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Executive Summary

FROM NAPOLEON TO Operation *Desert Storm*, the corps has been a critical military echelon, fighting at the higher-tactical and operational levels of war. While in the decades following the end of the Cold War, NATO's attention shifted to counterinsurgency and low-intensity operations, the return of great power competition brings the corps back into focus as a key component to warfighting at scale, and in competition across high-threat, politically complex environments. This paper therefore considers the role of the future corps, the capabilities it will need and the implications for NATO.

The increased density of sensors and range and lethality of fires on the future battlefield are trending towards frenetic kinetic engagements. The declining size of land forces, and the increasing complexity of enablers to get them to the close battle, are rendering tactical engagements increasingly decisive. It is therefore critical for units dedicated to the close fight to be committed in the most favourable circumstances possible, necessitating extensive shaping actions. As increasing ranges of weapons push sustainment and command-and-control capabilities back, the shaping battle is likely to fall on the corps.

The future corps will not simply be a command echelon but will need to be actively engaged in the deep battle to enable victory in the close by its subordinate divisions. It is likely to be engaged throughout its operational depth, and will need a full complement of fires, engineering, sustainment, ISR, intelligence, CBRN (chemical, biological, radiological and nuclear) and political components to operate effectively. Furthermore, while indispensable as the echelon shaping the close battle through deep effects, corps must retain sufficient cognitive capacity to maintain awareness of, and fight across, the multi-domain battlespace. This is why many multi-domain capabilities should be held at the highest tactical echelons, because it is there that a commander has the greatest time to understand the battle, while retaining direct touch points to the close battle that they are endeavouring to shape.

Multi-domain operations pose a challenge for NATO because the scale and complexity of its constituent capabilities are beyond many members' capacities, and risk creating a two-speed alliance. Indeed, the newly re-formed V (US) Corps is likely to operate alongside many NATO structures rather than as a part of them, precisely because its capabilities will not easily plug into systems of multinational formations. Ensuring interoperability must be premised on close working relationships between individuals, able to form bonds of trust and overcome the inevitable gaps in national systems. This is critical if the US's higher echelon capabilities are to benefit from the fidelity of targeting that other members' intelligence and contextual understanding can provide. It is also vital in multi-domain shaping during competition.

NATO currently has 10 corps headquarters in Europe. NATO members have, however, insufficiently resourced the corps echelon, and these headquarters do not exercise regularly

enough with their subordinate divisions to have built cohesive ‘teams of teams’ that will be robust in war. Indeed, the ‘rapid reaction’ concept that underpins NATO corps headquarters is likely inappropriate for the challenge now posed by hostile state actors. Instead, corps staffs need to be long prepared. NATO has made some progress in shifting its posture through the regional alignment of Multinational Corps Northeast and the stepping up of the Allied Rapid Reaction Corps to be held at readiness.

The NATO deterrence strategy is promising. But there must be a wider shift in the Alliance from measuring inputs to outputs, and rationalising capabilities so that there are fewer but better resourced and better prepared standing corps with clear responsibilities.

Introduction

THROUGHOUT THE MEDIEVAL and early modern period, an army was a largely unitary entity; it marched and fought on a single battlefield. A commander's most important decision was whether to offer or accept battle. Once engaged, they would have little control beyond the timing of when to open fire with artillery, advance with infantry or unleash cavalry.[1] The *levée en masse* of the 18th century and deployment of vast citizen armies required generals to divide their forces between subordinate commanders, creating divisions.[2] It was Napoleon who realised the potential of intermediate levels of command. He divided his *Grande Armée* into *corps d'armée*, which could each march and fight as independent forces.[3] This allowed Napoleon to advance his forces along several axes, outmanoeuvre his opponents and confront them from multiple directions, enabling defeat in detail. The continuation of divisions, meanwhile, allowed each corps commander to hold portions of their force in reserve, and so exercise greater control as to when their forces were committed. This system of fighting cut through Europe until Napoleon's adversaries adopted it, and it remained largely unchanged until the Second World War.

