



THE MAGAZINE OF THE JOINT WARFARE CENTRE

THE THREE SWORDS

STAVANGER – NORWAY

EXCLUSIVE INTERVIEW

Oana Lungescu,
NATO Spokesperson



MULTI-DOMAIN OPERATIONS

Adapting Beyond Joint Doctrine

THE EVOLUTION OF THE INFORMATION BATTLESPACE

Operationalizing Intelligence and the "Deter and Defend" Strategy



THE ESSENCE OF RISK
SUPPORTED/SUPPORTING INTERRELATIONSHIPS
GETTING THE MOST OUT OF A WARGAME



ON THE COVER

Top: The Nimitz-class aircraft carrier USS George H.W. Bush (photo by Petty Officer 2nd Class Novalee Manzella, U.S. Navy). The George H.W. Bush carrier strike group was placed under SACEUR's command and control during NATO Exercise NEPTUNE STRIKE 2022. Read more about the strategic communications efforts conducted during the exercise on page 18. **Bottom, from left:** The North Atlantic Council during 2022 NATO Madrid Summit; Oana Lungescu, NATO Spokesperson; Jens Stoltenberg, the NATO Secretary General (photos by NATO). Exercise COLD RESPONSE 2022 (photo by Torbjørn Kjosvold)

BACK COVER

Major General Piotr Malinowski, Commander Joint Warfare Centre (JWC), during NATO Exercise STEADFAST JUPITER 2022 (photo by JWC PAO). **Top:** NATO Exercise STEADFAST JACKAL 2022 (photos by NRDC-ITA)

THANK YOU!

Colonel Richard "Chris" Hyde, SHAPE Chief Public Affairs Officer; Brandon Chhoeun, Head Graphics and Reproduction, HQ SACT; Staff Sergeant Marco Orru and Corporal Mattia Russo, NRDC-ITA PAO

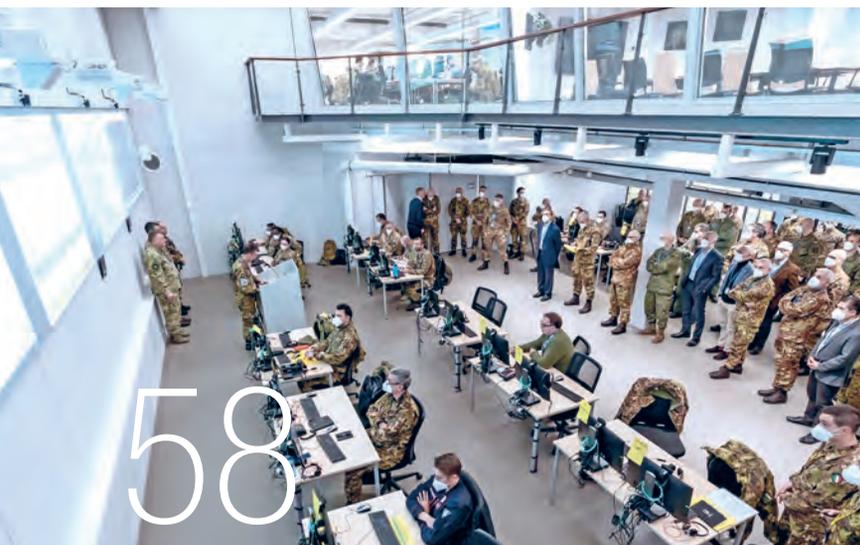


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December 2022
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"The Joint Warfare Centre is purpose-built and holds the entire communications infrastructure to run exercise control and support a training audience who may wish to deploy to Stavanger for an exercise. There is sufficient IT to furnish exercise control as well as establish a warfighting headquarters. The training audience sits at the heart of every exercise we conduct, and the Centre provides the wrapping around it to ensure that it is a truly immersive environment. We provide highly realistic and demanding training. If during the execution of an exercise the training audience feels the presence of an exercise control, then we failed in our task." (p. 93)

Wing Commander John Rees MBE, British Air Force
Resources, Analysis and Planning Branch Head
NATO Joint Warfare Centre



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EDITOR'S LETTER



DEAR READER,

Much has changed in the world since the publication of our last magazine issue at the end of 2021.

Since 24 February of this year, Russia has been openly waging a war that violates international law and in which countless people are dying senselessly. Although Russia tries to divide the world's biggest alliance for peace, democracy, freedom and the rule of law, NATO has grown even more united. President Putin has achieved the opposite of his stated aim to prevent NATO from expanding, as two of Russia's neighbours, Sweden and Finland, have now been invited to join the Alliance. Belonging to a defence alliance with mutual assistance obligations has grown even more important to the populations both inside and outside of the NATO member states.

Despite Russia's efforts to fill the information environment with disinformation, credibility remains on NATO's side. The NATO Headquarters Public Diplomacy Division is continuously informing the public, and the public affairs offices across Allied Command Operations (ACO) and Allied Command Transformation (ACT) do excellent work every day to provide accurate information in a timely manner. This ensures that NATO stays credible, no matter which audience receives the information.

We are proud to have been able to gain contributions to this issue from two top NATO speakers, NATO Spokesperson Oana Lungescu and Headquarters Supreme Allied Commander Transformation's Chief Public Affairs Jay Paxton. We are also pleased to feature ACO Communications Director Jay H. Janzen, whose article provides insight into ACO's communications strategy.

During the Madrid Summit this summer, NATO members agreed on the NATO 2022 Strategic Concept. This key Alliance document reiterates NATO's three core tasks: deterrence and defence, crisis prevention and management, and cooperative security. The Joint Warfare Centre-led exercises contribute to all of these.

In this edition of The Three Swords, you will find articles on the Joint Warfare Centre's exercises and warfare development efforts. Furthermore, you can read the latest on the topic of multi-domain operations in two exclusive articles from NATO's strategic Headquarters Supreme Allied Commander Transformation.

On behalf of the editorial team, I would like to thank the authors, without whom this edition would not have been possible.

Finally, I wish all readers happy holidays and all the best for 2023.

Lieutenant Colonel Stefan Kühling
German Army
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THE THREE SWORDS MAGAZINE

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THE THREE SWORDS is the Joint Warfare Centre's authorized journal published twice a year by the Public Affairs Office. It presents a compilation of articles, editorials, opinions, news and general information related to the JWC as well as a variety of key defence and security issues.

The views and opinions expressed in this journal are those of the authors and do not necessarily represent the official position or policy of member governments or of NATO.

Submissions have been edited for length, clarity and organizational standards.

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Major General Piotr Malinowski Polish Army Commander Joint Warfare Centre

I CONSIDERED IT AN HONOUR and a privilege to assume command of the Joint Warfare Centre (JWC), whose mission is to train NATO's command and force structures to meet current and emerging challenges.

The JWC is a unique organization that delivers high-intensity, high-value and realistic training at all levels, while developing warfare expertise to keep and hone our military edge. Our One Team, currently with staff members from 17 nations, ensures that we remain fit for the future in the continuously changing, challenging and competitive security environment we face. Our vision is best reflected in our motto: "Together! We make NATO better!"

As Commander of this unique organization since October 8, 2021, I have had the privilege of directing four major NATO command post exercises focused on NATO readiness. During these exercises, which can involve up to 5,000 personnel, the JWC trains multiple training audiences across a range of highly complex multi-domain warfighting challenges, using both Article 5 and non-Article 5 fictitious scenarios that we generate in-house.

Our exercises are NATO's largest and most challenging command post exercises spanning from tactical to operational and strategic levels, and they continue to expand both in scope and complexity. However, we are also an organization focused on innovation, and so our output is multifaceted. In addition to our work on the development of warfare capabilities, our output includes wargaming and a myriad of activities in support of digital transformation, operationalizing cyberspace, space support to NATO operations, and human security to satisfy the needs of NATO and the member and partner nations.

Today's battlefield, regrettably represented by Russia's illegal invasion of Ukraine, would have looked completely different a decade ago. Our challenges shift at the pace of technological progress, and we must evolve and train to overcome new obstacles. We must continuously adapt our exercises to sustain operational advantage. Multi-domain operations is a great example, which we continue to cover in our magazine.



Our defensive Alliance is strong and united to deter and defend across the Euro-Atlantic area, undertaking its largest adaptation since the Cold War with a new Strategic Concept and new strategies for deterrence and defence, including a new NATO Force Model, focused on increased high readiness.

But that is not all NATO does. Every day, the Alliance also defends our shared values of individual liberty, democracy, human rights and the rule of law.

As NATO's premier training establishment at the operational and strategic levels, the JWC is determined to ensure that NATO forces are well trained and ready to meet all the requirements of the Alliance, providing 360-degree protection of NATO territory.

Central to all these developments is effective communication; our theme in this issue of *The Three Swords*. Everything we say and do has a communicative effect; every ac-

tion sends a message. The most crucial message is our unity, our cohesion. Exercises are a powerful message of Allied deterrence. Together we are strong.

We accomplish our unique mission with tremendous support from our host nation Norway. The Norwegians' support of the JWC is built on trust, close cooperation and open dialogue. The crown jewel of this cooperation is our newly refurbished In-Rock Facility, which will add great value to our delivery of exercises.

This NATO-funded project was carried out by the Norwegian Defence Estates Agency (NDEA), with IT upgrades led by NATO Communications and Information (NCI) Agency's CIS Support Unit in Stavanger. With such advances in our Jättå premises, we will keep the JWC fit for purpose for many years to come.

To conclude, I would like to highlight a very special day: October 23, 2023, which marks the JWC's 20th anniversary! This date marks a great milestone that all of us in this beautiful host nation look forward to celebrating.

I will end by reiterating: "Together! We make NATO better!" And this will undoubtedly hold true in 2023 as well. ✦



Photo by NATO

OANA LUNGESCU

“ If Russia stops fighting, **there will be peace**. If Ukraine stops fighting, it will cease to exist as an **independent nation**. And if Russia wins in Ukraine, Russia could choose to risk aggression **against other neighbours**.”





ANA LUNGESCU is the principal Spokesperson for the NATO Alliance. Her NATO career so far has spanned seven summits (Lisbon, Chicago, Wales, Warsaw, two in Brussels, and Madrid), the Alliance's 70th anniversary, the NATO 2030 initiative, and arguably the most important NATO document produced in a decade, the 2022 NATO Strategic Concept. During this time, Montenegro and the Republic of North Macedonia joined the Alliance.

In the past decade, the world has changed considerably — emerging security threats, the Russian invasion of Ukraine, climate change and energy challenges, weaponization of social media for malicious aims, and technology continuing to shape our lives. The world is more uncertain, but also full of opportunities, especially with advances in space.

Particularly exciting is that Ms Lungescu is the first woman, and the first journalist, to serve as NATO Spokesperson, following a long and successful journalistic career with the BBC World Service. The recipient of many awards, Romanian-born Ms Lungescu reached a large audience with her BBC documentary series "State Secrets" about secret police archives and her own file with Romania's Securitate. The series earned her a commendation from the jury for the 2010 UACES — Thompson Reuters Reporting Europe Prize. You can follow her on Twitter @NATOpres and Instagram @oanalungescu.

*Interview by Public Affairs Office
NATO Joint Warfare Centre*

Ms Lungescu, thank you very much for agreeing to this interview. Let's start with your role as NATO Spokesperson. What does a typical day at work look like?

— We live in a dangerous and competitive world, which means that no day is like any other. But that's what also makes it so interesting. My role is to provide strategic advice on press, media, messaging and narratives to the Secretary General, the North Atlantic Council, and NATO commands and offices. So I brief the Secretary General every day and regularly travel with him, attend all the meetings of the North Atlantic Council, and am in daily contact with the chain of command.

I am also in charge of all the interviews, speeches, and articles by the Secretary General and Deputy Secretary General. The two of them conducted 300 interviews with international media in the first half of this year — as many as they did in the whole of 2021. That also led to a 300 percent increase in reach for our media engagements, to almost 40 billion people.



As NATO Spokesperson, I obviously speak to the media every day, and coordinate NATO's 24/7 media operations, including ministerial meetings and summits. Just in the first half of this year, we organized three NATO summits and six ministerials, with around 5,000 journalists attending. So, we have a lot to do, but I am lucky to have a great team of around 30 dedicated professionals in the Press and Media Section of the Public Diplomacy Division at NATO Headquarters.

You are the first journalist to hold this position in NATO. What inspired you to pursue a career in communications?

— It was totally accidental. A career in communications was not an option in Romania, where I grew up and which at the time was one of the most closed communist countries. But I used to listen to foreign radio stations such as the BBC, Deutsche Welle and Voice of America — under the bed covers, so that neighbours would not hear it and report me to the secret police.

When I managed to leave Romania, I saw a job ad for the BBC World Service and eventually went to London. After 25 years at the BBC, where I also reported from Brussels on NATO and the EU, I ended up on the other

side of the story, as NATO Spokesperson. I am really proud to be the first woman in this job, and the first journalist.

How would you define effective communications in today's security environment?

— To my mind, effective communication is about clarity, credibility, and cooperation. We need to reach a wide range of audiences around the world, not just the experts. So we must use clear language that people can understand. No acronyms and no jargon. We also need to have credible messages, and to communicate in a timely fashion. We need to be the first out with the truth. So, it is very important to have the right information and images at the right time.

We also need to be aware of what others are saying, so we invest a lot of energy in monitoring and analysing media and social media. We strive to be trusted partners for international media, to ensure they come to us first when they report on NATO. And the NATO Public Diplomacy Division also conducts our own polling to understand peoples' perceptions and see whether our messages are reaching our primary audiences.

Communication is a team sport, so cooperation is key. We work closely with colleagues within the Public Diplomacy Division, with national delegations and capitals, and with the chain of command. I totally rely on our network of military public affairs officers, who are doing a great job. Regular training and exercises — including those organized by the

Joint Warfare Centre — are really important to ensure we all communicate as a team. Because ultimately, the most important message we must convey is the unity of the Alliance. That is what our adversaries are trying to undermine every day through aggressive disinformation and other malign activities.

You have been in this position since 2010. How has NATO's approach to communications changed since your arrival?

— A lot has changed. The news cycle has become more intense, and we have become much faster. Social media is now a much bigger part of the job, and I really enjoy engaging on Twitter and Instagram. In the first half of 2022, our Twitter followers increased by 50 percent. But it also means that we get media queries on all these platforms, often at the same time. Only in the first half of this year, the Press and Media Section dealt with over 2,000 media queries and corrections, an increase of almost 60 percent from last year.

NATO has been facing disinformation and propaganda since its foundation. But since 2014, we have seen an exponential increase — not just from Russia, but increasingly from China and other actors. We cannot deal with every piece of disinformation; that would waste time and resources, which is exactly what our adversaries would want us to do. That is why in 2014, we created a portal on the NATO website called "Setting the record straight", to debunk the key Russian myths about NATO.

BELOW: (Left) Destroyed buildings and debris in Kyiv, Ukraine, on March 23, 2022. Photo by kibri_ho/Shutterstock. (Centre) The banner of "Setting the record straight" subpage (<https://www.nato.int/cps/en/natohq/115204.htm>). (Right) At the NATO HQ opening of the "Russian War Crimes House" exhibition on July 6, 2022, NATO Assistant Secretary General for Public Diplomacy, Ambassador Baiba Braže (left), looks at photo exhibits. Photo by NATO



A TRANSFORMATIVE SUMMIT



KEY DECISIONS

- // 2022 Strategic Concept
- // Strengthened deterrence and defence
- // Investing more in defence
- // Support to Ukraine
- // Adapting the Alliance to emerging challenges
- // Official invitation to Finland and Sweden to become NATO members
- // Recommitment to the fight against terrorism
- // Reaffirming NATO's common values

The North Atlantic Council,
NATO Madrid Summit,
June 30, 2022.
Photo by NATO



“The **most important message** we must convey is the **unity of the Alliance**. That is what our adversaries are trying to undermine every day through aggressive disinformation.”

The best way to counter disinformation is to communicate confidently and proactively. NATO's strong and united response to Russia's invasion of Ukraine has put the Alliance in the media focus as never before. That is a challenge, but it is also an opportunity we must continue to capitalize on. And we must not forget traditional communications can be extremely effective. A key driver for our communication at the NATO Summit in Madrid this year was the Secretary General's press conferences. They were aired live by over 30 major TV networks around the world, reaching an estimated audience of 1 billion people, with another half a billion in key print and online media. One of our main messages was: "President Putin is getting the opposite of what he wants — more NATO."

Considering the clear and persistent threat from Russia today, what does this mean for the Alliance?

— NATO is and remains a defensive alliance. Our mission is the same as when NATO was founded in 1949: to protect and defend all Allies. One for all, and all for one. So it remains key that Europe and North America stand together to protect our 1 billion citizens.

What has changed is the world in which we operate. It is more contested and unpredictable. Russia's war in Ukraine has triggered the gravest security crisis in Europe since World War Two. So the new Strategic Concept, adopted by NATO leaders at the Madrid Summit, rightly describes Russia as "the most significant and direct threat to Allies' security and to

peace and stability in the Euro-Atlantic area."

At the same time, we face many other threats and challenges, such as terrorism, instability in our neighbourhood, and the rise of authoritarian regimes. The Strategic Concept makes clear that while we remain open to constructive engagement with China, its "stated ambitions and coercive policies challenge our interests, security and values". The Strategic Concept also mentions climate change as "a defining challenge of our time, with a profound impact on Allied security".

Faced with all these threats and challenges, NATO is implementing the biggest overhaul of our deterrence and defence in a generation. With over 40,000 troops under NATO command, mainly in the eastern



part of the Alliance, supported by significant air and maritime assets; eight multinational battlegroups from the Baltic to the Black Sea; and greater ability to reinforce, with more pre-positioned equipment, more troops at higher readiness, and upgraded defence plans, with forces pre-assigned to defend specific Allies. We also invited Finland and Sweden to join our Alliance, which is a major geostrategic decision. The focus is now on implementing all these decisions as we prepare for the next NATO summit in Vilnius, Lithuania, next year.

As President Putin's unprovoked war against Ukraine plays out in real time, what are the opportunities and challenges for NATO communicators?

— The war in Ukraine is entering a critical phase. Winter is coming and it will be hard. Our unity will be seriously tested over the coming months, due to the energy and cost of living crises caused by Russia's brutal invasion. That



An operator from the Ukrainian Special Purpose Unit during NATO Exercise NIGHT HAWK 2021. Photo by NATO

is why Secretary General Stoltenberg has communicated very clearly on the importance of staying the course — both for Ukraine's security and for ours. As he said, the price we pay for our support to Ukraine is counted in money, while Ukrainians are paying with their lives. And all of us will pay a much higher price if Russia and other authoritarian regimes believe their aggression is rewarded. If Russia stops fighting, there will be peace. If Ukraine stops fighting, it will cease to exist as an independent nation. And if Russia wins in Ukraine, Russia could choose to risk aggression against other neighbours, and even an attack on NATO Allies. That is why NATO Allies have been providing assistance to help Ukraine prevail as a sovereign independent nation.

Since Russia's illegal annexation of Crimea in 2014, Allied countries have provided billions of dollars of support for Ukraine's security sector and institutions, and trained tens of thousands of troops, including special forces.

THE NEW NATO FORCE MODEL

The NATO Force Model aims to deliver an Allied response at much greater scale and at higher readiness than the current NATO Response Force, which it will replace. The transition to the model is planned to be completed in 2023.

Tier 1 Forces:

Well over 100,000+ / up to 10 days

Tier 2 Forces:

Around 200,000 / 10–30 days

Tier 3 Forces:

At least 500,000 / 30–180 days



"We will deter and defend forward with robust, in-place, multi-domain, combat-ready forces, enhanced command and control arrangements, prepositioned ammunition and equipment and improved capacity and infrastructure to rapidly reinforce any Ally, including at short or no notice."
(NATO Strategic Concept, para. 21)



CLOCKWISE: A Dutch-German Air and Missile Defence Task Force Patriot surface-to-air missile system deployed near Sliac Air Base, Slovakia, to reinforce defence capabilities in NATO's east; NATO Exercise RISING GRIFFIN 2022, enhanced Forward Presence Battlegroup Lithuania; air defence training over the Baltic region (Photos by NATO). HMS Prince of Wales, COLD RESPONSE 2022 (Photo by UK Ministry of Defence, Crown Copyright)





ABOVE: Over 40,000 troops, along with significant air and naval assets, are now under direct NATO command in the eastern part of the Alliance, supported by hundreds of thousands more troops from Allies' national deployments. Furthermore, NATO rapidly established four new multinational battlegroups in Bulgaria, Hungary, Romania and Slovakia, in addition to the existing battlegroups in Estonia, Latvia, Lithuania and Poland. The eight battlegroups extend all along NATO's eastern flank, from the Baltic Sea in the north to the Black Sea in the south. **BELOW:** Press point with NATO Secretary General Jens Stoltenberg in response to Russia's illegal annexation of four regions of Ukraine, September 30, 2022. "This is the largest attempted annexation of European territory by force since the Second World War." – NATO Secretary General Jens Stoltenberg

This helped to make the Ukrainian armed forces stronger, better led and better prepared for Russia's renewed invasion.

Since February, Allies have rallied to Ukraine's side with unprecedented military, humanitarian and financial support. In June, NATO leaders agreed a strengthened package of assistance, with fuel, food, medical supplies, military gear, secure communications and equipment to counter mines and drones. And we will support Ukraine's transition from Soviet-era weapons to NATO-standard capabilities.

NATO is part of the U.S.-led Ukraine Defense Contact Group, and we see the decisive difference our support is making on the battlefield every day. The sanctions NATO Allies imposed, together with the EU, are also having an impact on the Russian economy. Our nations are seizing this opportunity to break free of Russia's energy blackmail for good. At the same time, we are making the most fundamental shift in our deterrence and defence since the Cold

War. NATO's security guarantees leave no room for miscalculation in Moscow about our ability to defend every inch of Alliance territory. The security guarantees also enable Allies to support Ukraine's right to self-defence.

How important are exercises, such as those directed by the Joint Warfare Centre with a full simulation of the media environment, to prepare NATO for current and upcoming security challenges?

— They are absolutely essential. Today, wars are fought on the ground, at sea and in the air, but also in space, cyberspace and in the media. Smart communications has a big role to play, as we can see now in Ukraine. The Joint Warfare Centre helps us test our procedures and communications in a crisis and how we respond to hostile communications. I have seen in action your excellent work in some of our exercises. This is invaluable for NATO, as we continue to adapt to a more dangerous world. ✦

#StandWithUkraine

**"Donetsk is Ukraine.
 Luhansk is Ukraine.
 Kherson is Ukraine.
 Zaporizhzhia is Ukraine.
 Just like Crimea is Ukraine."**

NATO Secretary General
 Jens Stoltenberg



OPERATIONALIZING INTELLIGENCE

Shaping the **Information Environment** and Galvanizing **Western Action** Against Russia

by Jay Paxton
Chief Public Affairs
NATO Headquarters Supreme Allied Commander Transformation



By now we know the first chapters of the Russian war on Ukraine. The story, however, would have been vastly different had the operationalization of intelligence not been matched to strategic public affairs. This article explores portions of how the West got that process and narrative right.

ON JANUARY 25, 2022, former British Prime Minister Boris Johnson addressed the UK House of Commons. He revealed "compelling intelligence exposing Russian intent to install a puppet regime in Ukraine" and, not incidentally, predicted that Ukrainian resistance "would be dogged and tenacious".

During a White House address on February 15, U.S. President Joe Biden directly contradicted a Russian assertion that it had withdrawn forces from the border. "We have not yet verified that Russian military units are returning to their home bases," Biden said. "Indeed, our analysts indicate that they remain very much in a threatening position."

Both nations, at the most strategic levels, began releasing intelligence assessments to inform domestic and international audiences of Moscow's mobilization on Ukraine's borders and the makings of an eventual full-scale as-

sault. UK and U.S. intelligence communities predicted the February 24 assault almost to the hour. Even before the start of the war, the UK Ministry of Defence began to release a daily battlefield intelligence update on Twitter that became must-read material for anyone following the conflict. They lowered the classification of other intelligence to share not just with Allies, but with partners and friends around the world.

The declassification of intelligence, of late dubbed "radical transparency", is directly tied to numerous subsequent actions. First, it positioned the United States and the United Kingdom as legitimate and trusted sources of information for Allies, Western news media and international organizations. The information was accurate and the information fusion between intelligence and public affairs created trusting relationships between leading military and political leaders and members of the news media. Second, as a corollary to the first point, it galvanized Western sentiment about Russia's actions leading to the strongest possible set of sanctions against Russia. Third, it united the West in various international fora and contributed to one of the most successful summits in NATO's history. A summit where Ukraine's President Zelenskyy was present, where Sweden and Finland were set on a firm path to join the Alliance — thus doubling the border between Russia and the rest of Europe

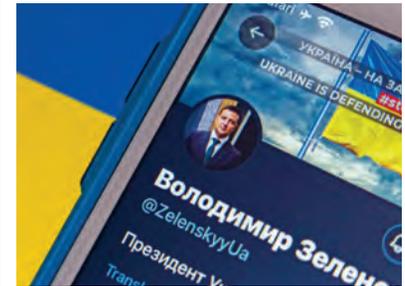
— and where 30 unified Allies stated: "We will continue to counter Russia's lies and reject its irresponsible rhetoric. Russia must immediately stop this war and withdraw from Ukraine."

All in all, a success for the intelligence communities. How was it achieved?

IN EARLY 2022, the U.S. intelligence community was emerging from two decades of mixed results. On the one hand, weapons of mass destruction were not found in Iraq, the high likelihood of an illegal Russian annexation of Crimea was not countered in a meaningful military posture, the speed with which Kabul fell was unforeseen. Syria and cyberspace activities compounded a general view of a staggering inter-agency colossus. On the other hand, terrorist leaders Abu Musab al-Zarqawi, Osama bin Laden and Ayman al-Zawahiri were killed and near real-time intelligence sharing with Ukraine was delivering strategic and tactical assistance in the country's self-defence and confounding Russia.

Throughout those successes and failures, there was one common thread: They all featured highly selective releases and control of information rather than open disclosure.

This changed in 2022 with Ukraine. In the Ukrainian context, the strategic and calculated disclosure of information to Allies and the public painted a more complete and more



PREVIOUS: (From left) NATO Secretary General Jens Stoltenberg, October 11, 2022. President Zelenskyy participating in NATO's Madrid Summit, June 29, 2022 (Photos by NATO). Peace sign on Ukrainian Flag (Photo by Denis Kuvaev/Shutterstock). Refugees on the Ukrainian-Slovak border, February 26, 2022 (Photo by Yanosh Nemes/Shutterstock)

ABOVE: Twitter account of Volodymyr Zelenskyy, the President of Ukraine. Photo by Koshiro K/Shutterstock



complex picture of Moscow's intent. The decision to share intelligence with Allies was made at the highest government levels. The Biden administration was trying to warn and rally Allies, friends, and partners, but was having difficulty communicating the gravity of the situation even to the Ukrainian government itself. U.S. Director of National Intelligence Avril D. Haines drove the idea forward; Biden saw the advantage immediately and endorsed Haines' strategy. "The President came back to us and said, 'You need to go out and share as much as you possibly can,'" Haines told CNN.

THERE IS SOME PRECEDENT for strategic transparency that dates back to the Cold War. During the Cuban Missile Crisis, the Kennedy administration publicly released classified reconnaissance photography that clearly illustrated assembly areas for Soviet-made ballistic missiles in Cuba as well as missile and aircraft shipments bound for the island. President John F. Kennedy capitalized on his advantage by outing the Soviet leadership as "liars" whose covert deployment threatened not just the United States, but half the hemisphere. Kennedy then went on an aggressive political campaign to rally the United Nations, European allies, and the Organization of American States. They were *first with truth*.

In communications terms, the Soviet disadvantage was plain for the world to see. The United States was on the offensive; the Soviet Union was reactive and defensive. This was illustrated most dramatically when the U.S. Ambassador to the UN, Adlai Stevenson, confronted his nearly speechless Soviet counterpart, Ambassador Valerian Zorin, in the Security Council. "Do you (...) deny that the USSR has placed and is placing medium- and intermediate-range missiles and sites in Cuba? Yes, or no?" Stevenson charged. "You will receive the answer in due course," Zorin spluttered. "Do not worry."

Transparency and accurate intelligence reinforced the Kennedy administration's credibility, just as correct forecasting of Russian moves in Ukraine raises American credibility now. Faced with a clear and imminent threat, it is much more difficult for undecided countries to ignore entreaties to join the coalition. Moreover, the dichotomy could not be more clearly etched: The Americans and Brits were consistently outing the Russians as liars.

The strategic advantage was obvious and noticed well before the outbreak of hostilities. "To mobilize allies, U.S. officials have shared sensitive intelligence about Russia's moves; when they've detected Russian plots, they've disclosed them," David Ignatius wrote in the Washington Post. "These aggressive tactics have checked Russia's usual advantages of surprise and stealth."¹ Former Director of National Intelligence James Clapper noticed the shift as well. "The new doctrine is the potential to use intelligence as an information operations weapon," he said.

The website War on the Rocks wrote on May 11, 2022: "[D]ecades of growing public transparency about intelligence, paired with unprecedented transformation in the capabilities and availability of open-source intelligence, made it possible for politicians, diplomats, and defence communities to reveal, challenge and warn of Russia's warlike preparations and intentions." War on the Rocks went on to note that "this made it possible to seize the initiative from Russian attempts at denial, deception, and prevarication, refuting and discrediting such efforts before they could happen through a policy of pre-emptive 'prebuttals'."²

The Biden administration was able to generate a coalition well before the war started, which enabled them to impose sanctions, de-



ABOVE: Avril D. Haines, Director of National Intelligence, speaking to the U.S. Senate Armed Services Committee on May 10, 2022: "The interconnected global security environment is marked by the growing specter of great power competition and conflict, while transnational threats to all nations and actors compete not only for our attention, but also for finite resources."

liver weapons, and close borders and airspace immediately once hostilities broke out. The New York Times reported: "William J. Burns, the CIA director, confronted the Russian government with its own war plans. Haines (...) shared secret intelligence with allied governments to build support for the American assessment. And the White House and State Department shared some declassified intelligence publicly to expose Mr. Putin's plans for 'false flag' operations and deny him the pretext he wanted to invade (...) But as the information provided grew and the Russian war plan played out as Ms. Haines had predicted, European officials shifted their view. The intelligence-sharing campaign ultimately succeeded in uniting Europe and America against Mr. Putin on a series of tough sanctions."³

The political advantages also delivered strategic communications benefits that were plain to see. "[The policy has] thrown Putin's plans slightly off," noted U.S. Senator Mark Warner.⁴ There was certainly a risk in predicting Putin's intent to invade, as the Biden ad-

Excerpt from
Executive Order 13526
December 29, 2009
(The U.S. Government Publishing Office)

**SEC. 3.1. AUTHORITY FOR
DECLASSIFICATION**

(c) The Director of National Intelligence (or, if delegated by the Director of National Intelligence, the Principal Deputy Director of National Intelligence) may, with respect to the Intelligence Community, after consultation with the head of the originating Intelligence Community element or department, declassify, downgrade, or direct the declassification or downgrading of information or intelligence relating to intelligence sources, methods, or activities.



ministration would soon find out. But this was a high-risk, high-yield proposition. If correct, it would dramatically reinforce credibility in U.S. intelligence assessments and galvanize the coalition. This could mobilize Western nations if there were to be an invasion and perhaps even prevent a war.

Russia was unprepared and unequipped to fight a rearguard following information dominance in Georgia, Syria and Crimea. Declassifying and strategically releasing truthful, timely and accurate information not only put Moscow at a tactical disadvantage in being able to shape the information environment, it was also a strategic disadvantage because the simple act of responding to Allied information releases dug a deeper hole of Russian lies. Further still, crowd-sourced data, open-source and commercial intelligence, news media, citizen reporting, and civilian satellite photography give the public more information than ever before. All of this reinforced the accuracy and credibility of Western intelligence.

One example is a CNN story asserting: "Officials have also been remarkably detailed in public about the number of Russian troops they see amassed on the border — intelligence that has been backed up by commercial satellite imagery released by private companies."⁵ Another example is the American and Ukrainian claim that a Russian parachute regiment sustained heavy losses while failing to capture an airport near Kyiv in the early days of the war. Using publicly available information and social media, the BBC was able to name the regiment and many of its casualties, thereby confirming the Western intelligence report.⁶

ON THE OTHER side of the Atlantic, the United Kingdom held a similar tack. The UK intelligence community, with an abundance of resources and expertise in the region, began to issue daily intelligence summaries on social media a full week before the invasion. These summaries, too, have proved largely accurate, reinforcing credibility and dominating the information space. For example, the same day the UK Ministry of Defence correctly asserted that Russia had failed in its primary war aim to capture Kyiv, Maxar Technologies published satellite photography showing the dispersal and withdrawal of the massive Russian spearhead that had threatened the capital.



ABOVE: Screenshot of a Twitter post with the first "intelligence update" issued by the UK Ministry of Defence on February 17, 2022 — seven days before Russian's unprovoked assault. **RIGHT:** February 24, 2022, New York newspapers report on the invasion of Ukraine by Russian military forces. Photo by rblfmr/Shutterstock

This is unusual in British intelligence practice, which traditionally has been much more guarded than its American counterpart. "It's a very different approach from the past, when intelligence and information was more closely guarded," observed Malcolm Chalmers of the UK defence and security think tank RUSI (Royal United Services Institute). Moreover, the previous British experience with public intelligence estimates, on the situation in Iraq, had proven disastrous.

But with the novel release of reliable analysis and precise forecasting, public confidence in UK capability has grown and the intelligence community have learned how to use their tools more effectively. "What Britain and the West have learned from the last Ukraine crisis in 2014 is that if you don't actively use your intelligence to shape the narrative, then you will lose ground to Russia," Karla Adam wrote in the Washington Post in April 2022.⁸

The new strategy includes a significant change in culture, but it has full buy-in from intelligence community leadership. Speaking publicly in March 2022, Government Communications Headquarters Director Jeremy

Fleming noted how quickly his agency moved to declassify information specifically to stay ahead of Moscow. "In my view, intelligence is only worth collecting if we use it," he said. "So I unreservedly welcome this development."⁹

Inevitably, we must consider Russia's strategy and response. Russia's reputation for prowess in hybrid warfare as well as malicious misinformation and disinformation campaigns has been badly damaged along with perceptions of other land capabilities. Although that could easily change, the fact remains that Russian disinformation has been completely overwhelmed by the West, in the West. As the war grinds on, this increasingly looks true from a global perspective.

The West's information environment favours transparency and openness, two traits not associated with Putin's Russia. By controlling all media in Russia, including social media, and pumping his propaganda directly into Russian homes, Putin has preserved his popularity and thus his political control. From this perspective, we should consider the possibility that this was a primary war aim when he invaded his neighbour in February.



“The pre-emptive release of relevant intelligence effectively neutralizes disinformation and deception, the cynical Janus of hybrid warfare.”



Fortunately, the advantages to the Western approach are now clear. Radical transparency raises political credibility. That credibility accelerates collective decision-making, which is crucial in a crisis, and the aggressive, pre-emptive release of relevant intelligence effectively neutralizes disinformation and deception, the cynical Janus of hybrid warfare. A strategy of radical transparency capitalizes on our natural advantages, while exploiting the weaknesses of the adversary. We are once again fighting on our home field. The result of radical transparency was and is a galvanized, united, active West that has delivered the most robust suite of sanctions against Russia possible.

AS A COROLLARY, it also gave space and breath to bring forward the central character of this war, alongside the efforts of the Ukrainian defence and people, Ukrainian President Volodymyr Zelenskyy. Zelenskyy now appears to be the indispensable leader: the right person in the right place at the right time. He was initially dismissed by Russia as a comedian and actor, a political novice thoroughly out of his

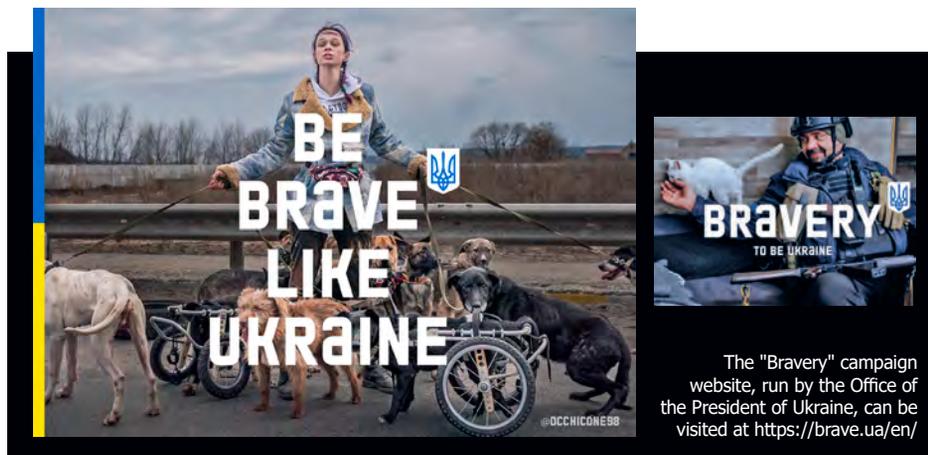
depth in office. But his extraordinary abilities were hiding in plain sight: Zelenskyy is a savvy political operator and an innovative communicator — a good skill set to have in a crisis.

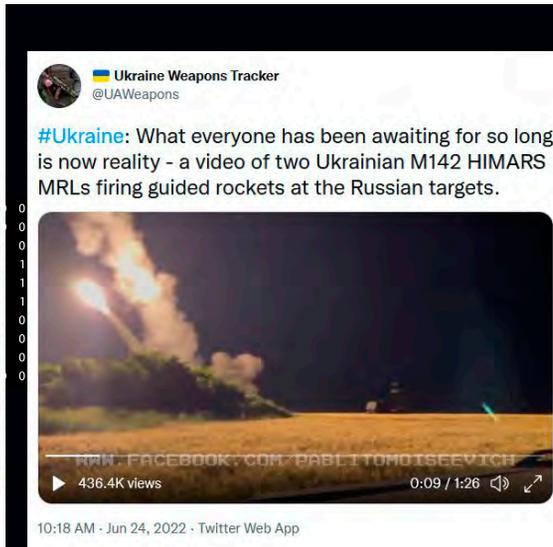
Zelenskyy was elected president in 2019 on a broad anti-corruption platform. He had rocketed to fame portraying a schoolteacher unexpectedly hoisted to Ukraine's presidency. His satirical TV show, "Servant of the People", was a hit. Zelenskyy honed his communication technique during the campaign. Often called the first "virtual" or "crowdsourced" campaign, he held no rallies, bought no advertisements, conducted no interviews, skipped every debate, and issued no platform. The Ukrainian media complained that he was ignoring their requests for transparency. But Zelenskyy, using social media, especially Instagram, was communicating to his people without intermediation. This gave him several advantages as well: He controlled the message and, therefore, the campaign's narrative, he reached his audiences immediately, he solicited direct feedback from which he could effectively poll his followers in real time, and he maintained authenticity by using his own voice.¹⁰

Zelenskyy's campaign then evolved into a cutting-edge communications operation that could beat Russia at its own game. Ukraine's internet network is highly dispersed domestically. Ukraine has the same number of international junctions as Russia (seven), with a fraction of Russia's population and land mass. Four of the Ukrainian junctions are located in the western part of the country, making it impossible for Russia to cut off Ukraine from the rest of the world. This has proved a communications lifeline as Ukrainian citizens, soldiers and leaders have poured out content to the world in real time.

