



**KNOWLEDGE OF PRINCIPLES OF WAR MUST BE TEMPERED BY A SENSE
OF CHANGE, AND APPLIED WITH A FLEXIBILITY OF MIND.**

Michael Howard
The Causes of Wars and Other Essays





ON THE COVER

WARFARE DEVELOPMENT

FOR MAJOR JOINT OPERATIONS AND COLLECTIVE DEFENCE

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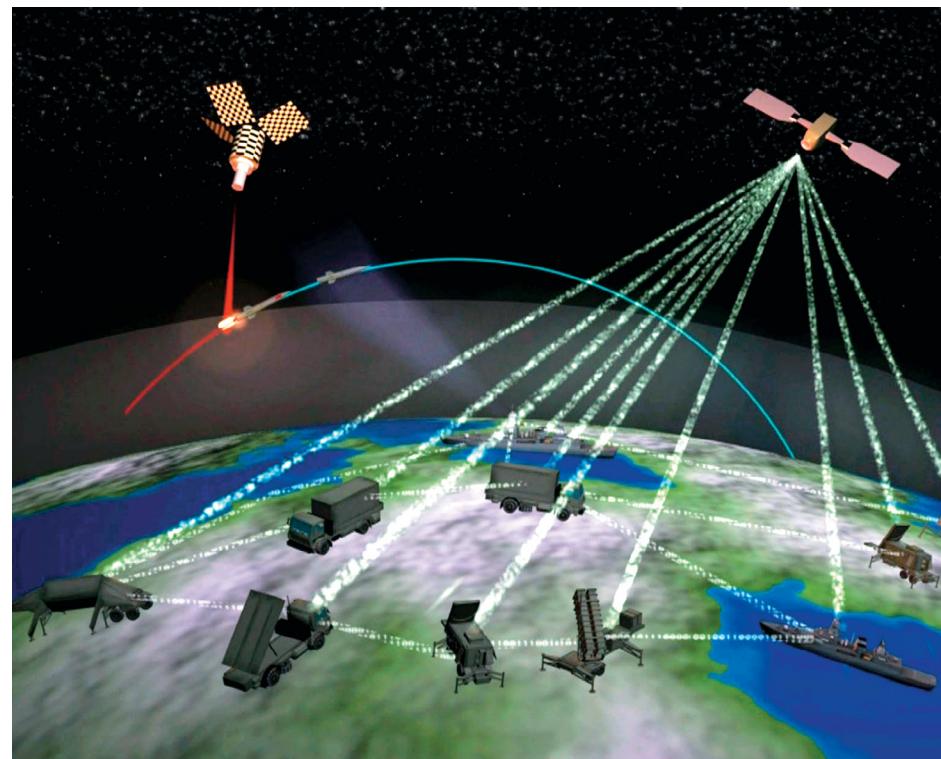


The Joint Warfare Centre is far from simply being a training centre and the importance of our role in **Warfare Development** is, arguably, greater than ever as we refocus NATO's agenda for **experimentation, interoperability and doctrine development** against **Collective Defence** and **Article 5 scenarios**.





ABOVE: A modified screenshot from JAVELIN (JTLS) showing red and blue forces. A Computer-Assisted Exercise (CAX) is a type of synthetic exercise where forces are generated, moved and managed in a simulated joint environment. CAX enables NATO Transformation to challenge and enhance capabilities, increase interoperability, save resources and reduce risk. **RIGHT:** NATO Space-based early warning capability. The early detection is communicated to Ballistic Missile Defence Command Centres within a minute or two of the missile launch. Integration of Space in exercises started in 2016 with TRIDENT JUNCTURE. Graphics by NATO



We live in interesting times, perhaps the most consequential for European security since the end of the Cold War. As NATO puts its weight behind assurance, deterrence and Collective Defence, so our work here at the Joint Warfare Centre (JWC) has adjusted from Crisis Management and Cooperative Security back to the challenges of facing a large and capable opponent. We find ourselves addressing once familiar aspects of major combat operations, like how to integrate joint actions to overcome layered defences,¹ anti-submarine warfare, operating in contested airspace, massing logistics, speed of assembly, freedom of movement, deception, concealment and emissions control, to name but a few old faithfus that deserve attention. Newer considerations have surfaced, such as the extent to which military commanders should wage “information war” to counter an adversary’s narrative, thrusting leaders into far

more public roles, not to mention highlighting contentious normative, ethical and legal considerations. So, these are indeed interesting times calling for broad-minded approaches to Warfare Development. And this is what staff in the JWC are attending to.

Whilst the JWC delivers higher command and staff collective training for 3- and 4-star NATO headquarters,² it also leverages a huge dividend in research and development. Although our training exercises are the most conspicuous aspect of what we do, it is our role in joint and combined Warfare Development that offers an enduring dividend to the Alliance. As the diagram on the next page demonstrates, training and Warfare Development are inextricably linked. So, the JWC is far from simply being a training centre and the importance of our role in Warfare Development is, arguably, greater than ever as we refocus NATO’s agenda for experimentation, interoperability and doctrine development against Collective Defence and Article 5 scenarios.