The invention of wireless communication and motorised transport transformed the reach and tempo of operations,[4] and enabled command to be maintained at a distance.[5] In the era of

1. The advance of command and control is neatly demonstrated in the three key case studies in John Keegan, *The Face of Battle: A Study of Agincourt, Waterloo and the Somme* (London: Bodley Head, 2014).
2. Although first envisioned by Maurice De Saxe, *Mes Reveries: Ouvrage Posthume de Maurice Comte de Saxe* (Amsterdam: Chez Areste et Merkus, 1757) and practised in the Seven Years' War by Victor-Francois de Broglie (see Russell Frank Weigley, *The Age of Battles: The Quest for Decisive Warfare from Breitenfeld to Waterloo* [Bloomington, IN: Indiana University Press, 2004], pp. 263–65), the divisional structure was formalised by the Committee of Public Safety and thence standardised under the Directorate. See Rafe Blaufarb, *The French Army, 1750-1820: Careers, Talent, Merit* (Manchester: Manchester University Press, 2002), pp. 133–63.
3. Gunther E Rothenberg, *The Art of Warfare in the Age of Napoleon* (Bloomington, IN: Indiana University Press, 1980), p. 128.
4. Recognised first by the Red Army in its development of the Deep Operations concept. See People's Commissariat of Defense of the Soviet Union, *Vremennyy Polevoy Ustav RKKA 1936* [*Provisional Field Regulations for the Red Army 1936*] (Moscow: People's Commissariat of Defence of the USSR, 1936).
5. Although French armour was superior when compared platform to platform (see R H S Stolfi, 'Equipment for Victory in France, 1940', *History* [Vol. 55, No. 18, 1970], pp. 1–20), the widespread adoption of radios allowed German commanders to respond to developments in a coordinated manner and orchestrate air strikes with ground manoeuvre, whereas French forces, once dislocated, could not. See Julian Jackson, *The Fall of France: The Nazi Invasion of 1940* (Oxford: Oxford University Press, 2003), pp. 215–25.

mechanised warfare, the capacity for units to keep fighting was dependent on their supplies of ammunition, fuel[6] and situational awareness.[7] It also required the management of reserves and when to rotate units into and out of combat.[8] Warfare therefore demanded an interface between the operational level, concerned with supply and resource allocation, and the organisation of tactical formations doing the fighting.[9] The corps proved to be the echelon at which this interface was situated, being far enough from the front to be able to look ahead and prioritise resources, while having few enough units under command to keep track of their progress on the battlefield. In mechanised warfare, the boundary between divisional, corps and field army responsibilities was to some extent fixed by the time-lags and bottlenecks in information management imposed by technology. Tactical commanders needed decisions to be made quickly, and there was a limit to how many units a headquarters could simultaneously manage.

The corps was an indispensable echelon of the major campaigns in the Second World War. When the British began their counterattack at El Alamein, XXX Corps was the lead tactical formation, fighting alongside X Corps,[10] although it was in some respects the weakness of the corps echelon

6. Logistics has always been central to the capacity of armies to fight, but the volume of constant consumables as a prerequisite for mobility significantly increased the importance of secure lines of communication, and made interdiction an operationally significant mission. See, for example, Alan J Levine, *The War Against Rommel's Supply Lines, 1942-1943* (New York, NY: Praeger, 1999). Logistics operations today are often larger than combat arms. See John J McGrath, *The Other End of the Spear: The Tooth-to-Tail Ratio (T3R) in Modern Military Operations* (Fort Leavenworth, KS: Combat Studies Institute Press, 2007).
7. A lack of situational awareness is a common cause of paralysis. For a famous example, consider Syrian forces during the 1973 Yom Kippur War, who halted after breaking through Israeli forces on the southern Golan Heights because they 'expected' there to be an ambush ahead, though no ambush was in fact prepared. See 'War with Gwynne Dyer, Part Three: The Profession of Arms (1983)', 24 June 2013, 15:00, <https://www.youtube.com/watch?v=NdwsfTy_haM>, accessed 17 August 2020.
8. This only really became possible as the division replaced the corps as the level at which arms were combined, which in the US occurred towards the end of the 19th century. See John B Wilson, *Maneuver and Firepower: The Evolution of Divisions and Separate Brigades* (Washington, DC: Center of Military History, US Army, 1998), pp. 23–25.
9. The operational level of war is not uniformly defined. Originally a Russian concept, it came to refer to the allocation of resources between theatres. Today, however, it tends to refer to the apportionment of resource to operations, as distinct from the use of those resources by tactical units to carry out operations. The corps sits simultaneously as a tactical formation, directly fighting the deep battle, and an operational formation, apportioning resources to its divisional lines of effort. In many contexts today, it will also be the highest echelon in theatre, directly interfacing with the strategic level, though this is not the case in a NATO Article 5 scenario. See Daniel Sukman, 'The Institutional Level of War', Strategy Bridge, 5 May 2016.
10. John Sadler, *El Alamein: The Story of the Battle in the Words of the Soldiers* (Stroud: Amberley, 2012), p. 74.