Notwithstanding pre-crisis missteps, Ukraine pivoted sharply to a very effective campaign message developed by Banda, a Kyiv-based advertising firm. Creative Director Egor Petrov and General Manager Dima Adabir pitched a campaign called "Bravery" (Смільвість) to Mykhailo Fedorov, Ukraine's Vice Prime Minister and Minister for Digital Transformation. Federov in turn got Zelenskyy's immediate approval. The simple branding soon went viral, covering billboards, bank cards, juice bottles and online shopping sites. It even made the leap to London and then to New York.¹¹

Following Russia's seizure of Crimea in 2014, the Russian disinformation model appeared to ascend. It posed a considerable threat to Western political culture and society. For them, our model of democratic government, free expression, and popular communication were not strengths, but seemed to be weaknesses to be exploited. Since the objective of the disinformation model is not *control* but *confusion*, the Western model could easily drown in a torrent of untruth.





ABOVE: (Left) Examples of Bravery campaign shared by Mykhailo Fedorov on his Twitter account. **CENTRE:** A popular aggregator on Twitter publishes battlefield videos and still shots daily. HIMARS stands for High Mobility Artillery Rocket Systems. **RIGHT:** The Ukrainian capital Kyiv. Photo by Drop of Light/Shutterstock

The campaign found an abundance of source material: small acts of individual resistance by average Ukrainians. These stories could be easily captured and dispersed via social media. The message was simple but comprehensive: Ukrainians demonstrating to themselves, to the world, and to Russia, their will to resist. Sometimes these stories overlapped with combat successes, as Ukrainians used a smart phone app called Diia to share geotagged photographs of Russian formations directly with the military.¹²

Ukraine's strategy also includes information control, an echo of Zelenskyy's election campaign strategy. The president continues to communicate directly with the public by social media. He has hosted most Western leaders, whose visits are highly publicized, but conducted under tight security. He has addressed foreign parliaments from the President's office, allowing him to reach powerful audiences while demonstrating he remains in Ukraine with his people. Ukraine has used the release of casualty figures strategically: a total news blackout early in the war, followed by releases of combat deaths more recently to stoke international support.¹³

TO SUM UP, strategic openness and transparency as well as truthful, timely, accurate information has embarrassed Moscow's "question

everything" communications mantra as well as its disinformation efforts regarding its invasion of Ukraine. The operationalization of intelligence has galvanized the West and resulted in sweeping — and increasingly damaging — sanctions against Russia. President Zelenskyy has capitalized on radical transparency to shape a brand and campaign that ties the war to the ideals of sovereignty and rule of law.

The lessons of this success must be harnessed and amplified if the West, NATO in particular, is to operate and help shape the information environment.

At NATO, multiple staffs are now working to frame efforts through work regarding cognitive resilience and defence, multi-domain operations and information sharing. That work needs to recognize the importance of radical transparency, the urgency of operationalizing intelligence and the vitality of public affairs. ✦

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THE ALLIED COMMAND OPERATIONS COGNITIVE CAMPAIGN FOR

by Brigadier General Jay H. Janzen (Retired)
Communications Director
NATO Allied Command Operations



DETERRENCE AND DEFENCE



"Deterrence is the art of producing in the mind of the enemy the fear to attack."

– Dr. Strangelove, in the 1964 film
"Dr. Strangelove or: How I Learned to Stop Worrying and Love the Bomb"



NATO'S CONCEPT for Deterrence and Defence of the Euro-Atlantic Area ("Deter and Defend") is one of the most significant advancements in strategic thinking for the Alliance in a generation. It seeks to deter adversaries and terrorist groups from spreading destabilization, widening disorder, or accruing decisive military advantage that would impact our security. Implementing such a concept involves a myriad of important factors including integrated plans, effective command and control, advanced capabilities, high-readiness forces, and a robust military posture.

NATO's approach to deterrence rests upon the comprehensive nature of its capabilities and a collective commitment to mutual defence. The three core elements of deterrence include cohesion reflected in Alliance unity and resolve; capability evident in demonstrations of readiness; and communication to contextualize and amplify these elements with intended audiences.

This article will focus on the communications aspects of deterrence, including outlin-

ing the Allied Command Operations (ACO) approach to advancing "Deter and Defend" objectives in the cognitive dimension. Perceptions regarding NATO's cohesion, capabilities and resolve are essential to strategic success. For this reason, ACO has adopted a cognitive campaign designed to directly support the "Deter and Defend" strategy. The aim is to combine powerful demonstrations of military activities, together with focused and compelling communications, in order to reinforce perceptions that will advance overall "Deter and Defend" strategic objectives.

Military StratCom Objectives and Effects

At the strategic level, simplicity and clarity of intent are paramount. Shaping perceptions around NATO military activity across the Euro-Atlantic area, with a collective audience of more than a billion people, requires sustained and focused effort. As a result, ACO has identified four military strategic communications objectives as the core of its cognitive campaign in support of "Deter and Defend" during peacetime operations:

- 1) Alliance cohesion maintained
- 2) Alliance publics assured
- 3) Alliance legitimacy maintained
- 4) Adversaries deterred

These objectives directly address the fundamentals required to deliver strategic success in the cognitive dimension during peacetime. Success is almost certain if Alliance unity is perceived as unshakable, populations feel protected, NATO's legitimacy is unquestioned, and adversaries fully understand our capability and resolve to defend ourselves.

By establishing these simple and fundamental StratCom objectives, it is hoped that every headquarters, every mission element, and every person across ACO can easily visualize how they might contribute to the overall cognitive campaign.

In order to further delineate and operationalize ACO's military StratCom objectives, thirteen supporting military StratCom effects have been defined, among them "Allies perceived as unified and committed to collective defence", "Perceptions of transatlantic link reinforced" and "Adversarial narratives impacting NATO countered".

StratCom objectives are designed to be long-term and aspirational, and are thus in need of constant, coordinated efforts in order to progress towards their attainment. StratCom effects, on the other hand, are viewed as short-term desirable outcomes that might result from a potential effort or activity.

For example, enhancing perceptions of Alliance cohesion will entail a constant effort over time, and will need to be supported by an

PREVIOUS: NATO Secretary General Jens Stoltenberg aboard USS George H.W. Bush during NATO Exercise NEPTUNE STRIKE 2022, October 25, 2022. Photo by NATO **ABOVE:** The George H.W. Bush carrier strike group. Photo by Petty Officer Justin Wolpert.





ABOVE: NATO Secretary General Jens Stoltenberg briefs the media representatives present on board USS George H.W. Bush, October 25, 2022. Photo by NATO

array of actions, outcomes, activities, and communications. However, generating an effect where perceptions of the transatlantic link are reinforced can occur in the short term, for instance during the deployment of a U.S. carrier strike group or by highlighting the Canadian-led battlegroup in Latvia.

Such temporary effects need to be combined with many other complimentary effects over time, in a coordinated way, designed to engender progress among the overall StratCom objectives.

Combining Military Activity with Communications — Recent Examples

In October 2022, ACO leveraged several high-profile military activities and exercises taking place in the Euro-Atlantic area in order to generate cognitive effects. In Exercise NEPTUNE STRIKE 2022, the USS George H.W. Bush carrier strike group was placed under Supreme Allied Commander Europe's (SACEUR) command and control. This two-week-long vigilance activity included more than 70 aircraft, 20 ships, and 5,000 personnel from 26 NATO Allies and partners.

ACO deliberately focused on the "adversaries deterred" StratCom objective for the month. To support this, a supporting StratCom effect was selected for NEPTUNE STRIKE: "Awareness of NATO's advanced capabilities". To achieve this cognitive effect, ACO needed to bring media and influencers close to the action, which was unfolding far offshore in the Aegean Sea. Two media days were conducted aboard the USS Bush; one early in the activity to raise interest and awareness, and one near the end that included a visit of the NATO Secretary General to the carrier. Groups of media representatives were flown to the carrier, briefed on the operations of Allied components of the strike group, and given opportunities to interact with multinational sailors, aircrew, and senior commanders. Journalists were also given demonstrations of the advanced air and maritime capabilities that are integral to the group.

To further underscore NATO's advanced capabilities, a third media opportunity was planned at a military range in Slovakia. At this event, many more journalists were able to witness first-hand the extended strike capabilities of the carrier group, thus painting a clear picture of decisive military firepower.

The resulting multinational media coverage reached audiences across Europe and indicators suggest this included Russian officials and influencers. NATO digital teams also produced compelling content on NEPTUNE STRIKE, and select components were translated into the Russian language.

NATO's reach into Russian audiences is limited, and our communications during peacetime are always attributable, factual, and transparent. They are also designed not to be inflammatory. Communications from the military level of the Alliance almost never mention or comment on Russia. In exposing a wide range of Russian citizens and influencers to factual content that demonstrates NATO's capability and resolve, it is hoped that such efforts will enhance deterrence efforts and help preserve peace.

ACO also aimed to expand its reach to non-traditional Allied audiences during NEPTUNE STRIKE. A "digital influencers day" was planned aboard the carrier strike group. Influencers representing a wide range of digital communities were invited to participate in a dynamic visit to the USS George H.W. Bush, and five individuals were selected to participate. With this audience, the desired cogni-



tive outcome was not deterrence-related, but rather focused on assurance. The specific effect sought by ACO was "Alliance publics feel NATO posture/activities are appropriate."

The aim was to attract influencers from several Allied nations who engage audiences outside of NATO's usual reach. As an example, one of the influencers who visited the carrier strike group was a woman from the United States who engages digital audiences on alpine sports, healthy living, and environmental issues. She has a following that numbers in the hundreds of thousands, from demographic groups largely uninterested in purely military content. ACO hopes that such influencers can connect their interests with global security issues, in order to demonstrate the necessity and legitimacy of defensive military activities. At the time of writing, ACO had not completed an assessment of outcomes regarding the influencer day aboard the USS George H.W. Bush, but initial feedback has been encouraging.

Operationalizing StratCom for NATO

StratCom efforts such as those conducted during Exercise NEPTUNE STRIKE 2022 do not represent a radical shift in doctrine or thinking within ACO. Instead, the focus is on embracing the advances made in the StratCom community over the past decade and bringing these elements together in a strategic and systematic approach to the regular activities and communications of the Alliance.

The ideas are not new, but the processes and architecture that ensure unity of effort across the entire Euro-Atlantic area mark a significant step forward. The aim is to operationalize StratCom thinking and connect it with military strategy and operational activity across SACEUR's area of responsibility.

The "Deter and Defend" concept embraces multi-domain operations, and StratCom plays an essential role in such efforts. As such, ACO's cognitive campaign was deliberately designed to integrate with efforts in all domains and all dimensions. Activities in all domains have impacts on the cognitive dimension, and vice-versa. There is widespread recognition in ACO that strategic success is closely linked to achieving outcomes in the cognitive dimension. This in turn has led to the embracing of an audience-centric approach to

operations. The remainder of this article will explore ACO's StratCom architecture in more detail, in the hope that it will benefit StratCom practitioners and Alliance leaders who seek to integrate the cognitive dimension into multi-domain strategy and operations.

Annual StratCom Campaign Guidance

ACO has developed specific processes to ensure that the coordination of StratCom objectives and effects are adequately considered for all significant military activities and associated communications. The process begins each year with the publication of a Strategic Coordination Order for Area of Responsibility Management and Peacetime Vigilance. This document provides a framework to align NATO's peacetime vigilance activities, exercises, training, and communications with SACEUR's overall "Deter and Defend" objectives. Hundreds of such activities are conducted each year across the area of responsibility (AOR).

In order to provide a focus of effort, the Strategic Coordination Order identifies a few dozen activities that are considered priorities for ACO. Care is taken to select an array of priority activities that adequately reflect each domain, region and capability.

"The aim is to operationalize StratCom thinking and connect it with military strategy and operational activity across SACEUR's area of responsibility."

A Nuclear Alliance

"The fundamental purpose of NATO's nuclear capability is to preserve peace, prevent coercion and deter aggression. As long as nuclear weapons exist, NATO will remain a nuclear alliance. NATO's goal is a safer world for all; we seek to create the security environment for a world without nuclear weapons."

Extract from the NATO 2022 Strategic Concept



Royal Norwegian Air Force F-35. Photo by NATO

These priority activities are sequenced in a way that accounts for anticipated adversarial actions and the normal rhythm of Allied military activity. This ensures NATO sends the right signals at the right times, in line with the overall deterrence strategy.

To further align ACO's efforts, a StratCom annex to the Strategic Coordination Order provides additional guidance, including monthly priority StratCom objectives, as well as a compendium of desired StratCom effects for each priority military activity occurring in the AOR.

The Strategic Coordination Order is published in October for the following year, thus providing ample time for subordinate commands to conduct deliberate StratCom planning and coordination. This guidance is intended to foster a manoeuvrist approach, whereby Supreme Headquarters Allied Powers Europe (SHAPE) articulates overall objectives and desired effects, and subordinate headquar-



ALLIED COMMAND OPERATIONS STRATCOM COORDINATION

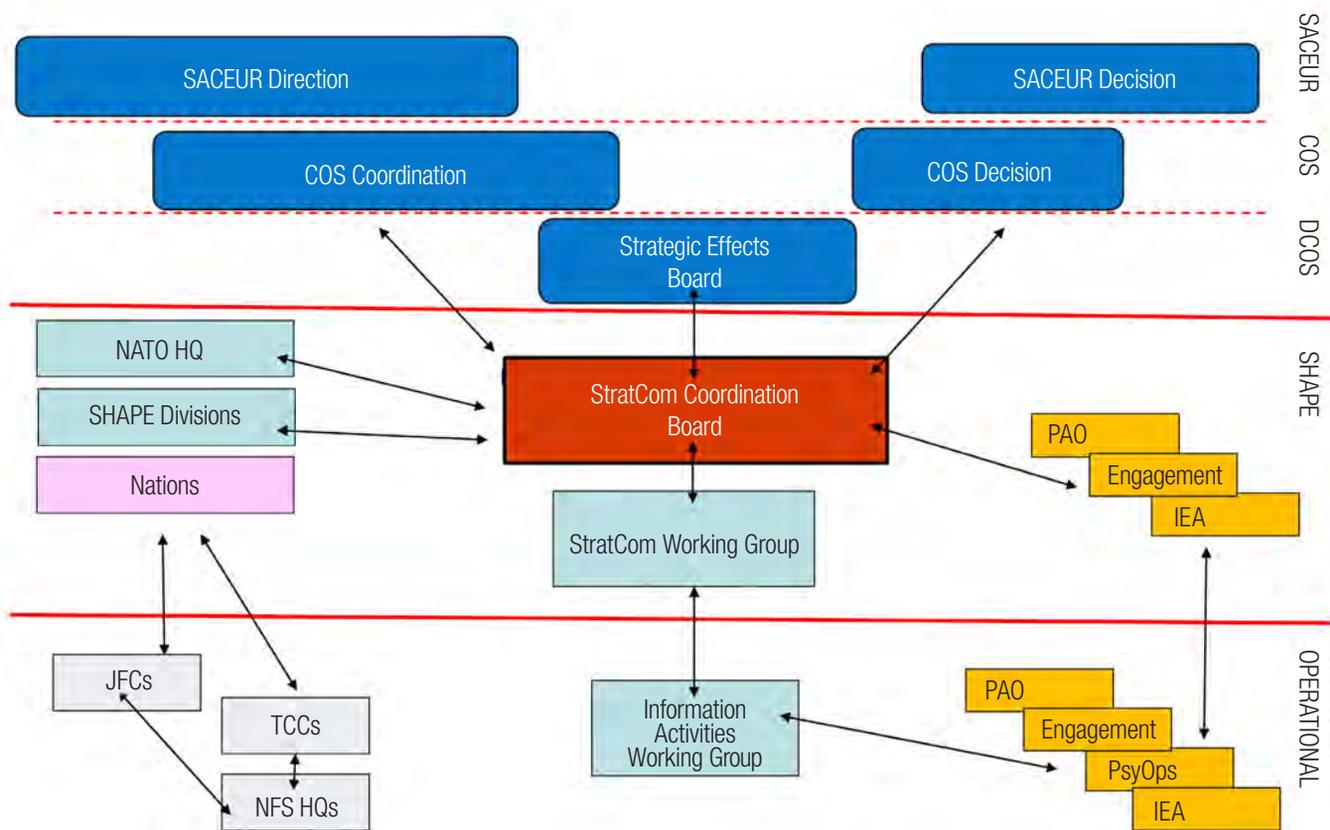


Figure 1 Abbreviations: Chief of Staff (COS); public affairs office (PAO); information environment assessment (IEA); joint force commands (JFCs); theatre component commands (TCCs); NATO Force Structure Headquarters (NFS HQs); psychological operations (PsyOps)

ters decide how best to achieve these outcomes within their respective areas and means.

Dynamic Campaign Management

Today's evolving strategic environment demands constant and dynamic campaign management to ensure StratCom efforts remain relevant and effective. ACO has developed an integrated battle rhythm to ensure that military activities and associated communications remain aligned with strategic intent and shifting geopolitical realities.

At the centre of these coordination mechanisms are the Strategic Effects Board and the StratCom Coordination Board (see Figure above). The StratCom Coordination Board focuses exclusively on generating effects in the cognitive dimension in support of SACEUR's military strategic objectives. It is informed by the efforts of working groups from across ACO

and from all information disciplines. StratCom chiefs from all ACO headquarters are invited to the StratCom Coordination Board, as are representatives from all other multi-domain functions. The focus of this board is not on communications per se, but rather on how ACO's priority military activities for the coming period can be leveraged to send the right messages to key audiences, thus generating desired effects in the cognitive dimension.

This approach recognizes that military activity itself creates effects in the cognitive dimension and that these impacts can be calibrated in intensity and directed at selected audiences using relevant communications channels. For example, the deployment of a carrier strike group can be relatively low-key if ships remain far from shore, conduct few communications activities, and do not conduct operations near adversarial areas of interest.

On the other hand, the same carrier strike group might host media representa-

tives and influencers aboard while conducting training missions together with maritime and air platforms from several Allied nations. Additional media members and influencers might be invited to a ground location thousands of kilometres away in order to witness the resultant range and combat power that such platforms can project.

The role of the StratCom Coordination Board is to consider the potential cognitive effects of ACO's military activities and communications (based on information environment assessment, including audience analysis) and to coordinate resulting efforts across ACO in alignment with the overall StratCom campaign (based on "Deter and Defend" objectives).

On at least a monthly basis, the ACO StratCom Coordination Board convenes to perform this cognitive campaign management function, with a specific focus on the upcoming 60-day period. The monthly StratCom objectives are confirmed, as are the priority



activities and the desired StratCom effects for each activity. The board considers whether the net effects of activities and communications across the AOR are aligned with current direction and are appropriate (given wider factors in the geopolitical environment).

The board devotes time to deconfliction, and members are invited to identify potential opportunities and risks prior to finalizing the cognitive campaign approach for the period. Immediately following the ACO StratCom Coordination Board, a national StratCom Board is held where StratCom chiefs from all Allied nations are invited to provide input on the ACO plan and to discuss areas of alignment and synchronization. The ultimate aim is the harmonization of all significant national and NATO activity across SACEUR's AOR, in order to send strong and unified signals regarding our collective deterrence and defence.

Following the StratCom coordination boards, key recommendations are passed to the ACO Strategic Effects Board, which is responsible for integrating effects in all domains and dimensions across SACEUR's AOR. The Strategic Effects Board considers effects in the cognitive dimension, together with multi-domain force posture, vigilance activities, intelligence collection, indicators and warnings, and other relevant operational factors. This ensures that ACO's approach to deterrence and defence accounts for all domains and dimensions, and remains synchronized with higher guidance as well as the current operating environment.

The emphasis throughout this process is on a manoeuvrist approach that provides strategic guidance, while simultaneously encouraging regional creativity and initiative in how military and StratCom effects are delivered across the AOR.

ACO StratCom Process and Functions

Cognitive campaign guidance and StratCom coordination are two key parts of the overall StratCom functions that ACO conducts on an ongoing basis. An overview of how ACO visualizes its StratCom process and functions can be found at Figure 2.

The process is visualized as a wheel, as it is continuously ongoing, and all elements are equally critical to overall success. The "understand" function is often regarded as the starting

point in the process, but in reality, this function is constantly conducted and needs to dynamically inform every subsequent component in the process. Planning is also dynamic within ACO. Long term planning, such as the development of campaigns or strategic coordination orders, can extend several years into the future.

Other plans consider limited periods of time or are specific to a particular issue, activity, or contingency. All such plans are revisited and updated regularly, and often make follow-on planning necessary to manage the fine details required for effective execution. Assessment is the culmination of the process, but this also requires ongoing activity and attention at every step in the functional process.

Assessing Campaign Effectiveness

Assessing campaign outcomes related to intangible concepts such as "deterrence" and "legitimacy" is extremely challenging. As NATO's information environment assessment capability matures, enhanced use of data science and artificial intelligence should improve the Alliance's ability to collect, analyse, assess, and visualize information linked to "Deter and Defend" outcomes.

In the interim, ACO recognizes the importance of creating campaign assessment

mindsets and processes, even if tools and techniques are imperfect. A focus on assessment causes ACO to engage in robust discussions regarding our strengths and weaknesses in the cognitive dimension. In order to assess effects, ACO needs to be crystal clear, well in advance, on what it intends to achieve around each priority military activity. This clarity of intent leads to more effective planning, tighter coordination, and the purposeful execution of activities and associated communications. Once efforts are complete, assessment illuminates where ACO information activities succeeded, and where efforts fell short of intended outcomes. Ultimately, assessment results in frank conversations on how ACO can refine, adapt and enhance our strategic communications efforts.

Visualizing Campaign Outcomes

Assessment of cognitive campaigns is a complex endeavour and results in reports that are nuanced and multifaceted. Such reporting is vital for analysts and practitioners, but senior military leaders seldom have the time to ingest long and detailed assessments. For this reason, ACO endeavours to distil assessment outcomes into succinct dashboards that highlight relevant shifts and trends in the cognitive dimension from a macro-perspective, as well



Figure 2 ACO StratCom process and functions, abbreviations and descriptions: information environment assessment (IEA); political advisor (POLAD); civil-military cooperation (CIMIC); future operations (J35); intelligence and open-source intelligence (J2/OSINT); legal advisor (LEGAD); key leader engagement (KLE); plans (J5); exercises (J7); Direction and Guidance (D&G)





ABOVE: The 2022 NATO Communicators Conference, Skopje, North Macedonia. (Clockwise) General Christopher Cavoli, SACEUR, participating in the conference via video link; Eleonora Russell, Public Affairs and Strategic Communications Advisor to the NATO Military Committee and International Military Staff; the author, ACO Director of Communications Jay H. Janzen, leading a panel discussion. Photos by SHAPE PAO

as key recommendations for ACO action.

ACO currently produces two cognitive campaign assessment dashboards each month. The first dashboard considers the entirety of the information environment, while the second dashboard focuses specifically on ACO's priority military activities. This approach recognizes that ACO could deliver significant effects around its own military activities for the month, but due to circumstances beyond its control, the Alliance could lose ground on StratCom objectives such as "assurance" or "deterrence".

For example, the deployment of a U.S. bomber task force in conjunction with Allied air-shielding activities could generate successful effects in reassuring populations regarding NATO's commitments to collective defence, while sending clear deterrence signals to adversaries. However, adversaries remain unpredictable and could, at the same moment, conduct other destabilizing actions, such as

a nuclear test, which would create simultaneous effects that may far outweigh those generated by ACO activity. This does not mean that ACO's efforts did not generate the desired effects; it simply means that they were overshadowed by other factors in the information environment. In order to appreciate the current status of the cognitive campaign and to enable broad adjustments, ACO needs to track progress of its StratCom objectives in the context of the global information environment.

ACO also needs to look more specifically at the localized delivery of effects related to its monthly priority military activities, in order to ascertain specific outcomes and fine-tune the planning, coordination and execution of future efforts. ACO's efforts regarding the assessment of its cognitive campaign are in the early stages of development, but they are already delivering insights that enhance communications efforts. As additional expertise, tools and

data sets are added to ACO's information environment assessment capability, it is expected that these efforts will become more robust and comprehensive over time.

Conclusion

Designing and implementing a StratCom campaign for ACO in support of "Deter and Defend" required 12 months of experimentation, education and reinforcement in order to reach a stage where all aspects of the system performed as intended. It also demanded a whole-of-headquarters approach, with joint functions collaborating in order to generate needed processes and synchronized outcomes.

ACO's planning cycles are long, and the array of military activity across SACEUR's AOR is vast. It is not surprising, therefore, that introducing an ACO-wide cognitive campaign required time and effort. The results have been worth the investment. ACO now has a deliberate approach to harnessing the messaging power of military activity and associated communications, which generates effects in the cognitive dimension.

All elements of ACO have clarity on SACEUR's StratCom objectives and desired effects. This improves ACO's ability to effectively allocate resources and prioritize efforts. It also enhances the unity and agility of our information activities. ACO's StratCom efforts are assessed and visualized monthly using dashboards. This activity provides benchmarks and lessons that will help us improve our campaign over time. ACO's cognitive campaign remains in the early stages of development and will require ongoing engagement and innovation in order to remain relevant.

The Communications Division at SHAPE is eager to engage with practitioners and academics who have an interest in combining powerful demonstrations of multi-domain military action, together with focused and compelling communications, in order to support the objectives of NATO's "Deter and Defend" strategy. ✦

**#StrongerTogether
#WeAreNATO
#DeterandDefend**

NATO MULTI-DOMAIN OPERATIONS

ADAPTING BEYOND JOINT DOCTRINE

VIRTUAL • COGNITIVE • PHYSICAL

by Jeffrey Reynolds
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"Born from the need to work together seamlessly in the most demanding circumstances, 'jointness' remains an important part of military doctrine. It is the basis upon which MDO-related thought is based. But the complexities we face today show that joint doctrine alone is insufficient for the military challenges of our era."

IN 2021, NATO's Military Committee tasked the two Strategic Commands to develop an initial concept for multi-domain operations (MDO) that integrates Allied thinking about how forces work together at the speed and scale of modern operations. Staff officers at Headquarters Supreme Allied Commander Transformation (HQ SACT) and Supreme Headquarters Allied Powers Europe (SHAPE) worked with Allies and partners to consider the meaning of MDO for NATO and their implications for Alliance forces.

Allies have travelled this path before. In the 1980s and 90s, NATO militaries conceptualized "joint" doctrine, which enabled the military branches of army, navy, marines and air force to work together as a coherent force. NATO further built on this feat by enabling interoperability amongst Allies as a multinational joint force. This joint collaboration was refined in the crucible of operations in Afghanistan, Libya, Iraq, and elsewhere over the past two decades. At the time, joint operations was controversial; some could argue that it remains so to this day, especially when issues of culture and history enter the discussion.

PREVIOUS: (Clockwise) Mountain operations soldiers and NATO Air Policing Mission (photos by NATO); illustrations on cyberspace and space domains (Shutterstock); the amphibious command ship USS Mount Whitney (photo by Mass Communication Specialist 3rd Class Jessica Kibena, U.S. Navy).





LEFT: Thousands of residents of Irpin fled as Russian troops bombed the city. Photo by Drop of Light/Shutterstock **CENTRE:** Russia tests the nuclear-capable intercontinental ballistic missile RS-28 Sarmat on April 20, 2022. © Reuters **RIGHT:** Online conversation with NATO Secretary General Jens Stoltenberg and Deutsche Welle journalist Sarah Kelly, October 19, 2022. Photo by NATO

Born from the need to work together seamlessly in the most demanding circumstances, "jointness" remains an important part of military doctrine. It is the basis upon which MDO-related thought is based. But the complexities we face today show that joint doctrine alone is insufficient for the military challenges of our era. To wit, the operational domains of space and cyberspace each have unique characteristics that cannot simply be incorporated into existing joint doctrine; many critical capabilities within them are not owned by militaries. The proliferation of non-military actors that contribute to military success, including commercial entities, has intensified over the past several years. These actors must be considered during the planning and execution of military operations.

Indeed, there are other considerations, such as changes in military culture, that reflect broad social evolution. Social media is among the factors that need to be weighed in military operations of the 21st century. Simply put, even joint doctrine executed flawlessly is insufficient for the context in which forces of the Alliance are expected to operate, both today and in the future.

An Inflection Point for Transatlantic Security

Without effective NATO MDO, credible deterrence and warfighting advantage are at risk in the modern battlespace. NATO must provide a conceptual bridge between the fundament of human conflict with the modern additions that change the character of war in profound ways.

Russia's war of aggression against Ukraine is a harsh lens to witness how critical MDO is for NATO. On one hand, Russia's failed invasion demonstrates the timeless lesson that the fog of war and grim realities of human conflict remain persistent features of the battlefield. Moscow's reliance on large mass fires, the levelling of cities and the terrorizing of civilians through siege warfare serve as a potent reminder of the brutality at the base of human conflict. This war, as with all others, remains a contest of wills in which the victory often goes to the belligerent that makes the fewest mistakes on the battlefield.

On the other hand, the Russo-Ukraine War shows the criticality of operating in the cyberspace and space domains, the utility of drones and autonomous systems, and the im-

portance of adaptive leaders who can deliver effects across multiple domains at speed and scale. It reinforces the importance of effective mission command, planning, and sustainment. The conflict emphasizes the wisdom of civilized nations to demand that their armed services conduct operations in accordance with national and international laws. The need to get MDO right for NATO to navigate a broad spectrum of challenges is apparent from other recent experiences beyond Ukraine. NATO's two decades of operations in Afghanistan raise questions about lessons learned and the perpetual challenge of fighting terrorism. The increased presence of China's military in the Greater Middle East and North Africa presents new implications for the capabilities required to defend the North Atlantic area. Furthermore, long-simmering conflict zones, from Syria and Iraq to the South China Sea and the Arabian Gulf, offer further insights into the increasing need to orchestrate military activity and synchronize non-military activity in all operational domains at the speed of relevance.



MULTI-DOMAIN COMMAND AND CONTROL

Beyond geopolitical challenges, the proliferation of disruptive technology across almost every part of society presents a double-edged sword. For example, the (yet unrealized) rise of artificial intelligence presents immense opportunities for free societies, but its introduction on the battlefield renders obsolete the assumption that warfare is a primarily human endeavour. From materials science to biological enhancement, disruptive technology creates both challenges and opportunities for militaries to adopt and counter novel combinations of technology better and faster than adversaries.

These factors compel forces of the Alliance to expand the manoeuvre space and maximize choice for political and military decision-making beyond the limits of joint doctrine. They indicate that military capabilities must operate in all five domains and deliver targeted effects in the three dimensions — physical, virtual and cognitive. Military commanders must conduct operations in an increasingly complex, hyperactive, urbanized and connected battlespace that has no geographical boundaries and where adversaries contest Alliance forces throughout all domains and across all levels of command.

Working Definition, Vision, and Principles

NATO's working definition of MDO is "the orchestration of military activities, across all domains and environments, synchronized with non-military activities, to enable the Alliance to create converging effects at the speed of relevance". This definition recognizes the complexity of the modern operating landscape and the increased presence of non-military entities at all stages of conflict, while retaining the centrality of force as a response to military problems.

The Alliance's agreed vision is that its approach to MDO will enable NATO's military instrument of power to prepare, plan, orchestrate, and execute synchronized activities across all domains and environments, at scale and speed, in collaboration with other instruments of power, partners and stakeholders. The realization of this vision will deliver tailored options at the right time and place that build advantage in shaping, contesting, and fighting, and that present dilemmas which decisively influence the attitudes and behaviours of adversaries and relevant audiences.

To achieve the vision of NATO MDO, four guiding principles focus effort: unity, agility, interconnectivity and creativity. NATO's digital transformation effort underpins these principles. It fuses military assets and connects non-military actors that, through collaboration, can contribute to successful MDO.

Agility focuses on improving speed, from tactical resupply to strategic understanding. It enables agility in decision-making and in defensive and/or offensive actions. **Interconnectivity** enables the exchange of data and information to build understanding, whether or not the tactical units are interoperable. **Unity** is as important for MDO as it has been for joint or coalition warfighting, and for delivering a comprehensive approach, while emphasizing

BELOW: (From left) COLD RESPONSE 2022 (photo by Torbjørn Kjosvold). NATO Cyber Security Centre (Photo by NCI Agency). Short-range air defence anti-aircraft missile and artillery system (photo by NATO). Artificial intelligence concept.



“The essence of MDO is to orchestrate what the military controls and, through collaboration with an ever-broadening range of stakeholders, synchronize the activities and capabilities of other actors.”

the criticality of information sharing. **Creativity** is what staff and commanders will need in order to build blended multi-domain warfighting options and to appreciate what data may be available to support military activity.

The essence of MDO is to orchestrate what the military controls and, through collaboration with an ever-broadening range of stakeholders, synchronize the activities and capabilities of other actors that can help the military achieve its objectives — mindful that military objectives in turn support NATO’s political objectives. NATO needs to exploit opportunities across all phases of conflict — shaping, contesting, and fighting — and from the tactical to the strategic levels, as well as with partners.

Rooted in Joint Operations and Forward-Leaning

MDO are a necessary progression from joint operations, or in casual parlance: “MDO goes

beyond joint-done-right”. The concept of MDO extends joint concepts and emphasizes the importance of domains rather than the military force operating in them. For example, the army, navy, marines and air force of some nations can all operate in the air domain. The delivery of effects in the air domain is the critical factor, rather than what brand of force carries out the activity. New structures for command and control help amplify this focus on domains and provide increased options for warfighting commanders.

The MDO concept also considers the broader operational picture to include non-military stakeholders, who all play critical roles as well. It will provide the conceptual space and capabilities required for forces of the Alliance to operate decisively in crises of the future and, ultimately, to gain relative advantage against adversaries, not necessarily across all domains, but sufficient to win.

NATO’s working assumptions for MDO can be distilled into complementary parts. There are five operational domains: maritime, air, land, space, and cyberspace. Commanders orchestrate military activities across all five domains and synchronize them in collaboration with other stakeholders. Together, stakeholders create tailored options that deliver effects in three dimensions: virtual, cognitive, and physical. MDO focus on the military domain. Non-military stakeholders own capabilities that may be extremely useful in the pursuit of military objectives. NATO needs access to these non-military capabilities to reduce operational risk and increase probability of mission success.

Enabled by Digital Transformation

Given the sophistication of modern capabilities, it is self-evident to note that digital transformation is the key to unlocking the full potential of MDO. If the Alliance is to achieve its vision of MDO, then it will have to digitalize; there is no way to conduct MDO at the speed of relevance with analogue approaches.

Put simply: We need to connect with one another via systems with sufficient capacity to enable persistent interaction. Digital transformation efforts vis-à-vis MDO tend to gravitate towards technical specifications and the substantial investment in NATO’s digital

backbone. This is a welcome effort; however, for NATO to achieve the highest aspirations of MDO, it must widen the aperture regarding digital transformation beyond technology to include culture, processes, and people.

A common refrain in military circles is that joint **culture** took two generations to form within forces of the Alliance. Yet, advocates of MDO maintain that NATO forces lack the luxury of two generations to adapt a MDO culture. NATO must be proactive and incentivize the cultural precepts that underpin a MDO mindset. Importantly, a digitalized NATO needs **people** who are proficient in the world of data, which has its own set of mores — how forces of the Alliance reconciles military culture with that of data science within a MDO framework is a significant undertaking with potentially percussive benefits across the enterprise.

NATO’s military leaders should consider the **footprint** of staff members in key strategic locations to enhance understanding and awareness as part of a broader meshed network that enables MDO. This includes **data factories** with data pipelines, algorithm generators, workflows, and storage that constitute the core infrastructures of data-driven MDO.

NATO will need to consider how **artificial intelligence** and **machine learning** can help harness large data sets to enable elegant and exhaustive operational pictures that underpin effective MDO. Moreover, NATO’s **processes** need to be refined to automate and move human labor beyond the critical path of routine administration in order to achieve the requisite gains in speed and scale that MDO demands.

Building on Good Practices

MDO present both challenges and opportunities in other areas as well: escalation management, Alliance culture change, command and control, networking, wargaming, education, and training, to name a few. How Allies adapt national approaches to NATO MDO will have a direct impact on the concept’s success and the collective operational success of multi-domain warfare, which exists beyond the simplicity of the physical effects dimension.

MDO expand the options available to a commander to apply operational art. Thus, we will need to ensure that NATO’s supporting concepts and doctrine can use MDO principles in the long term. Allies expect no less. ✦

**COMMAND
AND CONTROL**



US



Photos by NATO, MARCOM, NATO Cooperative Cyber Defence Centre of Excellence and Norwegian Armed Forces

UNDERSTANDING SUPPORTED/SUPPORTING INTERRELATIONSHIPS

by Lieutenant Colonel Matthew R. Prescott
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“If the band played a piece first with the piccolo, then with the brass horn, then with the clarinet, and then with the trumpet, there would be a hell of a lot of noise but no music. To get harmony in music, each instrument must support the others. To get harmony in battle, each weapon must support the other. You musicians of Mars must not wait for the bandleader to signal you... You must each, of your own volition, see to it that you come into this concert at the proper place and at the proper time.”¹

– General George S. Patton, Jr.
Address to the U.S. 2nd Armored Division, July 8, 1941

Introduction

NATO is increasingly using supported/supporting interrelationships (SSI) throughout Allied Command Operations (ACO) headquarters to leverage capabilities across the Alliance and national headquarters. Supreme Headquarters Allied Powers Europe (SHAPE) utilizes SSI to establish ACO-wide coherence of planning and execution, and the prioritization of resources over time and geography, across the competition continuum (peace–crisis–conflict). Using SSI in command and control (C2) structures provides the Supreme Allied Commander Europe (SACEUR) flexibility to create tailorable strategic options and conduct joint effects and actions at the speed of relevance. However, recent NATO documents and observations identify the need to clarify the purpose and role of SSI during military operations. Misapplying SSI leads to delays in planning and execution and could present C2 structure inaccuracies and misunderstandings to senior leaders within ACO.

THIS ARTICLE LOOKS to define SSI, explains the purpose of SSI, and makes recommendations when to use SSI, and when SSI are

not appropriate during a military operation. Ultimately, this article argues that SSI should be used as a means to reinforce mission command during NATO operations and enhance unity of effort across military echelons to achieve effects and objectives.

Seamless Utilization of SSI

At this moment, although there is no NATO-approved definition of SSI, Allied joint publications (AJPs) and NATO documents provide an adequate amount of guidance to implement SSI.² However, SSI are difficult to comprehend if a staff officer does not understand the meaning of an “interrelationship” and mission command. An interrelationship is two or more things having an equal relationship. In a military context, an interrelationship means two or more headquarters that have the same or equal amount of influence and hold no authority over one another. SSI are reciprocal relationships, traditionally directed by SACEUR, for a specific contingency or mission and should be limited in scope, time, and space during one or more phases of an operation.

ACO headquarters, organized by joint force commands (JFC), single service (SSC), functional, and theatre component commands (TCC), have an interrelationship and receive their direction and guidance from SACEUR.