Having completed TRIDENT JAVELIN

2017 (hereafter abbreviated to JAVELIN) in the autumn of last year, a vast Major Joint Operation³ Command Post Exercise, involving, for the first time in more than two decades, all levels of the NATO Command Structure and a considerable proportion of the NATO Force Structure, we have a very rich seam to mine. This article draws upon that recent experience and our continuous adaptation since the 2014 Wales Summit, which identified the need to restore the Alliance’s ability to warfight at scale against a near-peer adversary.

Lessons learned/identified for warfare development

Identifying the right areas for Warfare Development in the contemporary environment requires judgement. As the historian Michael Howard notes, differences brought by social and technological changes can be immense, even in the short term, and an un-intelligent study can easily lead to inappropriate conclusions deducted from oversimplified



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generalisations. So, “knowledge of principles of war must be tempered by a sense of change and applied with a flexibility of mind.”⁴ Carl von Clausewitz described this evolution in warfare as “chameleon-like in character, because it changes its colour in some degree in each particular case.” To that end, we must accept that change is constant and a critical factor to any analysis of the joint operational

level and be circumspect in drawing the right lessons into our development work.⁵ In such dynamic times it is important, therefore, to build from a solid foundation. That foundation is NATO Doctrine and, as Commander JWC, Major General Andrzej Reudowicz puts it, our role is to act as a “guardian of NATO Doctrine and standards”. For it is our doctrine that codifies what is known.

NATO Military Doctrine:

Fundamental principles by which the military forces guide their actions in support of objectives. It is authoritative, but requires judgement in application.

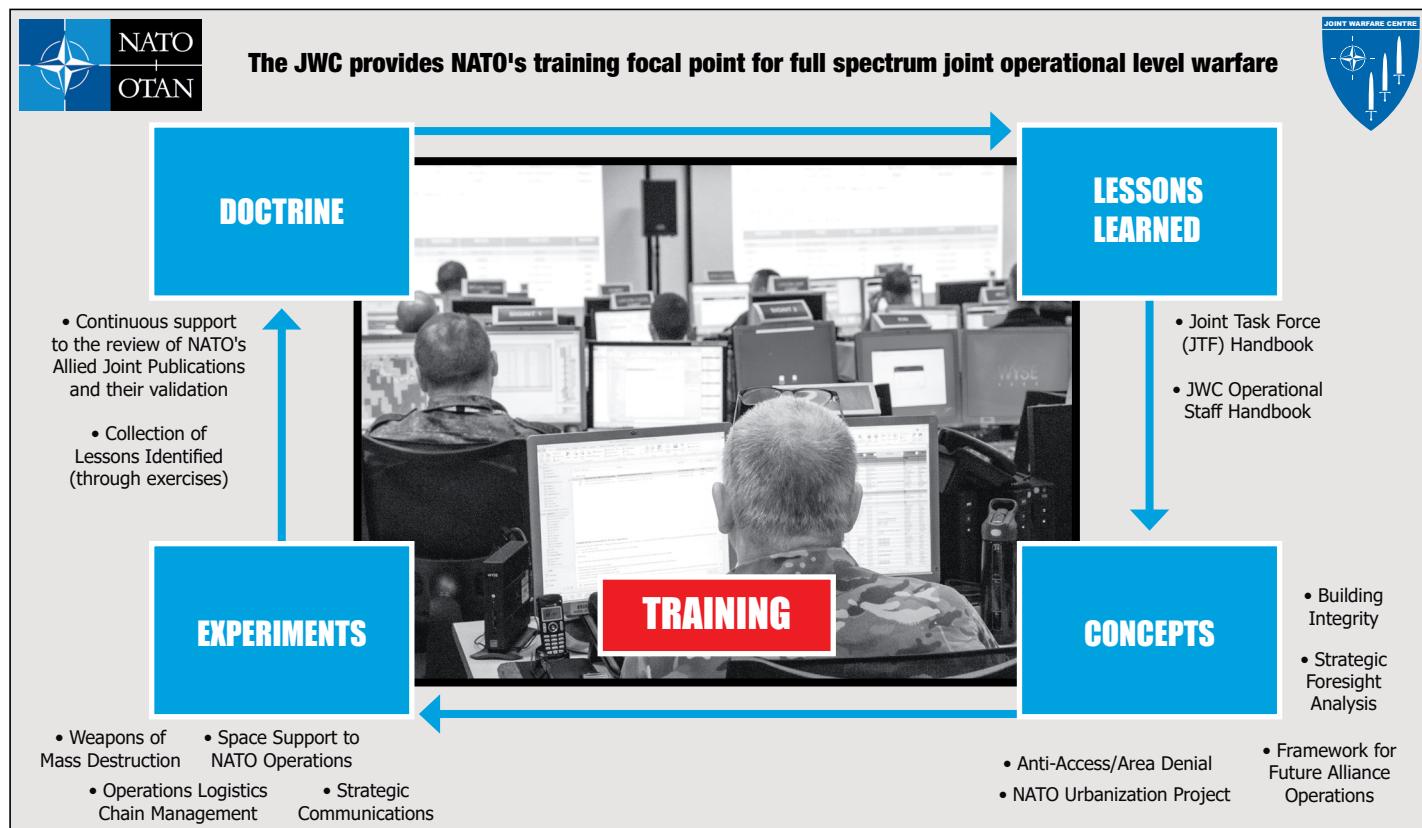
Indeed, as our own Doctrine Branch and Training Teams know, doctrine development never stands still. By stress testing NATO’s body of functional and thematic doctrine in our exercises, the JWC can offer significant insights to the drafting and updating of Alliance doctrine; one recent example being our authorship of the Battlespace Management