at this stage that curtailed the limits of Montgomery's exploitation of Rommel's defeat.[11] In the invasion of Italy, the US V Army and UK 8th Army punched their corps up either side of the spine of Italy.[12] In Operation *Market Garden*, the two tactical formations comprised I Airborne Corps and XXX Corps, though the former disintegrated as a command echelon after it was dropped into action, with the lack of coordination of parachute forces proving one of the major causes of failure.[13] By contrast, the Allied victory during the Battle of the Bulge was achieved in no small part because of the responsive redeployment of forces by US corps commanders.[14] There were, of course, many other examples, but the important point is that in practice, while army commanders set objectives and apportioned resources for operations, the detailed planning and coordination of tactical actions centred on corps headquarters.[15] The corps would remain a central warfighting echelon during the Korean War[16] and throughout the Cold War, though it proved less suitable for dispersed counterinsurgency campaigns.

Optimised for fighting the Soviet Union, the corps system demonstrated its combat power against Iraq in 1991.[17] Since the end of the Cold War, however, armies have shrunk across NATO.[18] The need to conduct a wide range of small but persistent operations saw the creation of mission-specific task forces, and eventually the restructuring of armies. In the US, this manifested itself in the Brigade Combat Team (BCT), which pulled assets from the division, enabling smaller force packages to self sustain.[19] In this context, divisional headquarters became the operational echelon, managing the rotation of their BCTs into and

11. Glyn Harper, *The Battle for North Africa: El Alamein and the Turning Point for World War II* (Bloomington, IN: Indiana University Press, 2017), p. 238.
12. Richard Doherty, *Victory in Italy, 15th Army Group's Final Campaign 1945* (Barnsley: Pen and Sword, 2014); Ian Blackwell, *Fifth Army in Italy, 1943-1945: A Coalition at War* (Barnsley: Pen and Sword, 2012); Richard Doherty, *Eighth Army in Italy, 1943-45: The Long Hard Slog* (Barnsley: Pen and Sword, 2007).
13. Antony Beevor, *Arnhem: The Battle for the Bridges, 1944* (London: Penguin, 2018), pp. 23–64.
14. Harold Winton, *Corps Commanders of the Bulge: Six American Generals and Victory in the Ardennes* (Lawrence, KS: University Press of Kansas, 2007).
15. Douglas E Delaney, *Corps Commanders: Five British and Canadian Generals at War, 1939-45* (Vancouver: University of British Columbia Press, 2012).
16. Samuel T Williams and Charles D W Canham, *The Corps in Korea: A Brief Informal History of IX Corps (Group) in Korea from 23 September 1950 to 1 September 1954* (Fort Sheridan, IL: IX Corps G3, 1954); Shelby Stanton, *America's Tenth Legion: X Corps in Korea, 1950* (Novato, CA: Presidio Press, 1989).
17. Mike Guardia, *The Fires of Babylon: Eagle Troop and the Battle of 73 Easting* (New York, NY: Casemate, 2015); Peter de la Billière, 'The Gulf Conflict: Planning and Execution', *RUSI Journal* (Vol. 136, No. 4, 1991), pp. 7–12.
18. *The Economist*, 'Western European Armies Have Shrunk Dramatically', 2 March 2020.
19. Despite creating more available units of action, the need for certain command functions remained. This did not create lean, but rather bloated, brigades, shifting responsibilities from high echelons without necessarily increasing efficiency. See Nathan A Minami and Donna Rhodes, 'Network Centric Operations and the Brigade Unit of Action', 2007, <https://proceedings.systemdynamics.org/2007/proceed/papers/MINAM139.pdf>, accessed 20 August 2020.

