, “Framing,” 53.

50 Josh Sugarmann, *Assault Weapons in America* (Washington: Firearms Policy Project of the Violence Policy Center, 1988), 42, <http://vpc.org/publications/assault-weapons-and-accessories-in-america/assault-weapons-and-accessories-in-america-conclusion/>.

51 Todd Gardiner, “What does the AP stylebook say about assault rifles vs assault weapons?” Quora, March 31, 2018, <https://www.quora.com/What-does-the-AP-stylebook-say-about-assault-rifles-vs-assault-weapons>.

52 Karen Callaghan and Frauke Schnell, “Assessing the Democratic Debate: How the News Media Frame Elite Policy Discourse,” *Political Communication* 18, no. 2 (2001): 201-203.

53 Heather Sliwinski, “If You Don't Tell Your Organization's Story, Someone Else Will,” *Public Relations Society of America*, September 25, 2013, <http://prnewpros.prsa.org/if-you-dont-tell-your-organizations-story-someone-else-will/>.

JOINT VISITORS BUREAU: ADMINISTRATION OR INFLUENCE?

Major Paul Collis-Smith, British Army

“We face a changing security environment threat which is complex and dangerous for the UK and our national interests. No country is able to address all the challenges alone. Strong Alliances and partnerships are more important than ever.”

Sir Michael Fallon, Former UK Secretary of State for Defence

The Problem

Here at the Allied Rapid Reaction Corps (ARRC) we are all in the business of influencing our A3E. Doing so satisfies a large portion of promoting our interests and projecting our influence overseas as stated in the UK's Security Strategy. Being 'international by design' gives the ARRC an extra dimension as a useful communication tool in executing the UK's National Defence Engagement Strategy as a strategic headquarters within NATO. The work practises of the Joint Visits Bureau (JVB) lies at the heart of defence engagement. We are a team of five individual who are dedicated to facilitating the ARRC's efforts to promote the interests and influence of NATO to its target audience.

The ARRC's strategic communications directive (STRATCOM) states:

HQ ARRC is an innovative HQ by design and ambition, which encourages conceptual debate and uses its extensive operational experience and multi-nationally resourced training programme to experiment with ideas, evolve thinking, explore boundaries and pioneer development of doctrine (both NATO and National). The Comprehensive Approach and Integrated Action have become central themes in the future development of the Alliance; HQ ARRC is actively contributing to both concepts

through civil-military engagement, exercises and integration activities.

Within the JVB, the main objectives we facilitate are to:

- *Contribute to NATO's efforts to promote and project stability beyond its borders in support of the defence of the Alliance, and as an expression of its commitment to its values and willingness to defend them.*
- *Support resourcing of the ARRC capabilities, development and experimentation (CD&E) programme by promoting HQ ARRC as a leading proponent of evolutionary and transformational military thinking.*

In order to meet these objectives, the JVB focusses on key leader engagement (KLE) as a prioritised activity, but visits must have a purpose, an outcome and a useful, measurable effect. This is more challenging than the visit itself.

How do we solve the problem?

Each visit has a potential to make an impact and gain traction as positive influence. The JVB is the tool by which a positive impression is created by providing an environment where senior staff can take care of business. Therefore, the JVB melds the administration component with the influence piece at the forefront. Combined with the nature of the ARRC Central Staff's connections across all branches of the headquarters, the JVB

are well placed to facilitate dialogue at all levels and target all relevant audiences.

The ARRC's Strategic Communication (STRATCOM) cell gives direction on how to portray the ARRC as a leading class, UK-framework, multinational headquarters that is capable of leading operations at the corps, land component command (LCC) or joint task force (JTF) levels. Part of the directive is to support UK and Alliance aims, objectives and values. The question is, then, is the ARRC meeting its STRATCOM objectives by merely facilitating a professional visit? Key Leader Engagement needs follow up with additional outreach coordinated through the Public Affairs Office and it is a pan-headquarters responsibly to ensure the awareness of this process is considered throughout all activities.

Three of the five UK defence engagement objectives stand out as core JVB business on behalf of the ARRC:

- Prevent conflict
- Develop capacity and interoperability
- Build and maintain access and influence

Service members operating at the strategic, operational or tactical level should have these objectives in place. The range of visitors to the ARRC with JVB involvement has the potential to expand our influence amongst their connections. This presents the ARRC's command group with the potential

to achieve any of the three defence engagement objectives in order to enhance presence as a permanent headquarters and as a JTF in the near future.

The ARRC attracts 'A List' visitors and it is a fact that the reputation of the headquarters is strong. In June 2018, 17 UK-based defence attachés (DAs) visited the ARRC, representing some of its 23 participating nations (PNs). The visit was an opportunity to advertise to NATO DAs the role, function and professionalism of the ARRC, encourage PN's to send quality personnel to the ARRC and encourage those NATO countries that are not represented in ARRC to consider joining. This kind of activity satisfies the key audience of NATO Allies and partners. The role of the JVB through the applicable front office staff is to help provide continuity of message in order to develop capacity and interoperability. It is therefore the responsibility of the JVB to ensure that key messages taken from each event is evaluated and fed back to the STRATCOM cell, with the assistance of the Public Affairs Office, in order to emphasise the message about current and future commitments, force development, training and manning. In this case it was an opportunity to advertise posts from to PNs and fill them with quality personnel from NATO members.

The same month the JVB facilitated a visit by a number of OF-5 students

enrolled at the Ukrainian Defence University. The visit was part of a wider command course programme to the UK to educate and reinforce Western governance structures and organisations at the strategic level, whilst exposing students to broader defence issues such as politics, economics and industry. This was in line with the Ukraine's' Strategic Defence and Security Review equivalent The Strategic Defence Bulletin. The brief given to them was, naturally, ARRC-specific and covered:

- The ARRC concept
- Interoperability by way of working with other countries
- Training and deployment
- The ARRC's staff branches

The brief included a discussion whereby the students were encouraged to ask questions and share personal experiences. The questions were both interesting and revealing. They were interested in what NATO would do – or would be able to do – in the event of escalating hostilities with our common adversary. Several comments about the ARRC and the difference between what they had initially thought about the ARRC were recorded. It was interesting to note their thoughts and impressions of the ARRC. This is where a seat on STRATCOM's Information Activities Working Group (IAWG) is important for the JVB. Gathering external feedback and exploiting the opportunity to

advertise we are carrying out this kind of activity teaches us a great deal about the perception from audiences and actors. We need to listen and act on feedback to maximise efforts and minimise risk where the incorrect message is reaching external audiences, which could have been the case with the Ukrainians. This was a vital piece of work and a prime example of why it is necessary to share information across the headquarters and act upon it. Perhaps this process is in need of development.

Ideal visit

Taking our potential transition to a JTF headquarters into consideration, KLE is a targeting activity. Rather like a meeting, a visit needs a purpose. Both the ARRC and the visitor must achieve an objective from the visit. Afterwards, a follow-up is required and this is where an improvement must be sought in our internal processes as previously identified. We need to provide answers and feedback on the requirement for the visit and record whether a service can be provided; can the visit result in providing a solution to a problem where something we require can be achieved? This is where the STRATCOM cell has a useful strategy when measuring effect for visits, during both internal and external interaction with ARRC staff and senior officers. Figure 1 below depicts how each visit can filter into the system and help convey the message or product:



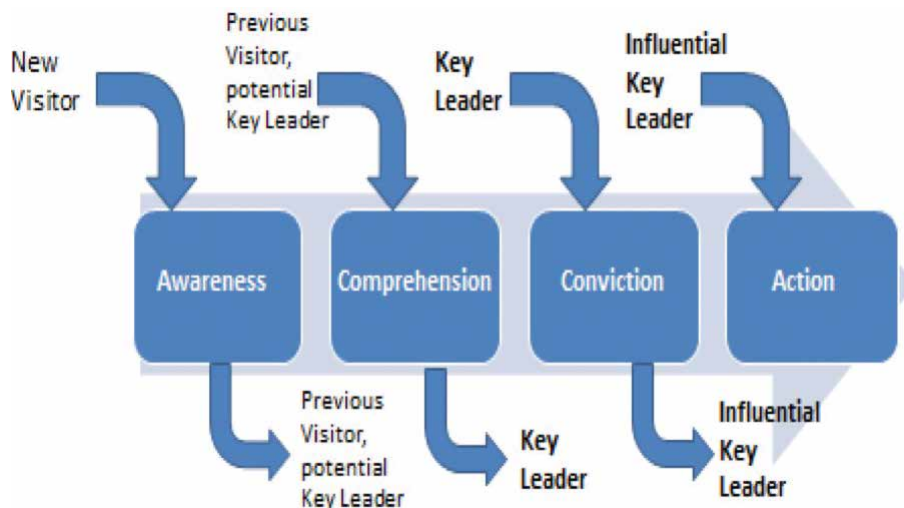


Figure 1

As indicated by Figure 1, a visitor can be assessed at any of the entrance levels along the top. The desired outcome, therefore, would be to influence the visit in such a way that visitor becomes more informed from a level of awareness on the route to providing action in some way beneficial for the ARRC. Using this method would 'sweat the asset' of the visit, enhancing reason and message delivery that achieves the visitor's initial desire to do business with the ARRC as a valued addition to their network. This process will dramatically increase the likelihood of influencing a visitor in becoming an effective key leader.

Additionally, a cross section and varied list of visitors must be targeted. Senior representatives from organisations such as the Department for International Development, the UK Cabinet, members of the UN, the Red Cross and the EU should all be desired and sought after visitors in addition to our own NATO senior officers, especially in the transition back to a tactical corps headquarters. The ARRC requires partnerships with a non-exhaustive list of these organisations in order to open doors for business in the future. The ARRC will want to be the military partner of choice for such organisations to achieve strategic, operational and tactical gains for NATO.

Finally, the JVB is placed within the ARRC's Central Staffs branch. However, the follow up process involves working closely with the STRATCOM cell and Public Affairs Office, and an input into the IAWG is necessary at the very least. The JVB therefore needs to develop a close working relationship with the ARRC's Joint Fires and Influence Branch (JFIB). In order to be as effective as our adversaries, we need to focus on the aftermath of the visit as much as the preparation of the visit itself, which brings

us back to the original point: If there is no action after a meeting, what is the purpose of the meeting? Although this is a cross-branch activity, the JVB have a place within JFIB in order to efficiently communicate the information and idea of conveying the relevant message from each visit, by coordinating the message and ensuring it reaches its target to maximise effect.

Conclusion

"Contacts with VIPs and decision makers provide COM JTFHQ/COS JTFHQ with an opportunity to deliver key messages. For that reason, visits to the JTFHQ are important influence opportunities"

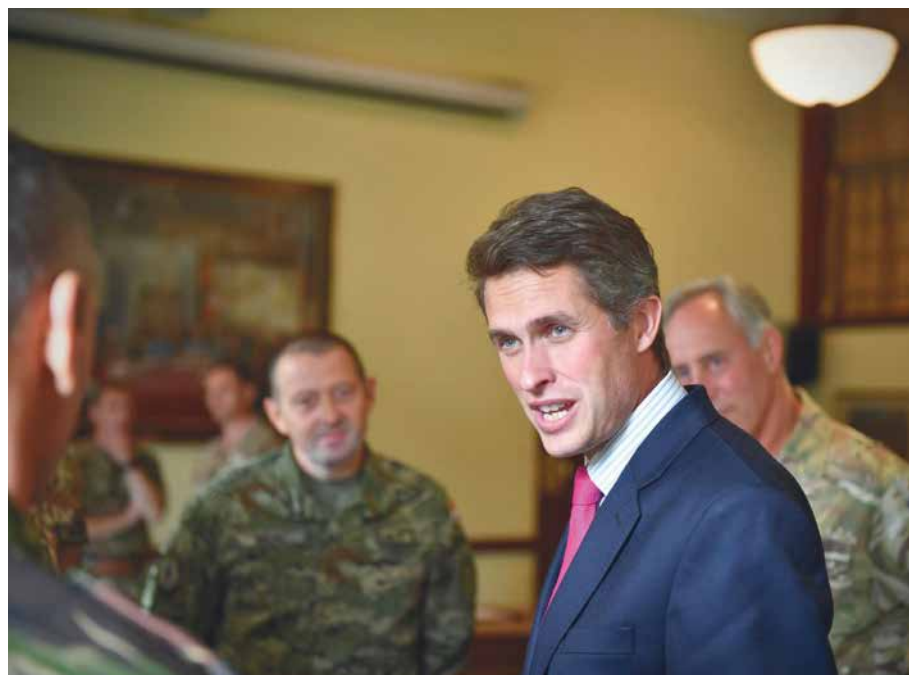
JTFHQ SOP for JVB

Key leader targeting in terms of soft effects is prioritised. In order to measure these effects, guidelines are there to be followed in the STRATCOM directive.

The easy solution is to assume that any defence engagement activity is not measurable, which causes complacency and, ultimately, ignoring the work to be post-visit. Indeed this is not the case. The UK's Defence Engagement Strategy has a clear direction, but the importance of STRATCOM in the military land component is only part of the solution. As modern warfare experiments with non-lethal effects, such as applying targeted, carefully planned, followed-up key leader defence engagement activity, we must all be familiar with the process and benefits of building relationships and follow-up activity.

ABOUT THE AUTHOR

Major Paul Collis-Smith is a 28-year veteran of the British Army's Corps of Army Music and currently serves as the team lead for the ARRC's Joint Visits Bureau. In his previous assignment he served as the Director of Music and Commander of The Band of the Prince of Wales's Division for the 160th Infantry Brigade in St. Athan, Wales. Maj. Collis-Smith has taken part in operations across an array of defence engagement and welfare roles in Afghanistan, Georgia and the Balkans, including Operation GRAPPLE 1 in Bosnia Herzegovina. A native of Nantwich, Cheshire, England, Maj. Collis-Smith holds a Master's Degree in Business Administration from Northampton University.



SURVIVE TO COMMENT: MILITARY UNDERSTANDING OF THE INFORMATION ENVIRONMENT



Major Chris Bell, British Army

“It is all around us. Even now in this very room. You can see it when you look out of your window, or when you turn on your television. You can feel it when you go to work...when you go to church...when you pay your taxes. It is the world that has been pulled over your eyes to blind you from the truth.” The Matrix¹

As individuals we all engage in bespoke information ecosystems. This engenders a familiarity with the information environment which, in turn, mimics understanding.² Objectivity is then difficult and individuals fail to understand the environment which understands them.

This is surely the most dangerous of all worlds and one that can be extrapolated to the wider defence community. Just as individuals become familiar with a tailored understanding, military institutions are in danger of doing the same. It is imperative therefore to define the environment we seek to operate in, and the one we must operate in. Only then can a holistic understanding be formed.

This is the first step of the ARRC Information Environment Analysis (IEA) programme: To understand the information environment pertinent to our operation. Comprehensive understanding of its characteristics will enable sophisticated information manoeuvre. This in turn will support refined outputs.