Section of Allied Joint Doctrine for Conduct of Operations.⁶ Another example would be lessons from JAVELIN, highlighting the requirement for multiple Theatre Logistic Bases due to challenging geography and the size of the Joint Operational Area (JOA).⁷ It is here that observations from training have been drawn into revised doctrine for operational planning and execution; lessons identified, codified through doctrine to become lessons learned.

And it is right to be doing this work at pace, for change is not unique to NATO; think about the quantum development in doctrine and capabilities in the Russian military in recent years under their dynamic chief, General Valery Gerasimov.⁸ Our efforts will be marked and matched.

The JWC staff have enjoyed the privilege of being part of Warfare Development played out through JAVELIN. We have learned much from observing and contributing to the concepts and doctrine, not to mention witnessing three levels of command take it from drills and process to an expression of operational art. Here, we have seen *Generalship* in action. Com-

BELOW: The unique training infrastructure at the Joint Warfare Centre that connects "Training" to "Warfare Development".



JOINT WARFARE DEVELOPMENT

General Salvatore Farina, Commander JFC Brunssum and the simulated Article 5 mission "Operation Unified Resolve". During JAVELIN, the Command and Control elements of the NATO Response Force 2018 Force Package were tested in a complex Article 5 scenario that deliberately incorporated the most demanding challenges the Alliance might face. Photo by JWC PAO



menting upon the scale and accomplishment of the exercise, Lead Senior Mentor, General (Ret.) Karl-Heinz Lather stated: "From the Senior Mentors' perspective, TRIDENT JAVELIN 17 has, without doubt, been a success. It has stretched and stressed Training Audiences and the JWC to improve conceptual understanding of Major Joint Operations."

The Article 5 JAVELIN scenario and story lines, worked by Messrs Derksen, Strina, Mientus and Ball and their teams, offered all PMESII⁹ challenges of a determined adversary willing to exploit deception and ambiguity through conventional and unconventional means. Moreover, the actions of Winter's OPFOR in JAVELIN were those of a peer enemy who gave as good as he got, using all levers of power; military, para-military, social, political and economic.¹⁰ Their assertive military actions were centred upon achieving rapid foreign policy outcomes and their application of "information warfare" was not constrained by Western ideas of ethical norm or international convention. So, JAVELIN certainly focused the mind of the Joint Force Command (JFC) and its components in conceptualising the peer threat. We now have a great opportunity to develop this further in preparation for TRIDENT JUNCTURE 2018 through collaborative work with Partners, including the Baltic Defence College who have depth in this area.¹¹

Enduring relevance of JWC's "Big Rocks"

The JWC's six "Big Rocks", elaborated below, have been well received throughout the NATO military community and their significance endorsed by Training Audiences.¹² Fresh thinking has been given to their enduring relevance as we pivot towards Collective Defence, Article 5, and the challenges of the information battlespace. Our analysis suggests the "Big Rocks" remain relevant, albeit requiring different emphasis, as the character of warfare evolves to new geopolitical circumstances.

1/ Information Management

Depending upon whose account you subscribed to, the "Revolution in Military Affairs" should by now have provided a utopian view of short, high-tech wars, well-ordered battlefields, complete situational awareness and a seamless decision-action loop. Alas, the human condition in peace and war is not so



Maj. Gen. Reudowicz and Maj. Gen. Andis Dilāns holding a signing ceremony for the "Letter of Intent on Cooperation" between JWC and Baltic Defence College, 17 August 2017. Photo by Baltic Defence College.



Training Audience's Combined Joint Operations Centre inside the JWC Bunker. Photo by JWC PAO



Reporting from the frontline:
World News Today (WNT)
television simulated newscast.
Photo by JWC PAO



neatly addressed in the Information Age. The reality is one of “wicked” complex and unstructured problems and imperfect information with which to make decisions. Even where information is available, it is sometimes difficult to separate the wood from the trees.

Whilst the “fog of war” for Napoleon and von Clausewitz was due to a lack of information, now there is way too much and our capacity is finite. Acknowledging the limits of capacity, it is for joint commanders to identify and ruthlessly prioritise their Information Exchange Requirements (IER).¹³ If, once upon a time, this essential role was delegated to a technical guy to fill in the IER detail, this cannot be valid in the Information Age—Information Management (IM) is command sport and an essential prerequisite for operational art. We must not forget that IER and CIS¹⁴ planning for exercise is planning for war. It is a real-time operational planning activity involving the JFC, the components, the Communications Agency¹⁵ and others, and deserves close attention.