Each ACO headquarters is responsible for a specific domain, function, or assigned geographic region. They provide SACEUR with planning and advice for their assigned role within ACO, and in the event of a crisis or conflict, can command combat forces. These existing interrelationships within ACO commands achieve desired effects through unity of effort.

Correctly utilizing SSI begins with a headquarters having shared understanding of four terms: 1) establishing authority, 2) supported command, 3) supporting command, and 4) mission command. Without this understanding, NATO commands will likely misapply SSI within their C2 structures.

At a minimum, there are three leaders responsible for the seamless utilization of SSI: the establishing authority, the supported commander, and the supporting commander(s). Each leader has distinct roles and responsibilities to enable successful SSI.



MULTI-DOMAIN COMMAND AND CONTROL

Supreme Allied Commander Europe,
General Christopher G. Cavoli
Photo by NATO



Establishing Authority

The establishing authority is the military officer with the greatest level of command authority over all other assigned NATO commands. In NATO military operations, the establishing authority will likely remain SACEUR, who is traditionally granted operational command (OPCOM) by NATO during a military operation. The OPCOM authority enables a commander to deploy units, assign or reassign missions and forces, and delegate operational or tactical control to subordinate commanders. Only under OPCOM can a commander task organize the force structure to accomplish a mission.³ A commander with OPCOM has the authority, and is the establishing authority, to direct SSI amongst the subordinate headquarters they command.

The establishing authority directs priorities, outlines in sequence the desired effects and objectives to be achieved, assigns forces and resources, and delegates authorities and responsibilities to subordinate commanders. The establishing authority assigns a supported command based on which command is best suited (with the appropriate level of expertise) to plan, coordinate, and synchronize the

designated activities to achieve one or more effects. The establishing authority will next assign one or more commands as a supporting command to the supported commander based on the joint or multi-domain requirements to achieve the effect. The establishing authority should ensure that each supporting command is resourced appropriately to achieve the effect and mitigate risk.

Supported Command

The supported commander is the commander who maintains primary responsibility for accomplishing the effect(s) assigned by the establishing authority. Supported commanders have no command authority over designated supporting commands due to the nature of interrelationships. Therefore, it is the responsibility of the supported commander to provide intent and general direction to all supporting commands. The supported command is the lead headquarters to plan, coordinate, and synchronize all the joint and multi-domain activities to achieve the effect.

Supporting Command

Supporting command(s) accomplish the actions needed to achieve the desired effect for the supported commander. In this role, the supporting command assists the supported command with planning by determining the capability requirements and employment concept, based on the supported commander's intent. The supporting commander uses their command authority through the orders process to task their assigned forces to achieve the effect for the supported command. If the supporting command does not have adequate capabilities to achieve the desired effect or mitigate risk, it is the obligation of the supporting commander to inform the establishing authority and request additional resources.

The Importance of Mission Command in SSI

Mission command is NATO's command philosophy.⁴ Embracing this philosophy begins with the understanding of why mission command enables optimal command and control in NATO military operations. Mission command emphasizes the importance of understanding

the higher commander's intent and the desired effects rather than specifying to subordinates how the intent and effects are to be achieved. This requires mutual trust between superiors, subordinates, and peers — and trust that each command will accomplish its task.

There are four requirements that guide the effective application of mission command:

- 1) Commanders ensure that subordinate and supporting commands understand the intent, and each command's expected contributions towards task accomplishment.
- 2) Commanders exercise minimum control over subordinate and supporting commands, while retaining responsibility for their actions.
- 3) Subordinate and supporting commands are told what outcome they are contributing to, the effect they are to create, and why.
- 4) Subordinate and supporting commands are allocated the resources they need to carry out their assigned tasks, with subordinate and supporting commands deciding for themselves how best to achieve their superior's intent.

A commander's responsibility for mission accomplishment is total. However, mission command promotes a decentralized style of command where subordinates are delegated needed decision-making authority in an effort to increase initiative and operational tempo. Mission command gives subordinate commanders freedom of action to execute operations according to the commander's intent, while also remaining responsive to additional superior direction. A mission command leadership style is not unbounded. Commanders remain in control and prevent misunderstandings by subordinates by clearly directing priorities, intentions, and restrictions, and identifying which decisions remain at their level.

Benefits of SSI

- In a resource-constrained environment, the establishing authority is able to efficiently use and prioritize available means across time and space to have the greatest effect, while minimizing risk across the strategic environment.



“Using SSI in C2 structures provides SACEUR flexibility to create tailorable strategic options and conduct joint effects and actions at the speed of relevance.”

- SHAPE and SACEUR, as the establishing authority, are able to remain at the strategic level, while detailed operational-level staff work and tactical application is completed and executed between ACO subordinate commands.
- To accomplish the intent of the supported command, the supporting commander determines the best use of their assigned combat power to conduct the required tactical actions to achieve the desired effect.
- When applied correctly, SSI enhance unity of effort and synergy across SACEUR's area of responsibility by applying the principles and philosophy of mission command.

SSI embrace the emphasis placed in AJP-5 on parallel and collaborative planning activities to harmonize plans across all levels.⁵ Collaboration, across all ACO commands, enables mutually supportive, compatible, and whenever possible, concerted planning. To maximize the benefits of SSI, each leader must complete their roles and responsibilities in a timely manner. Once the establishing authority nominates and provides the purpose for each support relationship, the desired effect, and priorities, the supported and supporting commands work

together to achieve the desired effect.

Supported and supporting commands accomplish the desired effect through direct interaction in accordance with the SSI terms and conditions determined by the establishing authority. With no direct authorities over supporting commanders, both parties (supported command and supporting command) should develop technical arrangements prior to execution that state requirements by each participant, coordinating instructions, and contingency considerations. When SSI disagreements occur, the establishing authority resolves or arbitrates issues, oftentimes via prioritization of assets and additional direction and guidance.

Deciding to Use SSI

Throughout the competition continuum, NATO will decide on the most appropriate C2 structure that embraces the fundamentals of C2 and mission command, and optimizes flexibility of NATO resources. C2 structures are determined based on various things such as the nature of the conflict, mission, geography, and force composition requirements.

Command at the strategic level is complex and challenging, particularly when operating in an alliance or multinational coalition. To mitigate these challenges SSI can be used as a means to promote mission command and instill unity of effort. SSI are particularly beneficial when mission or geographic requirements, or limited resources, prevent a commander from task organizing one or more all-domain joint task force(s) (JTF). When a single all-domain JTF is an appropriate C2 structure for the mission, SSI are not required and should not be used.

When deciding to use SSI, various supported and supporting commands will likely be assigned throughout a NATO operation. It is possible that multiple NATO commands will be both a supported and supporting command during distinct portions of an operation and across geographic regions, due to the size of SACEUR's area of responsibility (AOR). In other words, it is possible that one ACO command could be a supporting command in one geographic area, but also be the supported command for a separate strategic effect. When this occurs, SSI roles and responsibilities do not change.

It is incorrect to assume that commanders, who own battlespace, will always be the supported command in their assigned joint operations area (JOA). Although this may be appropriate at times, supported commanders are assigned based on the *best-suited* headquarters to plan, coordinate, and synchronize all the activities required to achieve the desired effect(s).

Below are some fictitious examples that illustrate different ways an establishing authority could direct SSI during a military operation.

Example 1: To accomplish military strategic effect (MSE) — freedom of navigation across the AOR ensured, SACEUR, as the establishing authority, determines that the Allied Maritime Command (MARCOM) is the best-suited supported command due to their expertise in the maritime domain. In this particular example, JTF-South is assigned as a supporting command because one of the geographic priorities regarding freedom of navigation for SACEUR is located in JTF-South's JOA. SACEUR thus assigns Commander JTF-South operational control (OPCON) of the anticipated force capability requirements to accomplish their portion of the MSE (see Figure 1, p: 34).

Example 2: To accomplish MSE — adversary anti-access/area denial (A2/AD) systems degraded, SACEUR, as the establishing authority, determines that JTF-North is the best-suited supported command due to the limited scope of the conflict and location of adversary A2/AD systems in JTF-North's assigned JOA. SACEUR assigns Allied Air Command (AIRCOM) as a supporting command because many actions required to achieve the MSE take place in the air domain. SACEUR assigns Commander AIRCOM OPCON of the anticipated force capability requirements to accomplish their portion of the MSE (see Figure 2, p: 34).

In both examples, the established SSI remains in place until the MSE is accomplished or the establishing authority provides new direction and guidance. The next examples illustrate two C2 structures that provide feasible SSI options to SACEUR (see p: 35).



MULTI-DOMAIN COMMAND AND CONTROL

Example 3 – Regional Model: In this fictitious training scenario, NATO is confronted with a state of crisis. To combat the crisis, SACEUR establishes one JTF with a regionally focused JOA. The JTF requires an all-domain joint force to achieve their directed mission; however, SACEUR wants to retain a centralized approach in the air domain due to other priorities within the AOR. SACEUR, as the establishing authority, designates the JTF HQ as the supported command with AIRCOM as a supporting command. AIRCOM establishes a component command to best support the JTF HQ but retains command authority over its assigned forces. The SSI succeeds because the establishing authority provides clear purpose and priorities, the supported commander provides intent and direction and guidance to the supporting commander, who in turn clearly states the force capability requirements they need to achieve the desired effect and mitigate risk (see Figure 3, p: 35).



the establishing authority, assigns the JTF HQ as the supported command and directs MARCOM, AIRCOM, and NATO Special Operations HQ as supporting commands. Assigned TCCs establish a component command to best support the JTF HQ but retain command authorities over their assigned capabilities. The SSI roles and responsibilities do not change due to the nature of this mission; all headquarters assigned to support this contingency mission must work together to achieve unity of effort. For the JTF HQ, liaison officers from each supporting command are pivotal to ensure the supported command can properly plan, coordinate and synchronize all the activities needed to accomplish the mission (see Figure 4, p: 35).

SSI Key Conclusions

- SSI are not a command relationship. Supported and supporting commanders have no authority over each other. SSI are mutual interrelationships, directed by an establishing authority, for a specific contingency or mission and designed to be limited in scope, time, space, and purpose. Conflicts of interest should be resolved through joint mechanisms at the supported commander's level or by the establishing authority.
- SSI should not be confused with the designation of a main effort, although this is often the case. SSI establishes the interrelationships between SHAPE, JFCs, TCCs, and functional commands, while the "main effort" provides a focus for activity that a supported commander considers crucial to the success of their mission.⁶
- NATO established SSI to flatten traditional C2 structures. SSI headquarters must work together. All commands participate in the preparation of the plan and coordinate with each other across geographic and functional boundaries to achieve synergy. Liaison officers play a pivotal role during planning, coordination and synchronization activities.

Figure 1
MSE: Freedom of navigation across AOR ensured

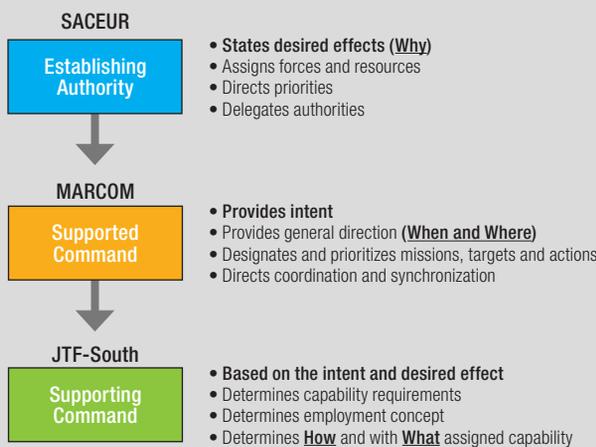


Figure 2
MSE: Adversary A2/AD systems degraded

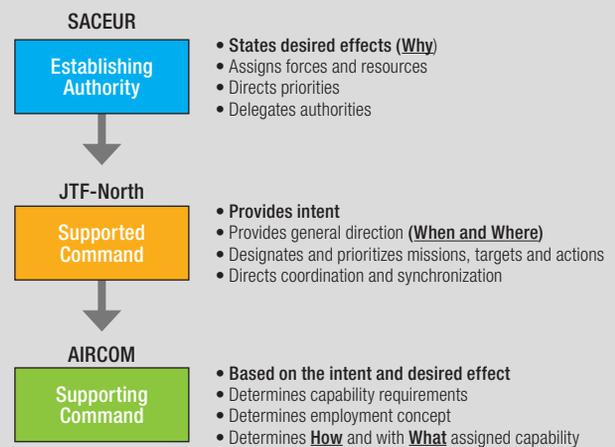
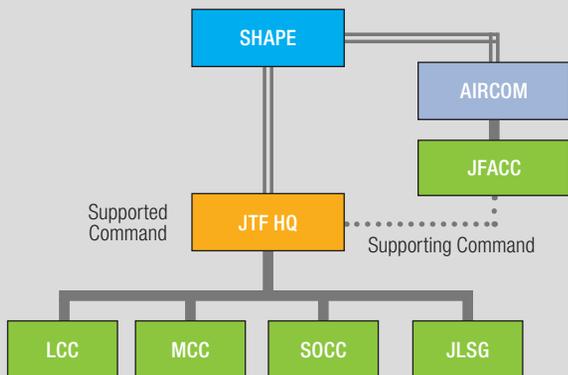
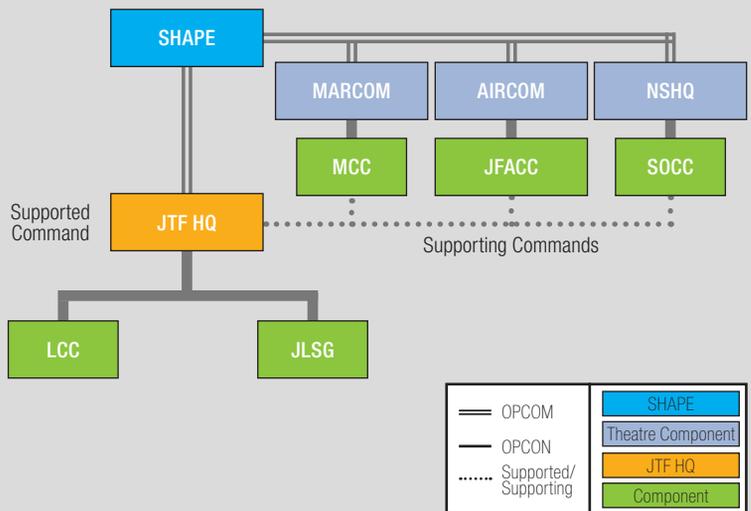


Figure 3: Regional Model



The fictitious graphic renditions are the author's own design

Figure 4: Mission-Specific Model



- The supporting command must clearly understand the supported command's mission, the desired effect, and the supported commander's intent. It is incumbent on the supported command to provide this information to ensure task accomplishment. Likewise, the supported command requires knowledge of the supporting command's capabilities and limitations.

- SSI are recommended when mission requirements, the size and scope of the AOR, and scarce resources prevent SACEUR from task organizing a single all-domain JTF. When this occurs, assigning supported and supporting commands provides the establishing authority with the greatest flexibility and likelihood of achieving strategic effects.

- SSI are not recommended when a JTF commander maintains sufficient command authorities and assigned joint and multi-domain forces to accomplish a mission. In this situation, commanders should use the orders process, and their authorities, to task subordinate forces and use "main effort" and "supporting efforts" to distribute combat power and provide clarity across the JTF they command.

Summary

Complexity throughout SACEUR's AOR will continue to grow in the future. To meet this challenge, it is crucial for NATO to consider how to best train ACO commands to operate across the AOR, and in multiple JOAs, with the optimal C2 structure. One option is to grow NATO exercises in scope and scale to increase Alliance and national military HQs' ability to handle anticipated complexities.

Another less demanding option is to create key leader and staff training events to foster C2 proficiency across a headquarters. The value of staff officers who know the fundamentals of C2 and understand how to create flexible C2 structures cannot be overstated. SACEUR will likely continue to use SSI as a means to reinforce mission command and develop tailorable C2 solutions and strategic options to achieve strategic effects. However, observations indicate that JTF HQs may benefit from further clarifying the purpose and role of SSI in commanding and controlling operations. Therefore, greater clarity and attention must be a focus in doctrine and strategic directives to SSI.

In the lead-up to STEADFAST JUPITER 2023, an ambitious NATO exercise that will challenge all training audiences, participants

must mitigate C2 challenges and misunderstandings through professional development to create a proficient understanding on C2 relationships, authorities, and how NATO establishes unity of effort across the Alliance. ✦

ENDNOTES

- 1 Charles Q. Brown Jr, "Developing Doctrine for the Future Joint Force: Creating Synergy and Minimizing Seams" (The Walker Papers No. 3, Air University Press, September 2005), 11.
- 2 See e.g. Allied Joint Doctrine (AJP-1), Edition E Version 1 (February 2017); Allied Joint Doctrine for the Conduct of Operations (AJP-3), Edition C Version 1 (February 2019); Allied Joint Doctrine for the Planning of Operations (AJP-5) Edition A Version 2 (May 2019).
- 3 AJP-3 Allied Joint Doctrine for the Conduct of Operations (AJP-3) Edition C Version 1; February 2019, 1-40.
- 4 Allied Joint Doctrine (AJP-1) Edition E Version 1; (February 2017, 5-1).
- 5 Allied Joint Doctrine for the Planning of Operations (AJP-5) Edition A Version 2; May 2019, 2-5.
- 6 Comment derived from consultation with General James Everard (Retired), Lead Senior Mentor (NATO Senior Mentor Programme), August 11, 2022.

MULTI-DOMAIN OPERATIONS IN AN URBAN ENVIRONMENT

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The most likely and most dangerous environment for future NATO operations will be the urban environment. It includes three layers — the physical, information, and human system — and heavily influences the emerging principles of multi-domain operations. The multi-domain NATO forces of the future must understand the urban environment, adapt quickly to the conflict, and continuously coordinate cross-domain fires to gain an advantage over the adversary. This article summarizes some of the key ideas of the Multi-Domain Operations in an Urban Environment concept.



IN

THE NEAR FUTURE, one of NATO's biggest challenges will be to comply with the principles of multi-domain operations (MDO). The emerging concept seeks to respond to intensified hybrid, asymmetric, and grey-zone challenges by taking joint force cooperation to a higher level and expanding it with two new operational domains: cyberspace and space. In this concept, the use of military force is much more rigorously coordinated, using diplomatic, information and economic instruments of power. The purpose of the MDO in an Urban Environment concept development is to explore the application of the still-developing MDO principles for a highly specialized (urban) operational environment.

Out of the possible special environments (urban, desert, low mountains, high mountains, jungle, arctic), operations in populated settlements are of outstanding political,

strategic, informational, and infrastructural importance. Half of the world's population lives in urban environments. Because cities have mostly grown near valuable natural resources and/or transport hubs, their economic importance is huge. In addition, they often hold symbolic value.

In megacities in developing countries, competition for scarce resources is intensifying due to climate change, and the daily disruption of already overlaid public services and infrastructure in a congested urban environment keeps the population in turmoil. The cultural, religious and linguistic frictions of the diverse populations of the densely populated cities cause constant tension, which manifests in riots at times. Dysfunctional municipalities engage in a hopeless bureaucratic fight against corruption, while the military, militia, police and volunteer police forces (often using illegal means) fight against organized crime. Amid the chaos, terrorists, cybercriminals and criminal organizations easily hide their activities.

One need only recall near-past operations in an urban environment to understand the importance of military operations in populated areas, and their complexity due to their different sizes and nature. Such operations include peacetime military engagement (e.g. nuclear emergency response in Fukushima in 2011; natural disaster relief in New Orleans after Hurricane Katrina in 2005), peace support (Mogadishu in 1993) and security (Kabul from August 2001 to 2021) as well as high-intensity warfighting (Baghdad in 2003). In such a wide

range of military operations, personnel from NATO and partner countries have evacuated military personnel as well as non-combatants; assisted in stabilization and reconstruction; provided humanitarian aid; contributed to peace support; fought against criminals, terrorists and insurgents; and faced natural and industrial disasters.

Headquarters Supreme Allied Commander Transformation (HQ SACT) has been developing urbanization concepts and their military implications since 2014, with the overall aim of developing a comprehensive (strategic, operational and tactical) theoretical framework both for the use of military forces in peacetime and for high-intensity warfare. The overarching capstone concept "Joint Military Operations in an Urban Environment",¹ delivered at the end of 2018, was developed in close cooperation with a large community of interest, including national experts, NATO centres of excellence, academia, and international organizations. These recent efforts provide operational concepts to bridge any gap between the evolving urbanization capstone concept and doctrine.

The Urban Environment

The concept development team, of which I was a member, began by exploring the terminology and concepts of inhabited settlements. Our research did not produce many results, as there is no NATO accepted terminology on the urban environment, and the definitions used by other

PREVIOUS PAGE: (Clockwise) Cybersecurity photo by Tudor Jelescu; a multimedia display of news; tsunami at Fukushima, photo by Fly_Dive/Shutterstock; Norwegian CBRN exercise, photo by Norwegian Armed Forces; torched vehicle during a demonstration; a special operations exercise, photo by Norwegian Armed Forces



sciences (e.g. geographical, civil public law, public administration, architecture) are of little relevance from a military point of view. Instead of making a new definition, we therefore restricted ourselves to circumscribing the concept of the urban environment (UE). For the purposes of the study, a UE is a "system of systems", a network of interconnected complex systems composed of four layers: physical system, information system, human system, and resilience.

I. Physical System

The physical system of UE is made up of the geographical environment and the system of three-dimensional buildings. The geographical environment is the topography, the soil, the climate and the hydrography of the city, fundamentally determining the structure, architecture and vulnerability of the UE as well as the likelihood of natural disasters. The artificial environment of the urban area greatly overrules the geographical environment: It changes its climate and terrain, eliminates the original flora and fauna, and transforms the threat of disaster, though it cannot eliminate basic geographical features. For instance, an extensive dam system may provide sufficient protection against annual floods, but is of no use against a rarer and more severe tsunami or tide (e.g. New Orleans, Fukushima). Mexico City is an urban environment built on human alterations to the geography: The Aztec city Tenochtitlan originally occupied a prominent island in a

shallow lake, which was later drained and the megalopolis Mexico City built in its place. Due to the solidification of underground clay layers, the city sinks 50 centimetres every year, increasing its vulnerability to earthquakes.

Three-dimensional human-made structures are the underground (basements, tunnels, canals), the surface (single-storey houses, streets, roads, parks, dams, embankments, monuments) and above-ground (multi-storey houses, power lines, overpasses, bridges) build-ups, which together form the material structure of the urban environment. This environment, with a visibility and range between five metres and five kilometres, poses a fundamental challenge to intelligence, surveillance, target acquisition, and reconnaissance systems: Walls and roofs make it difficult to acquire visual or technological information, and allow large-scale formations and extensive manoeuvres to remain hidden.

Districts are usually distinguished by the purpose and structure of the characteristic buildings there: historic district, business and financial centre, heavy and light industrial district, high and low population density, slum, underground district, etc. In the planning phase of operations, the structure of the urban environment must be taken into account: How dense are the buildings; of what material do they consist? How penetrable are the walls? Are roofs suitable for helicopter landing? Which type of road network is in place; how wide are the roads and are they negotiable by military vehicles?

The visual representation of information is also a challenge, as the traditional two-dimensional representation of the built-up environment does not reflect the typically three-dimensional operations of urban combat. The interiors of tall and large buildings cannot be displayed either, so command and control at the operational and tactical levels require alternative visual assistance such as aerial and ground photographs, videos, three-dimensional models, Google Street View, or augmented and virtual reality. Command and control in an urban environment is further complicated by the high operational tempo in the air, cyberspace and space domains, which leaves limited options for obtaining, processing and visualizing real-time information about activities and capabilities.

The most significant and populous cities were built primarily on the banks of rivers or seas, or at the confluence of the two, at huge

estuaries. The ports of such cities are of paramount importance as hubs between sea and land transport routes. Ports generally connect important industrial areas with global trade sea routes, so countries prioritize their protection and cyber security. Port infrastructure is also extremely vulnerable, and important for the sustainment of urban operations.

Attacks on civilian infrastructure are admissible under international humanitarian law and the law of armed conflict only if its purpose, nature, or location is of military significance and their acquisition, destruction or neutralization has a tangible military advantage. Even this is tempered by the principle of proportionality, which establishes that any collateral damage must not be excessive in relation to the concrete, direct military advantage anticipated from the attack. Certain buildings of religious or cultural value, or critical infrastructure essential for the supply of the civil population, enjoy special protection status. The layers of transport, information, education, health, law enforcement, drinking water supply, sewage and waste management, finance and economics, etc. and their infrastructural systems also belong to the physical system. Their continuous operation has a great impact on the human population of the city.

II. Information System

The information system of urban environments refers to the information infrastructure and the mass of information users, their interactions, their behaviours, and changes in their behaviour. Due to cities' well-developed information systems, the NATO forces are monitored and recorded at every step. Even the slightest mistake or misinterpreted activity might be published online in real time and draw thousands of social media comments from the international public. This possibility must be taken into account in all operations, from peacetime military engagement to warfighting. Cyberspace is the "high ground" to achieve direct effects in the cognitive domain; therefore, it should be never left without control. If an adversary builds up a "bridgehead" in this domain, they may achieve initiative to influence the local population. Their arsenal in cyberspace ranges from critical comments on real news portals to website defacement, deepfake videos and entirely fake news websites or news streaming.



https://www.nato.int/cps/en/natohq/official_texts_196951.htm

EXTRACT FROM NATO MADRID SUMMIT DECLARATION

(12) Climate change is a defining challenge of our time with a profound impact on Allied security. It is a threat multiplier. We have decided on a goal to significantly cut greenhouse gas emissions by the NATO political and military structures and facilities, while maintaining operational, military and cost effectiveness. We will integrate climate change considerations across all of NATO's core tasks.



The development of digital technology will increasingly result in "smart cities", within which the infrastructure listed in the previous section is interconnected to ensure a sustainable, prosperous, and inclusive future for the populace. Cities around the world will have financial, commercial, and thousands of other information and cultural connections. However, this results in a serious exposure to cyberattacks as well as failure or destruction of the network infrastructure. The impact of such breakdowns in cities' information systems may not only be local but also global. Examples of cyberattacks include data leaks, distributed denial-of-service (amplification) attacks, blocking news sites and attacks on logistics systems.

III. Human System

The UN estimates that more than half of the world's population already lives in cities, and this percentage will continue to increase in the future. The human system is what fundamentally distinguishes the urban environment from other operating environments (desert, mountain, jungle, arctic). The human system includes the population, the social, political-administrative and other institutional (economic and cultural) subsystems. Furthermore, the human system includes the continuous interactions of humans and the flow of people, services, goods, and vehicles within the city, between suburbs and other closely related conurbation.

In the urban environment, inequalities impacting minorities and women often worsen during times of crisis and conflict. Such grievances preserve the conflict and form a basis for further violence for a long time. In order to understand the human rights aspect of the human system, the gender and minority situation of the society must be analysed and assessed in detail with particular attention to the situation of the most vulnerable disabled or sick patients, the injured, the elderly, refugees, women, adolescents, children, lesbians, and gay, bisexual and transgender people. The majority of the urban population is non-combatant. Every effort must be made to minimize the operations' impact on their daily lives and to keep the inevitable harm to a minimum.

An urban environment densely equipped with security cameras, various sensors, and communication systems such as internet and mobile phone networks can provide a huge



amount of information. This wealth of data may currently seem impossible to monitor, evaluate and turn into intelligence, but future disruptive technologies will utilize artificial intelligence and machine learning to process, store and analyse patterns of population movement, detect unusual changes, identify faces and compare them across databases, identify trends, criminals, terrorists, extremists and other dangerous individuals. Following the same logic in the cyberspace domain, monitoring and analysis of social media content will allow operations commanders to detect changes in public perceptions and sentiments, and to launch a timely, effective information operation to communicate the NATO narrative.

IV. Resilience

Understanding, assessing and using the city's resilience is of paramount importance to NATO operations. The resilience² of a city means the ability of individuals, communities, institutions, infrastructure, and economic and financial enterprises to survive, adapt and further develop in the event of chronic stress or an acute shock. The resilience concept is valid in the event of a natural disaster or military conflict and can be applied to both the human and physical layers of the urban environment. The

traditional military approach (enemy-centric and area-dominant) to urban operations has ignored how operations generally exacerbate the situation of the human system and cause a number of problems that cannot be addressed using traditional military thinking. In order to enhance the city's security, its resilience must be enhanced and protected. Ignoring urban resilience will result in further conflicts and problems to address, and ultimately in failure of the operation.

An experiment previously led by HQ SACT³ has found 12 aspects that must be considered in resilience assessment: government legitimacy; government capacity; rule of law; effective security system; civil society organization; provision of essential services; livelihood and economic security; quality of labour force; social cohesion; ability to reconcile; perceived safety and security, and quality ecosystem services.

To evaluate the urban environment and its different parts according to the criteria above, a separate core element of appropriate experts must be developed; this element is called "green cell" in the capstone concept. The green cell obtains the necessary information through





ABOVE: Chemical, biological, radiological and nuclear (CBRN) hazard technicians. Photo by NATO

its network of contacts and keeps it up to date. The purpose of the cell is to identify civilian factors of operational significance.⁴ They liaise with NATO civil-military cooperation (CIMIC) units; leaders of the local armed forces and law enforcement agencies; influential economic, financial and political leaders; representatives of local society and refugees; leaders of governmental, non-governmental and international organizations; and journalists.

The urban environment is particularly attractive to the adversary seeking to neutralize NATO's technological superiority, to create uncertainty about their own role, to hide their own involvement and interests, and to remain on the brink of war. Such adversaries finance proxy forces, mercenaries, criminals, terrorists, insurgents, extremists, religious fanatics and dissidents who can set up their political and/or armed struggle below the threshold of what would constitute civil war, thus blocking international military aid. Consequently, the urban environment is a great terrain for actors pursuing asymmetric and hybrid warfare.

Enemy forces moving within the flow of the human system cannot be attacked as they are difficult to identify. The city provides inexhaustible opportunities for them to hide, to disguise their activities. During their manoeuvres, they

wear no distinctive signs or uniforms, conceal their weapons, use public transport to relocate, and set up bases in protected buildings, hospitals, schools and residential buildings, attacks on which are prohibited both by international law and NATO rules of engagement. Their weapons and explosives (e.g. improvised explosive devices from chemical fertilizers) and other (dual-use) technical devices (e.g. UAVs) can be obtained directly from civilian trade.

Irregular forces in the urban environment form a flexible, modular organization, and their command and control is organized along a decentralized, so-called herd intelligence, also known as swarming. Such forces adapt quickly to changing circumstances, are highly resilient (able to perform tasks even if one or more members fail), self-organizing (the units need no supervision or command and control centre), and self-coordinating.

Future NATO Operations in an Urban Environment

NATO's operations must adapt to the challenges of the urban environment even at the planning phase. In urban environments, the borders between the strategic, operational and tactical levels are almost blurred because military operations must be coordinated with other instruments of power (diplomatic, eco-

nomie, informational, etc.) that are not at operational commanders' disposal. This challenge to the planning process requires coordination between the different levels, unity of command through a common understanding of strategic objectives, and realization of a new, higher level of mission command philosophy.

Multi-domain operations (MDO) in an urban environment will naturally be land operations, but both adversarial parties will also seek to acquire the other domains. NATO operations should therefore be extended to all five domains of operation (land, sea/riverine, air, space and cyberspace). Cyberspace is the high ground, so it is critical to dominate this domain and, through it, the information layer of the urban environment. This results in decisive influence on the human system.

NATO must prepare for and accept that MDO will be a long-standing ongoing rivalry, a constant cycle of competition and struggle throughout the full spectrum of the conflict, from peacetime engagement to warfighting. The nature of the conflict may vary over time and through space, from one urban district to another, from peaceful coexistence, through irregular warfare, to traditional wars between states. The conflict may escalate to a higher level without transition and then return to a lower level. The level of competition will be difficult to predict and will vary in different areas, so NATO will have every reason to use military forces whose action can be fine-tuned to the level of violence in the crisis. The key to MDO command and control is automated connectivity and information sharing at the highest possible speed, in real time, connecting every sensor and weapon system available in the five domains and enabling the synchronization of cross-domain effects.

MDO require effective decision-making, for which NATO forces need an accurate understanding of all three layers of the urban environment, as well as the adversary and the conflict itself. NATO MDO forces will be capable of high-intensity combat, law enforcement, humanitarian operations and military advisory operations alike. They must be able to operate independently for a prolonged time, secure their own supplies, disaggregate if they find themselves overwhelmed by enemy forces, aggregate independently, reorganize, and perform manoeuvres and fires in three physical dimensions. They will be capable of cross-do-

“NATO MDO forces will be capable of high-intensity combat, law enforcement, humanitarian operations and military advisory operations.”



main (joint) cooperation and coordination with other MDO units in the absence of command and control, but they will also be suitable for civil-military interaction and cooperation with the host nation's armed forces, law enforcement agencies, and local supporting militias.

The support of the urban population and the influence of the human system are essential for the success of MDO. In order to secure influence, NATO troops must be in constant contact with the actors, audiences and organizations that are vital to the administration and management of the city. In summary, the NATO multi-domain forces will be able to understand the urban environment and adapt quickly to the conflict, and they will be able to continuously coordinate cross-domain fires and thus gain an advantage over the adversary.

Multi-Domain Operations Command and Control

The most important factor in the command and control (C2) of MDO in the UE is the speed of the forces. Shortening the decision cycle and sharing the information at the highest possible speed is crucial in securing NATO forces' superiority of information and leadership. The key to future leadership in an urban environment is the integration of intelligence, surveillance, and C2 systems: the fully automated, computerized C4ISTAR⁵ system. This network system ensures that command has direct access to all intelligence provided by the unified systems through a computer network, and can use this intelligence in planning and execution, which will pave the way for the next-generation C5ISR⁶ system. In the course of the C2 cycle, it is also necessary to cope with the processing of huge amounts of data and the cognitive overload experienced by staff. Revolutionary technological developments will eventually provide the solution: Artificial intelligence and machine learning will facilitate the analysis and extraction of the vast amount of incoming data, interpret it, and support decision-making processes with analysis, pattern recognition and predictions.

- **Decentralized C2:** The command posts of the future is a series of tiny, decentralized cells in constant motion, always connected to each other, but with as little physical and electromagnetic radiation as possible.



- **Communication and Information Systems:**

The communication required to control and coordinate the activities of NATO MDO forces must not rely on traditional CIS, but on alternative procedures and tools. These may include existing civilian systems and infrastructure (landlines and mobile phones), or secondary use of police, rescue or fire department systems. When using civilian systems, their reliability, security and the protection of information must obviously be ensured. In addition to the satellite communications available to NATO members, cheaper ground and airborne communications relays may facilitate communication in a congested environment (such as autonomous, robotic, stratospheric balloons and airships).

- **Manoeuvre:** Multi-domain forces trained and specially equipped for urban combat⁷ carry out their activities in a dispersed, independent manner, within the framework set by the operation commander, knowing the strategic objectives and the desired end state.

- **Planning:** Operational plans should be rigorously reviewed and tested through red-teaming, wargames, and modelling and simulation. Wargames will be supported by artificial intelligence in the future. Several experiments within a short timespan will help staff understand the secondary and tertiary effects of the operation in all three dimensions (cognitive, virtual, physical) and in all four layers of the urban environment (physical, information, human, and resilience).

Conclusion

In this article, I have sought to summarize the key features of future MDO in one of the most challenging environments in modern warfare. The most important requirement for these operations to succeed, however, will be the change in command culture. Commanders of the future must move beyond service-focused activity, and predetermined timelines and deliberate, sequenced activities if they are to adapt to the uniqueness of the urban environment. This cultural shift will be required at all levels of command and will demand an adoption of "extreme mission command". NATO forces must be prepared for constant competition and adapt to rapidly changing conflicts, synchronizing cross-domain fires to gain an advantage over the adversary. ✦

ENDNOTES

- 1 Capstone Concept – Joint Military Operations in an Urban Environment, dated 27 November 2018.
- 2 Resilience (fault tolerance): The ability of a functional unit to continue to perform a required function in the presence of faults or errors (NATO term). This term refers to information technology, but I found it applicable to social resilience as well.
- 3 Bodnar, J., Collins, S 2019. NATO Joint Military Operations in an Urban Environment: A Capstone Concept, The Three Swords Magazine 34/2019, https://www.jwc.nato.int/images/stories/_news_items_/2019/three-swords/NATOUrbanization_2035.pdf
- 4 The green cell reflects the PMESII (political, military, economic, social, information and infrastructure) factors described in AJP-01.
- 5 C4: command, control, communications and computers; ISTAR: intelligence, surveillance, target acquisition, and reconnaissance.
- 6 C5: coalition, command, control, communication, computers.
- 7 There are currently no troops dedicated and specially equipped for urban combat in NATO member states, but their creation seems to be modelled on other light infantry troops specialized on special operating environments (such as mountain troops).

WORDS



MATTER

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Supporting NATO Interoperability Through a Common Understanding of Operational Concepts

IT IS SAID THAT the pen is mightier than the sword.¹ Whether one agrees with the old adage or not, language is undeniably crucial to our work as warriors. In an Alliance of 30 nations, three of which use English as an official language, a common frame of reference is necessary for Allied members to understand concepts and fight together as a cohesive whole. A proper understanding of important warfighting terms in the Alliance facilitates the use of processes, whether they be doctrinal or experimental.

By practicing processes in military exercises directed by the Joint Warfare Centre (JWC), a NATO military headquarters gains the experience and understanding necessary to prepare and conduct an operation or fight a war. A NATO headquarters' ability to adapt the sequencing of joint force manoeuvres at a multi-corps and equivalent scale and, where necessary, apply sufficient lethal force in the form of joint fires, is among the processes that make up the core of military force-on-force warfighting with a near-peer competitor.

Since the North Atlantic Council (NAC)-directed NATO Command Structure-

Adaptation (NCS-A), which occurred in 2018, the function of joint fires and joint specialty of joint targeting in NATO have been theoretically practiced across the Alliance headquarters under the umbrella term "joint effects".²

This article will describe how joint effects and associated key operational terms relate within the Alliance. This includes the following terms: military response options, flexible deterrent options, operational effects, multi-domain operations, campaign synchronization, and joint synchronization. We will explore these select terms to better understand them in their NATO usage and see that a common understanding of terms benefits the Alliance.

Joint Effects Versus Operational Effects

The term "joint effects" should not be confused with "operational effects". Joint effects is a concept that was introduced into NATO through NCS-A in 2018. The resulting policy of joint effects theoretically consolidated the fields of joint targeting, joint fires, cyber, lawfare, strategic communications (StratCom), and elec-

tronic warfare.³ Some NATO headquarters, including Supreme Headquarters Allied Powers Europe (SHAPE), reorganized their staffs to incorporate personnel in those fields into a joint effects branch.

"Operational effects" are different. These are effects that are determined and defined as part of the NATO comprehensive operations planning process (COPP) and described in Allied Joint Publication 5 (AJP-5) on Allied operations planning and in Allied Command Operations' Comprehensive Operations Planning Directive (COPD), currently version 3.

Now let us look at a term used in Exercise STEADFAST JUPITER 2021: flexible deterrent options (FDO).