To facilitate this process, the ARRC IEA team will seek collaboration across the

NATO command structure. Identification of the best methodologies and tools employed in these headquarters will both inform future planning and enable refined outputs. This will subsequently contribute to the NATO IEA capability, as directed by the 2019 Communications Strategy and the IEA Capability Development Tasking.^{3,4}

The Environment

The information environment is constantly and rapidly evolving. Accelerating beyond our understanding (Figure 1) it is both an egalitarian and immersive experience.⁵ State actors, ideological extremists, individuals and terrorists now all have the enabling infrastructure to promote their reality. These actions often appear

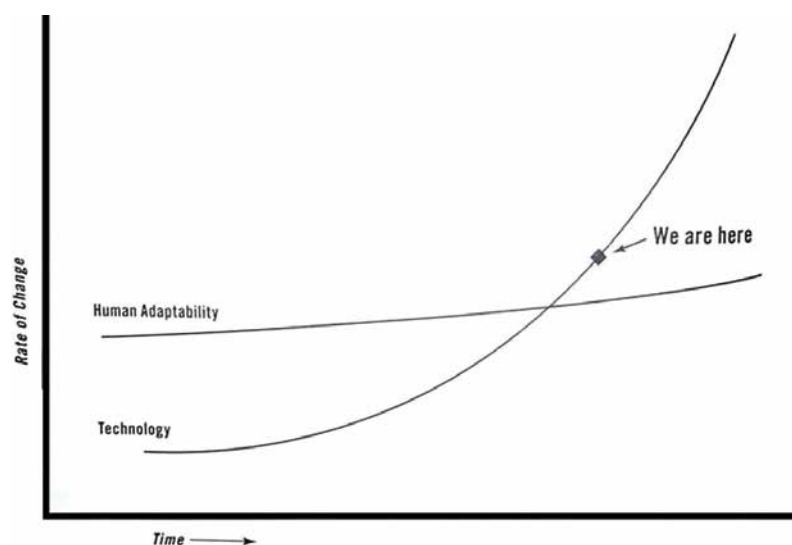


Figure 1

1 Lana Wachowski and Laurence Wachowski, *The Matrix*, (Burbank, CA: Warner Brothers, 1999).

2 Plato, *Republic*, ed. Benjamin Jowett (New York: The Modern Library, 1941).

3 Jens Stoltenberg, 2019 NATO Communications Strategy, (Document PO (2018)0516, 4 Dec 2018.) Para 39.

4 Mark Laity, Information Environment Assessment Capability Development, (SH/COM DIV/NC/18-000377, 31 May 2018)

5 Thomas Friedman, *Thank you for being late: An optimist's guide to thriving in the age of accelerations* (New York: Macmillan, 2016), 32.

disparate and discreet, but are frequently coordinated through state driven agendas. The opportunity to realise political goals by manipulating the shared reality is both attractive and substantial. It comes as a low cost, low risk option with significant potential. This creates multiple participants with competing agendas, who exist in a constant state of conflict. With no penalties to participation, there is little requirement to deescalate the information war.

This has created an environment akin to Hobbes' State of Nature, but with no compelling reasons to enter into a mutual contract.⁶ Governments do seek to curtail the actions of malign forces in their immediate vicinity, but only create localised and temporary solutions. The actors within the information environment will then evade, or ignore, the regulation.⁷ Thus the opportunities far outweigh the risks for external participants, giving them the ability to influence perceptions and shape reality.⁸

In the accelerating information environment, intelligent engagement will be multifaceted. Requiring a layered, coordinated and pan-disciplined response, each challenge must be treated as unique.

The Military Problem

When the military enters into this environment it encounters several key issues in understanding. Firstly, we use the wrong lexicon. Descriptions of the strategic, operational and tactical levels simply do not apply. They lead to confusion about where interactions

should take place. Any subsequent attempt to enforce the recognised military levels inevitably leaves gaps. Equally the deep, close and rear areas are not relevant – especially when our adversaries achieve simultaneous effects across the spectrum.⁹

In addition, the military relationship with technology must be considered. Throughout the 20th Century, innovation was often driven by conflict; engendering a deep military understanding. The subsequent advent of the digital age has seen this relationship invert, with commercial off-the-shelf purchases and hired expertise defining how we operate. This has depleted the instinctive understanding of the environment in which the military must now operate.

Equally, it has become apparent we cannot apply our conceptual rationale to our adversaries. Whilst our actions may seem reasonable to us, they may be viewed as an act of war by others. Similarly, our adversaries may deploy their considerable capabilities, when we believe no virtual threshold has been crossed. There are no governing treaties or universal rules of engagement born of a comparable conflict.

Furthermore, our structures are ill suited to encourage understanding in an asymmetric environment. With cyber, military deception, STRATCOM and PSYOPS (amongst others) in cognitive and structural silos, speed of response is reduced. In a space that is simultaneously the domain, medium and target – this can be fatal. Especially when our adversaries successfully promote an integrated approach across their "information weapons".¹⁰

Finally, we must redefine our understanding of the target audiences. Combatants, key influencers and commanders alike are now subjected to 360-degree digital targeting. Their partners, local communities and families all now have a place on the information battlefield.

If the military resolves these intrinsic issues, it can then focus on understanding the environment itself. This is the only logical pathway to intelligent participation.

Engaging With the Environment

In the accelerating information environment, intelligent engagement will be multifaceted. Requiring a layered, coordinated and pan-disciplined response, each challenge must be treated as unique. Resisting the temptation to answer-by-scenario, the inherent agility of the environment demands an agile response. It would be dangerous and disorientating to do otherwise, as our adversaries have embraced this idea before us.¹¹

Conclusion

This article is a limited think piece, outlining the author's understanding of the information environment. It suggests that our current familiarity with the information environment only mimics understanding and that the constant acceleration of the environment makes it an uncomfortable place to operate. Through the acceptance of this state of nature, and all the actors in it, success is possible. The article subsequently suggests adjusting the lexicon, altering conceptual rationales and reassessing the force structure. These changes may then generate the speed and agility required to be competitive in the environment. Finally, the article outlines three distinct characteristics of the information environment to give a flavour of the challenges to come.

ABOUT THE AUTHOR

Major Chris Bell is a 12-year veteran of the British Army and currently serves as the ARRC's Psychological Operations planner. In his previous assignment he served as the Executive Officer for the United States Army Training Establishment's Cobra Reconnaissance Team at Fort Irwin, California. Maj. Bell has served on three separate combat deployments to Afghanistan. A native of Durham City, England, Maj. Bell holds a Bachelor's Degree in Politics from Lancaster University.

6 Thomas Hobbes, *Leviathan or the Matter, Forme, & Power of a Common-wealth Ecclesiasticall and Civill* (London: Andrew Cooke, 1651), 17.

7 Adam Candeub and Mark Epstein, "Platform, or Publisher," *City Journal*, May 7, 2018, <https://www.city-journal.org/html/platform-or-publisher-15888.html>.

8 Mark Laity, "Les apories de la communication stratégique en Afghanistan," *Politique étrangère*, 2013, <https://www.cairn.info/revue-politique-etrangere-2013-4-page-161.htm>.

9 Valery Gerasimov, "The Role of the General Staff in the Organization of the Country's Defence in Accordance with the New Statute on the General Staff, Approved by the President of the Russian Federation," *Bulletin of the Academy of Military Science*, 2014.

10 Timothy Thomas, "Information Security Thinking: A Comparison of U.S., Russian, And Chinese Concepts," *Foreign Military Studies Office*, July 2001, <https://community.apan.org/wg/tradoc-g2/fmso/m/fmso-monographs/240293>.

11 Michael Chase and Arthur Chan, *China's evolving approach to integrated strategic deterrence* (Santa Monica, CA: RAND Corporation, 2016), https://www.rand.org/pubs/research_reports/RR1366.html.

Notes on the Character of the Environment¹²

You are the vital ground

The current war is being fought over your mind. Dominion here will enable those seeking power to influence cultures, activists and powerful individuals. It provides the opportunity to set the agenda or foment discord. More importantly, it will shape your personal values system. This makes your mind an enduring asset.

Your mind is also highly exposed. Terrorists would traditionally attack physical infrastructure to further their agenda. Resultantly, vulnerable institutions such as power stations created physical defences. They now create digital defences against the same perceived risk. This makes attacking them time consuming, hazardous and expensive for the terrorist. But your mind has no such defences. Human cognitive vulnerabilities are well documented, and rarely change. Cheap to access en masse, psychological operations enable the terrorist to have real world effect in a cheap and low risk manner. Once again, there is no penalty to failure.

Don't fear the bots

Humans still make the best people. The golden age of troll created content being amplified through bot networks is almost over. Informed audiences have become inoculated against serial likes and trending algorithms. They recognise echo chambers and use fact checking sites. Even though the method still garners partial success (through sympathetic audiences, key influencers and subsequently the media) the new friction of legislation represents cost. Intelligent campaigns now focus funding on people, as the bot networks represent diminishing returns.

Governments and companies alike – including Twitter and Facebook – have legislated against bots. Algorithms hunt out their accounts and deny them suffrage. This has precipitated the rise of the sockpuppet. As human backed persona's, they enable operators to court favour with key influencers. The puppets will then be interrogated and integrated over time. If successful, they will attain a respected position amongst an ideologically backed network of activists. This subsequently enables the hijacking of a formed network, to be triggered when most beneficial.

As it has always been, this war is about people. If the sockpuppets are successful, they have the opportunity at illegitimate leadership. Ultimately, this will be harder to legislate against than bots, as individuals come with associated rights.

The Neighbourhood Watch?

Digital communities tend towards polarisation in the information environment. Whereas moderate narratives require compromise in the detail, extremist narratives appear singular and clear. The constant stream of deepfakes, alternative truth and misinformation widen the divide, as individuals seek reassurance in polar narratives. This moral alignment ensures centrist views receive less consideration. Opposing voices either get muted, or reinforce the assumed belief structure.

These communities then withdraw from engaging with traditional democratic values and processes. As a result, they are harder to engage with – especially if effects are required in their political sphere. As a protectionist organisation, your very presence in their information ecosystem may provoke an attack on the friendly core narrative.

¹² Graeff, E. (2014). "What We Should Do Before the Social Bots Take Over: Online Privacy Protection and the Political Economy of Our Near Future." Cambridge: The MIT Press.

UTILISING CULTURE AS AN ENABLER TO ACHIEVE TACTICAL ACTIONS THAT HAVE POSITIVE STRATEGIC EFFECT

Lieutenant Colonel Per Mikkelsen, Danish Army

In August 2006, by the invitation of the Iraqi Government, a Danish battlegroup was deployed to the Basra region of Iraq with my role being commander.



The author's battlegroup on patrol in 2006.

I remember we arrived with a solid grasp of the military events that had preceded our deployment, as well as a clear understanding of our orders, which was to deliver security via protection of key civil infrastructure, oil production facilities, electrical grids and, most importantly, to build up and train the fledgling Iraqi

Security Forces. What I also recall is that we only had a narrow understanding of the civil environment itself, which, during our pre-deployment analysis, seemed inconsequential. However, within days of our arrival we found that we faced not just a complex security challenge, but a complex civil/security situation. This

stemmed from the fact that the civil environment was the source of the manpower for the security forces, as well as the workforce for all key civil infrastructure. Added to this complex and multi-layered problem, it also became apparent that there were numerous socio-political challenges within the civil environment itself, emanating from the local tribal structures, which were in dispute more than agreement and often violent dispute at that.

In the area of operations allocated to me there were approximately 72 tribes. Of these, two major tribes – the Garamsha and Halaf – had an on-going, bitter internal war. This was not a war of words, but

a conventional, almost daily, exchange of fire. The war and the disbursement of the national army had provided the population with a huge 'take your own weapons for free' option, which obviously had been a great success. Everybody had at least one Kalashnikov rifle and a matching RPG or mortar system as well.

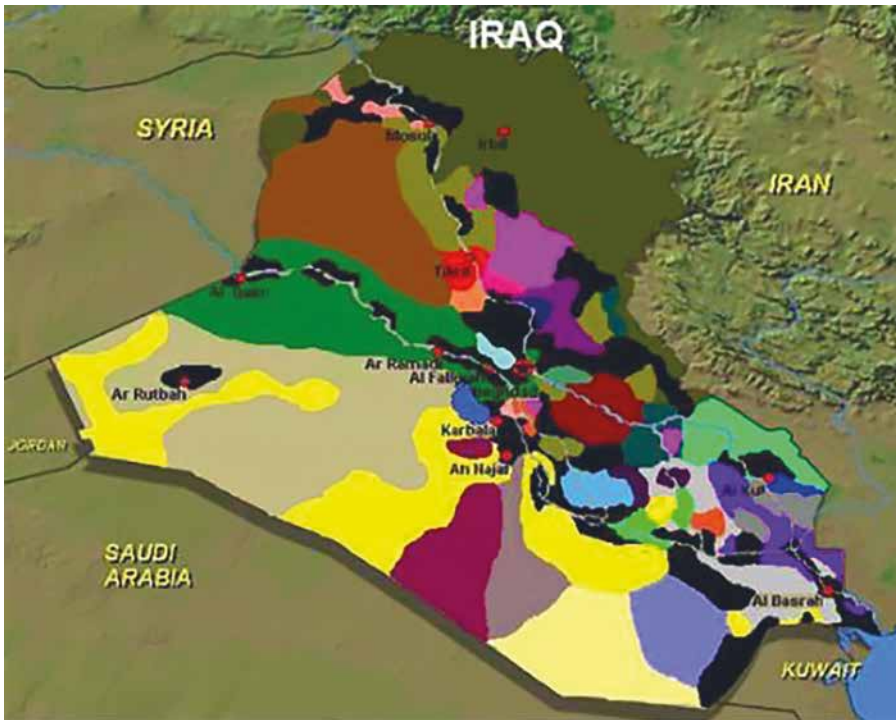


Figure 1 – Iraq’s tribal areas. Each colour represents a different tribe indicating the inherent complexity for C2.

The conflict between the two tribes had become not only a local issue, but also a regional concern due to the exchange of fire often blocking the highway between the Baghdad and Basra. This made the issue a top strategic priority.

Clearly the first priority was to solve this problem, but the two tribes were not willing to meet together to discuss the issue, nor did they believe this was an issue for external forces to involve themselves in. We concluded that if they wouldn’t meet that we would be forced to take control of the situation ourselves. As such we began to formulate a military plan that we knew we were ready and resourced to execute. However, intelligence indicators found that one of the tribes had at least 1,000 armed men and the cost/benefit analysis of taking this on immediately excluded any conventional military solution. Therefore, without the resources needed, nor a functioning security force to support us, we were at a dead end.

Luckily for us, amongst our team from the Ministry of Foreign Affairs was a Danish-Iraqi man who had lived for more than 20 years in Basra. Not only could he converse in the local dialect, but he also understood the culture and within this, the local customs and norms.