Moreover, commanders and staff should give similar scrutiny and analysis to classification and accessibility of information. These too are sometimes erroneously viewed as “exercise-only requirements”, but this denies the central importance and real-time criticality of command information. *Plan in haste—repent at leisure* might be an appropriate maxim for those who fail to give enough attention to what their information requirement is and how they

expect to receive it. All commanders should spend a bit of quality time with their IM and CIS people in order to better appreciate and address their information priorities.

2/ Battlespace Management

This links closely to challenges of volume of information and staff capacity to process it. By definition, Joint Warfare is a collaborative endeavour that benefits from high degrees of orchestration. As JAVELIN proved, the larger and more complex the endeavour, the greater the challenge; a JOA encompassing tens of thousands of soldiers, thousands of air sorties and dozens of warships, not to mention complex civil and information overlays, becomes a huge challenge for any joint operational commander and staff. The tyranny of distance, and therefore apportionment, was a real operational dilemma for commanders in JAVELIN; air sorties could not be flexed or re-tasked over the vast JOA in the way that they have been on operations in recent years.

If there is to be any relief to such dilemmas it begins well before the troops, planes and ships are anywhere near the battlespace. For it starts with a full and thorough Operational Plan Development¹⁶ where a relentless pursuit of simplicity must be front and centre in the planning effort, in order to de-conflict actions in the battlespace. The sequence by which joint actions are coordinated and synchronised in

time and space sits at the heart of our exercises, particularly when confronted with the complexity of fire support coordination measures or the layered defences presented by the JAVELIN Anti-Access/Area Denial (A2/AD) challenges. The contested airspace and A2/AD bastions in JAVELIN were beyond the ability of any single component to fix and called for novel joint cooperation between air, land, maritime and Special Forces, not to mention Space and Cyber.¹⁷

3/ Civil-Military Integration

Since conflict is shaped by political, economic and social factors, so we must integrate a constantly expanding roll call of participants throughout planning and execution of joint operations. Yet civil-military cooperation has taken a different hue in the context of major conflict and Article 5, and sometimes operational planning teams need to be reminded that they are no longer attending to Capacity Building and Security Sector Reform, *à la* Afghanistan. Now the cooperation is more about established governmental and civic bodies—with strong, long established notions of sovereignty and ownership.

The balance has, arguably, shifted from Non-Governmental Organizations (NGOs), International Organizations (IOs) and the like. This is a very different take on the Comprehensive Approach from recent campaigning and HQs



have sometimes been required to adjust their approach quickly. So, whilst a great deal has been learned through the years of Crisis Management and Cooperative Security, care must be taken to draw only the right aspects of that experience into the new operational paradigm.

For instance, Collective Defence requires a huge effort to mobilise quickly, then move and sustain forces. The requirement outstrips the capacity of the military alone and depends upon a civil-military logistic structure and enabling capabilities. Senior commanders and military analysts continue to highlight the requirement to remove civil bureaucracy between NATO states and improve mobility on intra-European routes. Similarly, liberated space is required to be handed over to civil administration—the complexity of this “relief in place” cannot be underestimated, particularly where terrain, airspace or territorial waters have been cleared of conventional forces, yet asymmetric threats persist. It is too late to be thinking about this aspect of Command and Control (C2) once boots are on the ground.

In a speech to the International Institute for Strategic Studies, General Sir David Richards offered a clear sense of the priority he gives to C2 in the Information Age: “For some years, I have been paraphrasing that great American General Omar Bradley who emphasised that professionals should place logistics before tactics. My version is that professionals first and foremost sort out Command and Control, followed by logistics, followed by

Total Defence Concept: Tor Honningsvåg, Senior Advisor, Norwegian Directorate for Civil Protection (DSB), during an interview with JWC Public Affairs. JAVELIN exercised the Norwegian Joint Headquarters' interaction with civil government organizations that contribute to Norway's Total Defence Concept in order to increase the Norwegian Armed Forces' ability to conduct high-intensity NATO Article 5 operations. DSB's overall task is maintaining a complete overview of various risks and vulnerability in general. The Total Defence Concept comprises society's support for the Norwegian Armed Forces as well as Armed Forces' support of civil society. Photo by JWC PAO



More than 75% of Host Nation Support to NATO operations is provided by civilian actors or by means of civilian infrastructure.

tactics. Get C2 right, putting the right people into it, and anything is possible.”¹⁸

The JWC exercises are starting to really stress Host Nation C2 dilemmas through planning phases and are revealing important themes in areas of civil administration and law during the transition from peace through the spectrum of conflict. Knowing who the key civilian interlocutors are—those “right people” that General Richards describes—and ensuring clear understanding of *modus operandi* for any particular nation’s Total Defence Concept

is absolutely critical to effective C2. Interestingly, a recent NATO C2 Centre of Excellence paper has added considerable emphasis to this requirement to describe *who* is responsible to *whom*, for *what* in relation to civil-military co-operation in the era of Total Defence.¹⁹

JAVELIN saw the integration of forces between Host Nations and NATO with nine separate nations in play. Norway’s Total Defence Concept allowed complex aspects of Alliance command, control and coordination, not to mention cost of conflict analysis to be considered. This work breaks new ground in doctrine development, and, whilst JAVELIN took great strides, operational dilemmas will now be refined further for JUNCTURE 2018 to challenge processes with Host Nation resilience structures, including state of order and national law on transition. This is a theme to be developed with Joint headquarters during the Academic Study phase of exercise preparation.