Military Response Options Versus Flexible Response Options/Flexible Deterrent Options

The term "response options" is mentioned once in AJP-5, at which point the reader is referred to the COPD.⁴ At the time of publication of the latest AJP-5 (2019), the COPD in use by



headquarters under Allied Command Operations was version 2. Version 3 of the COPD, the latest version, was published in 2021. Both versions describe "military response options" (MRO). The term MRO was also found in the Allied Administrative Publication 15 (AAP-15), the NATO glossary of abbreviations, which was recently integrated into the NATO terminology database NATOTerm.

MRO are part of the NATO crisis response planning Phase III process, and they are tasked by the NAC.⁵ The term "flexible deterrent options" (FDO) is different; it is a national term from U.S. joint doctrine. The latest U.S. doctrine on joint planning, the U.S. Joint Chiefs of Staff's Joint Publication 5 (JP-5), describes FDO and a related and similar term, "flexible response option" (FRO). An FDO is preventative, while an FRO is punitive.⁶ Though the terms come from U.S. national military doctrine, the information in JP-5 is certainly useful to NATO planners in stimulating planning ideas for NATO military response options. However, the context for FDO/FRO examples relies heavily on U.S. government terms with which not all NATO staff officers will be familiar.

Campaign Synchronization Versus Joint Synchronization

"Campaign synchronization" is not found in any current NATO doctrinal documents.⁷ The term "campaign" was found in AAP-6 and is in

AAP-39; it is a NATO Agreed term.⁸ "Joint synchronization" is not found in NATOTerm, but the terms "joint" and "synchronization" are both found in NATOTerm as standalone term entries. The former is referenced as an AAP-6 and AAP-39 entry. "Joint" is a NATO Agreed term, while "synchronization" is a NATO adopted term. The latter is defined in NATO publications in intelligence or science and technology contexts, but not in the context of joint operations at large. However, both synchronization concepts are used colloquially by NATO headquarters' staff officers. In the past, they have been used interchangeably in different contexts.

Discussions resulting from the publication of the Joint Analysis and Lessons Learned Centre (JALLC) Joint Fires Study in May 2021, as well as increasing appreciation of the value of exercising operational planning within NATO's various commands and headquarters since 2017, prompted SHAPE staff to analyse what the term "campaign synchronization" should mean. Given the NATO definition of the term "campaign" as including "several operations", SHAPE staff have leaned towards considering and eventually obtaining Alliance agreement of "campaign synchronization" as the synchronization of joint actions across multiple joint operations areas (JOAs).

This is to be distinct from the idea that joint synchronization would then be understood as synchronization of joint actions at the operational level by a joint headquarters within its own JOA. In both cases, the commander,

whether SACEUR or a joint force commander, will need to be "told the story" by his or her staff about how "the fight is going". The fight, whether a "campaign" or an "operation", will be developing better than planned, as expected, or behind the planned timeline. This "campaign assessment" or "operational assessment" will be based (or at least should be) on "measures of performance" (MOPs) and "measures of effectiveness" (MOEs) linked to "operational effects" drafted by a staff operations planning team during their mission analysis, based on higher-echelon direction and guidance.

Solutions and the Importance of NATO Interoperability

A solution facilitating a better understanding of terminology is the use of NATO standardization agreements (STANAGs). In NATO, a STANAG is a document containing administrative information regarding common usage of terminology as agreed by member nations. These as well as the current AJP's are archived in the NATO Standardization Document Database.⁹

One good example of the introduction of important terminology into NATO is Headquarters Allied Commander Transformation's (HQ SACT) current effort to define the concept of "multi-domain operations" (MDO) in NATO. The efforts by HQ SACT staff to develop an MDO concept for the Alliance is a step in the right direction. Critically, the first draft of the MDO concept describes the importance



The diverse team of the joint effects vignette for NATO Exercise STEADFAST JUPITER 2022



"When we think about **NATO interoperability**, the discussion should be a **holistic** one, incorporating **personnel** as a component of interoperability, in addition to **best practices** and **technological compatibility**."

of human capital, in addition to technology and processes, as an enabler for better thinking and execution of operations.

When we think about NATO interoperability, the discussion should be a holistic one, incorporating personnel as a component of interoperability, in addition to best practices and technological compatibility. The military personnel who fill the NATO duty positions come from 30 different nations, multiplied by the different national armed force services, however many they may be. Each country has different levels of experience and capabilities in joint operations.

A common terminological reference is therefore important for the Alliance staff members to be able to be interoperable. The NATO joint staff officer at a NATO Force Structure or NATO Command Structure headquarters should be able to understand what we mean by specific NATO-defined terms, even if they are not NATO Agreed terminology. Ultimately, common understanding of terms helps NATO interoperability, as does practicing operational

planning from scratch (as opposed to merely refining or validating existing plans) and conducting simulated warfare in a JWC-directed exercise "Phase IIIB" (execution) with a joint commander facing operational dilemmas.

IS THE PEN truly mightier than the sword? As the world enters a new geopolitical era, we are bound to see that their might is inextricably linked. Our shared terminology, our precise and careful communication across borders and military services, is the sharpening steel that hones the Alliance's sword. Should we face direct threats on NATO soil, the decades of agreeing on terms and warfighting processes, as is currently happening with HQ SACT leading the way in defining multi-domain operations, as well as SHAPE with joint effects, will undoubtedly serve the Alliance well.

Terms such as "flexible deterrence option", "multi-domain operations", "campaign synchronization", and "joint synchronization" need to continue to be defined (or simply defined in NATO in the case of "FDO") and incorporated into the NATO Terminology Programme. The individuals from our 30 Allied nations must appreciate the might of the pen and write in the same language in order to fight and win. ✦

ENDNOTES

- 1 "The pen is mightier than the sword" was first written by novelist and playwright Edward Bulwer-Lytton in 1839.
- 2 For further unclassified information on NATO joint effects, see the Special Report: "A New Era for Joint Effects" by Commander Cornelius van der Klaauw in the November 2020 issue of the JWC's The Three Swords magazine, available online.
- 3 Ibid.
- 4 AJP-5 (2019), 4-2, 4.3
- 5 COPDV3, 3-43
- 6 JP 5-0 (2020), Appendix E, E-1
- 7 Campaign synchronization was used in the context of joint targeting in a since rescinded ACO Directive 80-70. The term was dropped in the new version of the document in 2018.
- 8 Campaign: "A set of military operations planned and conducted to achieve a strategic objective." From the NATOTerm database at <https://nso.nato.int/natoterm/Web.mvc>, accessed 15 June 2022.
- 9 <https://nso.nato.int>.

BELOW: The JWC exercise planners supporting the vignette-based exercise portion of STEADFAST JUPITER 2022 for Supreme Headquarters Allied Powers Europe (SHAPE). Photo by SHAPE PAO



WAR



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GAMING

THE UGLY, THE GOOD, THE BETTER



WARGAMING IS NOT NEW. ITS RESURGENCE IN NATO IS A RESULT OF MANY FACTORS, BUT THE PRIMARY FACTOR IS PERHAPS THE INCREASING COMPLEXITY OF WAR IN A MULTI-DOMAIN ENVIRONMENT, WHICH REQUIRES MORE COGNITIVE EFFORT FROM STAFF AND COMMANDERS TO ANTICIPATE THE CONSEQUENCES OF DECISION-MAKING.

IN NATO, WARGAMING is in fashion. Almost every month, a NATO headquarters or nation announces either an initiative to set up a wargaming centre or expresses its requirements in this domain to other organizations. This increasing interest in wargaming is largely a good thing. It is a realization of the need to find pragmatic solutions to increasingly complex operational issues, and a corollary of the fact that the threat of large-scale wars against peer or near-peer adversaries is back and require serious analysis. However, the very fact that "wargaming" is becoming shorthand for almost every kind of training exercise or brainstorming gives rise to some serious issues that could potentially overtake the (many) benefits of wargaming as a staff tool. This article outlines the pitfalls of misusing wargaming (*the Ugly*), the contrasting good steps to initiate a wargaming effort (*the Good*) and, finally, the best ways to achieve actionable output from a given wargame (*the Better*).

The Ugly: How to Ensure a Wargaming Project Will Fail

Wargames are very diverse in nature, depending primarily on the context, method and expected results. One of the worst first steps for any organization is to make an unspecified request for wargaming a problem or a potential solution, usually under unreasonable time constraints. Most of the time, this request stems from the need to check that a potential

solution is workable. In that case, more often than not, wargaming is understood as a kind of elaborate brainstorming, or to use a phrase coined by wargame designers: a BOGSAT.¹ In that case, there is little commitment from the headquarters on the topic that is to become a wargame and, as can be expected, the result will usually be underwhelming in terms of the apparent effort to create a reasonable product.

The opposite is even worse: There are many cases where a request for a wargame comes from a very committed organization, who mostly wants to use a wargaming step to vindicate a decision already made or course of action already chosen, but which needs the official "polish" of a wargame as a seal of approval. This, of course, can lead to catastrophic operational results by stifling critical thinking — a key element of the dialectic approach that is integral to wargaming.

There are other variants or aggravating factors. One variant is to expect valid results to a complex problem by utilizing a "wargame in a box".² For the sake of saving time and financial resources in design and development, an organization may take the easier route of using a pre-existing wargame. While this can work for general educational purposes, it rarely works for a specific problem set requiring a specific wargame design. This risk often stems from a lack of interest, wargaming culture, or sponsorship in a given organization, leading to wargaming being seen as a "nice-to-have", or a ticket-punching step in a larger process.

To avoid the worst pitfalls of wargaming, as mentioned above, an organization or commander must decide 1) why they need a wargame, 2) what their expectations for the output are, and 3) whether they are ready to accept the conclusion and sponsor a given effort — or, in other words, they must decide when *not* to use wargames to support decision-making.

The Good: Ways to Set Things Right

"As a general rule, a successful wargame requires two conditions. First, we and our client must be able to identify a clear objective or, in military parlance, a concept of operations. Second, it is crucial that there be key groups with different equities — interests that are at real or imagined odds with one another, based on arguments over strategic or tactical plans, or institutional culture."³

There are many good ways to start a wargaming project on footing that, while it will not ensure the validity of the wargaming conclusions, will at least prevent the main risks. The first step is to work on a broad problem statement internally. This will clarify whether wargaming is the right tool, which type of wargame is to be adapted, and if the time and resources available support this option. Taking the time to consider all this will certainly help to prevent the "ugly" pitfalls defined above. For instance,



based on the working definition of wargaming, if the problem statement does not really define a dialectic dimension ("Who are the adversaries involved?"), wargaming techniques may not be applicable. This internal exercise in problem statement will go a long way in supporting the dialogue with the wargame designer and the wargame development.

The next step is to structure a wargaming support team, led by the wargaming sponsor. As underlined above, one cannot completely outsource a wargame; one does so under the penalty of mediocre results. Most probably, a given organization will have to outsource the design of a wargame and/or its development and analysis. This might create tensions (hopefully creative), especially if the results of a given wargame do not support planned options. This is where the leadership of an internal sponsor comes into play, and this sponsor needs to be supported internally by a team so that the development and output of the wargame is not perceived as foreign to the headquarters or organization.

Much of the value of a wargame resides in the process, sometimes more so than in the output itself. In the design dialogue, the sponsor and the associated team develop a deeper understanding of the problem at hand, in order to help the designer, create game mechanics (type of game, rules, and so on) that will

set conditions for getting the best output of the game. Further development will help clarify the critical elements and their interactions that need to be analysed.

Finally, the issue of adjudication/umpiring of the wargame and its analysis should be addressed at an early stage and not as an afterthought. Using a "trusted agent", an accepted authority with experience as an adjudicator, will go a long way to save the wargame from being disrupted by unsavory results, especially if the trusted agent is involved early in the process. Taken collectively, these pieces of advice support the development of an internal "wargaming culture" that is conducive to the best results.

The Better: Getting the Most Out of a Wargame

Wargaming is a tool in the toolbox of cognitive development and decision-making in complex environments. As mentioned above, it may or may not be the right tool in specific situations or under certain constraints. However, using wargames on a regular basis in an organization also has transformative effects that go beyond the uses of the tool itself. To get the most out of wargaming, and short of creating an internal wargaming branch, a given organization or headquarters must train a "wargame-

aware" team, or cadre. While there may not be "wargame experts" in all headquarters, there is a growing number of officers, non-commissioned officers and civilians who play commercial wargames or who have been exposed to wargaming at some point of their career. These staff members may represent, with the support of external wargaming resources and training, the core of this wargame-savvy team.

The experience of training this cadre at the Joint Warfare Centre (JWC) was very rewarding for those individuals who like being involved in high-level decision wargames. Furthermore, practicing wargames develops organizational qualities that are key elements of cognitive superiority in the current environment. Supporting a wargame design develops creative thinking and critical thinking as well as analytical skills in creating dialectic challenges (recreating duels with a thinking enemy) in a complex environment.

Being involved in the analytical part of wargaming also helps in developing an acceptance of failure as a potential result, forcing organizations to understand the reasons for failure in order to improve. Presenting the analysis of a failing party in each phase of a wargame supports a creative dialogue and generates experience in decision-making — something that can only be learned through practice.

Wargaming is not new. Its resurgence in NATO is a result of many factors, but the primary factor is perhaps the increasing complexity of war in a multi-domain environment, which requires more cognitive effort from staff and commanders to anticipate the consequences of decision-making. By creating a culture of creative and critical thinking, wargaming holds the potential to reinforce fundamental factors of the Alliance's superiority. ✦

BELOW: The JWC's first large-scale wargaming event, JETS 3.0, conducted at NATO Joint Support and Enabling Command, November 17, 2022. Photo by JWC PAO



ENDNOTES

- 1 BOGSAT is a derisive acronym of wargame designers for "Bunch of Guys (and Gals) Sitting Around a Table" and code for a pseudo-wargame, with no rules and usually very poor output.
- 2 That is a "generic" wargame with mechanics and objectives previously designed to tackle a different operational problem.
- 3 Mark Herman, *Wargaming for Leaders*, p.12, New York, McGraw Hill, 2008



The JWC News Archive
Visit <http://www.jwc.nato.int/newsroom> to learn more!



Major General Piotr Malinowski, Commander JWC.
Photo by Yrjan Johansen

DON'T MISS OUT!

TO PROMOTE the Joint Warfare Centre's (JWC) training and warfare development mission and increase awareness of the organization within NATO, the Centre published a book in August 2022. The book highlights the unique mission and capabilities of our organization, which will celebrate its 20th anniversary next year. As the JWC Public Affairs team, we thank each and every contributor to the book, especially H.E. Bjørn Arild Gram, Norwegian Minister of Defence; General Philippe Lavigne, Supreme Allied Commander Transformation; and General Eirik Kristoffersen, Norwegian Chief of Defence. From scenario development, media simulation and warfare development to real life support, we have rounded up the Centre's unique capabilities essential for making NATO better.

To learn more about the JWC, check the link:
<https://www.jwc.nato.int/newsroom/jwc-book-2022>

New Command Senior Enlisted Leader

On September 12, 2022, Polish Army Senior Chief Warrant Officer (SCWO) Andrzej Woltmann assumed the position of Command Senior Enlisted Leader (CSEL) for the JWC. SCWO Woltmann comes to the JWC from the Chief of the General Staff of the Polish Armed Forces where he served as the CSEL from 2020 to 2022.

The CSEL is at the pinnacle of the non-commissioned officer (NCO) ranks and serves as a senior advisor to the Commander, the Command Group, and other senior officers in every level of the JWC. The CSEL makes recommendations to the Commander on all matters pertaining to the NCO ranks, and simultaneously ensures NCO development, utilization, and engagement.

"I am both honoured and excited about the opportunity to serve at the JWC and represent my fellow non-commissioned officers," Woltmann said, adding: "My priority is to learn more about the JWC's vision and understand how I can support our enlisted personnel better. The JWC has a very motivated, professional workforce, and everyone is doing a great job. So we will keep doing what we are doing and focus on our teambuilding. I am fully committed to the well-being and success of the JWC's enlisted personnel."



COLLECTIVE
TRAINING



TRAINING NATO TO

OUT-FIGHT
OUT-THINK
OUT-LAST

STEADFAST JACKAL 2022. Photo by NRDC-ITA



EXERCISE REPORT

by Squadron Leader Matthew Whitfield
British Air Force
Staff Officer, Content Branch
NATO Joint Warfare Centre



Exercise STEADFAST JUPITER 2021
Photo by Rapid Reaction Corps-France PAO

“To truly test the training audience, the impact of the totality of a script over the execution period must be the focus.”

ARRIVED at the Joint Warfare Centre (JWC) in summer 2021 together with several other new members of the Content Branch. We were warmly welcomed, but we were also warned to expect a particularly busy end of the year with the two major JWC-directed exercises of 2021, STEADFAST JUPITER 2021 (STJU21) and STEADFAST JACKAL 2021 (STJA21), executed between October 14 and December 9.

Developing and running exercises of this magnitude is a complex enterprise requiring significant input from all areas of the JWC, together with external support. This article focuses on the work of the Content Branch in

preparing and executing these two exercises — from the perspective of a JWC newcomer.

I came to the JWC with previous experience of NATO, including participation in multiple JUPITER-series exercises; however, this had been at the tactical level and not the operational and strategic levels, where the JWC's focus lies. It was clear that I had much to learn. I believe that regular staff rotation is one of the JWC's strengths. Every year the organization is renewed with an influx of motivated and skilled individuals from a wide range of backgrounds and currently representing 17 nations. Every year the Centre's leadership has to ensure that newly arrived personnel are

equipped with the skills and knowledge they need to play their part during the particularly busy autumn/winter period. The JWC induction process starts with One Team training.

Having experienced a wide range of teambuilding activities in my career, some more effective than others, I entered the meeting room with the rest of my fellow newcomers, unsure what to expect. My scepticism turned out to be unwarranted: The session was interesting, did not feel forced and allowed us to meet some of our future colleagues, while gaining insight into the ethos of the JWC.

The One Team training was followed by a series of introductory briefs on the JWC's di-



visions and branches. After that, responsibility for in-depth staff training fell to the individual branches. The principal tool for managing the development and delivery of JWC exercise content is the Joint Exercise Management Module (JEMM). Training on this software was the first focus for Content Branch newcomers. The NATO Communications and Information (NCI) Agency delivered an online training course that provided us with sufficient knowledge to play an active part in the newcomer cohort's first major event, the STJA21 Scripting Workshop. We further developed our JEMM skills informally by observing the Content Branch's JEMM experts in action.

Rising to the Challenge

Both STJU21 and STJA21 were Supreme Headquarters Allied Powers Europe (SHAPE)-sponsored computer-assisted/command post (CAX/CPX) exercises. STJU21 was designed to train and evaluate the NATO Response Force 2022 (NRF22) headquarters, Multinational Corps North-East and theatre advisors in planning and conducting a pre-Article 5 small joint operation (SJO) against a fictional peer adversary contesting NATO in all domains.

With 15 training audiences, STJU21 was the largest and most complex CPX that NATO carried out in 2021. During the 10-day execution period, Content Branch personnel over-

“Deterrence presents a very different problem set to the often-practiced kinetic operations scenarios.”

saw the delivery of more than 1,700 injects to the training audiences. This was the first time that this particular exercise series focused on deterrence, with Chief Content noting during the exercise control (EXCON) training plenary session: "Deterrence presents a very different problem set to the often-practiced kinetic operations scenarios, requiring a more nuanced approach and a greater understanding of the political domain."

STJU21 created a buzz around the JWC. Following a long period of pandemic-related restrictions on the scale of 2020 and 2021 events, the JWC seemed particularly busy with

Headquarters Rapid Reaction Corps–France (RRC-FR), one of the secondary training audiences, operating from here.

STJA21 was a smaller exercise than STJU21, but nonetheless a significant undertaking. The exercise was designed to train and test the planning and conduct of an SJO of limited complexity at the operational and tactical levels against insurgents, with a focus on the land and cyberspace domains. Key objectives of the exercise were the training of NATO Rapid Deployable Corps – Italy (NRDC-ITA) as a joint headquarters and evaluating the French Joint Force Air Component (JFAC) prior to them assuming their NRF 2022 commitment. Over the 10-day execution period, approximately 850 injects were delivered to the training audiences — more on these numbers later.

Content Branch Exercise Configuration

The JWC Content Branch is made up of a diverse staff from eight nations. Newcomers usually begin as deputy event managers before progressing to be event managers. The most experienced OF-4s (NATO grade coding for navy commander, or army/air force lieutenant colonel/wing commander) may then go on to become chief content.

Chief content, as the name suggests, is the focal point for all content-related activity



The former Commander of Allied Joint Force Command Brunssum, General Jörg Vollmer (Retired), at a simulated press conference during Exercise STEADFAST JUPITER 2021. Photo by JWC PAO



Major General Piotr Malinowski, Commander JWC (right); Commander Peter Williams, the lead planner for Exercise STEADFAST JUPITER 2021 (middle), and Lieutenant Colonel David Tarifa Ramirez, exercise planner. Photo by JWC PAO





Clockwise: Content brief during Exercise STEADFAST JUPITER 2021; the Chief Content, Lieutenant Colonel Dominik Schmitz (right) and his deputy, Commander Nick Meredith. JEMM manager Lieutenant Commander Ian Fraser; the JWC Advisory Team in Italy during STEADFAST JACKAL 2021; the exercise situation centre. Photos by JWC PAO



throughout exercise development and execution. Event managers and their deputies sit below chief content in the hierarchy and are responsible for an allocated portion of storylines. Considering the number of injects that have to be developed and executed, breaking them into manageable groups is essential.

Both STJU21 and STJA21 followed the classic breakdown of injects across four events: Threat, Sustainment, Engagement and Higher Control (HICON). This worked well during the execution phase and, despite some inevitable crossover between events, response cell leads and liaison officers tended to engage with the same event managers, forging strong working relations.

The unsung but nonetheless critical role of JEMM manager deserves a special mention. During the development phase it is vital that the injector/receiver architecture within JEMM is carefully constructed so that exercise injects are sent to the correct recipient. During execution, the JEMM manager leads tailored training sessions for EXCON, ensures that injects are scheduled and carried out correctly, and acts as a focal point for all EXCON JEMM queries.

A small (but perfectly formed) element of the Content Branch is dedicated to managing the grey cell, which replicates entities that training audiences could expect to encounter as part of NATO's comprehensive approach. Generally, the cell is composed of subject matter experts or role-players representing agencies, organizations, institutions and individuals outside NATO and opposing forces structures. The grey cell personnel add significant breadth, depth and realism to both development and execution.

I was assigned to Event 3 (Engagement) for STJU21, which afforded me the opportunity to see the grey cell in action daily. It was quickly clear to me how much value this team's wealth of knowledge and experience add to the JWC's exercise output. The principal difference between the two exercises from a grey cell perspective was that for STJU21, the team was located at the JWC, but for STJA21 it was co-located with the primary training audience at NRDC-ITA to facilitate key leader engagement activity.

EXCON for the major JWC-directed events is typically made up of 80 percent external participants. During STJU21, Norwegian Joint Headquarters personnel augmented each



ABOVE: Laura Loflin DuBois, STEADFAST JUPITER 2021 media environment manager. Photo by JWC PAO

event and staffed Event 5, which was dedicated to supporting the Norwegian national command post exercise POLARIS GRAM, which took place in parallel. In addition, during STJA21, Event 2 (Sustainment) was ably supplemented by the Multinational Joint Warfare Centre (MJWC) in Istanbul, Türkiye.

The Final Piece of the Puzzle: Execution

While the execution phase of each exercise may be the most visible, most of the JWC's heavy lifting has already been completed before this phase. From a Content Branch perspective, the execution phase is not the most challenging part of the exercise. For each exercise, three major JWC-led content development events are held prior to execution:

- **Strategy Workshop.** The aim is to plan the major themes of the exercise with exercise stakeholders. The key output of the Strategy Workshop is a set of agreed operational dilemmas/challenges and themes that are to form the basis of all exercise content.

- **Incident Development Workshop.** The aim during this workshop is to use the verified output from the Strategy Workshop and the concept of operations from the crisis response planning to develop storylines and incidents

that are relevant to the training audience, support all primary training objectives and are in line with the exercise design.

- **Scripting Workshop:** The aim of this workshop is to create realistic exercise content by scripting injects within the already identified storylines, incidents and CPX design, which are linked to support all training objectives under a logical and manageable event structure. The output is a synchronized exercise script, which will enable the training audience to meet their training objectives within agreed start of exercise (STARTEX) conditions.

Execution Battle Rhythm

The tried-and-tested execution battle rhythm we followed was almost identical for both exercises: five days of EXCON training followed by a 10-day execution phase. Five days for EXCON training seemed generous when we were first briefed, but those days proved to be critical. Exercise injects are mainly injected by response cell personnel. The response cells are almost exclusively composed of external participants and provide a vital link to the training audiences. EXCON training ensured that all team members, particularly those in response cells, were comfortable and confident enough with relevant exercise elements and procedures to hit the ground running on Day One of execution.

One of the key parts of EXCON training for the content team was the mini-exercise led by the JEMM manager. This training event saw each response cell process increasingly complex injects. It provided a completely safe environment for them to practice their internal procedures and trial their interactions with event managers before the training audience was in place. The daily execution phase schedule of the branch started with a team huddle and concluded with the EXCON closedown brief. Between these events, branch members participated in a host of other meetings to coordinate and refine responses to how the exercise was playing out. Each event team coordinated their participation in all required meetings while also keeping each event position within the EXCON continually staffed to ensure the smooth and timely flow of injects in line with the script, and to deal with any queries from the response cells.



Five Key Takeaways

1. Content Development is Vital

No matter how good exercise execution processes are, the exercise will not be a success without the appropriate level of buy-in and effort from both the JWC and external staff during the content development phase. This was observed to be particularly important for STJU21, as the Deputy Chief Content commented: "The move away from kinetic-based conflict required a different approach to scripting and delivery than we were used to, and a closer engagement with the training audience at senior level in order to shape the exercise to their requirements. The presence and level of engagement of the Deputy Commander of Allied Joint Force Command Brunssum as Senior Trusted Agent during scripting was unprecedented and vital to the success of the execution phase."

2. Focus on Timing and Balance

To truly test the training audience, the impact of the totality of a script over the execution period must be the focus of attention. Through-

out the content development process, Chief Content keeps the team focused on ensuring that the quantity and severity of injects would appropriately test the training audiences without overwhelming them on the first day of execution. I previously mentioned the number of injects for both exercises. These numbers should not be interpreted in isolation, as they do not necessarily paint the whole picture: A single inject could result in significant work for multiple training audiences, while another may simply add to situational awareness.

3. Dynamic Scripting Is Not as Exciting as It Sounds

During the STJA21 Scripting Workshop, some scripters suggested they could just dynamically script as required during execution. The JWC staff discouraged this approach, and the reasons for this became very apparent during execution. The exercise scripts were carefully coordinated and tailored to meet training objectives and to appropriately test and certify

participants. An "on the fly" change to the exercise script may make sense to one element of EXCON, but it is vital to proceed with great caution to avoid unintended consequences. Over the course of the two exercises, only a small number of script changes were made, and these were carefully coordinated by event managers, trusted agents and Chief Content.

4. Effective Use of JEMM Is Critical

JEMM is central to the JWC's exercise development and delivery because it permits multiple EXCON elements (which may not necessarily be co-located) to coordinate and synchronize injections to the training audience. JEMM itself remains invisible to the training audience, as injections are designed to be received as they would be in reality. Without such a tool, injection management on this scale would be impossible. While face-to-face interaction is undoubtedly valuable, it is not always practical due to time and geographical constraints. The JEMM Battle Log is a particularly powerful feature that enables timely inject coordination and additionally provides an audit trail that can be used to monitor inject development. Time spent improving EXCON JEMM skills is time well spent!

5. The JWC's "Classic Approach" Remains Optimal

Due to limitations imposed by the pandemic, the Strategy Workshop and Incident Development Workshop for both exercises were held remotely. The JWC's cross-division efforts ensured that these workshops achieved their aims and laid a solid foundation for the scripting workshops and execution. Thankfully, the exercise scripting and execution windows fell between peak periods of pandemic restrictions. All these events took place almost normally, with some familiar precautionary measures in place. Importantly, the consensus among the Content Branch is that the remote running of content development workshops, while now proven as a viable option, should be viewed only as a "break-glass" fallback procedure. It is the traditional face-to-face interaction during these key content building events that leads to the best results. ✦

Key Terminology Table	
Operational Dilemma	A situation where a commander would be required to make a choice between equally undesirable alternatives; i.e. difficult or perplexing situations or problems that will require the training audience to demonstrate all the skills outlined in their training objectives.
Event	A collection of content sharing a broad theme. This could be a major occurrence or a sequence of related stories. Events are primarily tools to assist in the management of content development and delivery by breaking down content into manageable sections.
Storylines/ Incidents	A context/situation in which exercise activity will take place. A group of injects sharing the same context. The terms "storyline" and "incident" are interchangeable.
Inject	A relevant, appropriate piece of information sent from EXCON to the training audience to elicit activity that will assist them in achieving the required training or to meet exercise objectives. Injects will be in the form and method most consistent with doctrine and standard operating procedure with real-world entities so as to simulate the source of information to the maximum extent possible.
Content	Coherent, timely, relevant, useful and appropriate exercise material presented to the training audiences during exercise execution. Content goes beyond simply executing a script; wider non-scripted elements must also be dynamically managed and incorporated as appropriate to maximize training benefit.

ABOVE: The JWC Content Branch key terminology table.

STEADFAST JUPITER 2022



“STEADFAST JUPITER 2022 provided a **very challenging training environment** for 1 German-Netherlands Corps and helped it become an even more effective **NATO high readiness force headquarters.**”

– Major General Piotr Malinowski
Commander JWC

THE COMPUTER-ASSISTED command post exercise (CAX/CPX) portion of the three-layer NATO Exercise STEADFAST JUPITER 2022 (STJU22) concluded on October 20, 2022. Sponsored by Supreme Headquarters Allied Powers Europe (SHAPE) and directed by the Joint Warfare Centre (JWC), the tactical-level CAX/CPX was designed to train and evaluate 1 German-Netherlands Corps (1GNC) for NATO Response Force 2023 (NRF23), under the lead of Allied Joint Force Command Naples (JFC Naples).

Twenty-seven NATO and partner nations, as well as a large number of NATO commands and organizations, including four NATO centres of excellence and two non-governmental organizations, participated in the exercise control (EXCON) organization during STJU22. Based on a fictitious Article 5 scenario, the tactical-level exercise focused on strengthening 1GNC's readiness and interoperability across a range of multi-domain warfighting challenges, including those related to

human security, which includes the protection of civilians as part of NATO's overall approach to crisis prevention and management. Major General Piotr Malinowski, the JWC's Commander, who also served as the Exercise Director (EXDIR) said: "STEADFAST JUPITER 2022 provided a very challenging training environment for 1 German-Netherlands Corps and helped it become an even more effective NATO high-readiness force headquarters."

BELOW: Major General Piotr Malinowski **ABOVE:** The EXCON staff during STJU22. Photos by JWC PAO



TRAINING AND EXERCISES

The Commander added: "For almost two decades, the JWC has mastered the art of delivering operational-level exercises. Exercise STEADFAST JUPITER 2022 is the JWC's foray into the tactical level. And my team delivered most efficiently, providing 1 German-Netherlands Corps the opportunity to refine their collective capabilities and consequently make NATO better."

The EXCON response cells included personnel from multiple NATO commands and entities, including the JWC, Allied Air Command, the German 37th Panzergrenadier Brigade, United Kingdom Strike Force, the Joint Logistics Support Group Headquarters Brunssum, as well as trusted agents and role-players from 1GNC and Joint Force Command Brunssum and a combat readiness evaluation team from Allied Land Command.

Three centres of excellence — the NATO Human Intelligence Centre of Excellence, the

NATO Cooperative Cyber Defence Centre of Excellence, and the Counter Improvised Explosive Devices Centre of Excellence — supported the exercise. Additionally the Nordic Centre for Gender in Military Operations in Sweden participated in the EXCON.

The JWC's lead planner for the exercise, Navy Commander Peter Williams, noted that the exercise played a key role in strengthening 1GNC's ability to command and control a land-heavy small joint operation.

He said: "To bring this exercise to its start line took 18 months of planning and design work to meet the aim of preparing 1 German-Netherlands Corps for their role in the NATO Response Force from January 2023. It was really pleasing to see how quickly the EXCON came together and ran the execution phase. The success of this exercise is the culmination of a great deal of hard work and adaptability from a wide range of the JWC staff."

About 700 civilian and military personnel supported the tactical-level CAX/CPX.

Lieutenant General Nico Tak, the 1GNC Commander, said: "We conducted a very successful exercise and are now ready to command the land troops of the NATO Response Force. We are fighting fit, ready for the mission. We are strong together."

The exercise focused on modern command and control, joint effects and enablement for high-intensity warfighting against a peer/near-peer adversary, interaction with non-military actors, and the intelligence cycle, amongst others.

In addition to the 1GNC element, the multi-level Exercise STEADFAST JUPITER 2022 also involved a separate vignette-based exercise for SHAPE at the strategic level (Layer 1), and battle staff training for Joint Force Command Naples at the operational level (Layer 2). ✦

By Inci Kucukaksoy
JWC Public Affairs Office



The JWC-led Exercise Control (EXCON) during STEADFAST JUPITER 2022. Photo by JWC PAO





Clockwise: Exercise Situation Centre; members of the training audience; Major General Piotr Malinowski with the exercise media environment manager, Laura Loflin DuBois; the JWC's lead planner for the exercise, Commander Peter Williams (right) and his deputy, Wing Commander John Watson; Lieutenant General Nico Tak, 1GNC's Commander; a simulated grey cell meeting exercising NATO's comprehensive approach; simulated press conference with 1GNC's Commander, Lieutenant General Nico Tak (left). Photos by JWC PAO



THE JOINT WARFARE CENTRE TRAINING EVENT DEVELOPMENT ANALYSIS TRAINING OBJECTIVES REVISITED

by **Robert Scheider**
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Training Event Development Analyst
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IN THE JULY 2016 edition of the Joint Warfare Centre's (JWC) *The Three Swords* magazine, my colleague and I published an article entitled "JWC Training Analysts and the Training Objectives". While the information provided in that article is mostly still extant (I encourage all to read it by scanning the QR code given below), the intent of this article is to provide an update and to discuss some previously unaddressed issues and frequently asked questions about the training objectives.

The current version of the Bi-Strategic Command (Bi-SC) 075-003 Collective Training and Exercise Directive (which is a working draft, dated January 28, 2020) provides the direction for the NATO military collective training and exercise process, as well as processes

for developing exercise objectives and training objectives for major joint exercises. The directive also includes sample exercise objectives based on main capability areas that can be modified for each specific exercise, depending on factors such as mission and scenario.

In effect, each exercise begins before the exercise process starts, as each training audience should develop a set of roadmaps to plot their training requirements over a series of exercises in a multi-year period. The development of exercise objectives, therefore, starts with Stage 1 (concept and specification development) before the exercise process, with an exercise objectives workshop conducted as the draft exercise specification document is being produced. The generic exercise objectives from Bi-SC 75-003 are then modified to produce exercise objectives tailored to each phase or sub-phase of Stage 3 (operational conduct) of the exercise process, such as crisis response planning (Phase IIB) and execution (Phase IIIB).

Development of training objectives is a time-consuming process, especially in exercises involving multiple training audiences. It often

also depends on how the training objective manager representing the training headquarters decides to structure the training objective development timeline. For example, the training objectives workshop could be at (or near) the start of the exercise process, or it could be later in the process (more collation/confirmation), or it could be split into two at different stages of the process. Bi-SC 75-003 suggests allotting at least six weeks to develop the training objectives, but from my experience, the process can take considerably longer.

Think of a complex exercise such as STEADFAST JUPITER 2021. It was approximately seven to eight months from the training objectives workshop to final training objectives approval. Certainly, time to develop training objectives for a less complex, single-training audience exercise could be limited to six weeks or less, but multiple levels and large numbers of participating headquarters will add time and complexity. I believe that this is one area where there is room for improvement by developing training objectives for more complex exercises.



FURTHER READING

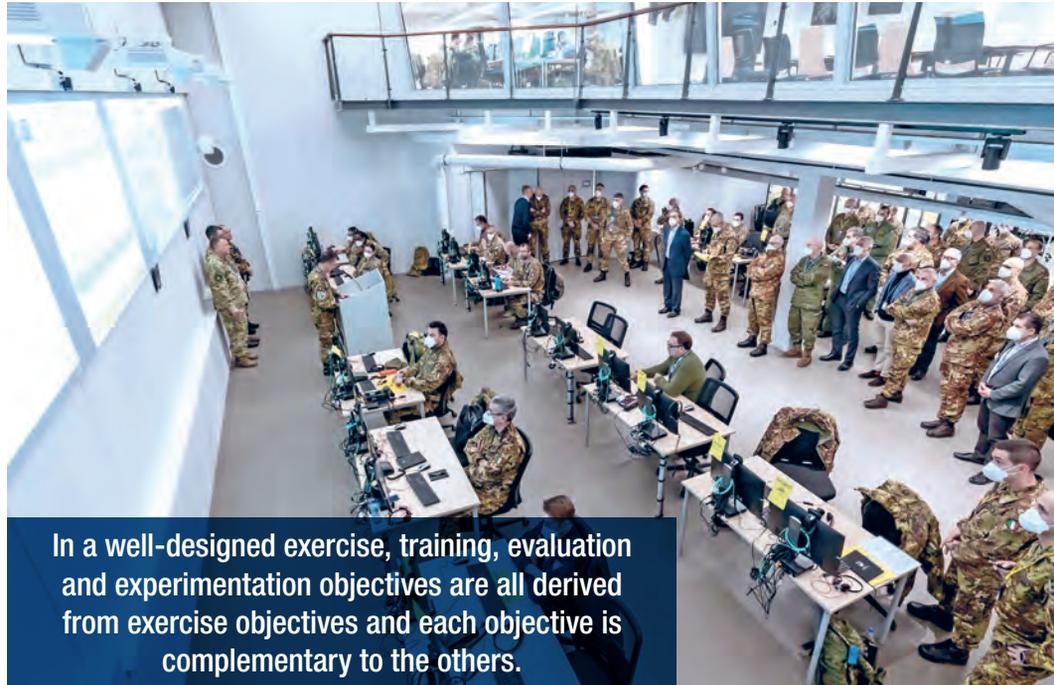
**JWC Training Analysts and
the Training Objectives**
The Three Swords, Issue No. 30



What is New: Standing Training Objectives

Although training objectives are complex in themselves, a recent initiative, led by Supreme Headquarters Allied Powers Europe (SHAPE), has begun to simplify their development process for NATO's major joint exercises. Standing training objectives (note that I did not write *standardized* training objectives!) provide a starting point for specific levels of headquarters. Indeed, they provide an approximately 70-percent solution that can be modified to suit specific exercises (for example Article 5 vs. non-Article 5), exercise objectives, and other unique requirements. The standing training objectives are still owned by the commanders of the training headquarters, but they no longer have to be developed from scratch for each exercise. They also benefit from both lessons identified and learned in previous exercises, as each standing training objective can be considered part of a living document that can and should be updated based on experience and evolving doctrine.