We discussed with him the problem we faced and he advised we arrange a shura with the regional Sheik Board (a traditional board with the most respected regional leaders), and negotiate a ceasefire agreement. The Sheik Board accepted and supported the proposal.

Surprisingly, however, this was not enough to convince the two tribal leaders to meet. It came to light that their justification was concern about their physical security at any proposed meeting. To counter this, my Danish-Iraqi colleague came up with what sounded like an unconventional plan at the outset, but was to become the much-needed solution to the problem we faced.

He drove to the local bazaar to buy two traditional Iraqi shrouds and, arming himself with these instead of the more traditional rifle, we visited each tribal leader in turn, where upon this item of clothing was presented as a gift. What I didn’t realise at the time was that this

unconventional plan was actually utilising the culture and symbolism of the local customs, as each presentation was the local and respected manner in which to guarantee a person’s safety. Much to my astonishment it worked and the following week we held the conference. The military solution, which we had originally thought would be the only way forward, with its inevitable loss of Danish life, collateral damage and ensuing chaos and violence, was avoided by the issuing of two, locally made \$2 shrouds.

This meeting is a story in itself and the success of this effort highlights the importance of thinking outside the box. Additionally, a further example of how cultural understanding can create positive outcomes was what happened after the conference itself when I was preparing to return back to base to lead an anti-smuggling night patrol. Knowing our convoy would need to pass through the Garamsha tribal area to get to the starting point of the planned patrol, I extended an invite to them to join our convoy, using the offer of free security as a hook. My real motivation was to use the journey time to have a talk with the Garamsha leader who I had offered a place in my vehicle, using the opportunity to explain the good work we were conducting in his district. He agreed to join us and we commenced our three-hour drive together, eventually arriving in the Garamsha area where we stopped to part ways. The tribal leader, who was called Ahmed, had so far not been the friendliest person I had shared a journey with, hardly saying a word the whole time. However, upon arrival at his village he suddenly changed his attitude. Upon exiting, he exchanged a bombastic hello in Arabic and then



A Shura with local tribal leaders that the author (centre), participated in.

he hugged me, held my hand and with a big friendly smile and invited me into his home. Later I understood that, in their eyes, they perceived me as the tribal leader of the Danish and because I had just protected him through 'enemy territory', he offered me his sincere friendship as was customary in his culture. Much to my surprise and relief, negotiations and shared collaborative projects on protecting/developing key civil infrastructure in the Garamsha area suddenly became easier from that evening forward.

I discovered that whilst transactional military measures of 'do what I say or face the consequences' may enable temporary domination, as soon as you leave the vicinity the old status quo will return and your efforts will then be undermined.

Conclusion

These are just a few examples from my time in Iraq, which highlight the value of being able to navigate a national culture and how doing so can unlock local practices that result in highly sought-after tactical enablers. As the Hofstede's Cultural model below shows, values and rituals are at the core of any person's culture, often manifested in their overt practices and behaviour. Reaching out to these and placating them can create a personal connection and gain emotional buy-in from the person involved. Such buy-in can shift a person's outlook or opinion onto something more positive and enable you to align it with your desired outcomes.

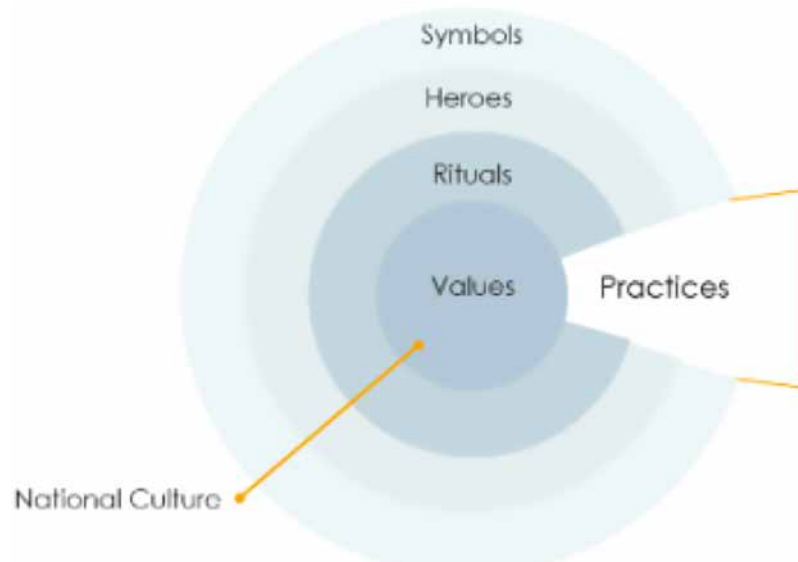


Figure 2 – Hofstede's cultural model perceives culture as several everlarger circles, starting with the core (which is assumptions) and encapsulating around that with each larger circle; values and norms, then subjective cultural traits.

Such realisations from my time in Iraq also cemented in my mind the critical requirement for civilian expertise on operations (a key tenant of the NATO Comprehensive Approach), without which this situation could have turned out very differently.

But what is also crucial is not just this cultural knowledge requirement, but the skill of knowing when to apply it to achieve outcomes that lead to long term, sustained improvements. I have concluded that establishing trust in Iraqi cultures instigates much longer-term benefits than that compared to giving out 'sacks of dollars' for quick win projects. Added to this trust is a much more successful transformational tactic in gaining influence, than that of falling back on our more traditional military means used to cajole the human terrain to fit in with your mandate. I discovered that whilst transactional military measures of 'do what I say or face the consequences' may enable temporary domination, as soon as you leave the vicinity the old status quo will return and your efforts will then be undermined.

ABOUT THE AUTHOR

Lieutenant Colonel Per Mikkelsen is a 36-year veteran of the Danish Army and currently serves as a Civil Military Interaction planner for the ARRC. In his previous assignment he served as an Institute Director at the Royal Danish Defence College in Copenhagen, Denmark. Lt. Col. Mikkelsen has participated in military operations across stabilisation and humanitarian activities in Iraq and the Balkans. A native of Copenhagen, Denmark, Lt. Col. Mikkelsen holds a Master's Degree in Military Studies from the Royal Danish Defence College.

SPECTRUM MANAGEMENT: HOW THE ARRC SHOULD PLAN FOR SPECTRUM USE

Captain Eric Copeland, United States Army

All military personnel have been involved in a situation where they could not communicate on their military-issued radios. While this could be due to operator error or line of sight interference, imagine if it was because an operator's radio frequency was interfering with civilian television station broadcasting.

What if every time one pressed the push-to-talk button to speak, the television station in a nearby house 'blipped' or an Unmanned Aerial Vehicle lost its signal because the frequencies were crossed? The electromagnetic spectrum (EMS) is a vital part of operational planning and requires dedicated management and consideration when conducting any operation.

Spectrum management is more important today than ever before due to rapid commercial and military technology evolution over the past two decades, which has allowed for new capabilities that have stretched the limits of operational capacity. While many would see this development as a positive, it has put an increased strain on spectrum management, especially within the military. Defined, the spectrum is the entire range of wavelengths of electromagnetic radiation.¹ All communications assets used today produce some sort of radio wave, from satellites and mobile phones to televisions and microwaves. In order to achieve operational success it is crucial that a spectrum manager ensure that coordination with a host country has been conducted, and that frequencies are assigned and used appropriately

to avoid unintended interferences and, ultimately, a communications failure.

Spectrum as a Resource

When people think of natural resources they automatically think of things that they can physically touch, such as water or oil. Although less tangible, the EMS is equally a natural resource and must always be viewed as such. Frequencies are a finite resource and, consequently, competition for them will be subject to supply and demand. In total there are 193 countries and more than 800 private entities that belong to the International Telecommunications Union (ITU).² The ITU is an organisation that is dedicated to providing the world with the global radio spectrum. It develops the technical standards that ensure networks can interconnect and improves access to information and communications technologies in under-developed countries.³

The ITU and its members hold a conference every four years to discuss current and future spectrum needs and to resolve current interferences, as well as address spectrum between countries. The EMS ranges from 3 KHz to 300 GHz and includes all radio frequencies.

In addition, government and private entities present future technologies to request that radio frequencies be allocated for their device(s) to use. These technologies range from military equipment to new mobile phones that companies such as Samsung or Apple are developing. For any new technology to be developed, it should be presented at the ITU conference. Military leaders need to become more proactive in developing their technologies. At the same time, governments around the world must realise it is in their own best interest not to sell off the entire spectrum and to reserve some for current and future technologies in the defence industry.

The Congested Spectrum

The amount of useable spectrum is decreasing every year as technology is rapidly evolving, requiring more frequency allocations. When the spectrum is not coordinated properly it causes interference, which must be de-conflicted through coordination with host countries and spectrum managers. Some interference is intentional. For example, when an adversary uses electronic warfare tools, such as jammers, to contest the electromagnetic environment

¹ "Spectrum," Oxford Living Dictionary, accessed December 12, 2018, <https://en.oxforddictionaries.com/definition/spectrum>

² "About International Telecommunications Union (ITU)," International Telecommunications Union, accessed December 12, 2018, <https://www.itu.int/en/about/Pages/default.aspx>.

³ "About International Telecommunications Union (ITU)."

and block GPS and communications platforms, much of this interference can be avoided by conducting simple coordination. Another example is remote-controlled garage doors; a garage door opener can interfere with a neighbour's garage and a person could potentially open two garages at one once without knowing it. In many cases, interferences are unknown by the person causing the disturbance.

Militaries are under constant pressure when working within the spectrum. They must compete with the adversary, commercial and other government entities to create an environment that friendly forces can communicate freely with and with a minimum of disruption. Every operation must consider that host countries possess services that cannot be interrupted. These include commercial, military operations, air traffic control and emergency services. As the commercial industry continues to expand, militaries will continue to 'feel the squeeze' in the spectrum environment as host countries look to profit from selling the spectrum to civilian organisations. Host countries must also realise the strain they are putting on their own military organisations and develop and guarantee allocation of frequencies that militaries can operate within and develop.

Operational Planning

All spectrum managers must insert themselves early into the operational planning process. Failure to do so could result in a lack of frequencies and resources for an incoming unit to use during operations. While it is a commander's responsibility to ensure those under his or her command can communicate, they must empower their spectrum manager to manage and coordinate the requirements for the operation. Furthermore, organisations need to realise spectrum management is not just a G6 function. It is a collaborative effort between the G2, G3, G6 and JFIB staffs to ensure that all spectrum requirements are understood and coordinated. It is critical that the spectrum manager speak with the different entities that utilise the spectrum. Coordination for frequencies to be protected, so that operations can run smoothly and all warfighting functions can use the spectrum to gain an advantage, is vital. The Spectrum Planning Phases Diagram (Figure 1) depicts the various planning phases a spectrum manager must navigate during a major operation.⁴

Shape. Once the area of operation is determined, the spectrum manager must begin initial discussions and negotiations with the host country to determine the frequency allotments the unit will receive to conduct operations.

Deter. Spectrum managers will shape the early stages of the operation from the moment small forces, such as special operations, have entered the environment.

Seize. At this point the spectrum manager should have already completed host country coordination and have moved on to frequency assignment. This becomes critical as units prepare to conduct major operations and are testing their communications equipment. The unit staging area can often become the most congested part of the spectrum and requires great focus to ensure that units are using the correct frequencies and not committing spectrum fratricide.

Dominate. It is at this point that the unit transitions to the dominate phase, which is when major operations take place. The spectrum, by this time, should be completely understood and owned by the unit.

Stabilise. Once major operations have been completed, units transition into the final two stages of spectrum planning, which are stabilisation and enabling civil authority.

Enable. During these phases of the operation, military units begin to re-deploy and the spectrum is gradually handed back to the host country. This will include ensuring the host country has a responsible plan and policies to help govern how the spectrum should be used in the future.

Joint Electromagnetic Spectrum Operations Execution Cycle

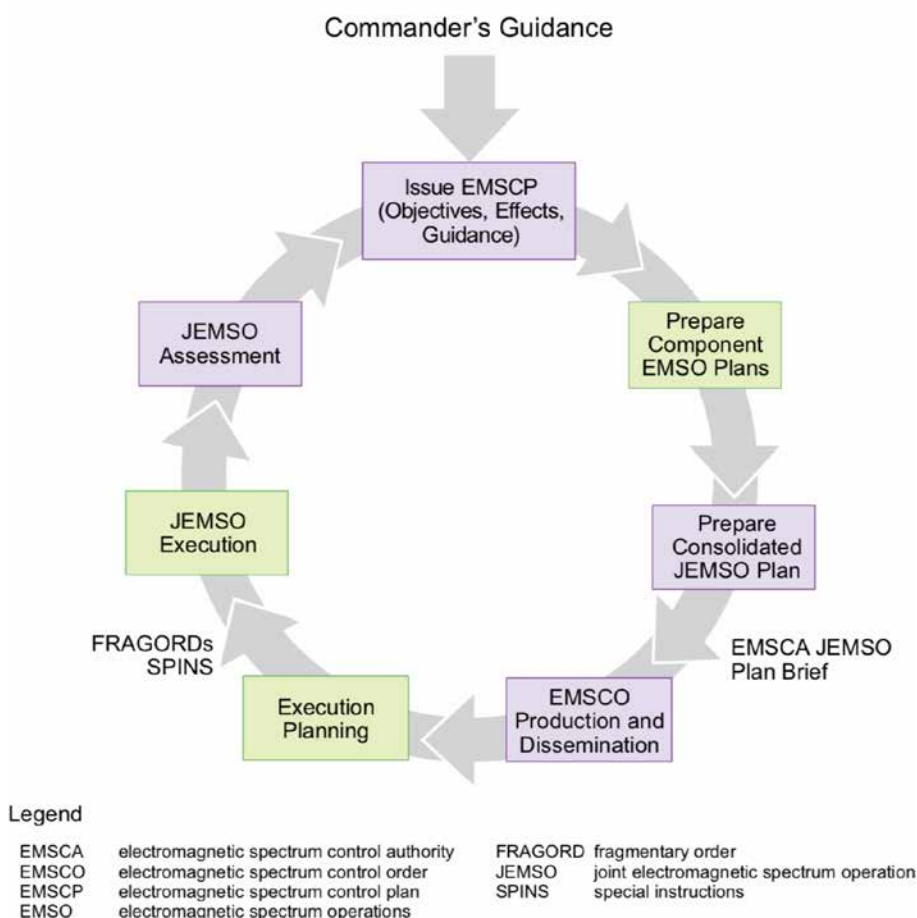


Figure 1 – Notional Joint Electromagnetic Spectrum Management Operations across the Phases of the Operation

4 Department of Defense, Joint Doctrine Note 3-16: Joint Electromagnetic Spectrum Operations (Suffolk, VA: Joint and Coalition Warfighting Center, 2016), VI 3-VI 4.