4/ StratCom and the Information Environment

This year’s SACT Strategic Foresight Analysis Report is revealing, particularly in Human and Technology themes.²⁰ The report describes areas of conceptual understanding moving so quickly that time horizons become almost meaningless; the rapidly changing information environment and human communication

Logistics and sustainability: Offloading vehicles from a cargo ship in support of BRILLIANT JUMP 2016. Photo by Edouard Bocquet, NATO

LEARN MORE

Operational level logistics (Page 22)



BELOW: Simulated television newscasts highlight the prominent role of information warfare in the conflict. **RIGHT:** A simulated press conference, (TRIDENT JAGUAR 2015). Photos by JWC PAO



THE INFORMATION ENVIRONMENT:

The physical, virtual and cognitive space in which information is collected, processed, perceived, disseminated and acted upon. It consists of individuals, organizations and information systems as well as the information itself.

Annex B to MC 0422/4



is, probably, where evolution is most stark. As Hope Carr's excellent article in our last journal (Issue No. 32, Pages 34-38) highlighted, the dawn of the information battlespace has resulted in commanders being drawn inexorably into areas of public diplomacy, which were previously the domain of statesmen and politicians. Not to participate is no longer an option; the "Battle of Narratives" is so dynamic and fundamental to theories of victory and defeat. Former SACEUR, General Philip Breedlove stated: "Battles will be fought on the ground, in the air, and at sea; but the next war will be won in the information battlespace."²¹

Human communication is challenging at the best of times. It takes huge intellectual effort to stay ahead, delivering a proactive and assertive Strategic Communications (Strat-Com) narrative, rather than simply reacting to events. Think about the complexity of messaging at the strategic, operational and tactical levels. Think about how communications might be refined and nuanced for domestic and international audiences, whilst ensuring consistency and avoiding contradiction. Think about the vast array of communication channels and how each and every one is viewed by different demographics and segments of a population, and one begins to appreciate the challenge to be confronted. JAVELIN allowed this dynamic, fast moving aspect of modern military affairs to impact the Joint Force Head-

quarters and components in a particularly challenging way. It was enlightening to see how forces adjusted to the environment, developing tools and procedures to effect behavioural change favourable to the Alliance; for instance, via social media with their "#PuttingTheRecord Straight" campaign. Our thinking is moving at pace and the JWC Information Environment Working Group is advancing in concert with HQ SACT to address this complexity and heighten awareness of non-lethal means; Sun Tzu's notion of "warfare as analogous to persuasion and a battle for hearts and minds."²²

Our drive to ensure that Training Audiences incorporate information activities

coherently, rather than add them as an afterthought, has gained real traction. This dimension must be at the forefront of operational planning and calls for a mind-set shift and also an organisational switch—most likely felt in terms of battle rhythm. So, as we now bridge from JAVELIN 2017 to JUNCTURE 2018, it is encouraging to note that JFC Naples has requested additional focus be placed upon Soft Targeting for their exercise in Autumn 2018.

5/ Battle Rhythm

If by rhythm we mean a pattern of recurring motion in the HQ, then it must also depend

"Not to engage is no longer an option." Joint press conference with the Commanders of the Polish, French and the U.S. detachments during Exercise PUMA 2015. Photo by Edouard Bocquet, NATO





The author, Colonel Wright, during an EXCON map room briefing with General Farina and Lieutenant General Rune Jakobsen, Commander Norwegian Joint Headquarters, in attendance. Photo by JWC PAO

6/ Joint Targeting

The importance of timely, accurate and intelligent targeting has been borne out in recent exercises, particularly where we have accentuated the grey areas between conventional and asymmetric threats and the requirement to co-ordinate and synchronise both lethal and non-lethal actions. Military professionals sometimes seem most comfortable at the kinetic end of the targeting spectrum. Perhaps this is because the principles of fire and movement are drilled into every new recruit from the outset of their military career and are therefore instinctive. What is less intuitive is the integration of information into the fires and manoeuvre mix. Yet, at the risk of stating the obvious, in the current Information Age this must become our foremost preoccupation.