out of theatre.[20] Corps headquarters persisted, but their role has become less clear. Of the 10 NATO corps headquarters in Europe,[21] none of the countries that run them could deploy a corps-sized force, and these headquarters lack permanently assigned corps-level units from logistics and intelligence structures to fires. Nor are these formations lying in wait for a crisis. The armies they belong to do not have enough equipment to arm corps-sized units, and could not produce the equipment in a crisis. It is therefore reasonable to ask what these structures are actually for, and what role they should be designed to perform. In a new era of great power competition, with a resurgent Russia fielding 11 combined-arms armies and one tank army,[22] the capacity to fight at scale is once again relevant. Although Russia cannot sustain all of these formations in the field, it can generate and project corps-sized units across its borders, and has extensively exercised corps echelon command.[23] But the character of warfare has changed since 1991, and the corps' role on the modern battlefield is not simply a return to Cold War doctrine.

One of the key changes since 1991 is that flexibility in communications allows forces to operate detached from the traditional hierarchy of echelons. For instance, in 1993, Lieutenant Colonel Danny McKnight found himself in a deeply frustrating position. He was leading a convoy of vehicles through the streets of Mogadishu, trying to reach a downed helicopter to extract its crew. His mission had been changed on the fly, and rather than having a detailed route plan, he was being guided by the Joint Operational Centre (JOC) of Task Force Ranger, who were tracking his movements via a video feed from an Orion reconnaissance plane. By the time the video from the aircraft had been transmitted to the JOC and the directions relayed to McKnight, however, he had already passed his turn.[24] Today, the White House can oversee the second-by-second conduct of tactical operations if they so choose. Modern communications mean that command structures can be organised by task, rather than being determined by scale and distance. But while modern commanders may have more choices, as McKnight's predicament demonstrates, the costs of fixing decision-making to the wrong command structures can be severe. The oversight of tactical actions by operational echelons can have a stultifying effect on mission command or lead higher echelons to become tactically obsessed and lose sight of their operational responsibilities. The freedoms of modern communications therefore present risks

20. Anthony King, *Command: The Twenty-First-Century General* (Cambridge: Cambridge University Press, 2019), pp. 27–29.
21. Nine are established within the NATO command structure. See NATO, 'NATO Organization', <https://www.nato.int/cps/en/natohq/structure.htm>, accessed 8 August 2020. A 10th is in the process of being established. See Romanian Ministry of National Defence, 'Establishment of the HQ Multinational Corps South-East', press release, 18 June 2020, <https://english.mapn.ro/cpresa/5245_Establishment-of-the-HQ-Multinational-Corps-South-East>, accessed 17 August 2020.
22. Russian armies are equivalent to NATO corps. See Andrew S Bowen, 'Russia's Armed Forces: Capabilities', Congressional Research Service, 30 June 2020, <https://crsreports.congress.gov/product/pdf/IF/IF11589>, accessed 20 August 2020.
23. Ben Connable et al., *Russia's Limit of Advance: Analysis of Russian Ground Force Deployment Capabilities and Limitations* (Santa Monica, CA: RAND Corporation, 2020).
24. Mark Bowden, *Black Hawk Down* (New York, NY: Random House, 2000), pp. 170–71.

and opportunities. In this context, it is important that militaries have a clear understanding of which responsibilities belong at what echelon, and enforce these boundaries.

This paper examines the higher-tactical and operational level of war on the modern battlefield. It aims to identify the role of the corps echelon in future warfighting, and the capabilities and resources that a corps requires to meet its responsibilities. From there, the paper seeks to suggest a path towards the rationalisation of corps-level assets for NATO. The paper is divided into three chapters: the first focuses on the future operating environment and the conceptualisation of the corps echelon within it; the second considers the capability requirements for a modern corps to perform its functions; and the third unpacks the implications for NATO armies. The methodology for this paper comprises a review of past and present doctrine, a literature review relating to the future operating environment, and interviews with NATO corps headquarters staffs. The paper also draws on the experience of one of the authors who served as G3 of V (US/GE) Corps when it was in Germany and was commander of III (US) Corps with over 100,000 soldiers assigned, which provided the command structure for Combined Joint Task Force Operation *Inherent Resolve*, coordinating a coalition of forces from nearly 30 states in the campaign to defeat the Islamic State.