As an example, the strategic- and operational-level standing training objectives were developed six months before the execution of the JWC-directed Exercise STEADFAST JUPITER 2022 (STJU22), tailored for Article 5 operations. Development of tactical-level standing training objectives began right after, with component training objectives from STJU22 as possible baselines.



In a well-designed exercise, training, evaluation and experimentation objectives are all derived from exercise objectives and each objective is complementary to the others.

ABOVE: The In-Rock Facility Combined Joint Operations Centre during NATO Exercise STEADFAST JACKAL 2022 Distinguished Visitors' Day. Photo by NRDC-ITA PAO

The JACKAL series of exercises also employs a set of standing training objectives tailored for non-Article 5 operations for the joint task force (JTF), joint logistics support group (JLSG), and NATO Response Force (NRF) joint force air component (JFAC) headquarters. To ensure the training objectives of each training audience were complementary, the JTF headquarters' training objectives were modified from the standing training objectives first, with the other headquarters following them. Use of standing training objectives has shortened the process of developing finalized training objectives, increased consistency across exercises, and removed some of the complexity from developing exercises.

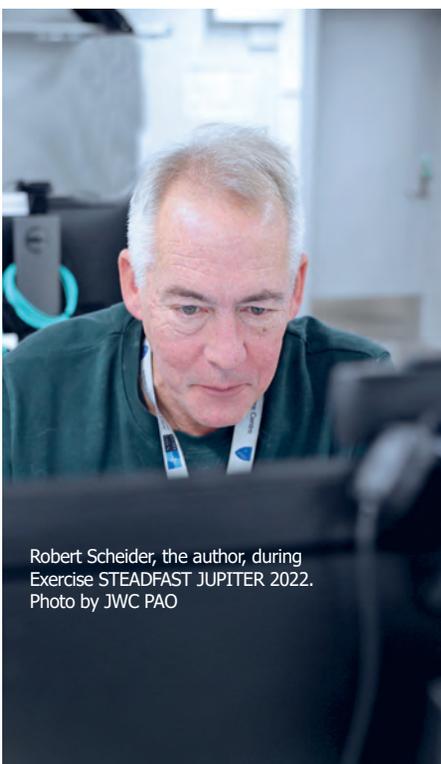
Some Tips

Bi-SC 75-003 contains detailed information about the components of training objectives (such as task statement, supporting tasks, conditions, and standards); however, it does not focus on the development phase of training objectives (or the modification of existing ones). If a training headquarters begins the development of their training objectives by requesting that each branch and section propose their own training objectives, the headquarters then may attempt

to select the most relevant of these. From my experience there is a better way. I believe that starting training objectives development from the bottom tends to lead to branch-specific, stovepiped tasks and supporting tasks. The 2016 article I mentioned in the beginning describes a process based on establishing a cross-functional team (such as a joint operational planning group or operational planning team) to ensure training objectives reflect functions from the whole headquarters; that process is still valid. I highly encourage all training audiences to adopt that approach and avoid the development of bottom-up, stovepiped training objectives.

Another important consideration is to facilitate the command group's involvement at all stages to ensure that projects (in this case, training objective development) meet the commander's intent or requirements. As such, it is essential to have a strong training objective manager to lead the scripters through the process. This individual should have ready access to the command group and should update them regularly on progress.

The training objective manager must enforce timelines and standards and should be entitled to make or request editing to ensure consistency among training objectives, as well as to prevent redundancy.



Robert Scheider, the author, during Exercise STEADFAST JUPITER 2022. Photo by JWC PAO





ABOVE: The JWC's Lessons Learned Branch. Photo by JWC PAO

A typical example of redundancy is the overlap between training objectives (for example when two or more training objectives are used to describe the same key process) or when supporting tasks are the same in multiple training objectives. Keep in mind that each training objective should focus on a key process (such as "conduct operational planning") and the supporting tasks should all be observable, within a specific exercise phase (for example "conduct mission analysis and deliver mission analysis briefing" during Phase IIB, crisis response planning). Training audiences commonly put a great deal of effort into developing task statements and supporting tasks (and they should certainly continue to do so!), but it is recommended that they also put sufficient time into crafting the final two elements of a training objective: conditions and standards.

Conditions are often very specific to a given headquarters or exercise and will require some tailoring, even if using standing training objectives. They represent what must be in place to ensure the training audience can accomplish its training objectives. Think of them as a wish list. If there is an officer directing the exercise (ODE) appointed, such as the Joint Warfare Centre, they can assist training audiences in defining conditions and can provide feedback on

whether they can deliver on what the training audience requests. Each condition is important and can help participating headquarters and the ODE in preparing for the exercise. Conditions can only be useful, however, if they are defined early in the process.

For example, the conditions relating to response cells and augmentation will require the training headquarters to request personnel with specific skills and expertise from appropriate sources (such as the commands that will provide response cells or centres of excellence for specific augmentation requirements). When developing conditions, the training headquarters must refer to the list of supporting tasks to be sure it will have the right people in the response cells to develop main events list/main incident list (MEL/MIL) injects and inject them, as well as the proper augmentees to accomplish the supporting tasks.

If, for example, a training audience wants to exercise space domain functions, there must be a response cell to develop and deliver space products and there must be some space expertise within the headquarters to interpret and apply them. The space subject matter experts (SMEs) would need to be actively involved in MEL/MIL development and be available for all phases of the exercise.

Each training objective should have defined standards. However, experience has shown that there is a need to invest more effort into developing this element. Standards consist of reference documents and criteria of performance. The reference documents, including doctrine and headquarters-specific standing operating procedures and standing operating instructions, should explain the processes related to the training objectives and supporting tasks. Headquarters' permanent staff (especially newcomers), external augmentees, and advisory team members will be able to refer to these documents to learn the specifics of each process as performed in a given headquarters.

In the past, we have sometimes observed training audiences leaving criteria of performance blank or simply listing another reference document. This is not adequate. Criteria of performance should be statements of "what right looks like". Those are relatively easy to define for certain types of training, such as passing scores on rifle ranges or tank gunnery tables. For command post exercises, they normally require qualitative statements based on expected products produced or processes employed by the training audience, such as "operational concept of operations (CONOPS) delivered and approved by SHAPE".



Setting the Conditions for Training Objectives' Achievement Through Exercise Content

The conditions that must be in place to enable training audiences to achieve their training objectives are well-defined in Bi-SC 75-003. However, training audiences must also familiarize themselves with suitable MEL/MIL conditions. Because training objectives are composed of many supporting tasks, it is difficult to determine if the MEL/MIL will enable achievement at the supporting task level.

The Joint Exercise Management Module (JEMM), the primary tool used to develop, manage, and deliver content during Phase IIIB, only allows users to track incidents against training objectives; there is no fidelity at the supporting task level. At the JWC, training objectives and specific supporting tasks are assigned to each incident/storyline during the incident development workshop and are applied at the scripting workshop. Training analysts (supported by the Centre's Advisory Team) develop spreadsheets and code each supporting task according to whether it would need triggers from MEL/MIL injects or opposing forces (OPFOR) actions or is likely to be triggered based upon procedures and battle rhythm events.

In a typical command post exercise, only about 25 to 30 percent of supporting tasks require triggers from MEL/MIL. The training analysts look for any potential gaps, i.e. supporting tasks that are missing expected MEL/

“Each training objective should focus on a **key process** and the supporting tasks should all be **observable**.”



ABOVE: The JWC's Advisory Teams during Exercise STEADFAST JACKAL 2022 (top) and STEADFAST JUPITER 2022. Photos by JWC PAO

MIL triggers. When all supporting tasks have some type of potential trigger, then the MEL/MIL is adequate to enable achievement of the training objectives.

Assessment Is Not Evaluation

One thing is crucial to get straight from the start: Assessment of the training objectives is not the same as evaluation. The JWC has advisory teams that contribute to training objectives' assessment, while evaluators are provided by other headquarters (such as SHAPE for most joint evaluation, Allied Maritime Command for maritime evaluation, etc.). So what is the difference?

There are two primary reasons why the JWC conducts training objectives assessment: 1) Bi-SC 75-003 requires that we report on exercise objectives and training objectives' achievement in our first impression reports (FIRs), and even more importantly, 2) the ODE needs to determine if training audiences are achieving their training objectives in order to steer the exercise. As training audiences achieve some training objectives, we can focus efforts on those that are yet to be achieved.

If there is a risk that a training objective will not be achieved, the ODE will determine

if there is a possible mitigation measure. For example, if a training objective related to joint targeting is "at risk", there could be opportunities to provide focused on-the-spot training or advice, additional MEL/MIL play related to certain aspects of targeting, or a combination. During Phase IIIB, the chief analyst updates the exercise director on training objectives' achievement daily, with an emphasis on training objectives that may not be on track to be achieved and recommended mitigation measures.

There are three main requirements that must be in place prior to start of exercise (STARTEX) to ensure we can assess training objectives' achievement: 1) a team of trained observers, 2) a plan to conduct observations and reporting, and 3) assignments of observers to specific training objectives and supporting tasks. While Bi-SC 75-003 refers to "training teams", the JWC employs advisory teams. These consist of subject matter experts representing each of the joint functions, as well as specialized functions such as operations assessment and cyber defence.

When training objectives or supporting tasks are related to functions not found within the JWC's organic Advisory Team, the Centre may request subject matter experts from other sources, such as NATO centres of excellence



or other organizations. For example, the JWC routinely requests support from the NATO Command and Control Centre of Excellence, NATO Stability Policing Centre of Excellence, and NATO Security Force Assistance Centre of Excellence for the STEADFAST JACKAL series of exercises. The chief analyst develops a plan for how to observe and report on training objectives achievement and training audience performance. At the JWC, we call this the director's observation guidance (since it is signed and issued by the exercise director).

Simply put, this guidance includes the criteria for assessing achievement for supporting tasks and training objectives, how and when to report, and other guidance. This is reinforced in training conducted before deploying to exercise locations for Phases II and III. The chief analyst and the advisory team lead develop a plan to assign supporting tasks and training objectives to advisory team members, who are responsible for providing written observations related to their supporting tasks and training objectives, as well as providing achievement assessments based on the criteria in the director's observation guidance.

Supporting task assessment is based on a colour system. At the JWC, we use white to indicate that a supporting task has not yet been observed (and most supporting tasks on Day 1 of a command post exercise will naturally be white). Yellow means that a supporting task has been partially achieved or the training audience has been partially effective. Green is for supporting tasks that have been fully achieved and dark green is used when training audiences have surpassed expectations or demonstrated a potential best practice. Red is used to indicate a risk. Overall, training objective assessment uses a similar colour-based approach and employs an aggregation of each supporting task status. For example, if a training objective has 10 supporting tasks and three are white, five are yellow, and two are green, the training objective will likely be considered yellow.

However, not all supporting tasks are necessarily of equal importance in achieving the overall training objective. A good example is a training objective for operations assessment: Most of the supporting tasks could be green, but if the most significant supporting task (related to conducting an assessment board) is white and has not yet been accomplished due to the placement of the activity

in the battle rhythm, it will still probably be considered yellow overall until the assessment board is complete.

Training objective assessment is still a subjective/qualitative process based on the combination of observations and best professional judgement of the advisory team and analysts. The colour rubric and definitions are the tool to bound this subjectivity for common understanding and representation purposes. For example, it allows for quick visualization tools for the ODE and chief exercise control (EXCON) to understand the trends of training objectives achievement and concern areas that *may* require EXCON actions. It does not result in a "score" or "report card" as such. The JWC's SOI 800-11 (available within NATO upon request from the author) provides more information and includes criteria for supporting tasks and training objectives assessment.

Ultimately, it is the training audience, under the officer coordinating the exercise (OCE) overall, that is responsible for assessing its own training objectives achievement, and the ODE representatives assist by providing their own observations and recommendations in this regard through first impression reports. Since the JWC provides ODE support to the STEADFAST series of exercises conducted within NATO each year, every headquarters should have the ability to conduct its own self-assessment of training objective achievement. The JWC's Advisory Team and analysts provide full support across all functions to the joint task force headquarters, including a full training objectives assessment.



The JWC's Head of the Lessons Learned Branch, Lieutenant Colonel Satir, during STEADFAST JACKAL 2022. Photo by NRDC-ITA

In addition, the JWC can to some extent support the component commands. Bi-SC 75-003 requires every exercise participant to report their views on exercise objectives and training objectives achievement in their first impression reports. From our experience, some headquarters and commands have developed this capability exceptionally well, while some others conduct their own assessment in an ad hoc fashion.

Headquarters without external ODE support, therefore, should begin organizing their own teams early in the exercise process. This includes appointing team chiefs or leads for observer and analyst roles. Whether the headquarters refers to this team as a training, advisory, or observer team, it must be able to observe and report on supporting tasks and training objectives achievement. One approach is to request subject matter experts from each branch that are dedicated to this team and are not part of the training audience. They can observe the processes and provide training or assistance, if necessary. Appropriate expertise and experience is a prerequisite and it may be necessary to request subject matter experts from other headquarters for certain specialized functions, such as cyber defence. Referring to the JWC SOIs will provide useful information on roles and responsibilities of advisory team chiefs, subject matter experts and analysts.

While end of exercise (ENDEX) and the after-action review mark the end of the most visible phase of an exercise, Phase IIIB, the exercise process is not truly complete until the completion of Stage 4. Besides reporting on key observations and providing assessments of exercise objectives and training objectives achievement in first impression reports, headquarters' staffs should review their performance to update their procedural training roadmaps and incorporate key lessons into their training programmes in advance of their next exercises, including an update to training objectives, if necessary.

Finally, to paraphrase former German national football trainer Sepp Herberger: "After the exercise is before the exercise!" Most likely the exercise process for the next exercise will be well underway already. Fortunately, since each headquarters is required to develop a total of three first impression reports after specified stages and phases, there is a chance for early adjustment from one exercise to the next. ✦

"The mark of true professionalism is when the findings from the risk analysis feed into and add value to planning and decision-making processes."

Lieutenant Colonel Bjørn-Erik Solli
Norwegian Special Operations Command
Advisor on Special Operations
NATO Joint Warfare Centre

THE ESSENCE OF

RISK



What You Need to Know About Risk While Serving at a Joint Operational Headquarters

THE VAST MAJORITY of those who serve at a joint operational-level headquarters work within a functional area that differs from that of most of their colleagues there. What these staff members nevertheless have in common is the need to understand and communicate risk, be it peace-time finance-related risk, health and safety-related risk, understanding risk at the strategic level, analysing risk for the operational level, articulating risk, or accepting risk. Having a cross-functionally applicable understanding of

risk is not just beneficial, it can prove crucial given the severe nature of wielding military power. A common understanding of conceptual ideas has been the bedrock of human co-operation, innovation and development since the cognitive revolution some 70,000 years ago.¹ Risk is one such conceptual idea.

This article will first describe how risk extends beyond the measurements of the natural sciences. After a brief look at the origins of the concept of risk, I will present a generally applicable foundational understanding of the term. The relationship between risk and resil-

ience is also addressed, followed by a look at the differences between "risk amateurs" and "risk professionals".

Finally, an example from a simple card game and a thought-provoking idea are presented in hopes of sparking critical reflection on the question how the concept of risk should be applied facing the uncertainties of the future. All in all, this article is a humble attempt at contributing to two out of the five warfare development imperatives within NATO's Warfighting Capstone Concept: cognitive superiority and layered resilience.



Scientists and Artists

If a tree falls in the forest and no one is there to hear it, does it make a sound? This is a classic thought experiment that scientists are more than happy to answer. According to the natural sciences, sound is variations of pressures that create soundwaves. Humans can register soundwaves ranging from 20 to 20,000 oscillation cycles per second. Additionally, there is scientific proof of soundwaves outside the limits of human perception. Using their scientific methods of measurement, natural scientists have developed knowledge in the form of a proven scientific theory that allows us to answer the "falling tree" question with certainty: Yes, it does make a sound. At the same time, sound is not just sound, but something more: Musicians create music, but the natural sciences tend to be insufficient when we try to describe the artistic expressions these artists create.

The concept of risk is subject to a similar limitation with regard to scientific knowledge produced by the natural sciences. Researchers, statisticians and other risk scientists working within the natural sciences have provided us with many tools to analyse and process risk. The natural sciences provide a sturdy foundation on which to build our understanding of risk. However, in the same way that music is more than soundwaves, risk is a lot more than precise measurements or methods of prediction. To truly understand risk, we must look beyond the limits of the natural sciences. Psychologists, social scientists and philosophers

BELOW: Understanding of risk is essential for many different fields and disciplines. Effective risk analysis requires leadership: both practical understanding of risk management and multi-disciplinary artistry.



also make valuable contributions to the understanding of risk. All of this makes risk an umbrella term that encompasses many different fields and disciplines.

However, in addition to the spectrum of these academic perspectives, we need a key human quality to comprehend risk beyond the theoretical. One needs a lively imagination to think of several potential futures of varying likelihood. For risk to be managed at a higher level of ambition than merely being able to describe risk naturalistically, one must aspire to multi-disciplinary artistry. One must balance the complexity of risk factors, appreciate uncertainties, and make rational decisions. While anyone can learn to play an instrument or analyse risk, only the dedicated and talented can become artists.



The Genesis of Risk Comprehension

The variety of conceptual understandings of risk is not limited to different scientific perspectives. Risk is defined and conceptualized differently across professional disciplines, cultures and human minds. Even risk professionals have not managed to agree on a precise definition or understanding for more than three decades.²

According to one of the world's most renowned risk scientists, Professor Terje Aven, the original understanding of risk comes from ancient Italy, but is applicable across the world. The term was used in reference to merchant sailors and fishers who, while trying to sell their goods or catch fish, had to face the possibility of their ships' hulls tearing open on jagged rocks hidden beneath the water's surface. In this context risk was understood as "to dare".³ The sailors and fishers took risk, or dared, in order to reach their objectives. If we lose this core understanding, risk is reduced to something uncomfortable and irrational. In common parlance, the term "risk" is often

used with purely negative connotations, even though risk-taking is a prerequisite for creating opportunities. This common parlance indicates a limited imagination and a lack of holistic thinking about risk amongst laypeople.

Just as the rest of the world embraced the Italian pizza and many cultures started to make their own, the concept of risk has also been exported and adapted. Most Italians will readily concede that they can get something that looks, smells and tastes like pizza all around the world. However, they are also quite likely to emphasize the original variant from Naples or politely explain when something no longer fulfils their definition of pizza. Mirroring the Italians' benevolence, risk professionals will largely acknowledge that different definitions and concepts that look, smell and taste like risk — even if it is not their preferred flavour. This is partly why the Society for Risk Analysis' Risk Glossary contains seven definitions of "risk".^{4,5}

A Modern Understanding of Risk

NATO doctrinally defines risk as "the effect [that] uncertainty has on ... objectives".⁶ NATO's definition is built on a modern, risk science-based view that is in accordance with the international standard for risk management ISO 31000:2009, which defines risk as the "effect of uncertainty on objectives".⁷ Professor Terje Aven has his own twist on the definition of risk, stating that it is "the combination of possible future events/consequences and associated uncertainty (C, U)".⁸

These science-based definitions of risk indicate that risk relates to the uncertainty of potential future events and their possible outcomes. However, such a baseline understanding has to be built upon to be practically applicable. Professor Aven does this by explaining that the equation (C, U) is a simplification of the full equation (C, C*, U, P, K). In this analytical model, C signifies the "full potential of consequences", C* stands for "expected consequence", U for "uncertainty", P for "calculated probability", and K for "quality of knowledge".⁹

In a military context, this model can be applied to an enemy attack, for instance: The attack will have a limited range of possible consequences (C). Given the knowledge of the enemy, terrain and own forces (K), there are some consequences within C that are most rea-



sonable to expect (C*). The extent to which the various consequences are likely to occur can be calculated (P). The perpetual limits of K prevent us from eliminating uncertainty (U) and force us to make necessary assumptions.^{10,11,12}

This modern science-based thinking about risk leads us to analyse both the potential adverse consequences of an attack and the associated potential gains, as the definitions are not exclusively focused on the negative. Where there is risk, there is always the possibility of opportunities to exploit. But such exploitation requires an imagination that is able to discover these opportunities, and a willingness to take or accept risk. Managing risk, therefore, requires intentional engagement with uncertainty related to potential loss in the pursuit of gains. The importance of articulating the uncertainty aspect of risk is emphasized by Hans Liwång, associate professor at the Swedish Defence University: "Not including uncertainty in the presentation of risk will obfuscate the actual level of risk and increase the possibility of flawed decisions as a consequence of being misguided."¹³

Risk and Resilience

Many find it hard to pin down the relationship between the concepts of risk and resilience. A general understanding of resilience is "the ability a system has to restore its functions after having been exposed to strain".¹⁴

Firstly, one needs to understand and be able to analyse risk in order to build a resilient organization. Without risk analysis, managing one's resources in a way that ensures the optimal level of resilience is borderline impossible. Resilience is therefore developed using what risk professionals refer to as consequence-reducing barriers or risk mitigation. In developing resilience, the results of risk analysis point to areas in which to prioritize resources.

Let us consider two findings from a risk analysis in a fictitious situation where one only has the resources to build resiliency for one of the events. Event A has mostly adverse outcomes of a medium severity but of high probability, based on substantial knowledge. An example of this could be a financially beneficial supply chain that often creates critical shortages of spare parts for the maintenance and repair of combat aircraft. Event B has only adverse outcomes of a potentially very high severity, but with very low probability, based on

“The term 'risk' is often used with purely **negative connotations**, even though risk-taking is a prerequisite for **creating opportunities**.”

equally substantial knowledge. An example of this could be unforeseen and arbitrary technical issues infrequently creating gaps in the air defence of an operationally significant air base. Out of these two, the rational choice to further develop resilience would be to prioritize resources to mitigate the effect of Event A. Risk analysis enables a higher-quality foundation for such resilience-related decisions.

Second, resilience is considered part of the broad discipline of risk science. Engineering resilience focuses on creating the ability to regain full functionality of a system when it is strained. The desire to become resilient is, therefore, in reference to future events with

all their uncertainties, which at its core is risk science. Additionally, risk management is generally defined as "all efforts and activities conducted with the intent to control risk".^{15,16} This illustrates how risk and resilience are intertwined and share the same "ingredients", just as Italian pizza with a thin crust and American pizza with a thick crust share most, or even all, of the same ingredients. Resilience engineering is a proactive part of risk management.

The Differences Between "Risk Amateurs" and "Risk Professionals"

As a "risk professional", one must be able to distinguish between risk as it is articulated in common parlance and risk as a concept with its inherent risk factors.

The sign of a "risk amateur" is when the person uses the word "risk" as a synonym for terms such as "consequence" or "likelihood". Risk is, as mentioned above, more than just one such risk factor. A risk professional will go to great lengths to articulate and distinguish between different factors of risk.

As an example, the inherently hostile threat of an opponent's submarines necessitates a different type of mitigation than the non-discriminatory hazards posed by a particularly challenging sea state. Additionally, a risk analysis based on calculated probability should provide a decision-maker with different confidence than an analysis based on assumed likelihood.

“Without risk analysis, managing one's resources in a way that ensures the optimal level of resilience is borderline impossible.”

Risk Terminology	
Risk Source	Element that, alone or in combination with other elements, has the potential to give rise to some specified consequences.
Consequence	Something that follows an action, or a set of conditions; outcome/result .
Probability	The degree to which something is likely – often presented numerically as it is based on calculations.
Likelihood	An assumption of the extent to which it is reasonable to expect.
Hazard	Something likely to cause damage.
Threat	An expression of an intention to hurt/punish/cause pain, etc.
Vulnerability	The degree to which a system is able to withstand specific loads.
Resilience	The ability of a system to sustain or restore its basic functionality following a risk source or an event.



THE RISK CONCEPT

Generally, risk professionals should be expected to display profound humility in their description of risk. This is particularly true for those who work with military-related risk, as "war is not a chess game, but a vast social phenomenon with an infinitely greater and ever-expanding number of variables, some of which elude analysis".¹⁷ Meanwhile risk amateurs are more likely to present the results of their analysis with unjustified certainty, and are more often than professionals prone to be affected by cognitive biases such as the Dunning-Kruger effect.

The mark of true professionalism is when the findings from the risk analysis feed into and add value to planning and decision-making processes. Lieutenant Colonel Mikael Andersen, currently serving at NATO's Multinational Corps Northeast, has written a Risk Management Handbook for NATO, based on ISO 31000:2009 and NATO doctrine. In this handbook he presents tools that help to ensure risk management is more than just a mandatory "tick the box" exercise. Among other things, Andersen lays out how risk identification and analysis can aid the "critical information requirements process" of a headquarters.¹⁸ The handbook is currently in the process of being accepted as an official NATO publication.

Perception of Risk in a Game of Cards

In the card game Texas hold 'em poker, the dealer starts every hand by dealing each player two face-down cards. Subsequently, the dealer deals three cards, one card, and finally another card face up to the centre of the table. These five face-up cards are the cards that are known to all players. To win, a player must have the best five-card combination based on their own cards and the cards on the table. Following each deal of cards, the players can place bets. The players may forfeit the hand at any time by handing in their two cards to the dealer. The hand continues until five cards are shared on the table and five rounds of betting have been completed, or until all but one player has forfeited.

Texas hold 'em is a game of risk, encompassing statistical probability and psychology. It is possible to know that you have been dealt an unbeatable hand by the time the dealer has dealt the first three face-up cards. Having a queen and nine of diamonds on hand, while sharing the eight, ten and jack of diamonds gives you a high-valued straight flush that cannot be beaten, regardless of the other players' hands or the two subsequent cards.

In the example below, we have two distinct situations of risk: the risk for the players

who, unbeknown to them, will not be able to gain a winning hand, and the risk for the player whose hand cannot be beaten. The only way the players with losing hands can win is if the player with the winning hand does not understand the strength of their hand and forfeits after being intimidated by bets placed by one or more of the other players. This is, however, something the losing-hand players do not know at this time. From their perspective, there is a large number of potential outcomes based on their knowledge of the two cards they hold and the three shared face-up cards. The unbeatable hand is just one of these potential outcomes.

The rational thing to do as a losing-hand player with a statistically good hand such as a flush, or a pair of aces with a potential flush, would be to place bets that do not intimidate other players from betting on their own hand and at the same time allow for the player to get a sense of the other players' confidence in their hands. However, every bet for the losing-hand players is a net loss, given that the winning-hand player knows the strength of their hand. For the winning-hand player, the rational thing to do is to bet in a way that emboldens the other players and encourages them to bet as much money as possible in the remaining three rounds of betting, increasing the size of the winning pot as much as possible.



The Poker Game and Associated Statistic Probability

Shared Cards Known to All Players



Player One



Probability of
Win 30.62 %
Tie 3.84 %

Player Two



Probability of
Win 60.66 %
Tie 6.87 %

Player Three



Probability of
Win 70.24 %
Tie 1.43 %

Player Four



Probability of
Win 91.61 %
Tie 0.08 %

Player Five



Probability of
Win 100 %
Tie 0 %

For the losing-hand players, the risk contains a spectrum of potential outcomes, from the highly unlikely event of the winning-hand player forfeiting their hand to the potential loss of all their money to an unbeatable opponent. The losing hands' risk lies in the uncertainty of other players' potential hands and the fact that the losing-hand players can only be certain of one combination of cards that the other players cannot have, namely their own combination. For the winning hand, the risk is in the potential sum of money won from the other players, i.e. in the uncertainty of potential gain.

Philosophical and Moral Challenges Regarding Risk at the Operational Level

Risk can be analysed and managed in a purely naturalistic manner, but as indicated, there are limits to the value of a strictly technical approach to risk. From a military perspective, one important and often undervalued aspect of risk management is the ethical evaluation of risk. Military forces are morally and legally obligated to defend the general public from aggressors. In many ways, one could argue that military personnel take risk on behalf of the population. Either by expeditionary warfare taking the fight to the enemy, or by defensively preventing an aggressor from inflicting harm or seizing parts of one's own or an ally's country.

In the excellent book "Risk: Philosophical Perspectives", seven questions of ethics are suggested for use in an ethical evaluation of risk.¹⁹

- 1) To what extent do the risk-exposed benefit from the risk exposure?
- 2) Is the distribution of risk and benefits fair?
- 3) Can the distribution of risk and benefits be made less unfair by redistributing or by compensation?
- 4) To what extent is the risk exposure decided by those who run the risk?
- 5) Do the risk-exposed have access to all relevant information about the risk?
- 6) Are there risk-exposed persons who cannot be informed or included in the decision process?
- 7) Does the decision-maker benefit from other people's risk exposure?

The first question raises an interesting dilemma:

To what extent must military personnel themselves benefit from the risk to which they are exposed when they take risk on behalf of someone else? How does one justify the risk to the forces conducting the fighting?

The second and third questions can be seen as a natural follow-up to the first: Is the risk distributed fairly amongst the forces? To what extent can one compensate for the potential adverse consequences of the risk exposure?

The fourth question makes an interesting delineation between potential decision-makers and people exposed to the potential adverse consequences of risk. The former are the ones to initiate the activities and to a large extent dictate the level of risk exposure. Simplistically, we can make a risk tripartite, differentiating firstly between the civilian populations who ideally only benefit from military activities, secondly the tactical units facing the threats and hazards, and thirdly the military higher-level staff and decision-makers managing risk at the operational and strategic levels. One could argue that the tactical units take risk, while the higher levels accept risk on behalf of the tactical units.

Questions five and six additionally challenge the "risk accepters" at the operational and strategic levels in how they inform or conduct collaborative planning with subordinates.

Furthermore, question seven challenges the "risk accepters" to critically reflect upon the question to what extent they themselves benefit from the "risk takers'" exposure to the risk-related hazards and threats of military operations. "Risk accepters" do not have the same consequence-based incentive for thorough risk analysis as the "risk takers", but it is the "risk accepters" who have the best analytical capacity of the two.

Conclusion

Risk is more than that which can be measured and described by numbers. It is a conceptual idea of daring to engage with uncertainties in the pursuit of gains, while at the same time accepting the possibility of loss. During the analytical parts of the process, imagination is required to identify risk potential, meaning both the negative potential and the potential opportunities and associated gains that can be achieved. Dealing with risk professionally requires humility in the analysis and articulation of risk, while being cognizant of how under-

standing risk depends on one's perception.

Additionally, one could say that for decision-makers and staff at operational-level headquarters and above, imagination must, for moral reasons, be combined with an ability to empathize with the units that take the risk the decision-makers accept. At the operational level all staff members should aspire to become risk professionals, while those serving in positions of leadership, particularly in the command group, should aspire to be risk artists and lead through the fog of uncertainty. ✦

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MANAGING CYBER RISK TO MISSION AT THE OPERATIONAL LEVEL



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ABOVE: Cyber defence exercise LOCKED SHIELDS. Photo by NATO Cooperative Cyber Defence Centre of Excellence

NATO SENIOR LEADERS must work with supporting staff to identify, assess and manage operational risks¹ in all domains, which increasingly include risks in cyberspace, through risk reduction and mitigation measures. Although many military organizations advocate risk management and have institutionalized risk management approaches and frameworks to inform and support strategic, operational, and tactical decision-making, such frameworks are not necessarily adapted to accommodate the unique operational dimensions of cyberspace.

The intention of this article is not to subsume or replace existing risk constructs, but to describe one proposed multinational cyber risk to mission approach and process,² poten-

tially applicable to NATO missions, based on an adapted common risk management and international standard ISO 31000 (versions 2009 and 2018). The Alliance may further tailor this, or other similar approaches, to address the unique aspects of its specific missions and operations. The aim of such a proposed cyber risk to mission approach and process is to structure an approach that helps to more systematically answer key questions related to operational risk and the cyberspace domain. These questions include:

- 1) How and where does the operation and mission interact with cyberspace?
- 2) How, where, and to what degree does this present risk (both threats³ and opportunities⁴) to mission objectives?
- 3) How can this risk be managed or exploited in the case of opportunity to enhance the mission?
- 4) How are response options planned and implemented?



NATO's senior leadership may choose to adapt this proposed generic cyber risk management approach as appropriate, adjusting or incorporating relevant aspects into any existing framework, or further customizing it to meet the needs and nature of the organization, mission, and the mission environment.

Risk Principles in the Cyberspace Domain

Risk management should be applied continuously in military operations with supporting information made available when critical decisions are being made. In doing so, best practice within the risk management discipline shows that the risk process is used for *maximum effect* when underpinned and guided by key and time-tested principles.

Such recognized risk management principles⁵ and guidance adapted to reflect applicability with the cyberspace domain include:

Identification of cyber risks aligned to mission objectives. Focus on prioritizing cyber risks with greatest impact on mission objectives. Seek to mitigate threats and impact, whilst also maximizing opportunities. Recognize that risks may include not just technology, but also people and organizational elements (including processes).

Consideration of mission context in identifying risks. Consider the context and full spectrum of the mission environment to identify all potential sources of risk. These may include internal and external factors, security environment, relevant governance (e.g. policy and doctrine), organizational structure, and stakeholder relationships.

Recognition of the dynamic nature of cyberspace. Timing is everything. Especially in the cyberspace domain, recognize that cyber risks can quickly emerge, change or disappear as external and internal context and missions evolve. Anticipate, detect, and respond to changes and events in an appropriate and timely manner.

Inclusive engagement with stakeholders. Recognize the importance of cooperation and sharing information in what is often a federated

“Recognize that **cyber risks** can quickly **emerge, change** or **disappear** as external and internal context and missions **evolve.**”

risk environment. Seek to gain and understand perspectives and equities from multinational stakeholders, government, industry and the private sector. Proactively involve and engage stakeholders to ensure that their knowledge, views and risk perceptions are included in the process. Use common cyber and risk language and processes to exchange information and build a shared understanding.

Clear guidance. Provide a clear and coherent approach to stakeholders for how cyber risks tied to mission objectives are identified, assessed and controlled across the operation.

Support to decision-makers. Support military commanders in understanding the relative risks and merits associated with cyber-related threats, and opportunities related to proposed courses of action. Systematically apply risk tolerance thresholds for each mission objective.

Human and cultural factors. Recognize that human factors including behaviour and culture influence all aspects of risk management.

Approach

Fundamental to a systematic and holistic cyber risk management approach is the creation and adoption of cyber risk management policy, strategy, plans, processes and reports that describe how, and in what sequence, related

activities are to be undertaken and that assign roles and responsibilities necessary for execution. A table outlining instrumental documents⁶ that can serve to underpin and guide the cyber risk management process can be requested via email to the address provided at the end of this article.

Process

Central to a cyber risk management approach is the creation and adoption of a cyber risk management process, which can be sub-divided into four primary steps: identify, assess, plan, and implement. These four steps form a logical sequence for robust implementation of a cyber risk management process underpinned by the risk management principles — with an additional "communicate" activity that permeates all the steps, reflecting the need for constant and effective communication and engagement throughout the process. (See the graphic on page 71.)

For operational missions, these processes should be augmented by a preceding "mission analysis" step to create a more broadly encompassing cyber risk to mission management process that is responsive to the needs of the operational commander. This additional step purposefully constrains follow-on activities and tasks to mission-focused elements of cyberspace, with identification and assessment of cyber risks also within the context of the mission environment.

It is emphasized that cyber risk management in support of mission assurance requires specialized knowledge and cross-disciplinary competencies. This involves prioritizing mission-essential functions, mapping mission dependence on cyberspace and identifying threats and vulnerabilities. The cyber risk to mission management process also requires adaptation and inclusion of related tools and techniques to address the three following additional requirements:

- **Mission Architecture:** Understanding of the cyber risks to mission first requires understanding of mission architecture and dependencies on data, communication links, and systems. For prioritization of resources, it is also necessary to understand which systems, data and communications are most critical and pose the highest risk to mission objectives and



BELOW: The JWC hosted its inaugural Cyber Seminar from September 20 to 22, 2022. The theme of the seminar was "Operationalizing Cyberspace: Lessons and Experiences from Operations and Exercises" with a focus on NATO, national, and multinational operationalization of cyberspace as an operational domain. Photos by JWC PAO **LEFT:** One particular focus of Exercise STEADFAST JACKAL 2022 was the cyberspace domain. Photo by NRDC-ITA



“Understanding the **cyber risk** across the force dramatically improves an operational commander's **decision-making** process.”

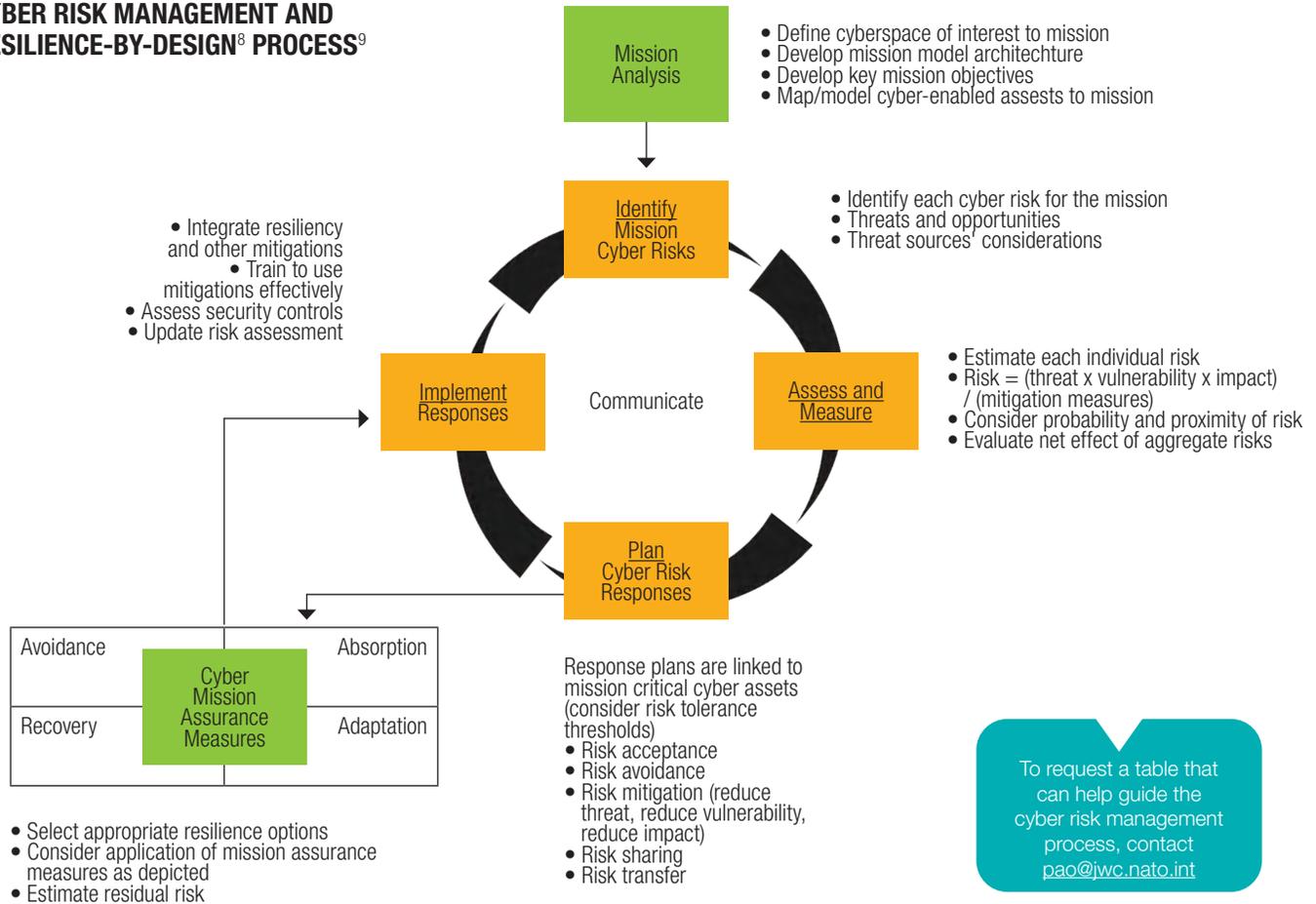
threads. It is recommended that cyber practitioners review, select, and leverage from existing and modelling techniques methodologies to map and model the mission architecture.