Conclusion

Spectrum management has become a significant area of concern for units as they move into an area of operation. It is essential that spectrum managers are able to enter the planning process early in order to assist in accounting for, and assigning, this limited resource as well as prevent interference. With more constraints than ever before being placed on military units, spectrum usage, if coordinated early, can be effectively managed and any problems resolved. The spectrum is more than just a layer of radio waves. It must be addressed during all phases of the operation as it can be used offensively, defensively and for stabilisation purposes.

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Captain Eric Copeland is an eight-year veteran of the United States Army and currently serves as the Spectrum Manager for the ARRC. In his previous assignment he served as the Signal Company Commander for the 1st Stryker Brigade Combat Team, 1st Armored Division at Fort Bliss, Texas. Capt. Copeland has led signal operations as part of Operation NEW DAWN in Iraq. A native of Charlotte, North Carolina, Capt. Copeland holds a Bachelor's Degree in Management Information Systems from Xavier University.

USING WIRELESS TECHNOLOGIES TO ENABLE AGILITY IN THE ALLIED RAPID REACTION CORPS

Captain Jonny Dale, British Army

Throughout history technological advances have defined the success or failure of empires and their armies. Inventions such as the longbow and gunpowder enabled military dominance and significantly enhanced the fighting prowess of those who possessed them. In the information age this is no different. Modern militaries advance or stall on their ability to widely share vast quantities of information securely and quickly.

The modern headquarters features a vast array of communications and information systems (CIS). These provide staff officers with the situational awareness required to advise decision makers and to disseminate their direction across the battlespace. Each staff officer has got one, two or sometimes three laptops on their desk, each of which requires a

The modern market is not limited to WiFi. An interesting alternative is Light Fidelity (LiFi), which transmits information via light. Where WiFi uses radio waves to connect, LiFi looks at an alternative area of the electromagnetic spectrum – visible light – to turn every light source into a potential router.

wired connection to a network. When setting up a headquarters it is these wired connections that take the longest to set up. Consequently, the larger the headquarters, the more CIS infrastructure it requires and the less manoeuvrable it becomes. The commander of the Allied Rapid Reaction Corps (ARRC) has made clear that to command a force its headquarters must survive. By deduction, this requires smaller headquarters and regular manoeuvre to avoid detection by an adversary. For the Signals community the exam question is, “How do we reduce the CIS infrastructure without diminishing capability?” The answer in this case could be through wireless (WiFi) technology.

WiFi seems to be an obvious solution and has been around for years. We use it at home, in hotels and even on public transport. The key concern is that security issues could put a headquarters at risk. For example, any keen IT enthusiast with a good quality receiver could detect a WiFi signal at a range of several kilometres and it requires a relatively low level of cyber knowhow to hack a WiFi network. In addition, a headquarters can be identified by its emissions and adding a large WiFi network to the picture would cause it to ‘light up like a beacon’ on any detection system. Despite this, it has its advantages, too, such as ease of use and fast set up speeds. A simple encrypted WiFi network would undoubtedly

improve a headquarter’s agility through the reduction of cabling. Given the above, the use of WiFi in deployed areas depends on the environment (i.e. is it one amongst many WiFi networks?), the classification and durability of the information being exchanged and the capabilities of the adversary.

The modern market is not limited to WiFi. An interesting alternative is Light Fidelity (LiFi), which transmits information via light. Where WiFi uses radio waves to connect, LiFi looks at an alternative area of the electromagnetic spectrum – visible light – to turn every light source into a potential router. The light source dips and dims extremely quickly, faster than the human eye can detect, to pass information in its beam. This information can be collected by a photodiode connected to your computer and translated into a language understood by the user. The benefits of this system are similar to WiFi, but potential connectivity speeds of up to a hundred times faster and it is not detectable to anyone including adversaries if the light is blocked. This means that within a closed building or tent the information is secure. On the downside, the technology is still in its relative infancy. This means it comes at a far greater cost when compared to WiFi and is less reliable. This should not rule it out, however, and it is one to watch in the future.

Circa 2012-2013 a variation to WiFi known as 'WiGig' was tested with a view to increasing internet speeds. Where WiFi emits a frequency of 2.4 GHz to 5 GHz, WiGig was designed to function at 60 GHz. This small change enabled internet speeds of 40-50 GBps, a massive increase over the 7-8 GBps possible with WiFi. At the time, though, technology was lagging behind the concept, but this is no longer the case. In the case of WiGig the change in frequency also alters the way the signal behaves. It cannot pass through walls and it is reliant on specially paired devices within line of sight. This rules it out in the average home which functions with a single centrally located router. Within a headquarters, however, this could be an advantage. If the signal cannot pass beyond line of sight then the security of the information is increased and the electromagnetic footprint of the headquarters is reduced. The difficulty with WiGig, however, is the expense associated with purchasing hundreds of devices which are compatible with it. It would require a full technological refresh of the ARRC's deployed headquarters, which may be deemed an unacceptable risk given the pace of technological change and the consequent appearance of newer, more effective, technologies.

This initial glance at three different wireless technologies has highlighted that there is not yet an obvious contender to fill the requirement within the ARRC. Due to the clear requirement for a wireless headquarters, the Field Army Science and Technology (FAST) board have approved funding for the first year of a three-year ARRC proposed project to analyse all options. Their research will provide in-depth analysis into the three technologies explained above and more, with a view to delivering a wireless headquarters solution sometime during 2020-2021. Prior to this, however, the ARRC staff can likely expect to see experimentation and prototype networks in the headquarters as early as Exercise ARRCAD FUSION 2019.

This initial glance at three different wireless technologies has highlighted that there is not yet an obvious contender to fill the requirement within the ARRC. Due to the clear requirement for a wireless headquarters, the Field Army Science and Technology (FAST) board have approved funding for the first year of a three-year ARRC proposed project to analyse all options.

ABOUT THE AUTHOR

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EXERCISE ARRCADÉ GLOBE: THE FUTURE FOR GEO COLLABORATION?

Lieutenant Colonel Simon Finch, British Army
Major George McCrea, British Army
Staff Sergeant David Thomas, British Army
Sergeant Thomas Glister, British Army

Exercise ARRCADÉ GLOBE is the pre-eminent NATO geospatial exercise and is delivered by the Allied Rapid Reaction Corps (ARRC) as part of the Engineer and Civil Military Interaction (ECMI) branch training.

It draws together experience and ability from across the NATO Command and Force structures to offer the opportunity for national geospatial entities to participate in a multinational collective training environment. In July 2018, a total of 156 participants from 13 different organisations representing 11 different countries descended on the Royal Marines Barracks in North Devon, England to take part in the exercise.

Aim

The aim of the exercise was to deliver a multi-layered tactical command post exercise (CPX) in a conventional warfighting scenario. Do so enabled various military geospatial cells to provide geospatial support to a corps headquarters and below in order to develop pan-NATO understanding and collaborative working practises.

The key theme was to develop the idea and mind-set of analysts, not technicians.

Exercise Construct

The exercise was designed to span five levels of command, from a 4-star headquarters down to battalion/battlegroup level. A daily situational awareness brief (SAB) was used to control events and generate analytical opportunities from which teams developed tasks.

The NATO Joint Warfare Centre authorised the use of the fictional SKOLKAN scenario. Exercise ARRCADÉ FUSION 2017 was used as the enhanced 'exercise wrap' as well as enabling the use of the operational staff work that had been generated by the ARRC the previous year.

Representatives from JFC Brunssum acted as higher 4-star headquarters, while there was strong support from the NATO Command Structure representing the 3- and 2-star levels of command. The ARRC geospatial cell was joined

by geospatial cells from NATO Rapid Deployment Corps Turkey and Italy, as well as Multinational Division-Southeast. Spread across the different command levels were national elements from Canada, the Czech Republic, Denmark, Norway, Portugal, the UK and USA.

Geospatial support to the NATO Force Structure is the responsibility of the framework nation, which means there is a rich blend of knowledge and experience to draw upon, helping to push forward collaboration.



Exercise ARRCADÉ GLOBE 2018 deployed technical accommodation and real life support laydown at Royal Marine Barracks-Chivenor.



The ARRC augmented geospatial cell, which added representatives from the Czech Army, Polish Army, NRDC-ITA, NRDC-TUR, MND-SE and the UK's 42nd Engineer Regiment (Geospatial).

Having a variety of different countries, working practises, ranks and experience levels was a deliberate act in order to force an effective spirit of collaboration, which resulted in the harnessing of best practises from across the Alliance.

be using the same baseline data; this is a vital ingredient to prevent fratricide (cognitive or physical).

Prior to deploying on the exercise, all the participants were sent the same authorised data. This simple process was very time consuming.

It put a great deal of pressure on data-managers as they were working on compressed timelines to ensure that data processing and husbandry was correctly achieved. There is currently no other way of doing this as the NATO Force Structure and national elements work on national CIS, thus precluding a 'plug and play' option.

displaying the same information, but in a multitude of different ways. The result is that end-users are often not 'fighting off the same map'.

Conceived collaboration through multinational design

From the outset of the planning it was clear that participants were keen to attend given the multinational nature of the exercise, which has been a theme of Exercise ARRCAD GLOBE throughout time. Whilst there have always been participants from various countries and organisations, it has not always been possible to achieve a collaborative working environment, which is something ARRCAD GLOBE 18 aimed to address.



NRDC-ITA's geospatial warrant officer using UK bulk production equipment.

Fighting off the same map

NATO geospatial practitioners have always considered best practise the ability to 'fight off the same map'; why would anyone do differently? Whilst this concept is easy to understand, it is challenging to achieve. The underpinning resource that allows the creation of 'the same map', along with a variety of other analytical and decision support products, is the data. No matter what the exercise or operation, all NATO countries should

Whilst using common baseline data meant that everyone had the same start point, the end points reached varied. This is salient when one thinks of 'the rifleman in the foxhole' analogy. It must be straightforward for troops on the ground to read and understand a map so as not to inhibit tactical thinking. There is currently no NATO standardisation for symbology and the marginalia of a map, which has resulted in a wide spectrum of products



UK reservists manning the mobile field deployable bulk distribution system.



The ARRC's national representatives from Canada, Denmark, Italy, Romania and the USA on the Visits Day, being shown the UK's mobile field deployable analytical systems.

Knowledge-sharing was addressed through end of day wash-ups. All participants, irrespective of rank, would congregate in the briefing room. Prior to this the exercise control (EXCON) team had chosen the five best products of the day, which were considered for utility rather than adherence to cartographic principles. The analyst(s) responsible for the product briefed the assembled crowd on their thought process in order to impart knowledge and analytical ideas that could be taken away for the benefit of all. Whilst this enabled the sharing of ideas, it did not foster a truly collaborative, multinational, pan-organisational working environment; something to work on for ARRCAD GLOBE 19.

Summary

Exercise ARRCAD GLOBE 2018 was a step forward in enhancing NATO's geospatial collaboration. Whilst it offered the opportunity for building relationships within the Alliance and across countries, it did not necessarily generate true collaboration and interoperability, which are key markers for operational and strategic success.

The in-depth and pragmatic nature of the after action review (AAR) meant that these points were captured for future planning and the design of Exercise ARRCAD GLOBE 19 will factor in the cross-country/organisational desire of participants to help strengthen further working relationships and yield a more collaborative outcome.

ABOUT THE AUTHORS

Lieutenant Colonel Simon Finch is a 28-year veteran of the British Army and currently serves as the ARRC's Chief Geographic Officer. Having served the majority of his career as an Air Support and Armoured Engineer, in his previous assignment he served as the Chief of Staff for the Royal Engineers Geographic branch at the Joint Forces Intelligence Group at RAF Wyton in Cambridgeshire, England. Lt. Col. Finch has deployed on an array of combat, humanitarian and peacekeeping operations across the Balkans, Iraq, Afghanistan, the Falkland Islands and Kenya. A native of Somerset, England, Lt. Col. Finch holds a Bachelor's Degree in Agricultural Land Management from Harper Adams University and a Master's Degree in Geospatial Intelligence from Cranfield University.

Major George McCrea, British Army, currently serves as the Geographic Production and Planning Officer for the ARRC. Whilst in his first specialist geographic role, he has previously deployed to Afghanistan and completed a number of exercises in a planning capacity helping to harness Geographic support. He holds a Master's Degree in Geospatial Intelligence.

Staff Sergeant David Thomas, British Army, currently serves as the ARRC's Geographic Cell Production Manager and has under his belt more than 16 years of experience as a Geographic Analyst and Technician. In his previous assignment he served as a Force Cartographer as part of the British Army's contribution to the UN mission in Cyprus. Staff Sgt. Thomas holds a Bachelor's Degree in Applied Computing.

Sergeant Tom Glistler is a 14-year veteran of the British Army and currently serves as the Geospatial Data Manager within the ARRC's Engineer and Civil Military Interaction branch. In his previous assignment he served as the Geospatial Sergeant for British Forces Headquarters in Episkopi, Cyprus. Sgt. Glistler has previously deployed on operations to provide geospatial support in Iraq and Afghanistan. A native of Norwich, England, Sgt. Glistler holds a Foundation Degree in Applied Computer Science from Sheffield Hallam University.



NRDC-TUR's Chief of Geospatial and a Portuguese Army geospatial officer discussing the finer details of analytical techniques.

THE SICILY CAMPAIGN OF 1943: LESSONS FOR A PROSPECTIVE JOINT TASK FORCE

Major Andrew Cox, British Army

It is no wonder that Sicily is the destination of both Exercise ARCADE CAESAR 2018 and Exercise ARCADE BUGLE 1-19, as the invasion of the island in July 1943 is an interesting study in the inherent problems and frictions that can face a joint task force headquarters (JTF) commanding troops from an alliance of countries.

This essay will highlight some of the main lessons that a JTF can learn from the 1943 Allied campaign in Sicily.

The Allied invasion of Sicily (Operation HUSKY), which began on 10 July 1943 and lasted for 38 days, was born of the need to continue pressure upon Axis forces in the Mediterranean Theatre of Operations following the conclusion of operations in North Africa. It was a strategic imperative for the Allies to open a new front, as the projected invasion of Northwest Europe was not yet ready. The campaign was only the second conducted under joint US/UK command after the invasion of Northwest Africa. It featured many unconventional and new modes of warfare, such as massed amphibious, parachute and gliderborne operations, which demanded an unprecedented level of alliance and inter-service cooperation. Such a high level of coordination was quite unfamiliar

and even considered threatening to the organisations concerned at the time. Therefore, many frictions were encountered, mistakes made and lessons learned.