I. Contextualising the Corps in the Future Operating Environment

THE EMERGING ERA of multipolar competition obeys different dynamics from the bipolar contest of the Cold War. The opposition between communist and capitalist blocs tended towards Clausewitzian extremes,[25] with Soviet war plans envisaging the seizure of Central Europe within weeks of an outbreak of fighting in Germany.[26] The threat of nuclear escalation caused the balancing of conventional forces in Europe to be surrounded by displacement activity in South America, Africa, the Middle East and East Asia. By contrast, today no great power has the aggregate combat power – or a motive – to occupy any other.[27] Furthermore, while the US would likely be able to defeat the military of either China or Russia separately in a conflict, provided it remained below the nuclear threshold, the damage to the US's own forces would likely hand considerable opportunity to whichever power was not engaged. The US's capacity to defeat both simultaneously without the uniform alignment and extensive contribution of its partners and allies must be doubted. This means that there is a strong political disincentive for great powers to strategically escalate against localised flashpoints, and creates a space within which the overt use of force by the great powers to achieve limited goals is a viable policy. This has been demonstrated already by Russia in Georgia and Ukraine, and by China against India in Ladakh. Combined with the US's recognition of the Israeli annexation of the Golan Heights, international norms against changes of state borders by force are eroding. A common dynamic in future conflicts is therefore likely to be intense fighting over strategically significant terrain, best defined as positional warfare.[28] There is also a likelihood of fighting flaring intermittently in zones of instability – whether defined as constant competition or durable disorder[29] – in which escalation occurs periodically to take advantage of narrow windows of opportunity to disrupt the status quo, between which

25. Carl von Clausewitz, *On War* (Oxford: Oxford University Press, 2007), pp. 219–26.
26. The CIA assessed in 1985 that Soviet war plans anticipated achieving 1,200 km of penetration across a 700-km frontage within 20–30 days of a general war, and that this was premised on an overestimation of NATO forces in the European theatre of operations. See Central Intelligence Agency, 'Soviet Strategy and Capabilities for Multitheater War', National Intelligence Estimate, June 1985, p. 10.
27. John J Mearsheimer, *The Tragedy of the Great Powers* (New York, NY: W W Norton & Company, 2001), pp. 379–81.
28. John J Mearsheimer, *Conventional Deterrence* (Ithaca, NY: Cornell University Press, 1983), p. 18.
29. Best understood as a state of instability that is nevertheless self-perpetuating and sustainable. See Sean McFate, 'Durable Disorder: The Return of Private Armies and the Emergence of Neomedievalism', PhD thesis, London School of Economics and Political Science, 2011.

conflict will comprise sub-threshold activity in politically complex environments.[30] There is, of course, a residual risk of major warfighting, made more likely if states are ill-prepared to meet such an escalation. Commanders operating in this environment therefore must be able to quickly draw on an expanded range of military capabilities in crises, but also operate across a complex breadth of political and military responsibilities to prevent their position being undermined, and to deter adversaries.

When there is an escalation to warfighting, tactical operations are trending towards frenetic and decisive engagements with an increased density and acuity of sensors, combined with the growing range and lethality of weapons systems. As armies around the world shrink in size, costly tactical engagements are taking on strategic implications.[31] This is exacerbated by the complexity of modern platforms, since it renders the regeneration of mass costly and slow. Peer-on-peer warfighting in the land domain therefore faces a comparable challenge to that of the navies of the early 20th century, in which a stronger force can lose a war in a single decisive battle if it is committed under the wrong conditions.[32] Ironically, this makes the commitment of forces to such a battle less likely, leading to prolonged skirmishing. The ability to deliver decisive effects also undermines traditional assumptions about force ratios. If employed under the right conditions – integrating the full spectrum of military specialisms – a force may achieve effects disproportionate to its size. A good example of this is the Islamic State's seizure of 40% of Iraqi territory in 2014,[33] whereby a lightly equipped force of motorised infantry displaced a vastly better-equipped and much larger Iraqi army.[34] This is not an entirely new phenomenon. It might be compared to the Wehrmacht's rapid defeat of French and British armies in 1940. However, the elements of combined-arms operations that contribute to outmanoeuvring an opponent have diversified, complicating delivering such an effect, while the capacity for a defeated force to regenerate is markedly different than during the Second World War.