- **Cyber Mission Assurance Measures and Cyber "Resilience-by-Design":** When cyber risk thresholds are exceeded, response plans may include selection of appropriate resilience options and cyber mission assurance measures. Though cyber resilience goals are linked to risk management goals in that they help to inform risk response planning,⁷ the cyber resilience process and framework focus is on continuity of operations given an attack or system degradation. Special consideration must be given to the relationship between these two related but different frameworks.

- **Cyber Situational Awareness:** The sharing, collection, fusion and analysis of threats, vulnerabilities and related risk information across the enterprise leads to a more comprehensive situational awareness and understanding of everything associated with the global cyberspace domain that could impact our complex mission environment. Understanding the cyber risk and opportunity profile across the force dramatically improves an operational commander's decision-making process. Though operational-level cyber situational awareness remains an evolving concept and is not illustrated in this process, it is necessary to fully integrate the flow of information and related inputs and outputs of each step in the process to support cyber situational awareness, and for development of a common recognized cyberspace picture.



CYBER RISK MANAGEMENT AND RESILIENCE-BY-DESIGN⁸ PROCESS⁹



It is recommended that a separate cyber risk to mission management process guide be created to describe how each step of the process is carried out to include 1) goals for each process step; 2) task descriptions and instructions that describe the actions needed for each step to transform inputs into outputs; 3) description of inputs, outputs and techniques (and templates) needed to complete each process step; 4) specifying roles and associated responsibilities for the whole process and for each step.

Cyberspace is indeed a new battleground for NATO, and cyber risk management will be integral to NATO's three core tasks of collective defence, crisis management and cooperative security, and will ultimately improve mission assurance at the operational level. In conclusion, as cyberspace as a domain of operations continues to evolve, more research is required to fully understand the implications of cyber risk management and cyber resilience

in support of Alliance operations and missions, not only with regard to organizational processes, but also to the role, functions, and competencies of cyber practitioners. ✦

ENDNOTES

- 1 Risk is defined as "an uncertain event or set of events that, should it occur, will have an effect on the achievement of objectives. A risk is a measure that combines the probability of a perceived threat or opportunity occurring and the magnitude of its impact on objectives." (Alexos Global Best Practice Management of Risk: Guidance for Practitioners, 2010).
- 2 This framework was proposed to the 2021–2022 Multinational Capability Development Campaign (MCDC) Multinational Integrated Cyber Fusion Project; an unclassified project that aims to develop a risk-based approach.

- 3 "Threat" is used to describe an uncertain event that would have a negative impact on objectives if it occurred.
- 4 "Opportunity" is used to describe an uncertain event that would have a positive impact on objectives if it occurred.
- 5 Management of risk principles are adapted from ISO 31000: 2009 and ISO 31000: 2018 and from Alexos Global Best Practice Management of Risk: Guidance for Practitioners, 2010.
- 6 Adapted for the cyberspace domain from Alexos Global Best Practice Management of Risk: Guidance for Practitioners, 2010.
- 7 Generic risk response options may include avoiding a threat (or exploiting an opportunity), reducing a threat (or enhancing an opportunity), transferring risk, sharing risk, or accepting risk.
- 8 Cyber resilience-by-design refers to systems that are purposefully designed with properties to enhance recoverability or adaptability in support of mission assurance.
- 9 The graphic is author's own design, adapted and enhanced for cyber risk to mission purposes from the Management of Risk basic cycle in Alexos Global Best Practice for Risk: Guidance for Practitioners, 2010.

ADDRESSING CYBER CHALLENGES THROUGH THE PRISM OF THE NATO AIR POLICING MISSION



by Wing Commander James Cummins
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Why Cyber Matters

There are hundreds, if not thousands of articles, policy documents and concept papers discussing the adoption of cyberspace as a NATO domain of operations. Most begin by quoting the NATO Secretary General Jens Stoltenberg, who said in 2016 that "NATO has declared cyberspace as an operating domain alongside the traditional domains of maritime, land, air, and space".¹ However, these articles rarely mention the rest of this declaration. Mr Stoltenberg went on to cover how NATO needs to embed and integrate cyberspace into NATO operations, ensuring we regard it as relevant across the board, rather than viewing it as a domain in isolation.

Cyberspace is often only thought of as physical information networks, and as a result, the distinction between cyber and information technology (IT) is not always conceptually understood. The intent of cyber threat actors is not just to compromise IT systems, but to use this as a means of targeting the process or the mission.

Today, advanced cyber threats include both state-sponsored espionage and criminal activity seeking to understand, disrupt or degrade the mission by attacking the mission-critical cyberspace. There is, therefore, an argument for making cyberspace even more relevant and enhancing the understanding and applicability of cyber risk to mission, rather than just thinking of this as an IT problem.

Simply put, operationalizing cyberspace means that the cyber domain requires a "seat at

the table" in each joint and component headquarters,² embedded in operations, and not as an adjunct discipline separate from the other domains. In other words, operational commanders of joint and single-service domains should "own" the relevant portion of their cyber environment and take the domain into account when making decisions.

As the cyberspace domain goes from being of concern only to the cyber specialist to becoming more relevant to the mission commander, bolstering the relevance of cyberspace is within our grasp.

This article offers an alternative from a mission assurance perspective on cyberspace,

ABOVE: A Royal Norwegian Air Force F-35 during NATO Air Policing Mission to Iceland. Photo by NATO



through the example of NATO Air Policing — a standing mission conducted by Allied Air Command (AIRCOM). This can serve as a starting point to consider the cyberspace domain as a whole-of-mission problem and not just an IT one, prompting further discussion on increasing the domain's relevance to NATO military commanders and thus informing how they might address this problem.

A New Approach to Air-Cyber Situational Awareness

NATO Air Policing is a peacetime mission that aims to preserve the security of Alliance airspace. It is a collective task and involves the continuous presence — 24 hours a day, 365 days a year — of fighter aircraft and crews. The crews are ready to react quickly to possible airspace violations or support civilian aircraft in distress, for example when they have lost communication with air traffic control.³

AIRCOM, headquartered at Ramstein, Germany, oversees the NATO Air Policing mission, supported by round-the-clock command and control from two combined air operations centres (CAOCs): one in Torrejon, Spain, which covers European NATO airspace south of the Alps, and one in Uedem, Germany, covering the north. However, the mission is also dependant on national forces, as NATO member countries provide the necessary aircraft, air bases, and national tactical command and control sites. All of these other elements are operated nationally, but under the direction of Supreme Allied Commander Europe (SACEUR).⁴

The interaction within the Air Policing mission is complex, because each part of the mission has a complex relationship with multiple parts of cyberspace. Air Policing activities include monitoring the NATO airspace, making decisions on any anomalies and intrusions to NATO airspace, launching aircraft and controlling them throughout.

At the operational level, the overall mission must also be continuously monitored, analysed and reported. Cyberspace is the glue that allows each of these operational processes to take place — it allows access to and dissemination of information, on the basis of which decisions are made and executed, and it enables the coordination of a large multinational operation spanning all NATO territories simultaneously.

Cyberspace for the Air Policing mission is more than just IT networks, for two reasons:

- 1) The mission itself is complex, involving multi-domain operators, systems, organizations, processes, information sources, and interactions during planning and execution. This involves human-to-human interaction, data links and the electromagnetic spectrum, and touches the information environment for deterrence effect. The process being conducted by people should be the focal point, and not just the physical IT networks that support and enable this activity.
- 2) The Air Policing mission's cyberspace crosses outside the boundaries of NATO-owned cyberspace, including national networks, civilian infrastructure and non-traditional information systems, such as aircraft platforms and base infrastructure. Much of the critical activities interact with cyberspace outside of traditional NATO-owned networks.

Making cyberspace even more relevant to the mission thus requires a more complete analysis of people, processes and technology writ large.

“Making cyberspace even more relevant to the mission requires a more complete analysis of people, processes and technology.”

Therefore, it follows that ownership of the risk of mission disruption from cyberspace sits firmly with the organization performing that process, rather than with a separate cyber component. Having a cyber component, however, also remains crucial for the holistic deconfliction of all operations in the cyber domain, and thus also for the planning and execution of cyber operations.

Making cyberspace mission-focused provides many benefits:

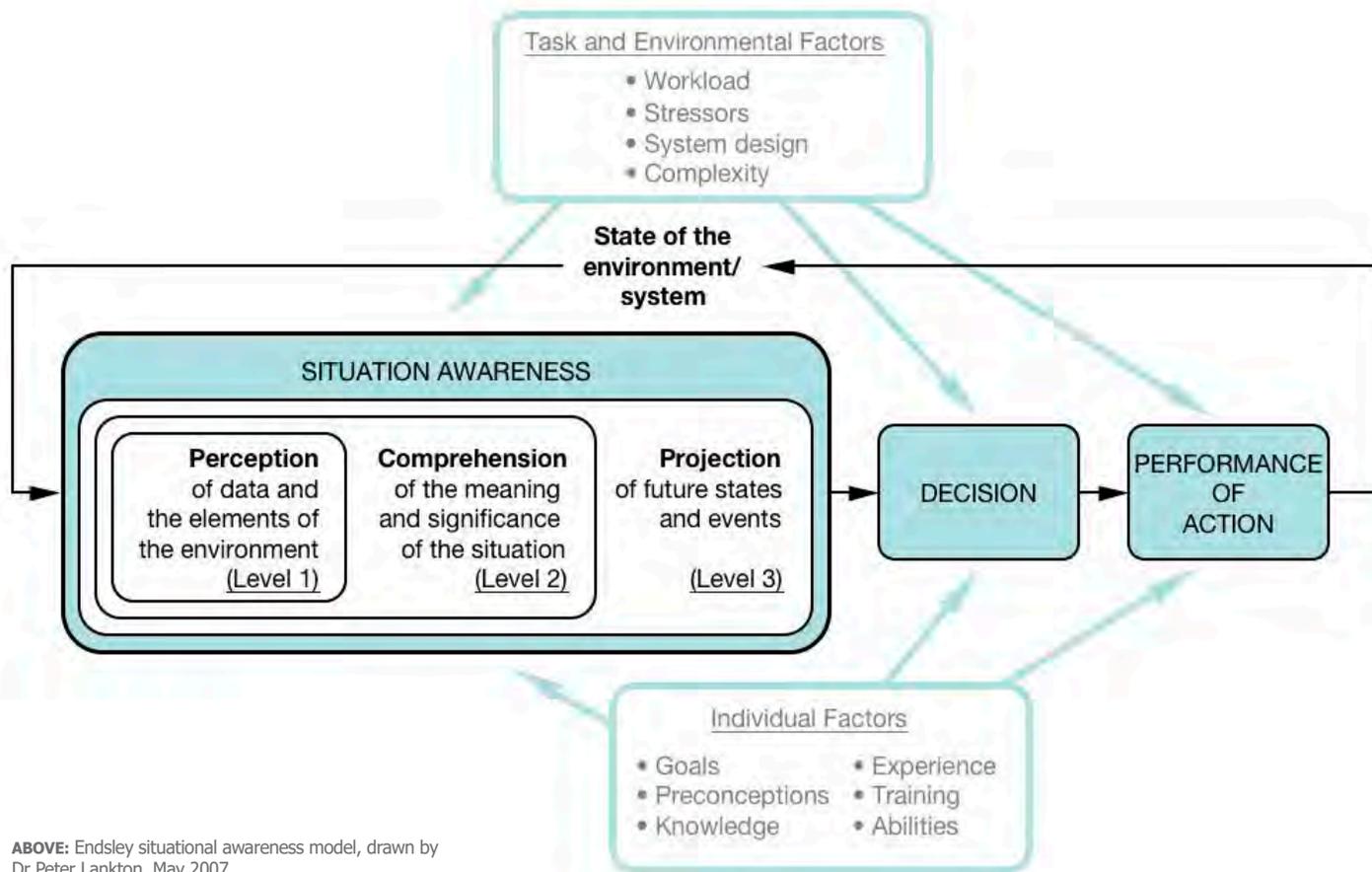
- The understanding of the mission dependency on cyberspace and the limitations, constraints and freedoms this provides, allows for a mission decision-making process with a fuller understanding of the operating environment.
- The understanding of how cyber threats and vulnerabilities can place the mission at risk enables an even more effective and efficient application of cyber effects.
- The interaction between the mission and cyberspace introduces a requirement for cyber operations that support NATO mission outputs. This means we have gained true collaboration between the mission and cyber component.

For Air Policing, these benefits have resulted in an adjustment of how cyber situational awareness has been integrated to deliver a better air-cyber picture. This integration is based on models for building situational awareness that NATO has already adopted, such as the Endsley model.⁵ Dr Mica Endsley, an engineer and a former chief scientist of the U.S. Air Force, provides the following definition:

"Situational awareness is the perception of the elements in the environment within a volume of time and space, the comprehension of their meaning and a projection of their status in the near future."

Within the Endsley model, the first level of maturity is gaining a perception of the environment, gathering relevant information to understand what is happening at the time. Comprehending this information is crucial in order to make it meaningful to the entire mission.





ABOVE: Endsley situational awareness model, drawn by Dr Peter Lankton, May 2007

Projection, the final step to situational awareness maturity, is probably the most important at the operational level. It provides understanding of not just what is happening *right now*, but what is likely to happen *in the future*. This is crucial in order to allow the operational commander to make timely decisions on the mission, based on understanding how cyberspace may place his mission at risk.

In the case of air-cyber situational awareness, projection to possible future cyber states allows the mission commander to shape the execution of the mission proactively. Within the Air Policing example, this proactive management is delivered through the Air Operations Directive planning, the Air Tasking Order planning the day before the mission is executed, or in real time as the Air Policing mission is conducted daily. Cyber situational awareness is a crucial addition at all stages to enable decision-making based on a full awareness of the operational environment. The information needed to provide situational awareness for the air domain is relatively easy

to comprehend: Air situational awareness requires an understanding of the environment and all actors operating within it. This approach is equally applicable to the cyberspace domain; however, as this domain is virtual, the environment is far more difficult to conceptualize. This might be one reason why there is a tendency to place the focus back on the network components that exist in physical space.

Comprehension of Mission-Focused Cyber Situational Awareness

The U.S.-led Multinational Information Cyber Fusion Program (MNICF)⁶, in collaboration with Headquarters Supreme Allied Commander Transformation (HQ SACT), suggests four categories of information that, if collated, would provide the required understanding of the cyber environment and the actors within it:

1) **Mission Information:** The information to build mission-focused situational awareness

must start with understanding the mission, and then the cyberspace that the mission requires. This then defines the cyberspace that the other parts of situational awareness will need to focus on.

2) **Network Information:** This means the state of the underlying cyber infrastructure, its availability, and its resilience. This information category only considers the cyberspace used by the mission.

3) **Vulnerability Information:** This information deals with weaknesses in people, processes and technology that could be exploited by a threat to disrupt this mission cyberspace. This includes anything from weak processes to people clicking malicious links in email.

4) **Threat Information:** This category of information deals with the capability of the threat to exploit these vulnerabilities, and the intent to do so. Threat activity taking place outside the cyber domain is important



since it provides information on this capability and intent. However, the threat information collected still needs to be analysed in the context of the mission, realizing that there is no risk where there is no capability or intent.⁷

This categorization of information provides a fuller, mission-focused view of air-cyber situational awareness. This view constitutes the perception and comprehension baseline in the Endsley model, which can then progress through the next stages of maturity.

Turning Cyber Situational Awareness Into Mission Risk

Comprehension allows us to build a meaningful situational awareness picture based on the currently available information. The key question that mission commanders must answer is not just what is happening now, but what changes in cyberspace might disrupt the mission in the future. Risk can be taken as the product of the likelihood of disruption and its impact, which can be defined as follows:

Likelihood: This includes an assessment of the capability and intent of the threat actor to disrupt the mission, and the opportunities they have to do this. The assessment is based on the threat and vulnerability information gathered during situational awareness.⁸

Impact: This relates directly to the mission impact and should focus on the activity performed. It is the impact of a particular process being disrupted that feeds an assessment of the mission in total being disrupted. This is also not exact: Some processes are survivable and have baseline resilience already built in, allowing the mission to succeed in an alternate way if one particular process is disrupted.

Air Policing has validated this theoretical approach, with some supporting processes to allow the approach to be applied. Application of the Endsley model is supported by two additional processes that provide AIRCOM with air-cyber mission situational awareness:

- Architectural approaches⁹ that show the linkage between mission people, processes and cyberspace. The main focus is on understanding the mission processes first; the interaction with cyberspace in totality will come from lower levels of the model, focusing any information collection requirements to generate situational awareness perception.

- Threat modelling that considers the cyberspace vulnerabilities that a threat actor may exploit, how they may disrupt the process, and which route the threat would take (threat vector).

In the Air Policing example, the mission itself is at the very top level of the architecture. The tasks performed to monitor the airspace, take decisions on aircraft launches and execute any intercept are then analysed in detail to provide the next level of the architecture.

Once these operational activities are known, key information elements and their flow through cyberspace can also be deduced and the Air Policing cyberspace vulnerabilities better understood. This results in a highly targeted, mission-focused cyber situational awareness for Air Policing.

Taking this into projection means incorporating the planned air activity delivered in the high-level orders such as the quarterly Air Operations Directive (AOD). This AOD can then act as the coordinating document to state the level of cyber risk to the execution of the Air Policing mission over the period the AOD covers. This allows timely decisions to be made on cyber effects to manage this risk.

The application of a mission focus through the Endsley model has allowed AIRCOM to deliver Air Policing from a better-informed, fuller understanding of cyberspace. This has led to commanders considering cyber at all levels and giving it a seat at the table within the air-operational decision meetings.

Conclusion

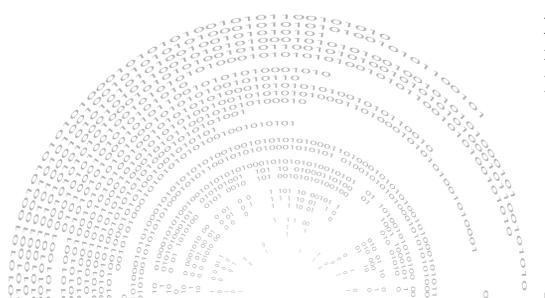
With the ever-increasing importance of cyberspace, the 2016 NATO declaration of cyberspace as a separate domain presented the opportunity to operationalize this space and fully integrate cyber defence into NATO missions. However, the tendency for the cyberspace

domain to be considered as no more than an extension of IT networks has the potential to shift focus away from mission assurance. This can be addressed by making the cyber domain relevant to the entire mission. Explicitly defining mission dependencies and opportunities in the cyberspace domain will help to maximize mission effects.

While AIRCOM is integrating some of these approaches into the Air Policing mission, there are significant opportunities for NATO to collaborate even more broadly on developing mission-focused integration of the cyber domain. All that is required is a change in mindset to make cyber a true mission problem, with IT as a supporting factor. The approaches summarized in this article present one way of starting this collaborative work, allowing us to achieve the full benefits articulated in the NATO Secretary General's statement. ✦

ENDNOTES

- 1 A Google Scholar search shows over 26,000 results containing this phrase.
- 2 "Cyberspace as an Operational Domain", CyCon 2018, <https://www.youtube.com/watch?v=xg2WHGjNdrE>
- 3 Allied Air Command: What We Do, <https://ac.nato.int/missions>
- 4 NATO Air Policing: Securing NATO airspace: https://www.nato.int/cps/en/natohq/topics_132685.htm
- 5 Endsley, M.R.: Toward a Theory of Situation Awareness in Dynamic Systems. *Human Factors Journal* 37(1), 32–64 (researchgate.net)
- 6 MNICF is led by U.S. Cyber Command, in partnership with NATO, the EU and many states across the world, and seeks to add value to the multinational force by proposing common frameworks and approaches within the cyberspace domain.
- 7 For example, the majority of massed cyber crime campaigns are untargeted activity taking place globally, being defeated by the very initial stage of defences on NATO networks. Monitoring these campaigns is therefore unlikely to impact the mission.
- 8 NATO Joint Air Power and Offensive Cyber Operations (japcc.org): <https://www.japcc.org/white-papers/nato-joint-air-power-and-offensive-cyber-operations/>
- 9 Mission Dependency Modeling for Cyber Situational Awareness: https://csis.gmu.edu/noel/pubs/2016_NATO_IST_148.pdf



The Complex Process of Developing the Allied Joint Publication for Strategic Communications

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Introduction

Some of us are given the opportunity to contribute to the review of an Allied joint publication (AJP) during our time in NATO. This time provides an excellent opportunity to share our experiences with the wider community of interest. As the custodian and as a member of the writing team, respectively, the authors of this article were in the rare position to draft and contribute to the development of a completely new AJP, the AJP-10 on Strategic Communications (StratCom). In this co-written article, we would like to explain why this AJP is important, as well as to elaborate on the process of drafting such a document, the impact that the pandemic had on the writing process, and, most importantly, the aspect of lessons identified during the document drafting.

Before elaborating on the importance of the AJP-10 for StratCom, it is necessary to give insight into the rapidly changing global security environment, the role of information activities,¹ the information environment,² and the need for NATO to communicate and act in a coherent and consistent manner. Apart from the obvious need to be able to react to any hostile activity by kinetic means, NATO also needs to be able to react to hostile activities below the so-called threshold of armed conflict. One of these activities concerns hostile information activities, which range from propaganda and disinformation to fake news. In these situations, it is crucial for NATO to communicate decisions and conduct actions at the right moment, to the right audiences, and in the correct and coherent manner. This is obtained when one manages to deter potential adversaries, while gaining and maintaining credibility among audiences.



Every action has
communicative effect.

What you protect sends a message

The NATO standing
maritime group with
UK carrier strike group
during STEADFAST
DEFENDER 2021. Photo
by UK Defence CSG21





#StrongerTogether
#WeAreNATO
#DeterandDefend

The JWC's flagship simulated television news programme, World News Today (WNT) replicates international news outlets such as BBC World, STEADFAST JACKAL 2022 photo by NRDC-ITA PAO

In 2009, soon after establishing a requirement for a strategic communications capability, the first NATO policy on strategic communications was approved. In 2017, two more important documents were drafted, namely the NATO Military Policy on Strategic Communications (MC-0628) and the Strategic Communications Handbook. The latest version of the ACO Directive 95-2 for Strategic Communications was approved in July 2021. Nevertheless, one key document was still missing: an Allied joint publication for strategic communications.

On its way to approval, a NATO doctrine undergoes different stages where it is drafted, staffed, harmonized, validated, revised or cancelled by following the rules for the development process. The three phases of the process are the review, development and management phases. A review phase is initiated when Allied Command Transformation (ACT) issues a request for feedback (RFF) in accordance with the Allied Joint Doctrine Campaign Plan (AJDCP). The issuing of a doctrine task by the Military Committee Joint Standardization Board (MCJSB) marks the end of this phase. Any doctrine is reviewed on a recurring basis to ensure that it reflects best practice, lessons learned and up-to-date policy.

The development phase, which is the next phase, is initiated when a doctrine task is approved. The phase ends when the letter to enter promulgation is issued. The MCJSB sec-

retary provides the custodian with the approved doctrine task and a data fusion summary report. The custodian then develops the doctrine with the support of a writing team. The writing team should always endeavour to support the custodian during the development phase.

The final phase is the management phase. It is initiated with the issuing of the letter for approval to promulgate, and ends with the issuing of an RFF, which indicates the beginning of a new review phase. The management phase includes education, training, exercise, validation, evaluation and feedback.

The Development Process

In 2016, during the 78th MCJSB meeting, a broad consensus was reached to focus on filling a void identified in the StratCom Doctrine. In addition, it was agreed that there was a lack of a common definition of StratCom at the military level, as well as a need for better structures for information and communication activities and processes to achieve more effective StratCom.

The following year, the MCJSB tasked ACT with developing an informed doctrine proposal for StratCom. In the same tasking document, the NATO Strategic Communications Centre of Excellence (NATO StratCom COE) was requested to investigate the possibility of developing a StratCom doctrine in parallel with the development of the new military

policy on StratCom. The rationale for developing the StratCom doctrine was the need to provide a common understanding of the function of StratCom to commanders and their staffs, and to provide them with detailed instructions for coordinating and integrating communication capabilities and the information staff function into other military activities.

Furthermore, the roles and responsibilities of StratCom staff officers were not always clear, including which boards and working groups to participate in and contribute to.

Finally, there was also a need to better synchronize effects in the information environment with the effects of actions and activities by other military capabilities in order to create a holistic approach to operations.

The overall purpose of developing the new AJP-10 was to implement policy and integrate a common understanding of StratCom, as well as to highlight the role that the information staff function and the communication capabilities play in achieving successful results. Therefore, AJP-10 needed to directly link with the reviewed AJP on Information Operations (Info Ops), on Psychological Operations (PsyOps), and on the new AJP on Military Public Affairs (Mil PA), which is currently being developed.

It was not until the final approval of the new military policy on StratCom in 2017 that the NATO StratCom COE could start exploring the possibility of developing a doctrine for



StratCom. At the end of November 2018, the NATO StratCom COE was appointed the official custodian of AJP-10. As such, the NATO StratCom COE could finally start the development of a framework for the document. The first step was a workshop conducted in Riga with the aim of discussing the current state of NATO StratCom processes based on the everyday experience of the practitioners. The conclusion from the workshop was that the development of the document would be challenging due to the many different opinions and established ways of working. There were different national understandings of the functions and capabilities of StratCom, Info Ops, PsyOps and Mil PA, and consequently, there were differences in terminology as well.

According to AAP-47, the custodian should hold a writing team meeting within 60 days of the doctrine task approval. The first task of AJP-10 writing team was to decide how best to work within the timelines of the tasking. In this context, it is important to know that although the custodian may designate an author to write the doctrine, they retain own-

ership and are responsible for meeting all milestones and timelines for the tasking.

Therefore, soon after the workshop that developed the framework for the new AJP-10, the first writing team meeting was held. In February 2019, representatives from nations and NATO headquarters and agencies convened in Riga with the primary aim of drafting the first two chapters of the four-chapter doctrine. At the second writing team meeting in Riga in March 2019, the main objective was to write the outlines for the third and fourth chapters, and to align these with the previous chapters of the document. The third writing team meeting was held a few months later in combination with the Riga StratCom Dialogue and focused on drafting the second half of the doctrine. By the end of the third meeting, all four chapters of the AJP-10 had been drafted. Subsequently, all four draft chapters of the document were checked by an editor with subject expertise in order to create a more coherent and legible first draft.

The fourth and final writing team meeting took place in November 2019 in Riga. The primary aim of this meeting was to review and discuss the first draft, with the aim of finalizing the draft by January 2020. The main objectives for this fourth meeting were to:

- Deliver coordinated content and amendments to allow the custodian to create the first study draft.
- Agree on whether graphs, vignettes, or other inserts were necessary, and agree on their content, to allow the custodian to hire an expert to design or draft such inserts.
- Agree on and standardize all definitions used in the AJP-10.

It is important to note that the AJP-10 takes on a governing role in all StratCom matters. In other words, other AJPs, handbooks, etc. should use AJP-10 for verification of facts and information relating to StratCom. Following the fourth writing team meeting, the release date for the first study draft was set to April 3, 2020, with the circulation period ending on July 31, 2020 due to the impact of the pandemic on staffing.

The circulation period is the time allocated to nations and organizations to comment on the first study draft via the Allied Joint Operations Doctrine Working Group (AJOD WG) forum on the NATO Standardization Of-

fice (NSO) website. The main responsibility of the NSO AJOD WG is to develop, manage, and standardize Allied joint doctrine with contributions from other working groups and with the support of doctrine custodians, in order to enhance interoperability and improve the effectiveness of NATO forces in planning and conducting joint operations.

After the end of the circulation period, the team processed all the comments made on the first study draft of AJP-10 and held the first adjudication meeting. An adjudicated comments matrix was created and used by the NATO StratCom COE to produce the second study draft.

The nations and organizations were then given a new period for commenting on the second draft. Following the second adjudication meeting and incorporation of more comments, a harmonization draft was published in the AJOD WG forum on the NSO website. Nations and organizations were then given one month to provide their comments on this harmonization draft via the forum.

According to AAP-47, the harmonization step was introduced so that nations and organizations could comment on a draft before submitting the ratification draft for approval. During this stage, the NATO StratCom COE, as the custodian, posts the harmonization draft on the AJOD WG forum to initiate the formal harmonization review. This is an important step towards assuring that the new doctrine is harmonized as much as possible with other key doctrine and military policies.

Once the review period was finished, the AJOD WG secretary reviewed the harmonization draft and forwarded it to the MCJSB for approval before it entered the ratification phase. A publication is ratified when the required number of NATO member states, as determined by the promulgation criteria, have provided their national ratification responses.

After the ratification draft was issued as a final draft, the nations were given 180 days to ratify the new AJP. The draft must be approved by three quarters of the nations in order to pass the ratification stage. For the AJP-10, this is scheduled to take place before the end of 2022.

Key Points

The development process of AJP-10 highlighted the importance of standardized methods

BELOW: Commander Cornelis van der Klaauw (left) and Major Lars Flink, the co-authors, at the NATO Strategic Communications Centre of Excellence (NATO StratCom COE), Riga, Latvia. Photo by NATO StratCom COE Communications Officer



and approaches. The following is a summarized list of some of the best practices we identified during our AJP work, which could serve to help our successors.

- Early involvement of the potential custodian in the formulation of the doctrine tasking would be useful, as it would help prepare the custodian for what is to come. Moreover, it would help the custodian prepare for the tasking within their overall programme of work. Since this work involves a long-term tasking that could last for years, this needs to be reflected also in the custodian's programme of work.
- Within a nation, there should be one point of contact who receives and distributes a draft during the process.
- AAP-47 is helpful in describing the process; however, it does not answer all the questions a custodian might have. For example, there are higher-level documents that have an impact on AAP-47 that are not generally known. The NSO plays a key role in collecting and sharing lessons identified, lessons learned and proven best practices. In the future, this could be further bolstered through a database or a handbook.
- The collaborative drafting of four separate chapters by the writing team is not an easy feat due to a high number of inputs and feedback. To speed up the initial phase of the process, it is recommended that the custodian develops a first working draft before the meeting of the first writing team.
- Creating a coherent document is only one of many aspects to consider when developing a new AJP. The wording and structure of the document should be clear and understandable, using a NATO writing style. This requires an experienced editor. In this context, the UK Development, Concepts and Doctrine Centre (DCDC) played an important role in editing the text and aligning it with other doctrine developments. This helped ensure we were not writing a document for ourselves, but for the wide range of non-subject matter expert readers.

- It is recommended to better highlight the role of the sponsor³ in the doctrine tasking. Thus everyone involved in the process would know what is expected of them, and also what they can expect from others.
- AAP-47 is the key document for doctrine development and review. All those involved in the development or review process of an AJP — not only custodian and sponsor — should familiarize themselves with it.
- New doctrine needs to be aligned with existing doctrine, and also it needs to be future-oriented. This means aligning the development process with other key doctrine publications under review is a must. Close cooperation between custodians is therefore crucial for the review of these publications and the documents they are guiding, such as handbooks and directives.
- Doctrine is a codification of theory and proven best practices and principles; however, it should provide enough room for manoeuvre without hampering interoperability and the inclusion of future developments.
- By the time the doctrine is promulgated, most of the people involved in the development of the document will have moved on to other positions. A corporate memory should be developed and made available, preventing a need to "reinvent the wheel" in years to come.
- It is vital to spread awareness of the document beyond the StratCom community of interest. As AJP-10 concerns all NATO personnel and is not limited to the communication capabilities and information function, everybody working for NATO should gain a clear StratCom mindset!

THE KEY IMPORTANCE of the AJP-10 for StratCom remains clear: It prevents stovepipes and establishes an inclusive approach through better alignment of processes and structures. In achieving this, NATO will be able to counter hostile information activities and at the same time promote its own narrative, using all capabilities within its structures and employing a behaviour-centric approach to achieve its goals.

Although the need for an AJP on StratCom was identified almost a decade ago, it took years before the development of the document could begin. It was hampered by several unforeseen aspects, such as the COVID-19 pandemic. Nevertheless, the work was completed, and many lessons learned: Although the process of developing a new AJP is well sequenced and described in AAP-47, we observed that there is a need for more detailed guidelines. Moreover, the several rounds of feedback from the nations will benefit from more structure and better routines.

Finally, it became clear that developing a new AJP requires both patience and excellent diplomatic skills. The NATO StratCom COE has shown that they master these skills extremely well, and the resulting document will reflect that. ✦

BELOW: "StratCom" as a primary training objective — Lieutenant General Lorenzo D'Addario, Commander NATO Rapid Deployable Corps – Italy, during STEADFAST JACKAL 2022. Photo by NRDC-ITA PAO



ENDNOTES

- 1 Activities performed by any capability or means, focused on creating cognitive effects.
- 2 An environment comprised of the information itself, the individuals, organizations and systems that receive, process and convey the information, and the cognitive, virtual and physical space in which this occurs.
- 3 Each AJP is assigned a sponsor who provides custodial access to relevant knowledge available through NATO Headquarters and NATO Command Structure. The International Military Staff appoints a doctrine sponsor for each AJP, to include emergent doctrine for which there is an approved doctrine proposal.



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 Polish Air Force
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THE POLISH MISSION NETWORK in the Coalition Service



FROM AN EARLY stage in the NATO stabilization operation in Afghanistan, it became apparent how important it was to achieve interoperability of communication and information systems (CIS) as well as command and control (C2) support systems. Initially, troops deployed to Afghanistan to conduct a multinational mission in the theatre tried to find a way to distribute a common operational picture to ensure the situational awareness of all nations. As lessons learned came from the implementation of the Afghanistan Mission Network, NATO saw the necessity for standardization of operational procedures and technical requirements that would guide Allied nations in the preparation of common CIS networks supporting future multinational operations. This created a need to establish a project coordination structure in the upper echelons of NATO. The resulting project initiative has been named Federated Mission Networking (FMN).

Poland, as a NATO member country, has actively supported the initiative and organized its own implementation, which has been named Polish Mission Network (PMN).

PMN now covers all needs concerning national operations and exercises as well as participation of the Polish Armed Forces in international missions and training events. Additionally, PMN is successfully used by coalition command structures in the Baltic region, which will be the focus of this article.

The FMN Initiative

The FMN initiative was launched by the North Atlantic Council in 2015 with the main task to consolidate an effort of NATO institutions and nations in defining operational procedures and technical organization rules to manage the connections of CIS and C2 support systems in international combat conditions. The initiative was the outcome of the NATO FMN Implementation Plan (NFIP), which Allied Command Transformation (ACT) submitted in 2014 in coordination with Allied Command Operations (ACO) and the NATO Communications and Information (NCI) Agency.

Subsequently, a governance and management body for this NATO-wide project was nominated in order to implement a fundamental idea of FMN. Federated Mission Networking has been introduced to coordinate the interaction of people, processes and technology in exchanging information and services among federated mission participants, including the use of interconnected autonomous computer networks for the conduct of coalition operations and exercises. FMN governance is a dedicated responsibility assigned to the NATO Military Committee, which sets the vision for the FMN and provides guidance as well as an environment for effective management of the FMN.

To facilitate a continuous increase in the level of maturity of FMN solutions, FMN requirements follow a spiral approach. FMN

requirements for "Spiral 5" have recently been worked out, mostly focusing on directives implementing NATO functional area services (FAS) in the mission networks. Moreover, FMN governance routinely verifies compliance with a spiral requirement in particular mission networks that are established by organizations or nations during NATO exercises, such as the Coalition Warrior Interoperability Exercise (CWIX) and STEADFAST COBALT.

PMN Development

Poland has been an active participant in the FMN initiative since the beginning. The first mature version of the PMN solution to fulfil FMN requirements, version 1.0, was validated during CWIX 2016. Later that year, the management and participating troops of the Polish international military exercise ANAKONDA 2016 were supported with PMN 1.0. The next development stage was version 2.0 of the PMN, which was used during two of the largest Polish international military exercises, ANAKONDA 2018 and DRAGON 2019.

In 2020, PMN 2.0 was properly federated with the Mission Partnership Environment (MPE), the U.S. mission network. The functionality of this system connection was validated during Exercise ASTRAL KNIGHT 2020, which was conducted by the U.S. Air





ABOVE: Polish CIS specialists at NATO Joint Force Training Centre (JFTC) and an illustration of PMN development break points. Photo by JFTC PAO

Force in Europe and significantly improved common situational awareness.

Currently PMN 2.0 fulfils "Spiral 2" of the FMN requirements, which mostly concern the implementation of core system IT services for various NATO-specific communications technologies. This system solution covers current national needs in three functionally separated areas: operational planning, crisis management and reconnaissance activities. Furthermore, expectations regarding international missions and training events are essential for the development of PMN 2.0.

In the near future, the next spiral requirements of FMN will be considered for implementation in PMN 2.0. The improvement of the system mobility and federation range will be developed, prioritizing aspects such as radio remote access and remote access and distribution of EU-classified data.

The PMN in Coalition Service

The enhanced Force Presence (eFP) was one of the initiatives launched after NATO's Warsaw Summit in 2016. The NATO deterrent presence in the Baltic region was a response to military activities of Russian troops and proxies in

eastern Ukraine, which had begun two years earlier in Crimea. Multinational Corps North-East (MNC NE), based in Poland, was tasked with coordinating the eFP initiative. Additionally, the next multinational command at division level was formed in Poland at that time.

According to the framework arrangements for these units, Poland was obligated to provide, among others, CIS and combat support for command posts created both for MNC NE and for the new Multinational Division North-East (MND NE).

In line with urgent formal obligations to extend the CIS capabilities of the eFP, Polish military authorities proposed using the PMN solution to federate mission networks of affiliated troops to MNC NE and MND NE. Due to this proposal, the Polish system management authority for the PMN created two new sub-networks, eFP MN and POL eFP, which were respectively dedicated to MNC NE and MND NE with Polish affiliated units.