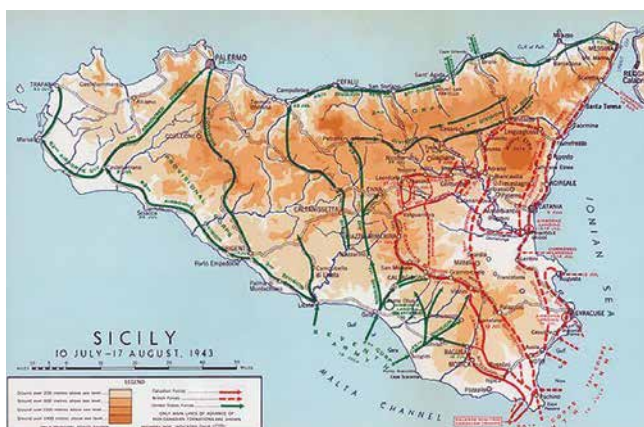
One such lesson was the conduct of the joint headquarters and its relationship with its subordinate commands. During HUSKY the joint headquarters (Allied Force Headquarters (AFHQ), based in Tunisia) was not present at the operational level in Sicily itself, and component commands planned almost in isolation. The result was a campaign that was land component planned and dominated, which overlooked opportunities for joint action. The greatest example of this was a critical opportunity that was missed and would have trapped Axis forces in

Sicily by closing the Messina Strait early in the campaign. Each component independently dismissed the heavily defended strait as not feasible, but as a joint operation it would have been a possibility. There is a clear lesson here that land component dominance must be resisted and all

component commands must be robustly directed and fully integrated into the plan. This will become critical to remember when the ARRC adopts the integrated and stretched model, which combines the JTF and Land Component Command within the same headquarters.

Linked to the previous point, another lesson identified was the need for a common operating picture of the battlespace amongst the components at the operational and tactical level. Failure of the Allied forces to do this led to many missed opportunities and mistakes, especially in the amphibious assault stage of the operation where joint action was most critical. Amongst the land and maritime forces, a level of integrated action was achieved out of proximity and necessity. This led to an impressive level of coordinated action: The 'Beach Bricks', joint units configured for the management and clearance of the beaches, which were successful as was the provision of naval gunfire to support the most critical phases of the operation. Later, the maritime component enabled a series of battlegroup-sized amphibious attacks on the northern coast of Sicily with the intent of outflanking Axis defensive positions.

However, the air component was not integrated at the operational and tactical levels, and so it acted independently. This led to gaps in fighter coverage,



A Campaign Map of Operation HUSKY.

which was exploited by the Luftwaffe, as was the lack of tactical air support to the land component in the close battle. It also led to one of the great tragedies of the operation when a lack of coordination and battlespace deconfliction caused the invasion fleet to mistakenly fire en masse at the formations of transport aircraft that carried the airborne contingent, leading to serious losses of soldiers, pilots and aircraft. It will be up to the JTF to ensure that the efforts of the component commands are pulling in the same direction, ensuring that their actions are properly deconflicted and are mutually supporting both in the planning and execution phases.

The Allies also failed to engage their Axis opponents in the deep battlespace. Due to the detachment of AFHQ from the operational area, and the land dominance of the headquarters in Sicily,



Operation HUSKY demanded a previously unprecedented level of Inter-Component cooperation.



Operation HUSKY featured some novel and unpractised modes of Inter-Component warfare with mixed success. This US Waco Glider was one of many that did not make landfall; a victim of inter-component and operator inexperience.

too great an emphasis was put on the close land battle to achieve the decisive effect. Throughout the operation, the air components of both the UK and US maintained a focus on strategic bombing of the Axis heartlands. Neither country sufficiently resourced efforts to understand the Axis rear area and conduct deep offensive operations. This allowed Axis forces breathing room to manage their battlespace and components better, conducting an organised withdrawal to a succession of strong positions in the close battle whilst preparing their rear area for evacuation. Ultimately, they managed to evacuate 53,545 soldiers, 50 tanks, 9,185 vehicles and almost 12,000 tonnes of stores over the Straits of Messina to fight again with virtually no Allied effort made to interdict them. The JTF role demands that the headquarters possess a full appreciation of the whole battle – close, deep and rear – and coordinate the efforts in each to achieve a decisive effect.

To conclude, this essay touched on the salient lessons that a NATO HRF(L) can learn about the conduct of the JTF role from the 1943 Sicily Campaign.

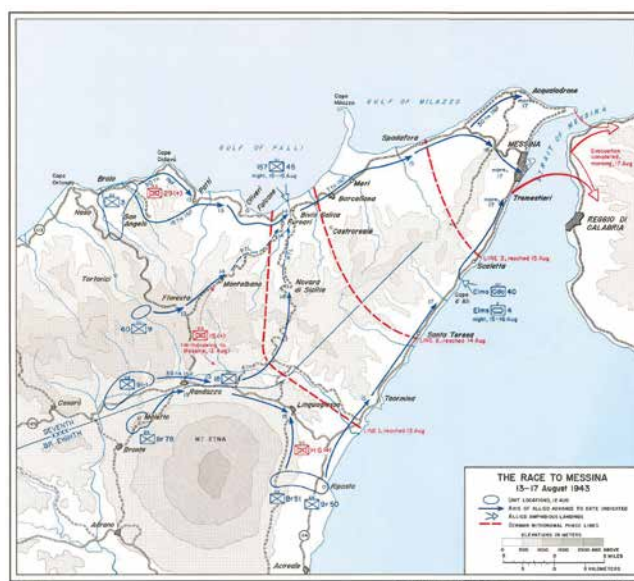
These include the importance of unifying component command planning; ensuring the land component does not dominate the planning process to the detriment of the campaign; ensuring a common battlespace picture across the component commands; and, finally, making sure

that there is an appreciation of the close, deep and rear battle across the force. The lessons the Allies learned in Sicily were later put to good use when the campaign continued onto the Italian mainland and when subsequent amphibious invasions

were conducted in Normandy and the South of France in 1944. All of these were much more successful Joint Allied actions in comparison. A prospective NATO JTF should heed these valuable lessons from history.

ABOUT THE AUTHOR

Major Andy Cox is a 17-year veteran of the British Army and currently serves as the ARRC's Movements Planning Officer. In his previous assignment he served as a Squadron Commander at the British Army's Defence School of Transport in Leconfield, England. Maj. Cox has led combat logistics operations in Iraq and Afghanistan. A native of Wolverhampton, England, Maj. Cox holds a Master's Degree in Military History from the University of Birmingham.



A map of the final stage of the campaign. The Axis forces were able to stage an orderly withdrawal from Sicily, aided partially by the Allied lack of appreciation for Inter-Component Deep Offensive Operations.

OPERATION HUSKY: ITS RELEVANCE FOR A CONTEMPORARY NATO JOINT TASK FORCE HEADQUARTERS

Major James Grant, British Army

The aim of Exercise ARCADE CAESAR 2018 (AC18) was to study the 1943 Allied campaign in Sicily – codenamed Operation HUSKY – and to draw contemporary issues and lessons from a joint task force (JTF) headquarters perspective whilst further developing work on corps recalibration toward a warfighting role.

The three key lessons identified were: The importance of a JTF headquarters to ensure unity of purpose and coherence of operational priorities during both the planning and execution of an operation; the need for an agile battle rhythm to

enable planning at different speeds (e.g. SOF vs conventional forces); and the difficulties in the governance of occupied territories (e.g. re-occupied NATO territory or occupied non-NATO territory).

Exercise AC18 was an ARRC collective training event that included senior representation from a wide variety of NATO formations, to include US Army Europe, affiliated multinational divisions and British Army brigades. The week-long staff ride followed the 1943 Sicilian Campaign from the beach landings on the Avola Coast, across the Catania Plain, through the fortress towns of Centuripe and Adrano and finished looking across the Straits of Messina toward mainland Italy.





Figure 1 – Operation HUSKY, D-Day concept.

The campaign was studied from an Allied and Axis perspective, reflecting on the strengths and weaknesses of both sides and drawing lessons for a contemporary JTF headquarters. This essay will provide historical background to three of the key lessons identified.

1. The importance of a JTF headquarters to ensure unity of purpose and coherence of operational priorities.
2. Battle rhythm agility.
3. Governance in occupied territories.

It does not include an overall campaign overview as this is covered in Maj. Cox's excellent piece that complements this. This article also does not cover all of the lessons identified during the exercise, but these are available from the Exercise ARRCAD CAESAR public WiP and the ARRC lessons identified portal (for those posted to the ARRC), or by contacting the author.

The importance of a JTF HQ to ensure unity of purpose and coherence of operational priorities

Whilst the other two sections in this essay detail the background to standalone lessons identified, this paragraph is an

amalgam of several individual lessons.

Lesson Identified: Understanding and explaining campaign objectives. Clarity in the definition and understanding of campaign objectives and supporting effects is vital. This clarity should also enable the right level of collaboration from the components.

Lesson Identified: Components. As well as the standard five components (MCC, LCC, ACC, SOF and JLSG), other areas, such as cyber and CEMA, were discussed in a "component-like" manner. Absolute clarity and shared understanding of the commander's intent, main effort and end state at the operational level also help to generate collaboration amongst components.

Lesson Identified: Influencing the planning process of Multinational Detailed Deployment Plans (MNDPP). The ARRC will need to influence the MNDPP to ensure that the plan delivers the right forces and support at the right time.

The strategic direction for Operation HUSKY was the result of the Casablanca conference (14-24 January 1943), which was attended by Prime Minister Churchill and President Roosevelt and their

respective military staffs. Following the conference, the Conduct of War in 1943 memorandum, dated 19 January 1943, recommended the occupation of Sicily with the objectives of:

- Making the Mediterranean line of communication more secure
- Diverting German pressure from the Russian front
- Intensifying the pressure on Italy

At the time the accepted convention was for British 'joint' planning to be conducted by a committee of peers across the three services. Although Gen. Alexander was the deputy commander under the supreme commander, Gen. Eisenhower, the planning had to be agreed to by Alexander in Algiers, Adm. Cunningham in Malta and Air Marshal Tedder in Tunis. However, until May 1943 their focus was on the successful completion of the North African Campaign. Therefore operational planning was left to a relatively junior team of planners led by Maj. Gen. Gairdner, based in Algiers. The geographical dislocation of the component headquarters and lack of a joint headquarters to coordinate planning resulted in significant changes by the various commanders and widespread

disagreement on operational priorities that were not resolved even during the campaign itself.

The lack of a joint headquarters also resulted in significant issues during the execution of the Sicilian Campaign. The most tragic incident occurred on D+2 when the 504th Parachute Infantry Regiment was due to reinforce the 1st (US) Infantry Division. The route taken by aircraft involved in this hastily arranged parachute drop was directly over the beachheads and took place only 30 minutes after a German air raid. Although some gun sites and ships had received details of the flight path, others had not. Therefore as soon as the lead C-47s arrived over the beachheads they were subject to anti-aircraft fire. Of the 147 planes involved, 23 were shot down with a further 37 severely damaged.

Battle Rhythm agility

Lesson Identified: The battle rhythm(s) (BR) for planning and execution need to be agile. The BR must enable planning at different speeds, e.g. SOF vs conventional forces. It must also be able to execute at different speeds, e.g. to contest the initiative.

In addition to the earlier example where information of the 504th Parachute Infantry Regiment's route was not provided to the maritime component and the anti-aircraft batteries at the beachhead, the importance of an agile BR was highlighted by the lack of amphibious operations in support of the final advances towards Messina. Throughout the campaign there were opportunities for significant operational gains from amphibious operations. However, these were only attempted in any scale later in the campaign as both the US 7th and British 8th Armies closed in on Messina. By this point a combination of the rapidity of the advance and the lethargy of the planning ensured that the four amphibious operations provided little tactical and no operational advantage.

The success of the Axis' delaying operations, which enabled the evacuation of troops and materiel across the Straits of Messina, stood in stark contrast to the Allied effort to prevent it. In total over 100,000 Axis troops and all their associated vehicles and equipment were transported back to the mainland. The Allies never mounted a concerted maritime, air or joint interdiction operation. The German review of the campaign sought to understand why the Allies had not tried to block the straits or to exploit the options for amphibious operations and why they had persisted with slow moving frontal attacks.

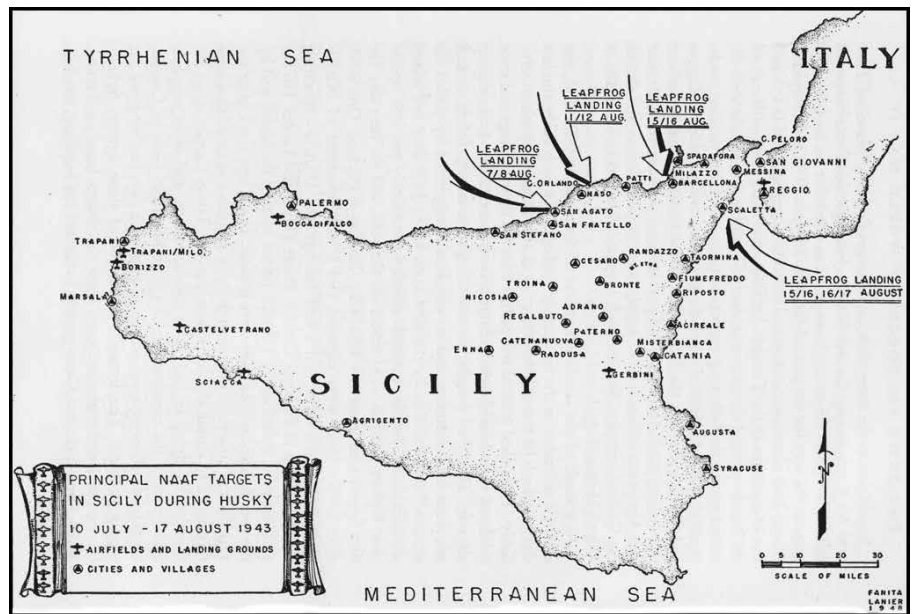


Figure 2 - Amphibious operations during the advance to Messina.

Governance of occupied territories

Lesson Identified: Ensuring that the culture and mind-set of the forces within theatre is appropriate for the legal basis under which we operate. This will differ depending on status of territory, re-occupation of NATO territory or occupation of non-NATO territory.

The occupation of Sicily was the first time that the Allies had occupied part of an Axis country. The campaigns in the Far East and North Africa had seen liberation of Axis-held Allied colonial territories or occupation of Axis colonial territories. To ensure that the occupation was a success they established the Allied Military Government of Occupied Territory (AMGOT) under the direct control of Gen. Alexander. The AMGOT had six branches (legal, financial, civilian supply, public health, public safety and enemy property) and five objectives:

1. Security for occupying forces and the lines of communications.
2. Restore law, order and normal conditions for the population.
3. Relieve combat troops from providing civil administration.
4. Resource occupying forces from the local economy.
5. Promote Allies' political and military objectives.

The success of AMGOT prevented the occupying troops from suffering the same fate as the French had in Spain during the Peninsular War or the Germans during Operation BARBAROSSA. It also provided a template that could be used for the remainder of operations in Italy and Germany.