So, we are consciously addressing fires planning to encourage appropriate balance between lethal-focused and non-lethal capabilities, ensuring that the latter is not simply added as an afterthought towards the end of the targeting process. We are tracking some exciting transformational thinking by Multi-national Capability Development Campaign (MNCD) into Integration of Lethal and Non-Lethal Actions (ILNA).²⁴ This seeks to establish a doctrine-based process for integrating lethal and non-lethal actions up front in

upon a sense of timing, flow and cadence. Whilst the former is about routine and “going through the motion”, it is those latter aspects of timing, pace and tempo in battle rhythm that support campaign synchronisation. For it is a flexible, adjustable rhythm that enables the “kingfisher moment” in operational art, rewarding the intuition of our very best generals: “Nine-tenths of tactics are certain, and taught in books: but the irrational tenth is like the kingfisher flashing across the pool, and that is the test of generals. It can only be ensured by instinct, sharpened by thought practicing the stroke so often that at crisis it is as natural as a reflex.” [T.E. Lawrence].

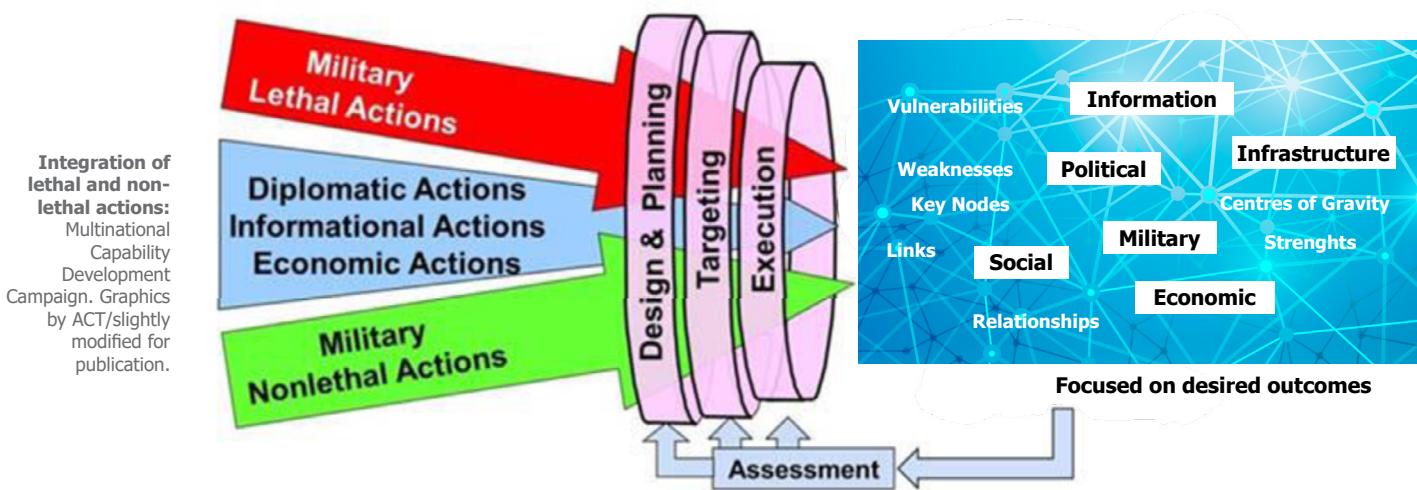
In exercises, we see the deliberate cycle of command and staff activities intended to synchronize current and future operations. These are the boards and working groups that coordinate activity according to different planning horizons and require a gearing mechanism to connect and synchronise them. Yet it is only the most agile headquarters that can gear shift in an accelerated environment and flex capacity of the staff across J3, J3/5 and J5 activities, depending upon changing events and priorities.

If the planning and assessment staff can adapt to a faster cycle, then they will allow that “kingfisher moment” of operational art in their commander, to exploit the fleeting opportunity. A set period Joint Coordination Cycle of, say, seven days, might limit the agility of the HQ and offer insufficient tempo to outpace an

adversary. If we really are all about decision superiority and moving at the speed of relevance through Boyd’s Cycle of Observe, Orient, Decide, and Act, then adjustable battle rhythm must be practiced.²³ This is as much about command culture, adaptability and the manner by which (traditionally) the Chief of Staff works up the team through Battle Staff Training and the like; what Lawrence described as “thought practicing the stroke”.

Major General Andrzej Reudowicz (right) with Rear Admiral (Ret.) Chris Snow at JFC Brunssum. Photo by JFC Brunssum PAO





We are consciously addressing fires planning to encourage appropriate balance between lethal focused and non-lethal capabilities.

the operational design and planning process. The aim is to enable commanders to engage an adversary using a multi-domain approach to solve the sort of complex operational problems faced now days; and not just use the “hammer to crack the nut”.

Moreover, the exploitation of lethal battlefield actions to accelerate non-lethal information effects and vice versa (Sun Tzu’s hearts and minds) requires careful and detailed thinking. Appreciation of intended and unintended consequences is where operational art comes into play if military commanders are to wage “information war” to counter an adversary’s narrative, not to mention protect vulnerabilities within their own Centre of Gravity (CoG).