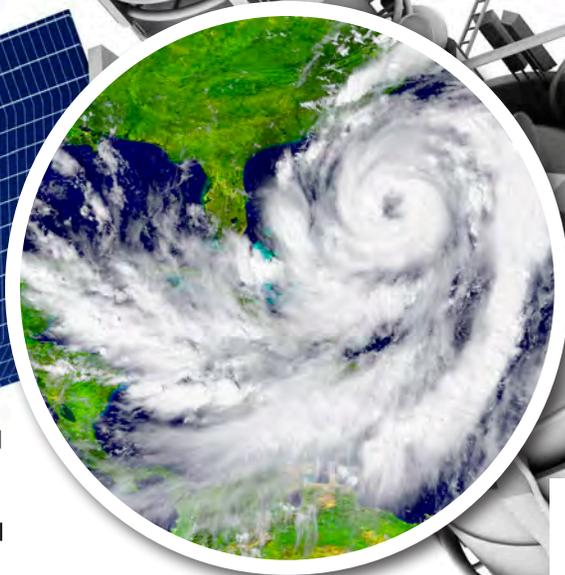
To support the eFP initiative in the Baltic region, eFP MN was temporarily federated with the U.S. MPE during preparations for Exercise DEFENDER EUROPE 2020. Furthermore, eFP MN has been activated to support Allied Joint Force Command Brunssum remote access to

the mission network of MNC NE. Such a CIS solution shortens decision-making and planning processes on both the operational and tactical levels in case of combat or training activities of MNC NE in its area of responsibility. The eFP MN was also used during Exercise STEADFAST JUPITER 2021, directed by the Joint Warfare Centre (JWC), which was a certification exercise for MNC NE.

Conclusion

It is important to underline that there is an additional effort for Polish national CIS structures to support coalition command structures in the Baltic region. These additional responsibilities simultaneously accelerate the development of PMN for national needs, which means that the technical and operational benefits are mutual. On the other hand, both MNC NE and MND NE have strong ambitions to provide their own CIS solutions that will meet FMN requirements. Until then, Polish CIS specialists from the unit acting as system management authority for PMN will be proud that their efforts are strengthening coalition CIS capabilities during the eFP mission in the Baltic region. ✦

NATO SPACE CENTRE



by Wing Commander Dave Allen
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NATO DECLARED SPACE an operational domain in 2019. As part of this shift, the North Atlantic Council authorized the establishment of the NATO Space Centre at Allied Air Command in Ramstein, Germany. The NATO Space Centre opened its doors in 2021 and, although it is still early days in the Centre's development, we have started to expand in terms of number of personnel and our capabilities.

The main role of the NATO Space Centre is to provide space domain awareness across the Alliance and identify any potential threats in this domain. Space systems are essential to our daily lives, enabling everything from mobile calls to banking services and weather forecasts. However, potential adversaries are developing, testing and operationalizing sophisticated counter-space technologies that could threaten Allies' access to space and

their freedom to operate in this domain. Current international events have brought into sharp focus how important it is to maintain access to the space domain and have highlighted the benefits of having a NATO Space Centre. The team have supported NATO operations across the other domains, providing them with the space-related products and services that are essential to execute their missions.

As NATO does not own any of its own satellites, the NATO Space Centre is also supported by Allies. We have started building strong relationships with a number of the space operations centres across the Alliance in order to supplement our own capabilities with their data, products and services. It has also been crucial to inform personnel about the importance of space and educate them as to what the NATO Space Centre can provide. Since its establishment, the NATO Space Centre has

briefed numerous senior commanders, including representatives from the NATO Military Committee, Canada, NATO Rapid Deployable Corps – Italy, and the German Ministry of Defence. The NATO Space Centre team has also visited space colleagues in Germany, France, Spain, Poland, the U.S. and the United Kingdom to strengthen ties with nations.

With the establishment of the domain, space has been increasingly integrated into NATO exercises at all levels. The NATO Space Centre has supported air, land and maritime exercises, as well as the STEADFAST JUPITER joint NATO exercises, run through the Joint Warfare Centre (JWC). This exercise series has been an excellent opportunity to upskill NATO Space Centre personnel, not just during the execution phase, but also throughout the exercise planning process. For example, a number of NATO Space Centre personnel can be found supporting the wider NATO space team during Main Events List/Main Incidents List (MEL/MIL) scripting at the JWC.

So what is next for the NATO Space Centre? Throughout winter 2022, we will refine our operational requirements to support the procurement and acquisition process. This will help ensure that the NATO Space Centre is suitably equipped as a modern-day 24/7 operations facility. We will also continue to support NATO operations and increase our involvement with a multitude of NATO exercises as the importance of the space domain continues to be recognized. And, once again, our personnel will support the JWC exercise preparation and execution. ✦



NATO Space Centre.
Photo by the author



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Phil Draper, the Joint Warfare Centre's Head of the Computer-Assisted Exercise (CAX) Support Branch, discusses the modelling and simulation systems in use at the Centre.

*By Inci Kucukaksoy
NATO International Civilian
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We have been working hard to realize the vision for a NATO ORBAT data inventory. This system is designed to simplify the reuse of data and ensure that the creation of accurate force structures and unit capabilities is as efficient as possible."

Mr Draper, thank you very much for taking the time to speak with us. We talked about the Joint Warfare Centre's (JWC) simulation technologies in an interview in 2018. From a training standpoint, what is new in the JWC's virtual battlespace?

— Four years have certainly flown by; it seems like only yesterday that we last spoke. We have recently tested and accepted version 6.5 of our core simulation, the Joint Theater Level Simulation-Global Operations (JTLS-GO). This version of the model continues to enhance the JWC's CAX ability to represent very large-scale, multiple joint operations area (JOA) scenarios.

One of the key features of NATO's vision for future exercises is the representation of operations at very large scales with multiple corps, thousands of air platforms and dozens of maritime vessels. It is crucial for us that our

simulation systems are able to address this requirement. However, we also need to prepare the complex databases that reflect these forces. Members of my branch have been working hard to realize the vision for a NATO order of battle (ORBAT) data inventory. This system is designed to simplify the reuse of data and ensure that the creation of accurate force structures and unit capabilities is as efficient as possible.

How does the multi-domain operations approach affect CAX?

— Multi-domain operations are extremely challenging to execute in both the real world and the exercise environment. Much of that challenge comes from the requirement for our training audiences to execute complex planning, communication and execution processes. To practice these activities in a synthetic

environment, it is essential that we have a comprehensive, truly joint simulation capability. This ensures that we capture and portray the roles of all the contributing domains in a realistic representation of the interactions of capabilities required to deliver operational effect. JTLS-GO is actually uniquely suited to the representation of these kinds of operations. If we prepare the appropriate exercise environment and provide the required human expertise, we can support this area of operational art very effectively.

How do you make sure you adapt to the changing operational requirements and simulate today's battlefield?

— We are critically dependent on the relationships with our training audiences and the component commands. We work collaboratively



CAX SUPPORT TO EXERCISES



The CAX Support team during Exercise STEADFAST JUPITER 2022.
Photo by JWC PAO

with these organizations to ensure that our data regarding operational capability is as accurate as possible. Within the JWC, we also rely on the Opposing Forces (OPFOR) Branch to confirm that the capabilities required to challenge the exercise participants are reflected in the orders of battle we build, the capabilities of the equipment the simulated adversary deploys, and the doctrine under which they operate.

The JWC CAX Branch is also deeply involved in the evolution of JTLS. We chair the Operational Authority Board for the system on behalf of Allied Command Transformation. This board assists the international user community in defining and prioritizing changes to the model. These modifications are essential in ensuring that our simulation toolset meets the requirements of representing a continuously evolving battlespace.

The JWC collaborated with Jordan this year as part of the Mediterranean Dialogue. Can you tell us a little more about that?

— The JWC CAX Support Branch responded to a request from the NATO Defence Capacity Building (DCB) community at NATO Headquarters for assistance in assessing a project in Jordan. The Jordanian Defence Force is undertaking a modernization programme associated with its simulation and training capabilities. Jordanian officers visited the JWC and

received extensive briefings regarding NATO's approach to computer-assisted command post exercises and how we employ simulation and media to support these endeavours. The JWC CAX staff then travelled to Jordan to review the current simulation technologies available to the country, and subsequently made recommendations to the DCB programme officers regarding the most useful areas for investment.

We were all extremely impressed with the professionalism and commitment of the Jordanian personnel we worked with, and the

event proved to be a truly collaborative undertaking. The JWC personnel learned much from the Jordanian approach. Their focus on real-world challenges and realistic scenarios was particularly interesting.

Is there anything you would like to add?

— Thank you for the opportunity to contribute to the JWC's wider communication initiative. I am extremely proud of my branch's small-but-important contribution to fulfilling the JWC's role in Alliance security. ✦



Phil Draper briefing the Jordanian officers.
Photo by Yrjan Johansen

Colonel Jean-Michel Millet
 French Army
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 NATO Joint Warfare Centre

TIME & OPERATIONAL ART

ADMITTEDLY, TIME MISTAKES are some of the most common errors in the history of battles and operations. Yet we usually take the notion of time for granted. So much so that we seldom even think about it. Saint Augustine, a father of the Christian church and a philosopher of the fourth and fifth century, was fascinated by the issue of time, and the difficulty to grasp time as a concept. In "Confessions Book XI", he wrote: "What is time? If I'm not asked, I know; If I'm asked, I don't know."

We are so immersed in time that we barely pay attention to its different dimensions. But beyond philosophical considerations, time dimensions indeed have a critical impact on operational art. This article aims to merely scratch the surface of the numerous operational benefits to be gained through a deeper understanding of time dimensions, and of our human limitations in integrating those dimensions into our operational decisions.

It is fitting to start by identifying what we mean by "time", as a single word covers,



"One classic time mistake is to consider duration in isolation, and as a series of fixed points."

in fact, many different notions. The first notion of time is the "time of the universe", or nature time. Since Einstein and the advent of quantum physics, we have learned that time is a relative notion. There is no such thing as "universal time", no clock of the universe. This time does not care about us humans. It passes without any possibility for us to influence it.

For most of human history, the time of nature has been the only kind that mattered, with humans adapting to the rhythm of day and night and the passing of seasons. Consequently, we humans of the 21st century are still influenced by this "nature time", which is integral to our physiological condition. We are influenced by daylight, by seasons, by lack of sleep — whether we want it or not.

A more familiar notion of time is "clock time". Of course, this is first and foremost a social norm that exists to enable the synchronization of social activities. It is a human construct that has evolved over the ages. For instance, ancient civilizations had a different notion of time, and even in the not-so-distant past, the pressure of "social time" was very different from that of the modern, globalized world with its regulated time zones.

This notion of "normative time" is in contrast with another perception of time: psychological time or "emotional time", that is how we as individuals perceive the passing of time. This perception is not linear. As individuals, we are influenced in our perception of time by our emotions and senses: We do not perceive time in the same way when we do something we like ("time flies") or when we rest, as opposed to when we are in danger (situations such as combat, creating a sense of "slow motion"). In fact, the relationship between the "normative time" and "psychological time" is a source of discomfort that is generally mild but can be severe in case of stress (being late, feeling overwhelmed by emotions in a time-stressed environment). Because of these tensions, because of our human nature, we have human limitations when it comes to our relationship with time. Unless we understand those limitations, mitigate them for us and exploit them against adversaries, we are prone to "time mistakes" in campaign planning and execution.

In addition to the three different definitions of time, a deeper analysis of time leads us to further refine time in different dimensions with critical operational consequences.



Duration

Duration is the most obvious dimension of time. In operational planning, duration is the assessment of the time available, based on the understanding of the time required to achieve a given task. However, one needs to be reminded that there are multiple durations always interacting. One classic time mistake is to consider duration in isolation, and as a series of fixed points. This was illustrated 2,500 years ago by the Greek philosopher Zeno of Elea and used more recently at the end of the 19th century by French philosopher Henri Bergson, who attempted to solve Zeno's Arrow Paradox. The paradox states that an arrow flying from one point to another should technically never reach its target, because when its flight is viewed in the form of isolated snapshots in time, it is never actually in motion. The human brain focuses on fixed points in time, regarding the current state at that instant as somehow "static"; it has to use abstraction to think about continuous movement. At the operational and strategic levels, the notion of duration should be linked to the notion of "available time" to achieve military objectives, before other dimensions of power, diplomacy, economy or information change the conditions again.

Relative Time

The human brain is hard-pressed to understand and intuitively compute the notions of relative speed, acceleration and deceleration. Meeting engagements and counterattacks are classic potential sources of mistakes: Actors are prone to miscalculating the relative speed of opposing forces and the impact of tactical or operational acceleration or deceleration. This can be used to deceive an adversary. But that is not all. Due to these limitations, the human brain has even more difficulty conceiving of relative time when multiple mobiles (as in a meeting engagement) are moving.

Accepting that the human brain wrongly conceives of time in a linear way and in fixed points, but that time is in fact not linear, is a major step in mitigating our cognitive limitations. It is also a useful reminder that linear thinking has serious limitations in planning techniques: Backward planning is the foundation of operational planning and is based on defining a future desired end state and assuming a backward linearity to the current situation.

Frequency

Acceleration and deceleration are linked to another, mostly overlooked, dimension of time: frequency, simply defined as the "tempo" of events. The usual perception in Western military doctrine is that a high frequency, that is a high operational tempo, is to be sought in order to overwhelm an adversary with events and "break into their decision cycle". While highly desirable, it does pose serious challenges. First, while the manoeuvre at the technical or tactical levels of war can be accelerated, this is much more difficult at the operational and strategic levels due to multiple interactions occurring in different time frames.

Second, as exemplified in hybrid warfare and counterinsurgency, adversaries operating on "low" operational frequencies (a bomb attack or cyberattacks at irregular intervals) or on variable frequencies (very few events in a given period, followed by rapid offensive) can be very disruptive and unsettling for defence organizations fixated on the primacy of "high tempo". One of the key factors for success lies in mastering the transition between "high tempo" and "lower tempo" in operations and imposing this transition in frequency on a given adversary.

Sequencing

Time is about events, and events have interactive relations; thus, the order in which events happen is critical. Much of the operational planning effort is focused on determining the events (the desired effects and their correlative actions) and their sequence to achieve the desired end state. Much of a campaign's execution consists of adapting the sequence of events to the dialectic reality of pitting our plan against the adversary's. It means a deliberate effort to break the adversary's planned sequence of events: disrupting its operational preparation, creating deception, achieving surprise, exploiting gained initiative, playing on transitions between acceleration and deceleration of actions and shifting axes of advance and domains of effort, while preventing the adversary from doing so and protecting our centre of gravity.

The right sequencing needs to anticipate the possibility of multiple outcomes to this dialectic reality. Thus, the right sequencing in planning an execution is about mastering the order of events that we can control and imposing this order of events on the adversary. As Na-

poleon once famously remarked: "A general-in-chief should ask himself frequently in the day, 'What should I do if the enemy's army appeared now in my front, or on my right, or my left?' If he has any difficulty in answering these questions, his position is bad, and he should seek to remedy it." This is, in fact, the definition of seizing and maintaining the initiative.

Kairos (Seizing the Moment)

One key element in the relationship between sequencing and initiative is that any force expends energy and cannot maintain itself at its maximum level of potential performance indefinitely, without risking going beyond its "culminating point". In writing on the "dynamic law in war", Clausewitz remarked that a force is, at any given time, in one of three mutually incompatible states: resting, in tension or in movement. Because a force cannot stay in tension indefinitely, it is vulnerable at times. Detecting those windows of vulnerability and protecting one's force from the detection of one's own weaknesses is critical and introduces the notion of "kairos", from the Greek term for a specific, fleeting point in time that needs to be seized to change the overall balance of forces.

In turn, determining the nature, ways to create it and timing of this decisive event is a major part of operational art. In the most favourable circumstances, it can take the form of an "operational surprise". Surprise includes different dimensions of time. It can, in the best case, be a "psychological surprise", unhinging the enemy's entire plan by preventing them from controlling required actions and their sequence in a way that efficiently counters our actions. In less favourable circumstances, seizing the initiative may be limited to creating a physical surprise, where the enemy, while aware of our own course of action, does not have the physical capacity to react to it in due time.

Time is ultimately a shared abstract construct. It has many dimensions, and, in many ways, all organizations struggle to accommodate the human cognitive limitations in thinking those different dimensions simultaneously. As demonstrated, there is no linearity or unity of time. As the Alliance is decisively engaged in developing cross-domain operations, understanding the value of time analysis is more critical than ever. ✦

THE JOINT WARFARE CENTRE'S OPERATIONS PLANNING ADVISORS

by Lieutenant Colonel Wycliffe Nieboer
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THE JOINT WARFARE CENTRE (JWC) Advisory Branch is one of three branches in the Transformation Delivery Division (TDD). Located on the top floor of F-Block, the three TDD branches of Doctrine; Concepts, Capability Integration and Experimentation; and the Advisory Team work alongside one another in an open office space. In this area, the operations planning advisors, who are part of the Advisory Branch, work in a medium-sized room, simply known as the "planning bay".

The planning bay, formerly an auxiliary meeting room, was redesigned in 2020 to act as a collaborative work area with multiple whiteboards, an overhead projector, conference table, and several maps of important regions across NATO's area of interest.

Since its redesign, the planning bay has been used to brief distinguished visitors, facilitate planning team activities such as the Pandemic Response Working Group and NATO Design Thinking Working Group, and develop the curriculum for both the Joint Operations Planning Group (JOPG) Leaders' Workshop and Enabling Decision-Making Workshop.

Rather than concentrating on a single joint function or domain, operations planning advisors are generalists who are proficient in planning and in the execution of NATO operations at the joint task force and operational level of war.

These advisors require a big-picture perspective on the joint and all-domain activities that a joint task force will organize and manage to achieve operational objectives. Their experience and education enable them to advise leaders and staff officers who work in the J5 (plans), J35 (future operations), and J33 (current operations) during the JWC-directed exercises.

During crisis response planning, operations planning advisors advise the training audiences' JOPG on the NATO operations planning process and provide techniques to manage and lead diverse planning teams. During exercise execution, they focus on advising a training audience on joint synchronization activities that enable the commander's decision-making cycle and create unity of effort across the joint force.

To be successful in their role, operations planning advisors interact early with a training audience to build continuity and credibility. Through remote over-the-shoulder and live in-person continuous collaboration, advisors aim to foster trust with a training audience. Trust is a key ingredient needed to advise and mentor training audiences, especially as the JWC's training audiences navigate very complex exercise scenarios. With their collective wealth of experience, operations planning advisors offer best practices to a training audience as they transition through each stage of a JWC-directed exercise to mitigate recurring challenges.

When not advising training audiences,

operations planning advisors often facilitate the Strategic Operations Planning Course and Comprehensive Operations Planning Course at the NATO School Oberammergau (NSO). Facilitating these courses enables students from within the NATO Alliance to become familiar with the mission of the JWC and receive an early introduction to the value of the JWC's Advisory Branch. In the future, many of these students will participate in a JWC-directed exercise; early introduction to the branch helps build continuity, legitimacy, and trust between a training audience and the Advisory Branch.

To conclude, operations planning advisors help a training audience through the difficult process of planning and executing operations at the operational level of warfare. This takes experience, knowledge of doctrine, and understanding of operational art. With their big-picture perspective on all domains and joint functions, the advisors have a crucial role in mentoring a training audience to accomplish many of their organizational training objectives during a JWC-directed exercise. ✦

BELOW: The JWC's operations planning advisors (from left) Lieutenant Colonel Wycliffe Nieboer, Lieutenant Colonel Matthew Prescott and Commander Sveinung Wersland. Photo by JWC PAO





THE STOIC LEGAL ADVISOR

A Mindset for Principled Counsel

by Lieutenant Colonel Michael Lipkin
United States Army
Legal Advisor
NATO Joint Warfare Centre



"If you do the job in a principled way, with diligence, energy and patience, if you keep yourself free of distractions, and keep the spirit inside you undamaged, as if you might have to give it back at any moment, if you can embrace this without fear or expectation — can find fulfillment in what you are doing now, as Nature intended, and in superhuman truthfulness (every word, every utterance) — then your life will be happy. No one can prevent that."

– Marcus Aurelius, "Meditations", 3.12

LAST FALL, after the conclusion of a legal conference in the beautiful city of Bruges, I sat on the train to Brussels thinking about a lecture presented by Dr Craig Jones, a political geographer. During the conference, Dr Jones conveyed the story of a U.S. Army Judge Advocate having difficulty reconciling his role in lethal targeting operations. I struck up a conversation with a senior legal advisor (LEGAD) who happened to be sitting near me on the train, also returning home from the conference. For him, Dr Jones' lecture brought to mind the teachings of stoic philosophy, which he commended to me. This would send me down a path of learning and self-improvement for which I will always be grateful. The philosophy would teach me both how to be a better person and a better LEGAD.

Under NATO doctrine, a LEGAD must demonstrate "candour" and provide an "independent perspective on issues of concern" to the commander and the command.¹ This is a corollary to the U.S. Army Judge Advocate General's Corps' (JAGC) refrain that legal advisors must deliver "principled counsel" to command and staff.² Principled counsel is defined as "professional advice on law and policy grounded in the Army Ethic and enduring respect for the Rule of Law, effectively communicated with appropriate candour and moral courage, that influences informed decisions".

Principled counsel and candour are thus key tenets of NATO LEGAD doctrine. Any attorney that has practiced military law has had to deliver advice they know will be perceived

as unhelpful, or perhaps even as obstructionist. While the advisor may often identify solutions that can enable the commander's intent within the confines of law and policy, delivering "bad news" is sometimes unavoidable. At times, this advice may pertain to questions of minimal consequence: May the official vehicle be used for a particular purpose? May the recipient keep a gift from a dignitary?

At other times, the LEGAD's advice may involve life-or-death, time-sensitive targeting decisions. LEGADs must be able to objectively apply the facts to produce unvarnished legal advice in times of significant pressure. As LEGADs, that is our mission, but it is sometimes easier said than done.

Marcus Aurelius, Roman Emperor (161–180 CE), stoic thinker and author of "Meditations", written towards the end of his life.



This article analyses the pressure facing LEGADs seeking to help the team succeed, while remaining free to raise concerns. As I learned from my new mentor on the train, ancient stoic philosophy can provide a powerful tool for the legal advisor. It teaches the LEGAD how to muster the necessary courage to be effective, while achieving professional fulfilment by focusing on the process of analysing and conveying interpretation of the law, and not on the extant pressure or the decisions made after conveying the advice. In this way, stoicism provides a helpful mindset to enable the principled counsellor's success.

The Courageous Advisor

According to stoic philosophy, happiness is achieved through living a virtuous life. The stoics divide virtue into four main types: wisdom, justice, courage, and temperance. Courage has long been considered a key virtue for a lawyer. This principle is exemplified by the fictional character Atticus Finch in Harper Lee's "To Kill a Mockingbird", long considered a folk hero among the legal community. In the novel, Finch represents a black man named Tom Robinson unjustly accused of rape in mid-1930s Alabama. Finch repeatedly takes a stand against racism, and fights with courage and grace against the racist judicial system in Alabama. Finch's courage is perhaps at its peak when he spends the night guarding Tom Robinson's prison cell because he knows it is highly likely a lynch mob will try to take Tom.





"There will be adversity over which we have no control, and while there is virtue in overcoming this adversity, the greater truth is that the adversity itself becomes the factor that opens up our path to fulfillment."

Courage is our ability to overcome feelings that threaten to cause cowardice, and as a result prevent us from acting in the correct way. It means doing the right thing even if we are afraid to do so. It means not letting fear cloud our focus.

TWO OF THE MOST celebrated musical performers of our time, Beyoncé and Adele, have conveyed that they suffered from performance anxiety, commonly called stage fright. Both artists have gone so far as to create alter egos to cope with the anxiety. Adopting an alter ego is a form of self-distancing, allowing us to take a step back and see a situation in a more serene way. Self-distancing gives us a little bit of extra space to think rationally about the situation.

While I am not suggesting LEGADs create alter egos, it is important to realize that even the best have strong feelings of anxiety and inadequacy in the performance of their duties, and controlling those feelings is critical to success. Understanding that one can control their own emotions is a key tenet of stoicism, which emphasizes the insignificance of any one person's existence in the grand scheme of things. Because life is short, we should live it to the fullest by enjoying the present and seek fulfillment by striving to be a good person and doing good work.

As "the Philosopher King", Marcus Aurelius states in "Meditations", 8.5: "The first

step: Don't be anxious. Nature controls it all. And before long you will be no one. The second step: Concentrate on what you have to do. Fix your eyes on it. Remind yourself that your task is to be a good human being; remind yourself what nature demands of people. Then do it, without hesitation, and speak the truth as you see it. But with kindness. With humility. Without hypocrisy."

It is important to point out that one can commit injustice by doing nothing. It is LEGADs' professional obligation to speak up when the circumstances call for it. This simple truth calls into mind the famous, unattributed maxim: "The only thing necessary for the triumph of evil is for good men to do nothing."

While courage is a critical characteristic of a good legal advisor, one should also seek to develop other key stoic traits in an effort to be a virtuous LEGAD.

The Path of the Virtuous Advisor

In "Meditations", 5.20, Marcus Aurelius wrote: "The impediment to action advances action. What stands in the way becomes the way."

It is through the process of practicing law, grappling with the rules, the facts, and applying them, that an advisor becomes proficient at the practice. It is through the process of providing advice that leadership may not want to hear that LEGADs become more comfortable doing so in the most critical of circumstances. They simply become better advisors by living through the challenges of the profession. Perhaps this is one reason LEGADs are commonly encouraged to "take the hard jobs". Many aspects of the job are outside of the LEGAD's control. The principled counsellor knows that they are an advisor, and the final say on command decisions is not theirs.

One anecdote comes to mind. A retired senior officer was asked what he thought the job of the legal advisor was. The retired officer responded that the LEGAD's job was to apply the emergency brake. His former legal advisor, who was present, stated: "Sir, *you* applied the brake. I just *suggested* you use it."

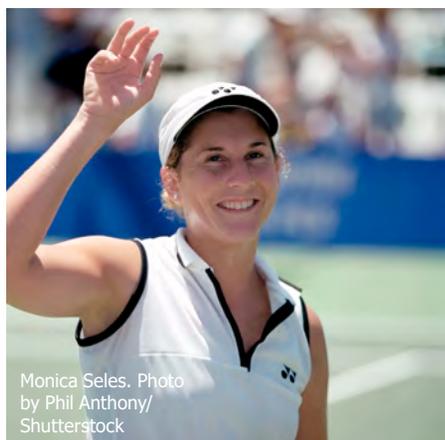
That the decision is not the LEGAD's should be liberating, freeing them to go through the virtuous process of dispassionately and objectively applying the law to the facts without

being overcome by the weight of the decision being made. For this reason (in addition to the importance of maintaining proper command authority), the LEGAD should regularly remind the command that they are not the decision-maker, and most all advice should start with "My advice is", or "I recommend".

There will be times when the LEGADs disagree with the judge's or commander's decision or are disappointed to find their well-researched position is the minority, rejected view. They may be congratulated on their performance, receive an unanticipated award, or their email may go completely ignored. There are many factors outside of our control. LEGADs usually do not get to pick whom they work with or work for. As with other military professions, they do not get to write their evaluation, and they do not have final say on their assignment. Fulfilment is in the process and not the result. You cannot control how your work is received, but you can take great satisfaction in knowing you put together the best product you could. You may receive what you perceive to be an unfair evaluation, work for a tough boss, or even have unfair accusations levied against you. There have been LEGADs significantly affected by "the invisible wounds of combat", as discussed in Dr Jones' lecture in Bruges.³ When we are down, the key is in how we respond.

AT THE AGE of 16, the American-Hungarian tennis player Monica Seles became the youngest winner in French Open history. For three years, she dominated the tennis circuit, winning eight Grand Slam titles, including three back-to-back French Open titles. In January 1993, Seles defeated Steffi Graf in the Australian Women's Open and in April of that year, when a 19-year-old Seles was playing a quarter-final in Hamburg, a Graf fan plunged a boning knife between her shoulder blades. For two years, Seles suffered from PTSD, repeatedly hearing her own scream ringing in her ears and enduring persistent nightmares and depression. After committing to therapy and focusing on living in the present, in 1995, Seles triumphantly returned to win the Australian Open, her final Grand Slam victory. She stated in her memoir that in the end, returning to the court was not about proving anything, but instead "it was about going onto a court and playing great tennis".⁴ It was about the virtue of doing what she loved to do.





Monica Seles. Photo by Phil Anthony/Shutterstock

Following her return to tennis, Seles was contacted repeatedly by fans and their loved ones seeking her help in overcoming major challenges in their lives. Seles would go on to become a Hall of Famer and goodwill ambassador for the UN's Global Sports for Peace and Development Initiative. One lesson from her story is that we have ownership over our minds to recover from any situation or experience. As the psychologist Victor Frankl, a Holocaust survivor, said: "Everything can be taken from a human but one thing: the last of the human freedoms — to choose one's attitude in any given set of circumstances, to choose one's own way."

At the age of 30, Canadian American actor Michael J. Fox was told that he had early-onset Parkinson's disease, and that he had 10 years before the disease would prevent him from acting. After years of working tirelessly in TV and film, Fox was forced to accept that he had a terminal illness. Fox began drinking heavily and suffered from depression. He eventually sought help and stopped drinking altogether. In 1998, seven years after his diagnosis, Fox went public with his disease, ultimately testifying before the U.S. Congress about Parkinson's and becoming the much-needed face for chronically underfunded disease research.

Despite his tremendous success at a young age, Fox would call the years following his diagnosis the best of his life — not despite having Parkinson's, but because of it. In his memoir, "Lucky Man", he describes the disease as a gift that "directed him towards what is right or good".

The stories of Seles and Fox serve to remind us that there will be adversity over which we have no control, and while there is virtue

in overcoming this adversity, the greater truth is that the adversity itself becomes the factor that opens up our path to fulfilment. The keen reader will observe that it took Seles two years to get back onto the court, and Fox struggled for years with the anxiety of being "found out", taking seven years to go public with his diagnosis. The path to fulfilment, to coming to terms with one's circumstances, can be long and arduous. But it is this difficult journey that ultimately becomes the virtue itself.

Stoicism is not about turning a switch. It is not simply about embracing suffering and hardship. On the contrary, one must keenly observe one's feelings — not to push them down and pretend there is no problem, but to understand where to go next.

In Disney's animated film "Inside Out", a young girl named Riley is uprooted from her small-town life and moves to busy, chaotic San Francisco. Her emotions Anger, Sadness, Disgust, Fear, and Joy, brought to life as characters controlling Riley inside her head, disagree on how to deal with this dramatic change. Joy attempts to keep Riley feeling happy and positive

**“Fulfilment is in
the process and
not the result. You
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can take great
satisfaction in
knowing you put
together the
best product
you could.”**

about the move, but other emotions try to steer her away from positivity. As Riley acts out and things start falling apart inside her head, Joy ultimately allows Sadness to take control when she realizes the only thing that is able to shake the girl out of her numb, nihilistic state is allowing herself to feel sad, and sharing that sadness with her parents.⁵

Our emotions are not an enemy to be pushed down and ignored. They are a natural part of us to be understood, acknowledged, and managed. Seles and Fox found the path to virtue by seeking help and developing an understanding of their circumstances. The more we understand ourselves, the easier our path to virtue — to helping others and being honest, kind, appreciative, and humble. Of course, there will be times when we create our own adversity by acting against our own better knowledge. Perhaps we could have prepared just a little more, or we have to circle back to amend incorrect advice or explain a rash comment or apologize for some infraction. This humility, too, makes us better lawyers and better leaders. Humbly admitting one is wrong is as virtuous, if not more so, than sending a perfect memo analysing a complicated legal issue.

A FORMER CHAIRMAN of the Joint Chiefs of Staff, U.S. Army General Martin Dempsey (Retired), said that we understate the importance of humility in leadership; those leaders he admired the most exhibited a sense of humility about the position.⁶ Dempsey also said that a leader cannot be other than who he or she is. The stoic advisor humbly strives to be the best officer and lawyer they can be, taking into account all the relevant facts and disparate viewpoints, and then humbly (but confidently) delivering their interpretation to the command. There will be times when you doubt yourself or feel embarrassed about something you said or did. There may be times where you fail to raise your hand, acquiesce without expressing your reservations, or are too tired and pressed to think through a problem quickly enough to slow down a process that could have used more deliberation.

As an ensign, future five-star Admiral Chester Nimitz (1885–1966) ran the USS Decatur aground in 1907 and was convicted at court martial for hazarding a ship.⁷ Nimitz had failed to check the harbour's tide tables and tried



Batangas harbour when the water level was low. This left the Decatur stuck until the tide rose the next morning and she was pulled free by a small steamer.⁸ Nimitz was found guilty of neglect of duty, but due to his otherwise excellent record and willingness to admit his own fault, he was only issued a letter of reprimand.⁹ Nimitz would go on to be Fleet Admiral of the Pacific during World War Two.

Your career will not be executed perfectly. Understand this, own your shortcomings, and then return to being the most virtuous advisor you can be. Seneca wrote, "The spirit ought to be brought up for examination daily... I pass the whole day in review before myself, and repeat all that I have said and done: I conceal nothing from myself, and omit nothing: for why should I be afraid of any of my shortcomings, when it is in my power to say, I pardon you this time: see that you never do that anymore." Forgive yourself, see the good in every "bad" situation, and understand that you can only control your own actions, without being distracted or concerned about what cannot be controlled.

The Stoic Leader

Many of the qualities that the great stoics espouse translate not only to being a good legal advisor, but also to being a good leader. The stoic lawyer and leader should aspire to make decisions based on two basic criteria, which Marcus terms "the two kinds of readiness". The effect is the development of a sort of "decision tree": 1) Make a decision based solely on the application of the law and guidance from higher authority with the good of human beings in mind, and 2) be willing to reconsider

your decision, but only on conviction that it is right, or benefits others, and not because it is more appealing or popular.

Proper execution of this "decision tree" requires one to keep their ego in check, be approachable, and actively listen to subordinates. A truly wise leader must be tolerant and open to legitimate criticism, selflessly seeking to improve and empower the team without concern for personal recognition. As Marcus writes: When we make others better, "we perform our function".¹⁰

Application of the "decision tree" will also invariably result in speaking uncomfortable truths to power and may also prompt unfair criticism from some. In their works, various stoic philosophers, including Marcus and Epictetus, refer to an ancient saying: "It is kingly to do good and yet be spoken of ill."¹¹ Doing the right thing is all the more virtuous when done in the face of unfair criticism.

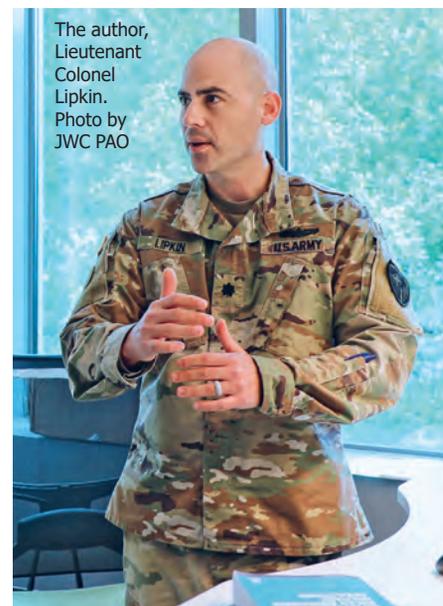
Conclusion

Being a LEGAD is not always easy, but one can take solace, pleasure even, in the virtue of doing the work, and realizing that, if things do not go as one would have liked, it is a learning opportunity to grow and improve. You cannot control the decisions that are made after your advice is given, but you can ensure that the work is done well.¹² If you have a tendency to be overly self-critical, or are subjected to unfair criticism, you control your own reactions, including self-forgiveness.

In the end, our lives are short, and all too quickly our careers will be in the past. The greatest virtue is in being a good human being, speaking the truth, and generally *doing the right thing*. If we focus on doing our best to do our jobs well, giving principled, candid counsel, and supporting our teammates wherever we can, the rest should not matter. ✦

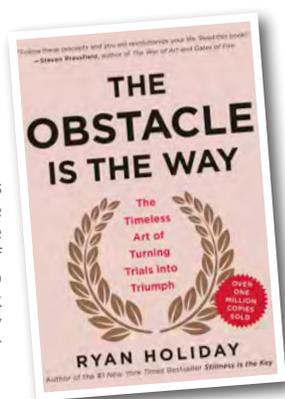
ENDNOTES

- 1 Directive 15-23, Policy on Legal Support, sets out the responsibilities of LEGADs to the NATO Command.
- 2 The JAGC mission is to "provide [principled counsel] and premier legal services, as committed members and leaders in the legal and Army professions, in support of a ready, globally responsive, and regionally engaged Army."



The author, Lieutenant Colonel Lipkin. Photo by JWC PAO

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- 4 Seles, M. and Richardson, N. Monica: From Fear to Victory. HarperCollins, 1996, p. 205
- 5 Lyttleton, O. (June 22, 2015). "Inside Out" And The Vital Importance Of Sadness In Pixar's Blockbuster Hit. IndieWire. <https://www.indiewire.com/2015/06/inside-out-and-the-vital-importance-of-sadness-in-pixars-blockbuster-hit-262727/>
- 6 Duke University — The Fuqua School of Business. Real Conversations with Real Leaders: General Martin E. Dempsey — Chairman, Joint Chiefs of Staff. YouTube, 5 November 2013. <https://youtu.be/Otv8xgq3g88>
- 7 Slavin, E. (May 16, 2010). How Would Admiral Nimitz Have Been Dealt With in Today's Navy? Stars and Stripes. <https://www.stripes.com/news/how-would-admiral-nimitz-have-been-dealt-with-in-today-s-navy-1.102689>.
- 8 Potter, E. B. (1976). Nimitz. Annapolis, MD: Naval Institute Press. pp. 58–61. ISBN 0-87021-492-6
- 9 "USS Nimitz (CVA(N)-68)". Dictionary of American Naval Fighting Ships. Navy Department, Naval History and Heritage Command
- 10 See "Meditations", 6:16: "So we throw out other people's recognition. What's left for us to prize? I think it is to do what we were designed for."
- 11 See "Meditations", 7:36 and The Golden Sayings of Epictetus; different translations exist for this saying.
- 12 Doing the job well most often requires adhering to what the U.S. Army JAGC refers to as the "Four Constants": substantive mastery, stewardship, servant leadership, and principled counsel.



Ryan Holiday's "The Obstacle is the Way: The Timeless Art of Turning Trials into Triumph", a book recommended by the author



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(From left)
Major General
Piotr Malinowski,
Commander
JWC; Mr Bent-
Joachim Bentzen,
Norwegian State
Secretary and
Deputy Minister
of Defence; and
Mr Thorbjørn
Thoresen,
Director General
of the NDEA.
Photo by
JWC PAO

Ribbon-Cutting Ceremony Marks the Re-Opening of the Joint Warfare Centre's In-Rock Facility

Exercises are
about to get
even better!

THE JOINT WARFARE CENTRE (JWC) and the Norwegian Defence Estates Agency (NDEA) held a ribbon-cutting ceremony on September 28, 2022, to celebrate the re-opening of the JWC's In-Rock Facility, following a two-year modernization project. The ceremony was jointly hosted by Major General Piotr Malinowski, Commander JWC, and Mr Thorbjørn Thoresen, Director General of the NDEA. It was presided over by Norwegian State Secretary and Deputy Minister of Defence, Mr Bent-Joachim Bentzen, who also delivered the keynote speech.

The modernization project of the In-Rock Facility, funded by NATO and carried out by the NDEA, involves extensive upgrades of infrastructure and communications and information systems (CIS), enhancing the JWC's capability in delivering high-quality exercises to address the defence and security needs of the Alliance. Distinguished guests attending the ceremony included Ms Lone Merethe Solheim, Deputy County Governor of Rogaland; Colonel Morten Anderssen, representing the Norwegian Joint Headquarters; Colonel Waldemar Torbicki, the Polish Defence Attache.