Conclusion

The Sicilian Campaign provides an excellent opportunity to study the challenges of planning and executing a large-scale joint campaign as well as the post-conflict reconstruction of an occupied territory. This essay has sought to highlight how the historical lessons of Operation HUSKY can be used to inform a contemporary NATO JTF headquarters. It has focussed only on the key lessons identified from AC18 as it was not possible to cover all the lessons. Although AC18 studied Operation HUSKY from a JTF perspective, many of the lessons identified are equally as applicable as the ARRC returns to corps recalibration.

ABOUT THE AUTHOR

Major James Grant is an 11-year veteran of the British Army and currently serves in the ARRC's Engineering Logistics and Infrastructure cell. In his previous assignment he completed the Intermediate Command and Staff Course (Land) at the Defence Academy of the United Kingdom. Maj. Grant has led military engineering operations as part of counter-IED and security operations in Afghanistan and during the 2012 London Olympics. A native of London, England, Maj. Grant holds a Master's Degree in Mechanical Engineering from the University of Bristol.

THE MOSQUITO IS MIGHTIER THAN THE MORTAR: LESSONS FOR COMMANDERS ON FORCE HEALTH PROTECTION

Colonel Jeremy Tuck, British Army
Major Glen Bullivant, British Army

It is a military truth that any force will suffer more attrition due to disease and non-battle injury than combat. Amongst the many diseases that have affected military forces over time, malaria, spread by the female anopheles mosquito, has arguably had the most decisive impact.

Despite great efforts over the past 20 years to reduce the incidence of malaria, it still remains a risk to half of the world's population in 91 countries, some of which our participating nations and we are currently serving in.

“I only had to sack three [commanding officers], by then the rest had got my meaning.”

Field-Marshal Viscount Slim

Historical Impact

The armies of the Goths and the Huns both succumbed to malaria at the walls of Rome in the 4th century. The disease affected Genghis Khan's army in the 12th century. The British campaign to the Walcheren in 1809 was defeated by malaria after Napoleon had deliberately flooded the area in order to encourage the spread of the disease; while some 100 fatalities were combat related, just over 4,000 fatalities were ascribed to malaria. In the British West African campaign of 1849 the deployed force was defeated by disease without ever coming into contact with the enemy. In

the French campaign in Madagascar in 1895, 13 soldiers died by enemy action, 4,000 by malaria.

Perhaps the most significant episode in which malaria played a part was George Washington's campaign during the American War for Independence. The end of the Siege of Yorktown on 19 October 1781 was the culminating point of the war. Having lost Yorktown, the British position in the American colonies was untenable and the fledgling United States finally won its independence. However, what is frequently overlooked is that 50 per cent of the British garrison was not fit to fight because of malaria. The Continental Army, in contrast, was taking an infusion of the Cunchina tree, then known empirically to prevent and cure the disease even if it was not understood how the disease spread or how the Cunchina infusion worked. The active component was identified later as Quinine by French researchers Pelletier and Caventon in 1820, but still the causative parasite and the vector for its spread were unknown.

While the Romans had understood the importance of poorly drained land as a factor in the spread of the disease (known in some areas as Marsh fever), it was Laveran who first described the malaria parasite in 1880. When Grassi and Ross published, almost simultaneously (1897/1898), their research that identified

the female anopheles as the vector responsible for transmitting the disease, the means of preventing the disease through insect control finally became clear. Yet for military forces, malaria remained a major threat. British, French and German troops in Macedonia during the First World War were affected heavily by malaria. So much so that one French commander in particular was unable to make an attack as his “Army was in hospital” with malaria.

The Role of the Commander

It is arguably Field Marshall Slim who was the first commander who understood the importance of maintaining the force through health protection. He changed the approach to malaria management through prevention and treatment. At the time, malaria treatment was given in the base area. This almost rewarded soldiers for catching the disease. Slim moved malaria treatment units forward, making the prospect of being admitted for treatment far less appealing. He also understood that good doctors were of little use without good officers to take the lead in enforcing health discipline. To reinforce this message, Slim introduced unit inspections to assess compliance with malaria protection policy. If the unit failed to achieve 95% success, he sacked the commanding officer. In two years, Slim reduced the incidence of malaria in the Burma Army six fold.

In recent memory there have been successes and some forgettable moments. During the Vietnam War, some units suffered 50 per cent attack rates of malaria. The British force in Sierra Leone in 2000 sustained 82 malaria cases in six weeks and a US Marine contingent in Liberia in 2003 had a similarly bad experience. Force Health Protection (FHP) was noted to be poor in both cases. However, a company commander at that time in the Sierra Leone operation would later be the joint force commander of a small operation in the Democratic Republic of the Congo where the risk of malaria was high. Remembering the experiences of 2000, he briefed his component commanders that he would hold them responsible for lapses in force health protection discipline. The result? No cases of malaria.

It is arguably Field Marshall Slim who was the first commander who understood the importance of maintaining the force through health protection. He changed the approach to malaria management through prevention and treatment.

Bringing the story to very recent memory, the joint force commander on the first rotation of Operation GRITROCK made it known that he would hold commanders responsible for lapses in force protection discipline. The result? Four cases of malaria (each one rigorously investigated for failure to adhere to force health protection policies) and the lowest recorded incidence of gastro enteritis in a deployed military population ever published; this in a country where gastro enteritis amongst travellers is almost universal.



As part of the propaganda campaign against malaria in the Pacific Theatre during World War II, the US Army produced a series of posters, calendars and comic strip, "Malaria Moe," reminding soldiers to follow various protocols in order to prevent contracting malaria.

What does this mean for a NATO HRF(L)?

We may have to fight in places where disease is endemic and FHP will be critical to maintaining force levels. Force Health Protection is not about being risk averse, on the contrary; it should be seen as enabling, not constraining. Military operations are invariably a risky business; FHP therefore provides a function that assesses the health threats then recommends pragmatic achievable mitigation measures to reduce the risk and give the commander freedom of movement. While medical professionals will provide specialist advice (and we do have a FHP expert within the OLRT), it will be for commanders to ensure that discipline is maintained.

Key considerations

- Lack of commitment to FHP will result in higher rates of diseases, such as malaria or gastro enteritis.
- Medical SMEs can advise, produce guidance/instructions and even deliver pre-deployment briefs. However, the effective implementation of control measures to prevent malaria is down to good leadership and command at all levels.
- Commanders must lead on enforcing FHP discipline. As Slim so succinctly put it in his memoir Defeat Into Victory, "I only had to sack three [commanding officers], by then the rest had got my meaning."

ABOUT THE AUTHORS

Colonel Jeremy Tuck is an officer with the British Army's Royal Army Medical Corps and is a consultant in public health medicine and a former general practitioner. He currently serves as the ARRC's medical director. Col. Tuck has extensive operational experience in clinical delivery, command and staff roles, and has worked at every level from the tactical front line to operational 2- and 3-star level headquarters, as well as on the strategic stage at Ministry and international levels.

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THE SPANISH ROAD: LOGISTIC LESSONS FROM THE RENAISSANCE APPLIED TO MODERN DEPLOYMENTS

Major Juan Ariza Gómez, Spanish Army

In the fight for power on the European continent during the last half of the 16th century, the Spanish Army had to find a route for deploying forces by land between northern Italy and Flanders province. After thorough planning, the Spaniards established an efficient system for a permanent flow of forces. This deployment system was successful for half a century and helped to preserve the Spanish Empire and provided a valuable lesson for the future deployment of forces.

Reception, Staging and Onward Movement: A constant challenge for the deployment of forces

In 1558, the English, who were at that time allied to Spain, ceded the city of Calais to the French. This change posed a great obstacle to the Spanish flow of forces to the province of Flanders. During the following decade Spanish troops needed to keep tight control over all of Spain's territories.

Spanish King Philip II inherited separated European territories from various ancestors. These included ones on the Iberian Peninsula, the Mediterranean Sea, in Italy, Hungary and Bohemia, Flanders, Bourgoigne, as well as some

in Austria and Germany. These territories enabled Philip in 1566 to order massive deployments of forces into the province of Flanders, avoiding maritime transport through the English Channel altogether. This led to a planned land operation involving the movement and transport of troops and horses through mountains and valleys, from Milan to Flanders. This extraordinary tour de force gave birth to a plan known as 'The Spanish Road'.

Such a plan was the materialisation of an operation aimed at the reception, staging and onward movement (RSOM in NATO doctrine today) of troops in order for them to reach their combat positions as a ready force. This deployment phase is nothing new and has been historically

one of the most challenging aspects of holding territory, as experienced by great tacticians from Alexander to Napoleon.

The first expeditions and their adaptation

As a result of the early deployments along the Spanish Road, it was deduced that forces needed to be divided into packages of no more than 3,000 soldiers. Doing so allowed easier command and control of moving assets and the right balance of facilities to be used along the way. Due to fears that such a deployment would negatively impact the transited countries, Spanish emissaries were sent to ensure that the only mission of those armies passing through was to fight in the North.

The success of these movements was also based on very strict marching discipline that allowed a daily progression 12 miles. The journeys from Milan to Namur usually took six weeks, but the Spanish Road enabled some forces to break records and accomplish the movement in only 32 to 34 days.

As the French narrowed the options, several alternative routes were developed, but it got extremely demanding. Finally, the 1615 peace agreement in Asti put an end to the Spanish Road since Savoy fell under French rule and the flow of forces was definitively blocked.





Performing RSOM in the 16th century

Negotiations and agreements. When deployment is to be performed in conjunction with third parties, it is essential that such deployments be backed with the proper diplomacy. For that reason, the Philip II attached ambassadors to Genoa and various Swiss provinces to see to it that particular agreements were established for passage.

Maintenance and control of the routes. There was a system of fortresses all along the Spanish Road, making possible the control of the roads and various staging areas. Apart from that, engineer work was carried out to widen and keep the road in good shape, contributing to the success of the mission.

Need for contracting. The armies were not able to produce for themselves all the services they required. For that reason, Spanish officers arranged several contracts with wagon dealers in Savoy and Lorraine, and took care of balancing the business prices in order to prevent any maladjustment within the local economies. They also established a system of midway storage and local exploitation that avoided rapine and generated confidence.

Local perception through passing sites. Although no social media was available in those days, other forums for mass communication, such as churches and pulpits, were the medium by which the public received information from the shapers of public opinion of the day. For example, a failure of discipline resulting in abuses to the local population could jeopardise not only the success of the movement on going, but also the following ones.

Training and equipment. Spanish Tercios, similar to regiments, were recruited mainly in Spain and Italy. Newcomers barely had time to receive equipment and training before deployment so it was during the movement northward that they were mostly trained. That gave increased importance to the activities carried out during staging periods and by the time they arrived in Flanders, formations were equipped, well trained and cohesive.

The 'Sargentos', auxiliary officers for the commanders, directed the training sessions. Traces of the Spanish Road nowadays show where the compounds used for staging purposes were and each had enough room for such activities.

Medical assistance. Medical care was performed at different levels for differing sizes of formations. While marching convoys were supported by barbers (every 250 soldiers), as well as doctors and surgeons (every 2,200 soldiers), the general hospital was available at Malinas (Flanders), acting as something comparable to Role 4 facility.

When planning for today's deployments, it is undeniable that a realistic approach is to be made, taking into account the tools and the right framework, and even current doctrine is to be tempered with more recent experiences.

Recommendations and reflections in modern RSOM

Legal framework. As experienced by the Spanish, troops must be fully covered by a legal framework that defines the status of the force and the range of host nation support.

Status and control of the routes. Route control and availability are key. The works carried out by the sappers of that time were very close to what could be expected today for engineers during RSOM, according to doctrine.

Logistic operators and contractors. European kings during the time of Renaissance relied on markets exactly like official agencies do nowadays. The role of the Spanish Road in this sense shows how to deal with it in a balanced approach and with profitable results.

These three points are aligned with support structure, force protection and convoy operations, which are two of the essential enabling factors for RSOM, according to ATP 3.13.1.

Strategical Communication and Civil Military Cooperation. These two functions should be aligned with the achievement of freedom of movement (stated in ATP 3.13.1 as one of the goals to achieve). The lack of distrust by locals was mostly assured by the discipline of the troops and the execution of missions today has to be carried out in the same exemplary manner.

Importance of the Staging Areas. Like it was done then, in the framework of a RSOM operation, there has to be a detailed programme of activities to perform in order to make possible the transition from transport configuration to a fighting one.

Medical Staging. Even in the 16th century the Spanish were aware that the provision of medical care is essential during RSOM operations and should be mission-tailored to confirm the medical timelines. This is also reflected in the aforementioned ATP.

Conclusion

The study of great military actions from the past will always be a rich source of knowledge and a very useful tool for planning current and future operations. When planning for today's deployments, it is undeniable that a realistic approach is to be made, taking into account the tools and the right framework, and even current doctrine is to be tempered with more recent experiences. What is clear throughout is that daring, determination and accurate planning was as key to success then as it is now.



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BRIDGING THE SECURITY GAP: STABILITY POLICING IN A NON-ARTICLE 5 ENVIRONMENT

Captain Patrick Crossland, British Army

The need for NATO to be equipped with a military capability of civil policing became apparent during the 1997 Stabilisation Force (SFOR) operation in Bosnia and Herzegovina. Allied Command Europe saw the space in the field of public order and security. Known as the security gap, it was the grey area between the SFOR military capabilities and the UN International Police Force mission, with no executive powers, as well as the capabilities of the local police forces, who often either lacked the capability or were unwilling to enforce the law.



In this grey area, no party either could or wanted to take responsibility. Subsequently the gap was bridged by a military unit capable of performing some of the typical tasks of a civil police force and this was to be known as the NATO Multinational Specialised Unit (MSU). The MSU was made up of gendarmerie forces, which are military forces with a full police capability. Since then, this concept has been put into practise several times and the deployed MSUs have received the contribution of military police forces and infantry forces trained for the specific mission.

A key example of this is the Kosovo Force MSU; KFOR MSU is based in Pristina and is composed entirely of Italian Carabinieri. It provides the KFOR commander with a capability for security operations including criminal

intelligence, crowd and riot control as well as information gathering and assessment. The MSU can also provide advice, training and support to local police forces on a wide range of policing issues if required. These include law enforcement, combating organised crime and terrorism, war crime investigation, crime prevention and public security. The MSU is commanded by an Italian Carabinieri officer who advises the KFOR commander on all civilian police matters. The idea itself of military forces performing police duties to cover the 'security gap' has evolved up to the current concept of Stability Policing (SP).

What is Stability Policing and how it is conducted?

The concept of SP, targeted within the stabilisation and reconstruction post-

conflict process, concentrates on the requirements of the civil populace. Stability Policing, a concept described throughout the NATO AJP 3 doctrinal series, is defined as a set of police related activities for the restoration and/or upholding of the public order, security and rule of law as well as the protection of human rights through supporting and, when necessary, temporarily replacing, the indigenous police forces, when the latter are either unable or unwilling to perform the function themselves.