It is also worth noting that the sheer scale and tempo of major combat operations across a vast JOA might deny the luxury of centralised targeting processes, such as we have known on operations in recent years. It is becoming clear that fresh thinking may be required with regard to delegations and au-

thority, in order to deal with the quantity, scale and speed of demands such as they were on JAVELIN. Agility is particularly critical to the exploitation of time sensitive and dynamic targeting opportunities. Moreover, these challenges of volume and scale also apply to the tasking of surveillance and reconnaissance assets in order to conduct Battle Damage Assessment. There is little point in targeting if no capacity exists to assess outcomes; a requirement sometimes overlooked.

Emerging themes in the context of Collective Defence

It is reassuring to note that so many of our observations from training ultimately coalesce around a relatively small number of themes; those hardy perennials we call our “Big Rocks”. That said, we cannot afford to stand still and must constantly review their relevance as we continue to evolve. With echoes of Bradley’s emphasis on logistics before tactics,²⁵ there are new logistical and legal dimensions that warrant increased prominence as we adjust from expeditionary campaigning to operating within territory of NATO Member States.

Lieutenant General Ben Hodges (the outgoing Commander U.S. Army in Europe) captures the legal and logistical pressures evocatively: “NATO forces should be able to move as fast in Europe as a Polish truck with a load of apples on the way to Lisbon.”²⁶

General Hodges’ campaign to highlight the lack of a “Military Schengen” has done a huge amount to unlock bureaucratic paralysis in legal and logistical areas. JAVELIN

highlighted other areas in relation to states of emergency, conflict and war across Host Nations and concomitant impact upon the conduct of operations in the sovereign territory of NATO states. The stressing of the defence industrial base and other forms of support, including civil transportation, communications and energy infrastructure provided valuable stimulus, as did linkages with Norway’s Total Defence Concept at national, regional and local levels. This plays directly into the level of ambition set for JUNCTURE 2018, as will further work relating to risk appetite and thresholds in terms of casualties, platforms and materiel in Article 5 operations.

Know the enemy, know yourself

Given that the practical part of our exercises starts with Strategic and Operational Planning, and culminates with execution of the Operational Plan, the JWC staff are uniquely placed to assess coherence and consistency through all stages of the planning process. Perhaps the most obvious assessment of consistency in joint force planning is revealed through the CoG analysis. It is all too easy for the thread of continuity to become stretched or severed, resulting in incoherent planning against the wrong campaign end-state. CoG analysis is one of the best indicators of this. So, time spent in analysis is never wasted, particularly in relation to well considered CoG analysis, which really is a foundation for any plan. Doctrine describes the detailed consideration a Joint Force Commander must give to analysing both



JOINT WARFARE DEVELOPMENT



ABOVE: JAVELIN (left) and the Scenario Wargame in preparation of TRIDENT JUNCTURE 2018 (learn more about the Wargame on Page 77). Photos by JWC PAO

his own, and enemy CoG: Characteristics, capabilities, or localities from which a... military force... derives its freedom of action, physical strength, or will to fight.²⁷

A CoG can sometimes unlock a campaign end-state and is worthy of close personal engagement by the Joint Force Commander. The commander must decide who, or what, has central importance within the context of the campaign, thus allowing him to allocate resources, either to protect the CoG of his own force or to attack that of his opponent. Perhaps it was ever thus, but CoG at the operational level seems to frequently focus upon intangibles relating to the battle of wills and narratives. This could be to do with the ubiquity and all-encompassing nature of the information environment and social media phenomenon. Amongst Training Audiences the greater weight of analysis often seems to be

given to enemy CoG, at the expense of consideration of own critical strengths and vulnerabilities. And yet the need to protect the CoG of friendly forces against, for instance, the tit-for-tat playground manipulations of “fake news” has never been more prescient. If not checked, such propaganda can drive a barb to the heart of morale, resolve and cohesion. This is about protecting the force, the mission and even the political state. In the information environment tactical actions have strategic consequences and the “flash to bang” is measured in minutes rather than hours. We must know our vulnerabilities and ruthlessly protect them. The simulated information environment on JAVELIN was relentless and unforgiving, just as in real world, and stretched every sinew of the Joint Force Commander, who responded positively to this reality of modern day campaigning.

To the work ahead

This article only really scratches the surface of Warfare Development and innovation in the JWC. With more time and space, it might have been possible to expand on the importance of exercise setting and scenario work, helping to conceptualise Major Joint Operations and Collective Defence. As one recent visitor put it, “scenario opens the door to interoperability”.²⁸ In that sense, the new OCCASUS scenario for JUNCTURE 2018 represents a quantum step forward in exercising Collective Defence and our plans to build scenario material in TOP-FAS are genuinely transformational.²⁹

Moreover, this article has touched doctrine development work only fleetingly in the context of Battlespace Management and Logistics, but doctrine imbues everything. As



Capabilities: NATO's future structures must be robust enough to cope with the requirements of a major all-out conflict. Royal Air Force A400M lands at Lielvārde Air Base (Latvia) to support RAMSTEIN DUST II. Photo by Miks Uzans, NATO.