Clockwise: Major General Piotr Malinowski receives a plaque from Mr Bent-Joachim Bentzen; Major Arne Olsen and Mr David Keane from the Protocol Office; members of the press at the Combined Joint Operations Centre; Wing Commander John Rees addressing the guests. Photos by JWC PAO

ché, local military commanders and members of the media.

Following the ribbon-cutting ceremony, the event moved on to the situation centre inside the facility. As the first speaker here, Mr Thoresen, the Director General of the NDEA, said that his team was proud to be a part of the modernization project, which started in October 2020.

"We are an administrative agency subordinate to the Ministry of Defence. Our primary tasks relate to the planning, construction, administration, leasing and sale of defence estates and properties," Thoresen said, adding: "This can be a high-tech training facility for our special forces, a regular barracks where our soldiers live and sleep, office buildings where missions and daily operations are planned, bases for our fighting aircrafts and rescue helicopters, weapons, and training areas. Or it can be what we reopen today, a state-of-the-art educational and training facility that you, our good friends and allies, use to prepare for your mission: Defend freedom. Defend NATO. Defend Norway."

Speaking next, Major General Piotr Malinowski underlined that the new facility made an ideal setting for future command post exercises. The Commander said: "NATO's investment in this facility highlights the confidence in the Joint Warfare Centre's important collective training mission to ensure sustained readiness of our forces in the face of all challenges. This project is also a true testament to the strong bonds of cooperation and partnership between the Kingdom of Norway and the NATO Alliance."

The Commander added: "I see this modernized In-Rock Facility as an added value to our delivery of quality training, demonstrating our determination to make NATO better."

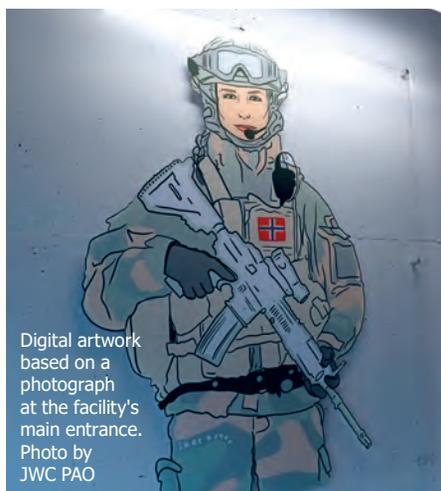
Following the Commander's remarks, Wing Commander John Rees MBE, the JWC's Resources, Analysis and Planning Branch Head, briefed on the Centre's mission as NATO's footprint in the North. He said: "The Joint Warfare Centre is purpose-built and holds the entire communications infrastructure to run exercise control and support a training audience who may wish to deploy to Stavanger for an exercise. There is sufficient IT to furnish exercise control as well as establish a warfighting headquarters. The training audience sits at the heart of every exercise we conduct, and the Centre provides



The flags of the NATO member countries at the entrance to the facility. Photo by JWC PAO

the wrapping around it to ensure that it is a truly immersive environment. We provide highly realistic and demanding training. If during the execution of an exercise the training audience feels the presence of an exercise control, then we failed in our task."

The In-Rock Facility provides the JWC's second combined joint operations centre and additional training space, including multi-functional office spaces accommodating up to 600 people, meeting rooms, a real-life support office, and a CIS service desk to facilitate delivery of NATO's most complex computer-assisted command post exercises (CAX/CPX), directed by the JWC. NATO Communications and Information (NCI) Agency's CIS Support Unit in Stavanger played a major role in the CIS upgrades in the In-Rock Facility. In close conjunction with several of the Agency's business areas, the CSU supported the NDEA in



Digital artwork based on a photograph at the facility's main entrance. Photo by JWC PAO

design, planning and implementation of cutting-edge CIS technology to provide the JWC a state-of-the-art training facility that is in line with the Centre's current and future demands.

In his keynote speech, Mr Bent-Joachim Bentzen, Norwegian State Secretary and Deputy Minister of Defence, thanked everyone involved in the project.

"Many projects funded through the NATO Security Investment Programme have been implemented by Norway acting as host nation since the establishment of the Joint Warfare Centre in 2003," Mr Bentzen said. "One major milestone was reached when the new facility for both permanent and training staff was opened in 2011. However, the training activity has increased over time, and a new major milestone is reached today when a fully refurbished In-Rock Facility is made available for NATO use."

Mr Bent-Joachim Bentzen highlighted the cooperation between the JWC and the Norwegian Armed Forces, saying: "We are deeply appreciative of your important work for planning and running big exercises. This is important for NATO, as well as for Norwegian fighting capabilities. Norway deeply values NATO's presence in our country. We will continue to actively support this presence."

The Deputy Minister then presented Major General Malinowski with a plaque to mark this special day. ✦

By Inci Kucukaksoy
NATO International Civilian
Public Affairs Office
NATO Joint Warfare Centre



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The Joint Warfare Centre Welcomes its New Deputy Commander and Chief of Staff

Brigadier General Mark A. Cunningham ★



THE JOINT WARFARE CENTRE (JWC) welcomed its new Deputy Commander and Chief of Staff, Brigadier General Mark A. Cunningham, on August 29, 2022. Brigadier General Cunningham most recently served as the Deputy Commander of the U.S. Marine Corps' Force Headquarters Group.

After participating in the JWC's comprehensive Newcomers Programme (an in-depth introduction to the organization as part of the initial onboarding process) and a variety of introductory and staff meetings, Brigadier General Cunningham hosted his first all-hands call in September.

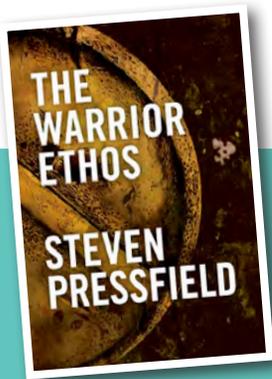
During the event, Brigadier General Cunningham introduced himself and spoke about his family and the values and principles that guide him in life. Brigadier General Cunningham noted that his first observation about the JWC was its "great mission and even better people" saying that he was very excited about joining such a professional and competent team. "I know that I am going to enjoy being here and serving with you in the next two years," he said. "But please remember that, more than anything else, I am here to enable your continuing success."

A native of Lancaster, Ohio, with a residence in Dayton, Ohio, Brigadier General Cunningham enlisted in the Marine Corps in 1992 and was commissioned as an officer in 1996. He is a graduate of The Ohio State University, University of Dayton, and the U.S. Air War College. Brigadier General Cunningham has a broad and extensive experience in counterterrorism and intelligence analysis, including the senior intelligence analyst position for a joint task force in support of Operation ENDURING FREEDOM in Afghanistan in 2011, where he provided intelligence for more than 110 combat operations.

As for his expectations of the JWC's One Team and his personal organizational culture philosophy, Brigadier General Cunningham shared his three principles: 1) Treat everyone with dignity and respect; 2) take care of each other; and 3) do your job, but even more importantly, do your duty. The latter, he explained, must be based on a clear sense

of purpose: "NATO readiness is crucial and that's why the JWC exists. What I like to have everybody do is: Wake up in the morning and feel energized, because you are contributing to something great and have a clear purpose behind what you are doing every day."

The Deputy Commander said he also valued hard work, warrior ethos, resiliency and honest feedback. ✦



Steven Pressfield's "The Warrior Ethos", a book recommended by Brigadier General Cunningham

Steven Pressfield, a former Marine, writes in "The Warrior Ethos": "Directed inward, the Warrior Ethos grounds us, fortifies us and focuses our resolve (...) Let us be, then, warriors of the heart, and enlist in our inner cause the virtues we have acquired through blood and sweat in the sphere of conflict — courage, patience, selflessness, loyalty, fidelity, self-command, respect for elders, love of our comrades (and of the enemy), perseverance, cheerfulness in adversity and a sense of humor..."

Interview with the JWC Commander's Special Advisor, Commodore Knut Rief Armo ★

Royal Norwegian Navy Commodore Armo, whose awards include the National Service Medal, Defence Service Medal, Defence Operation Medal (Afghanistan) and NATO Non-Article 5 Medal (Afghanistan), assumed his position at NATO's Joint Warfare Centre on February 3, 2020. After 40 years in service, he will retire in 2023.



Commodore Knut Rief Armo
Royal Norwegian Navy
Special Advisor to the Commander
Joint Warfare Centre

Sir, thank you very much for this interview. You joined the JWC in February 2020. As your time here draws to a close, how do you feel about your assignment at the Centre? What will you remember most?

— I have had three really interesting and exciting years at the Joint Warfare Centre. The membership in the Alliance is a cornerstone in Norway's security policy and therefore NATO vocabulary, techniques, tactics and procedures also saturate all processes in the Norwegian

Armed Forces. I've always felt that I have been a part of NATO throughout my career. When I started at the Naval Academy, our first classes were about NATO maritime and air tactical codes. The NATO tactics, techniques and procedures, as well as the NATO lingo, were a natural part of the way we conducted our war-fighting business at sea.

Later I served at Headquarters Supreme Allied Commander Transformation and in International Security Assistance Force, and I studied at the NATO Defence College in Rome. It has been a privilege to have had this new opportunity to work for a NATO entity here at the Joint Warfare Centre.

The Centre is a highly professional organization filled with extremely dedicated, experienced and knowledgeable personnel from all the contributing nations. The pandemic in particular showed how agile and flexible this organization is, as our personnel smoothly adapted to the situation and delivered exercises throughout that period despite the hurdles created by COVID-19 restrictions. So it has been a true pleasure to work with all these fine people, both military and civilian. That is also what I will think back on most fondly and what I will miss when I leave.

What unique role do you feel that the JWC plays for NATO and our host nation Norway?

— To my knowledge NATO is the only political security alliance that has a military core in the form of an established command structure and a force structure. To be the intended deterrence tool for its members, this military organization always has to be vigilant and well prepared, and therefore it has to exercise its role regularly. The Joint Warfare Centre is the

primary deliverer of the exercises for NATO's strategic-, operational- and upper tactical-level headquarters, so it plays a vital role in producing the Alliance's deterrence.

Norway takes pride in being the host nation for the Centre, as this affords our small nation the opportunity to contribute to the Alliance and take our share of the burden. At the same time, there is a political aspect to hosting the JWC that shows both our Allies and our adversaries that Norway is a part of NATO and that we take our membership very seriously.

Can you please explain why is diversity valuable and important to you?

— NATO today consists of 30 member nations, probably soon to be 32, and their military organizations. Each of these member nations come with their own language and culture. This diversity can be a challenge, but it is also a strength. In NATO's military joint operations, complex as they are, these nations have to work together in all dimensions, not only through coordination, but elevated to a higher level of collaboration. Thus, we need interoperability in all aspects of our business. In dealing with these challenges, NATO has developed a common vocabulary, a shared set of doctrines, and tactics, techniques and procedures. All of these efforts serve to smooth out our differences and facilitate our work. Simultaneously we should never forget to further develop our ways of conducting warfare to better meet the challenges of tomorrow. Through diversity, we all bring to the table new ways of thinking and solving the challenges of tomorrow. In that respect, we capitalize on diversity in warfare development. Diversity makes us more creative together, and it makes us stronger together. ✦

Building a Diverse, Innovative Team at the Joint Warfare Centre

In each issue of *The Three Swords*, we ask a JWC staff member about their views on service, culture and leadership. This time we speak with Colonel Bente Sleppen, the Centre's Director of Management.



Colonel Bente Sleppen
Royal Norwegian Air Force
Director of Management
Joint Warfare Centre

Colonel Sleppen, thank you very much for this interview. Before being assigned to the JWC in March 2022 as the Director of Management, you had various key assignments in the Norwegian Armed Forces. Can you tell us about some of them and about your most important takeaways from these positions?

— I started handover/takeover on March 28, 2022 and took over the position as the JWC's Director of Management on April 1. My previous assignments to highlight include: I was Head of Department for the Senior Executive

Course at the Norwegian Defence University College, and at the same time held the position of Principal Aide to His Majesty the King of Norway. I served as Assistant General Director at the Norwegian Ministry of Defence, working with personnel and competency policies in the defence sector. I also spent four years in the Norwegian Military Mission at NATO Headquarters in Brussels.

Before I came to the JWC, I was the head of the Senior Executive Course at the Norwegian Defence University College. The 12-week course is the top tier of the national education for officers and also for personnel in the civilian and private sector. The course provides key high-ranking personnel with comprehensive knowledge and insights on Norwegian foreign, security, and defence policies as well as important factors and external forces driving these policies. The participants are also introduced to the structure, systems and actors in the concept of Total Defence of the country. I have learned how the mobilization of the Total Defence and civilian cooperation systems for crisis management and public security is linked with Norway's "whole of government" approach for maintaining security and order in times of crisis, conflict and war. It has been a great learning experience to be part of creating networks that are important and beneficial to our country and to contribute to enabling our society's resources to be used in concert in times of crisis.

How do you feel about serving at the JWC?

— To work at the JWC and with NATO is especially interesting now in light of NATO's new Strategic Concept and everything we need to strengthen, change and adapt to make NATO better. The role of Director of Management at

the JWC is very interesting in many ways. I feel it is more challenging to work in an international setting than in a national setting. Challenges inspire me and motivate me to learn more and expand my horizon.

An international environment demands more of my leadership because leadership, direction and guidance must take into consideration that we communicate in a language that is not everyone's primary language, which can create more misunderstandings and uncertainties. Communication is already challenging as it is, so here you have extra layers to consider and understand. Things can get lost in translation, a nation's honour codes can unintentionally be overstepped, there are culture differences between the nations' armed forces, differences between military and civilians, between superiors and subordinates — all of these aspects can be challenging, but also very interesting to learn from.

I like working with a diversity of people. I also find it very interesting to work with people's professional development and the JWC's organizational improvement. Hopefully, I will be able to make a difference. As Director of Management, I have the privilege to work with many very talented and experienced colleagues. In that sense, I find the working environment both challenging and very rewarding.

How would you define your leadership style?

— My leadership adapts to context, but the core of my leadership is based on my values, my strong personal integrity, my basic trust in people and their ability to collectively find good solutions through involvement, inclusion, direction and guidance. I consult and listen actively to my colleagues, even more so



when I lead organizations with very high and broad competence and experience. I strive to be clear and concise, as visible as possible despite very busy days, and able to act efficiently. I always want to find the core of a problem, instead of merely identifying the symptoms of a problem. I believe I have an open, positive and genuine, intention-based leadership style and the ability to influence and create movement.

Why do you think diverse organizations have better performance?

— People often think about diversity along the lines of gender, sexual orientation, background, culture and ethnicity. I find that it is the sum of all of our personal traits and expressions, competency and skills — the variety and composition of people. Different people have different qualities, and it is this dynamic that creates a workplace, creates an organization and creates development and smart solutions. It is a strength we must embrace. To recruit a workforce in our own image, or only acknowledging education and backgrounds that resemble our own, does not get us far.

What diversity at JWC boils down to is the ability to create and produce exercises and training for the future, in the framework of an increasingly complex and unpredictable world. The JWC needs to stay ahead, offer new ideas and continue to be proactive. If we do not understand the value of embracing diversity, you could say we are standing in the way of staying relevant. At the JWC we state that we are the bridge between Headquarters Supreme Allied Commander Transformation (HQ SACT) and

Supreme Headquarters Allied Powers Europe (SHAPE), and we firmly believe in that statement. But more precisely it is the exercises we produce here at the JWC that constitute the bridge. The exercises create the venues in which the warfighters in Allied Command Operations are exposed to HQ SACT's warfare development efforts, and this fuels both the processes of further development and the implementation of new concepts. We need to aggregate professionalism, curiosity, creativity, thoughts, designs and smart solutions from all of our excellent colleagues to enable innovation and development of NATO's capabilities. That is how we make NATO better.

How do you as a leader seek out diverse perspectives and what value do they bring?

— I am impressed with the JWC's ongoing work with the Insights programme. Personal insight helps us understand diversity and how it affects communication, cooperation, tolerance and efficiency. I think we are on the right track here. As I have already mentioned, I believe that recruiting a workforce that is different from you in any of the aspects we have

talked about is of value to an organization. The same goes for always being conscious of how you put together teams such as core teams and working groups. I think that it is important to keep building a safe working environment where it is accepted and appreciated that new ideas are brought forward and discussed. That yesterday's truth can be challenged, not for the sake of just protesting without any new concrete suggestions, but for broadening mindsets in a constructive way and giving our leadership the best basis for decisions. Most of all, I think the most important diversity perspective is how we work on ourselves to allow different opinions and suggestions to be brought forward. It is easier said than done sometimes.

How do you see the cooperation between the JWC and the Norwegian Armed Forces?

— I believe there is a good cooperation between the JWC and the Norwegian Armed Forces, and I see a growing demand for use of our facilities, and for military groups visiting us for professional development purposes. There is good cooperation with the Norwegian Defence University College, and we have a cooperation agreement with the Norwegian Joint Headquarters. Maybe there is potential for the Norwegian Armed Forces to be more curious about learning from the JWC's excellent staff in planning and executing exercises.

Is there anything else you would like to add?

— I would like to learn more about what people in Stavanger and in Norway know about the JWC. NATO stands in very high regard in Norway. I still get the feeling that knowledge about the JWC could be broader, both within the Norwegian Armed Forces and the civilian community in Norway. I would like to learn more about this through a survey, so we can understand how to promote ourselves even better and benefit from this insight. Stavanger is a great place to live. The JWC is a great place to work. Our production of exercises and training is essential to NATO and essential to our security. It is important that our mission is widely known in order to strengthen knowledge, reputation, recruitment and cooperation. ✦

The Three Swords Diversity Series Interviews by Paul Sewell • Sarah Denieul • Inci Kucukaksoy

“What **diversity** at JWC boils down to is the ability to create and produce **exercises and training for the future**, in the framework of an **increasingly complex and unpredictable world**.”



"Time out of our schedules to develop our teams is never wasted. Outside of our battle rhythm bubble is where the real development occurs."

ORGANIZATIONAL OSMOSIS

Developing Teams Outside the Battle Rhythm



ABOVE: Staff members participating in the Insights programme at the JWC.

by Paul Sewell
NATO International Civilian
Organizational Development and Culture
NATO Joint Warfare Centre

REGARDLESS OF how educated or experienced we are, much of our working days run on habit and routine. Our daily commute, the weekly battle rhythm, and even our lunchtimes with colleagues can become mindless and repetitive. We shuffle from meeting to meeting, from task to task.

With routines and habits shaping our "habitual" lives, we barely find time to stop and reflect. We are constantly moving from different bubbles of reality throughout our days: meeting mode, focus mode, planning mode, and so on. This habitual structure of our minds

also affects our perception of time, allowing it to pass more quickly than we wish: It is Monday, Friday, then suddenly Monday again. We are in December but swear that we were just in October. Many of us are also at an age where we wonder where the decades have gone! Research supports this, revealing that our perception of time quickens as we age.

As we run on autopilot through our everyday routines, we hardly stop and notice what is new or different. Our busy tunnel vision, filtering out the novel around us, leaves us at the mercy of our minds' biases and blind spots. Who we are also shapes what we see. All of our attributes and roles in life add extra fil-



ters affecting our view of reality. These include our national culture, gender, military service, age, and personality preferences, and all of them can obscure our effectiveness in working with others, particularly considering the diversity within NATO.

Reflection Is the Answer

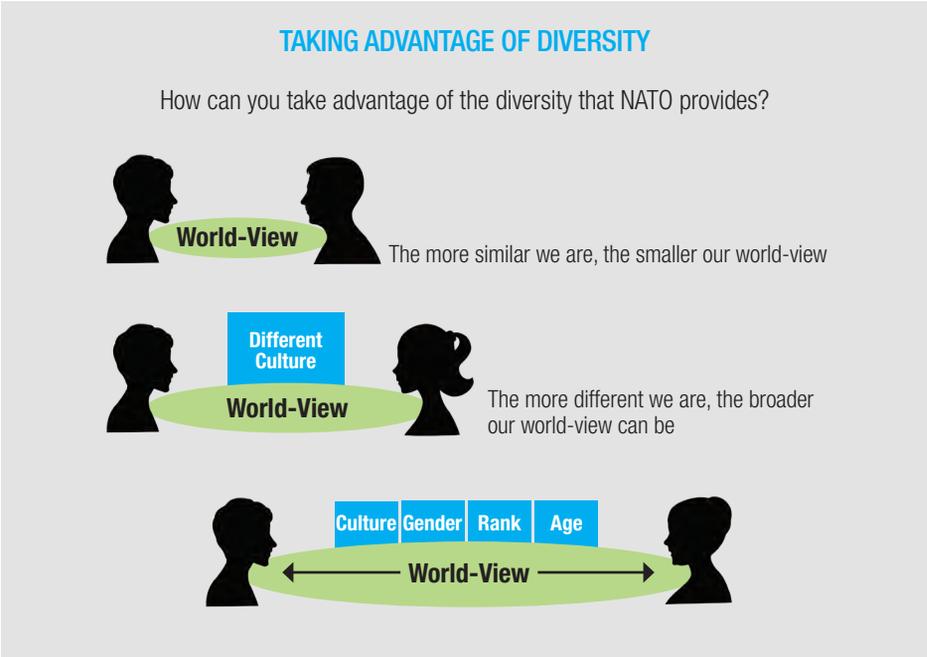
The antidote is reflection. Reflection helps us stop and lift our heads above these blind spots that blur our perceptions. It gives us the mental space for new ideas and perspectives to arise. To reflect on something is much like waiting for ripples on the surface of the water to subside so that we can see deeper. In most cases, reflection is a solitary pursuit. However, we are never fully self-aware from our own reflection; we need feedback from those around us. This is why it is vital for teams to take time out of the battle rhythm to grow and develop.

Reflection in Teams

In any up-and-running organization, team development is rarely a priority. Within NATO, teams may work together for years and not know much about each other beyond names, ranks or nations. But when we look beyond these simple labels, we uncover the rich diversity and experience in our teams, something that benefits NATO greatly.

Unlike many other industries and organizations, NATO does not always get to choose its teams. Team members are not selected by one group of superiors, but by many different nations. Often this works seamlessly, but there can be team constellations where more work is required. Teams full of experience and potential may be rendered less productive by misunderstandings or differing perspectives between the team members. When left unaddressed, a simple misunderstanding can often evolve to threaten the team dynamics, bringing productivity down.

It is understandable that these frictions can occur, particularly when working with diverse, multicultural teams: Your own team likely comprises colleagues from different nations, services, genders, and/or generations. If teams take time out to get to know each other, they often operate far more effectively and at a more efficient tempo.



Organizational Osmosis

What is required is more of an "organizational osmosis" within our teams. That is, the ability for our teams to step out of their "routine reality" bubbles to better absorb perspectives, practices, and ways of working from those around them. This ultimately leads to an expansion of our own worldviews, making us more flexible and adaptable to the world around us.

This, however, rarely happens by chance and we remain caught in the work routines that carry us through the days, weeks and years of our working lives. Instead, these opportunities must be cultivated. The solution is to make the conscious decision to take time out of the battle rhythm to focus on your teams' ongoing development. When a team is able to do so, the



The One Team programme comprises various modules and activities. Photo JWC PAO



ONE TEAM PROGRAMME



ABOVE: Paul Sewell at the two-day workshop for the NATO Science and Technology Organization Collaboration Support Office. The workshop's aim was to build a solid foundation for their teams, but also to support the organization's future vision. Photo by Marc Durand

time is rarely wasted; in fact, the benefits can be astonishing.

Below are some considerations and real-world examples facilitated by the author within both the Joint Warfare Centre (JWC) and other headquarters over more than a decade.

The ability to get to know each other better.

Conducting events out of the battle rhythm allows people to drop their normal work roles. It also gives them license to show their other roles and sides. The JWC's One Team programme for our newcomers has been specifically designed for this purpose. Throughout the day's modules and activities, the new staff uncover together how they are similar and different, while building connections for later benefit.

The value of being in another environment/context.

Bringing teams together in other environments also has great value. Experience shows that when people are together in a different location, they can be less restricted in their thoughts and actions. In other contexts, people can see themselves, their teammates, and/or the task or challenge more broadly.

Instead of the normal labels we use with each other in the work context (boss, subordinate, colleague, etc.), we can discover more about each other and the various roles that we inhabit. You may discover that the colleague you have been working with is also a father to two teenagers, a coach for the local

football team and a motorcyclist who likes the idea of riding 200 kilometres just to buy an ice cream. Which facts we learn in these moments is relatively unimportant compared to the added benefit of seeing beyond the normal two-dimensional view of our colleagues. Our interactions often become easier and quicker, and we are able to talk about things that we may have avoided in the past.

BELOW: (Top) The author leading the Insights programme at Allied Joint Force Command Brunssum. Photo by Leo Roos (Below) Kaire Hallik, instructor, during a workshop. Photo by JWC PAO



Creating a strong collective experience.

When a large team or a whole organization participates in a team event, it becomes a bonding experience in and of itself and a strong collective memory for the team. A recent example was outreach work with NATO's Science and Technology Collaboration Support Office in Paris. The two-day workshop for this small, dynamic organization integrated a short cultural trip to Les Invalides, which includes Napoleon's tomb. The event provided a strong positive collective memory as the participants toured this awe-inspiring location together.

Another example was a strategy planning meeting for an exercise team conducted some years ago. They had recently finished a major stage of the exercise planning and were poised to begin the next stage. This workshop was conducted in the mountains of Sirdal, west of Stavanger. Before beginning the day's workshop, the team took a short hike up a nearby mountain, which offered a glorious panoramic view of the region. Beyond the obvious social and physical benefits of the hike, the view provided the strong metaphor of scanning the horizon for what lay ahead and carried into their discussions throughout the workshop as they planned the future strategy.

Similarly, with any team development, the foundations developed in these external events inevitably serve us when we return to the normal work context. The robust characteristics of a strong team such as trust, shared understanding and alignment around a common goal become so much easier to achieve. It is when we have the space to stop and reflect beyond our labels that we allow our teams to bond over our shared humanity.

All successful team development and reflection events have a common denominator that should be underlined: They provide the mental and psychological space for fresh thoughts to arise that can be difficult to see in our normal habitual patterns of work.

We must take team reflection seriously if we are to remain effective in our support to NATO. It should not be left to chance, and it belongs in our calendars as we plan the year ahead. This time out of our schedules to develop our teams is never wasted and the benefits can exceed what we are able to imagine. Outside of our battle rhythm bubble is where the real development occurs. It is only here that we finally realize what sets the best team apart: It is the team that takes time to talk. ✦

EXPLORING SOUTHWESTERN NORWAY

THE OUTDOOR LIFE OF THE JOINT WARFARE CENTRE

by Lieutenant Colonel David Ethell
British Royal Marines
Content Branch Head
NATO Joint Warfare Centre

Bike, check. Kayak, check. Skis, check. Critical information requirement: Am I going to need a mountain or road bike? A river or sea kayak? Downhill or cross-country skis?

A tour of duty at the Joint Warfare Centre (JWC) is not all about preparing and delivering large-scale command post exercises and everything this entails. For me, moving to Norway was also a chance to explore the great outdoors. My two previous visits to northern Norway for Arctic warfare training in the late 1990s had already assured me that the Norwegian outdoors are indeed great.





Photo on previous page by Johannes Bluemel/Shutterstock. All other photos by the author.



ARRIVING IN STAVANGER in summer 2020 was a welcome relief. Norway's internal infection control measures were somewhat less stringent than those in most of Europe, the days were long, and the sun was remarkably warm. In addition to my wife and our cat, I had brought along with me two friends who were going to take two weeks to cycle back home to the French Alps.

After unpacking for a day, we headed out for a two-day bike ride to the south coast city of Kristiansand with one of my new colleagues leading the way. Immediately south of Stavanger, we were met by lush fields and healthy-looking cows busily chewing their cud. The many cycle paths, gentle slopes and warm weather made for very pleasant riding.

On the route were a few World War Two fortifications, and as we approached the Magma UNESCO Global Geopark, the terrain changed to short and steep rolling hills, many lakes, and rounded boulders. On the outskirts of Egersund, our guide turned to head back to Stavanger, some 70 kilometres north of us. My friends and I headed further south on our own. The hills from here became steeper, slowing down our progress. With the steeper descents to sea level and the many river crossings, this stretch was harder work. However, the beautiful landscape and the picturesque villages we passed made it worthwhile.

Early on the second day, our route took us to Jøssingfjord, which included a descent through an old tunnel with large windows cut into the rock wall giving great views over

the fjord. As I cycled along, catching the view where I could, I had to stop sharply to avoid running into a hammock slung across the tunnel. Unbeknown to me, hikers and travelers regularly camp in the tunnel. Unfortunately, there were no signs to make early-morning cyclists aware of the practice!

Seven months later, I found myself skiing uphill, wondering why I could not get enough grip, even with the herringbone technique. My destination was a cabin at Taumevatn lake owned by the Norwegian Trekking Association DNT. The association operates hundreds of cabins throughout the country and marks and maintains thousands of kilometres of footpaths. During the winter, this includes the "kvistekart", literally "twig-map", which shows where ski trails across the fells and frozen lakes have been marked with twigs and branches.

My route to Taumevatn involved a steady climb of about 500 metres, largely on a closed road and paths. My skis were a pair of old and well-used touring skis with metal edges but requiring grip wax on the area directly under the foot. Despite my best efforts with a variety of grip waxes, the well-polished icy surface was as

smooth and hard as glass and easily defied both my wax and metal edges. As I reached a peak on the route, I spotted a danger sign in Norwegian, warning of avalanches. Moving quickly through the area, I followed the twigs across the first of several frozen lakes before climbing a small summit with a cairn marking the trail. Despite being a handy Telemark skier, snowploughing turned out to be quite a challenge.

Across the next lake there were multiple tracks leading to various cabins. Checking my map, I opted for one of the most prominent tracks. But when I had arrived at the cabin, I soon realized it was the wrong one. Backtracking a few hundred metres, I then broke my own trail through soft snow to the edge of the lake. As I did so, I realized that one of the smaller trails did, in fact, lead here. A few kilometres further on, as I came over a rise, I had a snowy vista of frozen lakes and high ground in the distance. Clearly silhouetted against the white features was the dark shape of the Taumevatn cabin, close to the lakeshore.

As the light started to dim, I was glad to meet up with my neighbours, Ben and Jo. Luckily, we had the whole cabin to ourselves; it was a "self-service" type of cabin with a pantry full of long-lasting provisions. As with many things in Norway, it is operated entirely on a trust basis. You can leave cash in a lockbox in the cabin or wait until you have access to the DNT website to pay online for what you use. As well as having bunk rooms for up to 30 people, the cabin had a spacious kitchen and lounge with a dining area, equipped with a wood burner, gas stoves, solar panels, and a well-maintained bathroom cabin about 30 metres away from



the main cabin. Although too polite to say so, I think Ben and Jo were secretly pleased that the cabin guitar was missing a few strings so that they didn't have to endure my small repertoire of sing-along songs!

The following morning, Ben and Jo decided that they would return via the same route on which we had arrived. I opted for a round-about route going further to the north and west before heading south to pick up the original track. The weather was overcast with low clouds, giving rise to the phenomenon of "flatlight", in which it becomes difficult to see shadows or focus on the surface of the snow. This makes it tricky to distinguish features on the ground immediately in front of you (as you inadvertently ski into piles of snow or make unexpected drops). Depending on your constitution, it can lead to motion sickness as you struggle to make out your surroundings.

While the existing ski tracks were difficult to see, the twigs marking the route were clear. My path wound its way north for several kilometres before I arrived at a signposted junction, at which I headed west.

There is nothing quite like being alone in the wilderness, and although I was following a marked trail, I could see no signs of other people and had no idea when the trail would next be traversed. On such occasions, I take some pleasure in playing mind games with myself to work out how I would deal with an emergency. Although I was carrying a fully charged mobile phone, and the DNT mapping app shows you GPS-derived position, I was in an area with no phone signal. What would I do if the weather changed? If I broke a ski? If I fell and became injured or woke up in the dark?

Like pilots planning their diversion airfields, I was constantly thinking about which direction I would choose to seek safety, the route to the previous and next cabin, and the myriad of factors that I would need to consider in the event of a problem. In addition to the phone, I was carrying a paper map, compass, whistle, food, water, a strobe light, a high-visibility air panel and some additional warm clothing. The weather was forecast to deteriorate slightly during the day, but I was not unduly concerned. The map and compass were going to be useful in getting me home, but the "micro-terrain" of lumps, bumps, small rocky outcrops and corresponding drops that don't appear on a map can make navigation difficult, particularly when

the light is flat. I lost the path a couple of times, fell on some descents, and found a few unseen snow drifts, but eventually made it to the road leading south of the Storevatn reservoir dam. I soon found the twigs alongside the road and took some shortcuts across lakes. Approximately five hours after waving goodbye to Ben and Jo, I arrived back at the Sirdal cabins from where I had started the previous day.

The JWC Community Support team does a great job in organizing events for the staff and their families, to help meet each other, to settle in, and to experience all that this part of Norway has to offer. One of the first events that I participated in was a day trip to the roadless hamlet Flørli, which lies in the spectacular Lysefjord and is home to the world's longest wooden staircase. The ferry along the Lysefjord, which is the only way to reach Flørli, passes under the foreboding, world-famous cliff Preikestolen, known in English as Pulpit Rock. Flørli is the site of a disused hydroelectric plant. The 4,444 wooden steps of the staircase lead from the plant up to Ternevatn lake. Accessible only from the fjord or by an arduous 15-kilometre hike from the nearest roadhead, Flørli is synonymous with the peace and natural beauty of this part of southern Norway and is a must for any adventurous visitors who have a day to spare.

Given a short period of good weather, my plan was to kayak to Flørli, spend a day exploring and then paddle back to Stavanger. An hour after departing from my local beach, I passed to the south of the island of Tingholmen and entered the Høgsfjord, a large body of water extending some 20 kilometres in a north-west/south-east direction. Some way along the Høgsfjord is the entrance to the Lysefjord, which extends 45 kilometres to the east with Flørli just over halfway along on the south side. The weather was perfect, cool with no wind, making for easy kayaking. On the way, I spotted a couple of seals and a few porpoises, which are common in this area. During a previous kayak trip in the Høgsfjord, I had disturbed a pair of large sea eagles from their perch in a tree, but no eagles were to be seen this time.

Despite a well-loaded boat, I made good time and crossed the Høgsfjord in a straight line to Oanes, the mouth of the Lysefjord. Another huge body of water and more than one kilometre wide for its entire length, Lysefjord

is lined by steep terrain and cliffs on both sides, and the lack of exit points can be intimidating. Undeterred, I paddled under the bridge linking Oanes on the north shore with Forsand to the south and entered the fjord.

Given the high ground on either side of the fjord, the weather in Lysefjord can be unpredictable, with gusts of wind appearing from nowhere and highly localized conditions. Passing under the heights of Preikestolen, I could easily pick out the square shape of the cliff some 600 metres above me and make out some ant-sized people peering over the edge. After six and a half hours of paddling, I arrived at Flørli.

After a chilly night, I readied myself and set off up the wooden steps. I'd had an idea that I might try to head to Kjerag, the famous mountain with a large chockstone that overlooks the eastern end of the Lysefjord, but the deep snow near the top of the steps soon made me realize that this trip would have to wait until warmer weather. Instead I opted for a lap of Troppekosknuten, the 900-metre peak that dominates the high ground above Flørli. It was a cold but clear day with bright sunshine granting fantastic views. After a brief lunch in the sun just below the summit, I followed the well-marked paths back to Flørli, taking in views of the waterfalls and a jutting rock formation that looks like a smaller copy of Norway's famed Trolltunga ("the troll's tongue") on the way.

BELOW: The wooden staircase at Flørli





ABOVE: (Clockwise) Looking back along the Lysefjord; the author at Troppekosknuten; campsite in Flørli, halfway along the Lysefjord

Back down at the campsite, I was pleased to have the company of Tom, a local retired firefighter and a very experienced kayaker. As we cooked and ate our evening meal together, we exchanged tales of previous adventures. I like a good kayak trip, but I could not compete with Tom who had previously kayaked the entire length of the Norwegian coast from the Russian border in the north to the Swedish border in the south. He completed the almost 3,500 kilometres in 90 days!

The following day, Tom and I paddled along the Lysefjord in perfect conditions, the steep walls of the fjord reflected in the perfectly still water. Tom accompanied me as far as Hengjanefossen, a waterfall nicknamed "Whiskey Falls" close to Preikestolen, before we parted company. As I paddled towards the entrance to the Lysefjord, I was conscious of the weather forecast and increasing wind. Approaching Oanes, I could feel the wind on the water and boat, but the sun was shining and giving me some warmth. Rounding the corner and entering the Høgsfjord, short clean waves were rolling down the fjord towards me. I used the "ferry glide" technique for about three kilometres to cross the Høgsfjord diagonally to the island of

Ådnøy, from where I would be able to paddle up the west side of the fjord and get a little shelter from the increasingly rough conditions.

Rounding the top of Ådnøy, I was able to take a respite, but this was short-lived. I was soon bearing the brunt of a strong wind and white-capped, wind-blown waves, giving very choppy water. My preference to paddle between 50 and 100 metres from the shore for a sense of security became a problem. As the shoreline changed from beaches and low rocks to steep cliffs, the wind and waves were reflected, adding to the confusion of the rough water.

Onwards I paddled, confident of my own experience and ability, but not without some concerns. My eskimo roll for righting a kayak was honed from many years of white-water river kayaking, but would I be able to do it in a choppy sea? If I ended up swimming to the shore, would I be able to get my boat in as well? I had sufficient safety equipment in my buoyancy aid, but even in my two-piece drysuit, how far would I be able to swim? It was early April, and the sea was still only five or six degrees Celsius.

I managed to get some relief by sheltering in the lee of some small islands and for a short period taking my hands off my paddles

and stretching a little. I had convinced myself that when I came Tingholmen, I would get some shelter from the islands and that it would be easy paddling back into Stavanger. How wrong I was! The wind continued to blow and if anything, despite the short reach, the sea became even more confused. After another hour of toil, I reached the islets guarding the larger island of Hundvåg, the water calmed, and I breathed a sigh of relief.

I have highlighted three adventures among the many that I enjoyed just within my first nine months in Stavanger. The surrounding area is rich with fantastic geography and beautiful scenery and there really is something for everyone, irrespective of fitness or ability. I encourage all staff members to look beyond the work of delivering large-scale command post exercises and training; family members and visitors, too, should seize the opportunity to explore this stunning region. In this part of Norway, the great outdoors really are just outside your door and you don't have to travel to the far north to see amazing sights. I guarantee that you will have a story to tell and fond memories of Norway. ✦

SPORTS DAY 2022

Photos by Chris Hill

"When a large team or a whole organization participates in a team event, it becomes a bonding experience in and of itself and a strong collective memory for the team."

— Paul Sewell, "Organizational Osmosis", p. 100





The Joint Warfare Centre provides NATO's training focal point for full-spectrum joint operational- and strategic-level warfare.



ABOVE: Major General Piotr Malinowski, Commander of the Joint Warfare Centre and Exercise Director (EXDIR), during NATO Exercise STEADFAST JUPITER 2022. Photo by JWC PAO **TOP:** NATO Exercise STEADFAST JACKAL 2022. Photos by NATO Rapid Deployable Corps – Italy PAO



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