Security Policing falls within the Security Sector Reform covered in the AJP-1 and AJP-3 doctrinal series, which entails reforming security organisations so that they can deliver an effective role in providing internal and external security with accountability, as well as the military assistance to civil authorities function envisaged in AJP-3.4, that may require involvement in civil security tasks. This includes operations to maintain local law and order until appropriate civil authorities can resume control of the task. Despite this, SP can't be compressed within the confines of civil policing since it can embrace such a wide spectrum of activity that relates to other agencies or services that are most likely to occur. Stability Policing is conducted in unstable areas where NATO is engaged, throughout the spectrum of conflict ranging from peace to high intensity conflict.



The aim of Stability Policing

The aim of SP is to establish a safe and secure environment (SASE), restore public order and security and contribute to create the conditions for effective governance. Throughout the spectrum of conflict the initial goal of SP is to re-establish and maintain sufficient security for the local populace. Afterwards, it seeks to re-establish law and order and to enforce the law, eventually leading to reinforcement of local security institutions.

Is Stability Police a function of the Military Police?

The key components of SP, in the wake of the NATO MSU, developed over approximately two decades. Stability Policing is not currently a defined function of the MP corps, but the discussion within NATO is ongoing. Taking into consideration that SP requires a civil policing-focussed mindset and a specialist approach, such thinking reflects that focus, meeting the needs and expectations of the civil population in order to be successful. Stability Policing is a capability that can be applied to any NATO operation and includes a wide range of civil police activities that focus on civil populations. Security Policing may be conducted by a range of military forces; the best suitable forces are the gendarmerie-type forces and the MP. When MP are required to conduct SP, they are not conceptually performing MP activities, but assisting in delivering civil police activities. Other military forces can contribute with their own specialised capabilities.

The added value of SP is inherent in its contribution to enable NATO to have a holistic approach to crisis response. The added usefulness for the NATO Force commander resides in having the availability of military forces trained and equipped to conduct the operation with a specialist capacity of civil policing.

The Centre of Excellence for Stability Police Units (CoESPU)

Stemming from an Italian initiative, supported by G8 Summit countries as part of a wider action plan of the International Community for Expanding Global Capability for Peace Support Operations, with an emphasis on African countries, the CoESPU was established by the Carabinieri on 1 March 2005 in Vicenza, Italy.

The CoESPU, as a national structure opened to international contributions, is a centre for advanced studies and a doctrinal hub, serving as a think tank and a training centre that mainly operates in cooperation with the UN Department of Peacekeeping Operations and with other international organisations, to develop Carabinieri-like units of interested police contributing countries committed to support peace operations. Sponsored by the US Department of State through its Global Peace Operations Initiative, the project is based on the international expertise developed by the Italian Carabinieri, as well as on their expertise developed through numerous peacekeeping missions over last few decades. The Centre is primarily dedicated to:

- Conducting training programs;
- Maturing current police peacekeeping doctrine and related best practises, developing doctrinal proposals and new operational procedures;

- Promote interoperability principles;
- Be an active part of a worldwide 'doctrinal network', interacting with the various international organisations, academic institutes and research centres.

The CoESPU's training efforts aim to prepare police peacekeepers specialised in managing the transition from a post-crisis situation to a stable environment for reconstruction, through a people and community-oriented approach. The Centre of Excellence is open to all countries interested in establishing their own SP units, which may be employed in peace operations under the auspices of the UN, as well as of other international organisations.

ABOUT THE AUTHOR

Captain Patrick Crossland is a 12-year veteran of the British Army and currently serves as a Military Police staff officer with the ARRC. In his previous assignment he served as the Operations Officer for the 158th Provost Company, Royal Military Police in Bullford, England. Capt. Crossland has deployed on combat operations in Afghanistan and has conducted Military Police training on four continents. A native of North Yorkshire, England, Capt. Crossland holds a degree in International Politics from Swansea University.



WINNING TRUST AND COOPERATION:

Utilising Psychological, Cultural Theory and Interest-Based Negotiation Tactics to Successfully Engage Non-Military Actors

Major Neil Weddell, British Army

Building trust and negotiating collaborative outcomes in Civil Military Cooperation (CIMIC) environments is pivotal to ensuring successful transition from a warfighting phase to stability and withdrawal.

Lessons learned from operations show military means, although essential, are not enough on their own to meet the many complex challenges to our security.

Addressing crisis situations therefore calls for a comprehensive approach (Figure 1), which combines political, civilian and military instruments

collaboratively to manage the array of requirements involved in the transition from warfighting to withdrawal. Such an approach requires pre-established information sharing, planning methods, role integration and, ultimately, operational support.

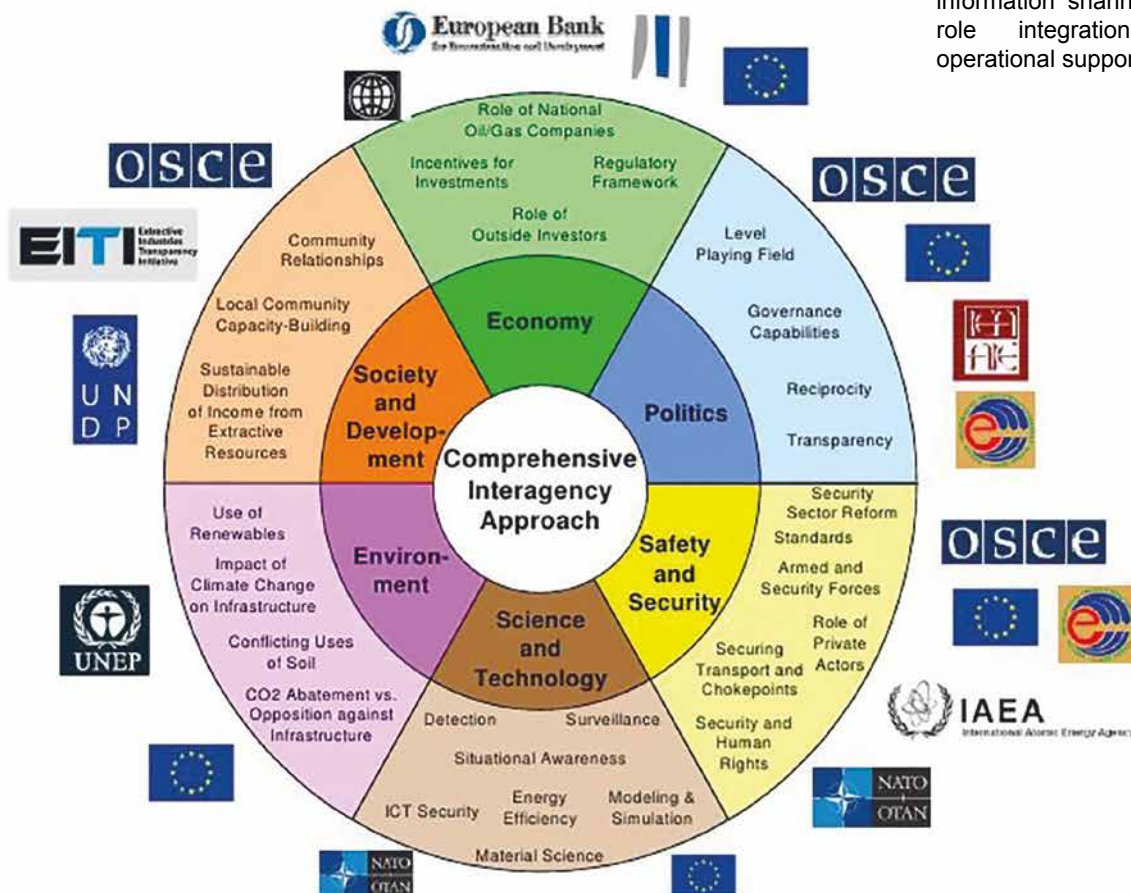


Figure 1 – NATO’s Comprehensive Approach – Military alone can’t solve all operational challenges

However, an unintended consequence of the comprehensive approach is that although some military and non-military organisations can add greater value when working collaboratively, there can be mistrust, concern or hesitation from non-military actors, which prevents effective and efficient working practises from being established. For example, in the case of humanitarian groups the use of humanitarian aid for political or military purposes represents a direct violation of the fundamental humanitarian principles of humanity and impartiality. When aid is allocated on a strategic basis to win popular support rather than on the basis of need alone, humanitarians risk losing their protected status as impartial. Even if they are not directly involved in military-led relief operations themselves, such actions can easily blur the distinction between humanitarian and military actors, leading to the perception of humanitarian relief as supportive of, or associated with, military operations.

Therefore, in order to create positive working relationships with open and transparent dialogue, CIMIC staff often underpin their interaction and liaison duties with non-military actors with the use of modern management and psychology theory, as this helps prepare the ground for effective collaborative working practises. Akin to incorporating interpersonal and communication skills in CIMIC delivery, such approaches are not immediately obvious or explained in our own standard operating instructions (SOI). Additionally, such skills are easily transferable to other situations, such as domestic, personal and professional contexts, which is an added bonus for the CIMIC operative.

The first theory that is considered is that of Kurt Lewin, a social psychologist and change management expert.¹ Lewin noted that people often take on distinct roles and behaviours when they work in a group. Coining the phrase 'group dynamics', he describes in detail the effects of these roles and behaviours on other group members and on the group as a whole. In brief, he states that a group with poor group dynamics disrupts work and as a result, the group may not come to any decision, or it may make the wrong choice, because group members could not explore options effectively.

Building upon this foundational knowledge, more recent research, which has become central to CIMIC's effective leadership and management practises,

by psychologist Dr. Bruce Tuckman adds further cognitive guidance on how to maximise interactions when applying the comprehensive approach.² Tuckman came up with the memorable phrase 'forming, storming, norming and performing' in his 1965 article, Developmental Sequence in Small Groups. Later, he added a fifth stage, 'adjourning', which is sometimes known as 'mourning' (Figure 2). He used this framework to describe the path that most teams follow on their way to attaining

high performance relationships and output, starting with Forming and working sequentially towards Adjourning. Each time CIMIC deploys and is required to engage with other actors in the operational area, the team prepares itself mentally to go through these five distinct stages, identifying which stage is in play, and tailoring their behaviour and communication style to match.

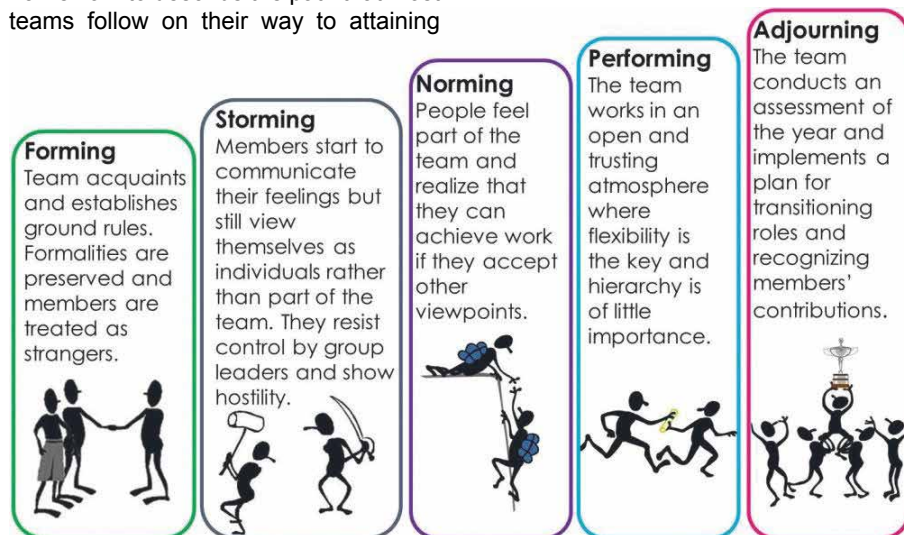


Figure 2 – Tuckman Developmental Stages in Small Groups

Whilst Tuckman highlights the 'what and why' of group forming, he unfortunately does not elaborate on the 'how' with regards overcoming it. This is purposely done as he rightly advocates that, when it comes to working with human personalities, there is never a one size that fits all and therefore each new group must create a bespoke approach.

For the sake of awareness within this essay, some of the tools that CIMIC has found to be effective in helping the group transition through the stages are provided below.

Forming	Storming	Norming	Performing	Adjourning
Clarify roles	Communicate & collaborate	Reflect on group process	After action review	
Build goals (SMART criteria)	Negotiate Ideas	Experiemen (trial & error)	Share lessons Learned	
Establish timeline	Resolve Conflict	Learn/move beyond failure	Self/group evaluation	
Identify/assign tasks	Give effective feedback	Test assumptions		
Discuss working agreements	Escalate appropriately	Conduct interim check-ins		
Identify individual strengths	Tools: deBono's 6 thinking hats, ask/speak/listen, ladder of inference, L-column	Present outcomes		
Tools: technology use		Tools: Kolbs Experiential Cycle		
Time management				

Figure 3 – CIMIC suggested activities for each stage of Tuckman

1 Kurt Lewin, "Frontiers in Group Dynamics: Concept, Method and Reality," Human Relations 1, no. 1 (June 1947): 5-41.

2 Mary Maples, "Group development: Extending Tuckman's Theory," The Journal for Specialists in Group Work 13, no. 1 (1988): 17-23.

One of the most dangerous times, and the point in which the group can fragment irrevocably, is the Storming stage. This is the point in which most friction, resistance, hostility and emotional escalation can occur.

To overcome this challenge, the application of Cultural Theory and Interest Based Negotiation tactics are highly recommended. The principle is that when resolving any difference in opinion or dispute, the key is not to entrench one's position, but to seek out common ground, re-establish rapport and build 'social favour' by focussing on shared interests. Such a tactic calms the divisive situation and helps move the situation from one of defensiveness to one of pragmatism. Figure 4 indicates how this process looks followed by an explanation.

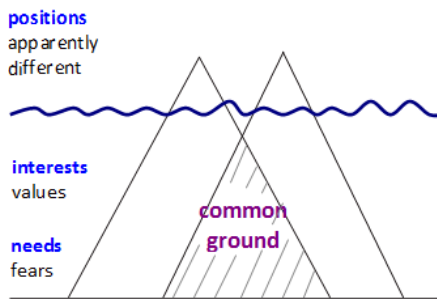


Figure 4 – Pictorial Representation of Interest Based Negotiation Strategy

Party A and party B (represented by the triangles), come to the table with different positions. If party A simply tries to push their position without incorporating B's position, A will only be able to achieve limited gains, if any, and the same for B. However, by focussing on common ground where needs and interests overlap (e.g. avoid human suffering), emotional outreach can be achieved, and B's original triangle position could be shifted to the left and start to overlap, provided consensus and rapport is built upon these needs/interests.

In order to help define for the reader what 'common ground' could consist of or to be of such an inspiration as to gain buy-in, the Cultural Iceberg is utilised. As shown below in Figure 5, the iceberg is roughly divided up into three sections: Visible, less visible and not visible. Each section represents parts of a human's cultural identity, the difference being the visible ones are the most overt/recognisable, whilst the other two are much less. When an impasse is reached, in the Storming stage for instance, the key to creating a positive relationship is to find common ground on any of the factors listed in the Iceberg (e.g. life experiences or

worldview). Some will be easier than others to utilise, and much does depend on the situation and the emotional intelligence of the parties involved.