The way ahead: The unveiling of the logo of upcoming Brussels 2018 Summit, which will be held on 11 and 12 July 2018. Photo by NATO



we were reminded on JAVELIN, it is our key to communication and interoperability. Discussion without definition is pointless and without prescriptive method we risk cross purpose communication and confusion. And whilst this article has covered some of the work in the so-called information environment, there is much else going on in our Concepts and Capability Integration area, not least in the Space and Cyber Domains, and enhancing the sophistication of Operations Assessment to assist commanders in making evidence-based decisions. These might be topics for future articles in this journal; suffice it to say there is much work to be done in the months ahead, it feels relevant, real and very much to the point of NATO's current effort.

So, Europe may well have entered what analysts view as a dangerous new phase. The fast-changing geopolitical landscape makes for interesting work in Warfare Development and a fascinating time to be serving here in NATO's Warfare Centre. We have a unique and privileged purview of *Generalship*, and the higher command and staff within NATO. We see the most talented commanders and staff operating in challenging and stressful conditions. It would be impossible not to be humbled and impressed by this. Yet the privilege comes with responsibility, which is to offer valid observations from training back into Warfare Development. It behoves us all to reflect upon this, the *raison d'être* of training and warfare in NATO. That linkage must be self-evident and plays to the very heart of multi-nationality, interdependence and interoperability. We are limited only by our own imagination! ♦

Recommended Reading

* NATO Strategic Foresight Analysis, 2017 Report
www.act.nato.int/images/stories/media/doclibrary/171004_sfa_2017_report_hr.pdf

END NOTES:

- 1 A2/AD or Anti-Access/Area Denial.
- 2 Including Academic Packages, Key Leader Training, support to Operational Planning, advice to Battle Staff Training and Computer-Assisted Command Post Exercises (CAX/CPX).



**“ THE PLAN IS
NOTHING, BUT
PLANNING IS
INDISPENSABLE. ”**

GENERAL DWIGHT D.
EISENHOWER

- 3 Requiring Joint Force Command Brunssum to conduct a Washington Treaty Article 5 operation to defend and restore territorial integrity of NATO member states in the most challenging security environment.
- 4 Michael Howard, "The Causes of Wars" (London: Unwin, 1983): 208-217.
- 5 See Oxford University Changing Character of War Programme: www.ccw.ox.ac.uk/research
- 6 AJP-3.
- 7 To be included in updating Allied Joint Doctrine for Deployment of Forces (AJP 3-13).
- 8 Stephen R Covington, "The Culture of Strategic Thought Behind Russia's Modern Approaches to Warfare" Harvard Kennedy Belfer Centre, October 2016, and, Romeo Squared "General Gerasimov describes state of Russia's Armed Forces", 16 November 2017 (www.romesquared.eu).
- 9 PMESII: Political, Military, Economic, Social, Infrastructure and Information.
- 10 Although Lt Cols Derksen, Mientus and Winter, Sqn Ldr Ball and Lt Cdr Strina are singled out here, there was a vast staff effort behind them from all Branches and the deployed Training Teams; all deserve special credit.
- 11 See Baltic Defence College and Potomac Foundation "Baltic Security Net Assessment", 1 October 2017.
- 12 JWC's "Big Rocks", described in our Operational Staff Handbook, are: Information Management; Battlespace Management; Civil-Military Integration; Strategic Communications (organisation and messaging); Battle Rhythm and Joint Targeting.
- 13 AJP 6, Allied Joint Doctrine for Communication and Information Systems elaborates requirements clearly.
- 14 Communication and Information Systems.
- 15 NATO Communications and Information Agency and NATO CIS Group.
- 16 Phase IV of NATO Crisis Response Planning; development of the CONOPS and OPLAN.
- 17 See the article by Capt (US-N) Bill Perkins (JAPCC), also in this edition of the journal.
- 18 General Sir David Richards, "Future Conflict and Its Prevention: People and the Information Age". A speech to IISS on 18 January 2010.
- 19 NATO Command and Control Centre of Excellence Seminar Review 2017, page 52 "Considerations in the Re-establishment of Total Defence".
- 20 Strategic Foresight Analysis 2017 Report, Supreme Allied Commander Transformation (SACT), dated 4 October 2017.
- 21 General Philip M Breedlove during a visit to the JWC on 29 September 2014.
- 22 Steven Combs, "Sun Tzu and the Art of War: The Rhetoric of Parsimony". Quarterly Journal of Speech 3: 276-94, August 2000.
- 23 "Science, Strategy and War", The Strategic Theory of John Boyd", December 2006, Routledge.
- 24 The US-led Multinational Capability Development Campaign (2017-2018), Integration of Lethal and Non-lethal Actions (ILNA). See www.act.nato.int/mcdc
- 25 Op. cit.
- 26 Lieutenant General Ben Hodges, Commander US Army in Europe, "The Achilles Heel of NATO", Reuters, 17 November 2017.
- 27 AJP-5 Allied Joint Doctrine for Operational Planning, 2013, P 2-32.
- 28 Brigadier General John Healy, Director ECJ7, US European Command (EUCOM).
- 29 TOPFAS is NATO's operational planning tool: Tool for Operational Planning Facility Area Service.