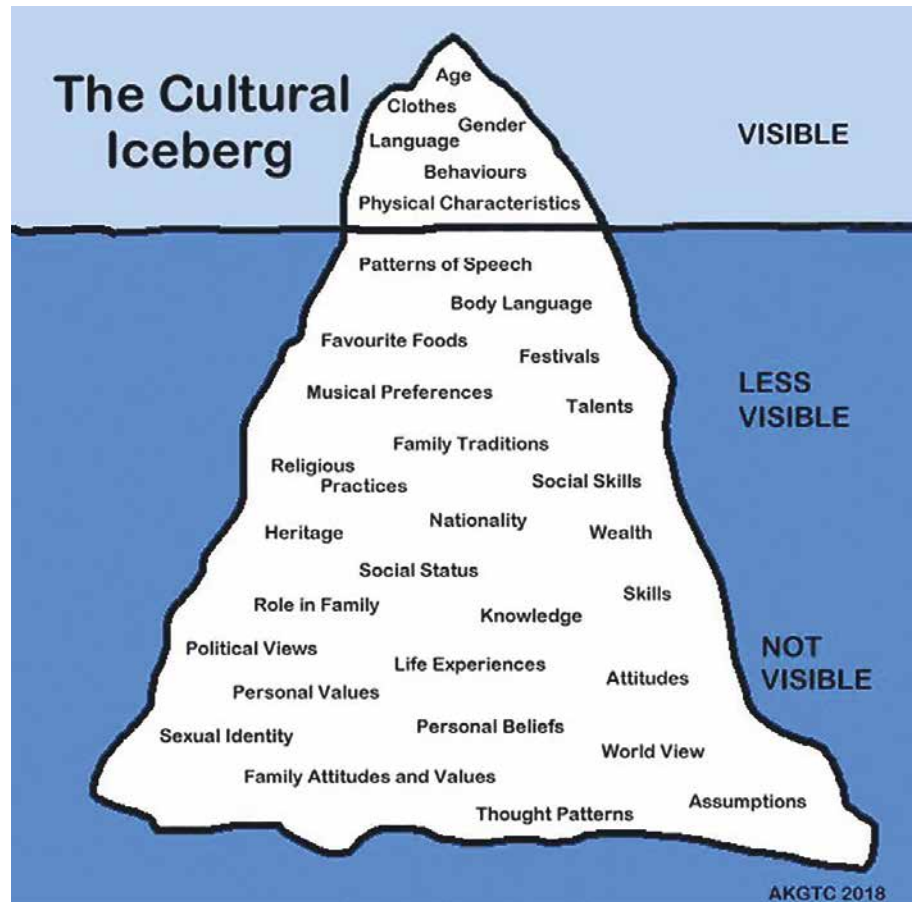


Figure 5 – Cultural Iceberg Model

Conclusion

The nature of CIMIC operations has been proven to remain consistent over time: Support the force; support civil actors; and liaise (AJP-3.4.9). However, because there are often different actors and different environments in which CIMIC is conducted, the approach to implementing these principles can and needs to adapt for every occasion. Utilising modern management and psychological theory provides the cognitive handrail to guide the CIMIC operative, helping them to deliver their work effectively, efficiently and always in a professional manner.

ABOUT THE AUTHOR

Major Neil Weddell is a 15-year veteran of the British Army and currently serves as the ARRC's Military Liaison Officer to Non-Governmental Organisations (NGO). In his previous assignment he served as the Strategic Planning Officer for the Government of Sierra Leone at Freetown during Operation GRITLOCK (2014 Ebola outbreak). Maj. Weddell has led civil-military collaboration efforts during combat operations, defence engagement activities and humanitarian missions across Afghanistan, Saudi Arabia, Nigeria and Sierra Leone. Maj. Weddell holds a Master's Degree in Project Management from Cranfield University, a Master's Degree in Education from the University of Southampton and a Master's Degree in Business Administration from the University of Plymouth.

HOW MEDICAL SUPPORT ON OPERATIONS IS CHANGING AND HOW THE GOVERNMENT AND CIVILIAN SECTORS ARE EVOLVING

Colonel Jeremy Tuck, British Army

The government and civilian sectors have a history of coming together to alleviate the human suffering that inevitably follows natural disasters. While each sector has different principles and practises that can cause significant operating frictions, the fundamental drive of every player to reduce human suffering ensures that any major obstacles can be overcome through negotiation.

This pragmatic approach to cross-sectoral working, however, takes time to put in place and is done very much on a case by case basis and is strongly influenced by personality. This can affect the population in need. There is, therefore, a requirement for all stakeholders to learn how to work together more successfully.

“Every civilian’s death diminishes us collectively.”

Gen. David Petraeus, US Army (Retired)

Precedent and Practise

The outbreak of Ebola in West Africa saw unprecedented levels of cooperation between government (international aid and defence) agencies and the civil sector (both charity and, for the first time in an emergency response, commercial). However, this cooperation still took time to establish. Under the leadership of the British Red Cross, a non-governmental organisation/military contact group (NMCG) has been set up to explore how common ways of working can be established more effectively in future

natural disasters, particularly public health emergencies of international concern.

In parallel, the Allied Rapid Reaction Corps’s (ARRC) Medical Branch has established an outreach group to look specifically at how the military and civilian sectors might work more closely in future kinetic operations. This is seen to be of particular importance as there is a risk in the deployed setting that displaced civilian populations will try to access military medical facilities, which will threaten the integrity of the operational patient care pathway. While robust medical rules of eligibility (MROE) might be seen as the solution to the problem, they will not remove the moral and ethical duty of military medical personnel to treat any individuals that present themselves for care. The only consideration will be the level of need and an urgent civilian case would take precedent over a less urgent military casualty. This may also have a strategic impact on firm base public opinion if it appears that combat casualty’s care was affected because they were a lower priority than a civilian. The key to mitigating these risks will be the non-governmental organisation (NGO) community.

Opportunity and Experimentation

All parties agree that there is a need to work together to ensure that care

packages can be ready to deploy safely and quickly to help affected and vulnerable groups, and to ensure that the operational patient care pathway remains clear for military casualties. Acknowledging that there is a need to work together is a long way from actually doing it. Language separates the two groups; the meanings of ‘security’ and ‘intelligence’ are different between the sectors. ‘Access’, ‘safety’ and ‘safeguarding’ also have subtly different meanings between the military and civilian stakeholders. There is a requirement, therefore, to agree on a common taxonomy to enable future doctrine to emerge. Following on, there is a need to understand how much of the civil population need will be met and by whom and where we can work more closely together, and where this will not be possible.

Finally, how will this be ‘C2d’? ‘Command’ and ‘Control’ will not be words that will appear in the final doctrine. While they hold no fears for a military community, the NGO sector never uses them. ‘Collaborate’ has, potentially, too many pejorative resonances to be of use. ‘Co-ordination’ will be very necessary, but may not be achievable because of the close link between ‘coordination’ and ‘control’. That being said, leveraging military capability that the NGOs need has, in the past, generated a desire by the NGOs to coordinate efforts. This was exemplified



Members of the Canadian Armed Forces medical team review video of the next stage of training during Operation SIRONA (Canadian contribution to the Ebola outbreak in West Africa) pre-deployment training with their British counterparts at the Army Medical Services Training Centre in Strensall, UK, Dec. 11, 2014..

at the Mozambique floods in 2000 where the military controlled all rotary wing assets, which was the only way of getting aid to isolated communities. If, therefore, 'Coordinate' is going to be a challenge, only 'Cooperation' is left as the 'C' word that we will be able to agree on and make a start on practises and procedures. It will, however, be a start.

This is still very early on in this work strand. Early meetings have been very much conversational and will serve to get stakeholders into the same room and build trust. Only then will substantive negotiations be able to begin and develop. While personality should not be a constraint to transform something that needs to be changed, within the civil/military setting, personality is everything. After years of slowly moving towards closer working with the military, a high profile NGO is now moving in the opposite direction following a significant change of personalities in its executive management.

While the government and charity sectors have a history of being able to work together, the new arrival of the commercial sector will add a new dynamic. The appearance of the commercial sector during Operation GRITROCK (the Ebola crisis response in Sierra Leone) saw the rapid deployment of a highly capable organisation. However, while the working relationship

with this organisation in Sierra Leone was very fruitful, getting the commercial sector to join in the ARRC Article 5 Outreach Group has not been possible. The reasons are not clear although it has been speculated that outreach and contact groups do not generate contracts and so are seen as low priority activities.

Key Considerations

- Displaced civilian populations will inevitably seek medical care at deployed military medical treatment facilities. This will have an impact on the operational patient care pathway.
- MROE will not take precedence over a clinician's moral and ethical duty to treat all casualties on the basis of need alone.
- Most agree that a close civil/military working relationship is not only necessary, but inevitable; to start working on this when the first close battles have started will be too late.

ABOUT THE AUTHOR

Colonel Jeremy Tuck is an officer with the British Army's Royal Army Medical Corps and is a consultant in public health medicine and a former general practitioner. He currently serves as the ARRC's medical director. Col. Tuck has extensive operational experience in clinical delivery, command and staff roles, and has worked at every level from the tactical front line to operational 2- and 3-star level headquarters, as well as on the strategic stage at Ministry and international levels.

STRENGTHENING THE ALLIANCE: ENGAGEMENT WITH ESTONIAN DEFENCE FORCES

Lieutenant Colonel Mikk Pukk, Estonian Land Forces

In recent years the Allied Rapid Reaction Corps (ARRC) has undertaken a number of capacity building activities in support of wider NATO and UK defence engagement. The Baltics remain a keen area of focus for the ARRC and the establishment of the UK enhanced Forward Presence (eFP) battlegroup in Estonia has served to focus UK and ARRC attention to developing greater working relationships with the Estonian Defence Force (EDF).

Following British Army and EDF talks in 2017, it was agreed that the ARRC would support the development of the EDF deployable headquarters in a capability development programme to better enable EDF headquarters integration alongside NATO headquarters.

To understand the scale and the implications of this programme it is necessary to understand the context that Estonia sits within. Estonia, a country in northern Europe, borders the Baltic Sea and the Gulf of Finland and includes more than 1,500 islands covering a total 45,227 square kilometres. It has a population of 1.3 million inhabitants; for

scale this is approximately twice that of Gloucestershire. Estonia's neighbours by sea are Finland, Denmark, Sweden, Latvia, Lithuania, Norway, Poland and Russia and it shares land borders with Latvia and Russia. As recent historical context is established through observations of the activities of Russia in Georgia in 2008 and Ukraine in 2014, Estonia can view many similarities of the plight of these countries with its own potential future. It is also a country that is in conflict in terms of the large numbers of cyber attacks, propaganda events and witness to very large-scale military exercises such as VOSTOK and ZAPAD on its borders. It is no secret that the cyber aggression and propaganda that NATO and western democratic society have been subjected to is felt even more keenly in Estonia.

NATO equally considers Estonia to be a focal point for activity with the establishment of Air Policing, NATO Forward Integration Units (NFIU) and eFP battle groups in the region, as well as associated enablers. Multinational Corps Northeast (MNC-NE) and Multinational Division Northeast (MND-NE) have also been established and maintain over watch of the area and they will soon be joined by through establishment of Multinational Division North (MND-N).

Estonia spends more than 2 per cent of its GDP on its defence budget

and continually conducts training for conscripts to produce reserves. The EDF's largest exercise in recent years was Exercise HEDGEHOG 2018 where the ARRC took the opportunity to train its Operational Liaison and Reconnaissance Team (ORLT) in close cooperation with Estonian and Latvian NFIUs, MNC-NE, and Estonian partners and enablers. More recently the Estonian government conducted political-level exercises on 2 November 2018, which culminated in the call-up of a reserve battalion to full deployment. These types of exercises serve to highlight difficulties from strategic level down to the sub-tactical, where the 'strategic conscript' may not arrive when called up if the assembly area does not have WiFi. The EDF headquarters deals with all of the levels of command and the associated issues in one headquarters construct.

The ARRC and Estonia share a common vision in the employment of the NATO vision and, in particular, Article III, which states, "In order to more effectively achieve this Treaty, the Parties, separately and jointly, by means of continuous self-help and mutual aid, will maintain and develop their individual and collective capacity to resist armed attack."

Estonia understands the need to reorganise its operational level of command and control to counter existing

The relationship between the ARRC and the EDF is based on maintaining the Estonian lead in the activity and supporting, not leading, their development programme.



Lt. Gen. Tim Radford (left), commanding officer of the ARRC, receives an in-brief from the staff of the Baltic Defence College in Tartu, Estonia during his visit there Sept. 19, 2017.

threats. As with every programme of change this must be done within the constraints of time, space, available resources and the resultant effects to organisation and outputs. Additionally, the inter-system considerations of working alongside NATO headquarters and forces must be woven into the plan.

Estonian C2 has been in constant evolution, but there is always room for improvement. Some of the areas identified for development are: Personnel limitations, which result in many having to fulfil dual roles that in turn limits the headquarters' ability to run and participate in exercises simultaneously; how to link the current headquarters to the future vision given resource limitations; and what interoperability with other countries and allies looks like.

For the ARRC to better understand the requirement and support the EDF with this programme, a staff advisory team led by the ARRC's Assistance Chief of Staff (ACOS) G5 was deployed to Estonia in May 2018 with the purpose of conducting an initial training needs analysis of the EDF headquarters. The analysis focussed on the ability of the EDF headquarters to command force elements in executing the Estonian National Defence Plan.

As agreed in subsequent talks, the programme will focus on: Identifying and developing the EDF headquarters'

operational level of command with sub-tasks of determining the headquarters construct, its core processes and designing the command post layout; and wider development along the combatant functions to develop the headquarters' capability. This will be undertaken along three lines of operations:

- a. Deployable headquarters concept development;
- b. Deployable headquarters collective development;
- c. Deployable headquarters individual capability development.

In September 2018 the ARRC Chief of Staff visited Estonia and discussed the details of the report and agreed the future direction for the ARRC and EDF headquarters cooperation. This meeting was followed by a series of observer-mentor visits to EDF headquarters exercises beginning in November, which provided an opportunity to see the EDF headquarters operate in a supporting role to the Estonian government based in a real-world exercise.

The relationship between the ARRC and the EDF is based on maintaining the Estonian lead in the activity and supporting, not leading, their development programme. The benefits to the EDF in this activity are clear and the opportunities for the ARRC to learn from the programme are equally beneficial.

The ARRC has the ability to observe an agile organisation that is evolving in response to a very real and proximate threat. Equally, there is a lot that the ARRC can learn about readiness from an organisation that is constantly poised to deploy and lead its entire country in collective defence at any moment.

ABOUT THE AUTHOR

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