What enabled the Islamic State's rapid advance was higher echelon coordination of psychological operations,[35] unconventional fires and ground manoeuvre.[36] Similarly, it was the Wehrmacht's

30. This is a dynamic articulated in detail by the UK's Integrated Operating Concept, a public summary of which was published on 30 September 2020. See Ministry of Defence, 'Introducing the Integrated Operating Concept', 2020, <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/922969/20200930_-_Introducing_the_Integrated_Operating_Concept.pdf>, accessed 13 October 2020.
31. As recently demonstrated in Nagorno-Karabakh. See Jack Watling, 'The Key to Armenia's Tank Losses: The Sensors, Not the Shooters', *RUSI Defence Systems*, 6 October 2020.
32. Winston Churchill, *The World Crisis* (New York, NY: Charles Scribner's Sons, 1923–31), Vol. 3, p. 106.
33. Wilson Center, 'Timeline: The Rise, Spread, and Fall of the Islamic State', 28 October 2019.
34. Yasir Abbas and Dan Trombly, 'Inside the Collapse of the Iraqi Army's 2nd Division', *War on the Rocks*, 1 July 2014.
35. P W Singer and Emerson T Brooking, *LikeWar: The Weaponization of Social Media* (New York, NY: Houghton Mifflin Harcourt, 2018), pp. 1–23.
36. David Kilcullen speaking at the RUSI Land Warfare Conference 2017. See RUSI, 'RUSI LWC 2017 – Session 7', 19 July 2017, 01:00:00-01:05:00, <https://www.youtube.com/watch?v=_EcrrD1dBhg>,

ground and air coordination that enabled its rapid victory. Today, the number of capabilities that must be integrated places a heavy burden on higher echelon headquarters. When coalition forces arrived in Iraq and Syria, they improved the support and synchronisation of indigenous forces and the tide turned against the Islamic State. But what the Iraqis lost in six months took the international coalition four years to recover. The ebb and flow of the Islamic State's caliphate demonstrated how an appropriately set up, well-timed and synchronised application of force can take ground with minimal losses. If the Islamic State had been a peer competitor, the costs of retaking that ground without a comparable degree of preparation, timing and synchronisation could impose a level of material cost as to inflict strategic defeat even if the adversary succeeded in the mission of liberating the territory. It follows that deterring, or denying the opportunity for, such a decisive manoeuvre by an adversary requires militaries to maintain coordination of capabilities from higher echelons prior to the outbreak of warfighting. Deterrence activity therefore depends on support from higher echelons able to manage both the span of command tasks and of political and contextual responsibilities. When this is not in place, a force risks being surprised.

These competitive dynamics have several implications for land forces. The commitment of tactical manoeuvre elements to attritional battle is likely to be seen as strategically self-defeating. Thus, the increased decisiveness of high-intensity engagements is likely to make them rarer. Commanders will commit to them when they believe the objective can be achieved with minimal loss. We may therefore conceive of the future campaign as being initiated by rapid offensive operations by one party – in fait accompli – followed by a prolonged period of shaping the environment in which higher echelons seek the ideal window of opportunity to reverse gains without suffering unacceptable losses. This shaping battle – comprising recce skirmishes, raiding, long-range precision fires, electronic warfare and cyber operations – would see persistent attempts to blind, fix, deceive or constrain an adversary to create opportunities to commit to a favourable decisive engagement.

The most direct strategic competitor for NATO is Russia. Russian forces have, for the last decade, prioritised snap drills,[37] practising operational transportation of materials,[38] and large-scale exercises integrating multiple capabilities under higher echelon command.[39] This has

accessed 18 October 2020. Note that the equipment and allocation of resources enabling the tactics Kilcullen describes were enabled by a highly centralised production and distribution system. See Nick Waters, 'Types of Islamic State Drone Bombs and Where to Find Them', *Bellingcat*, 24 May 2017.

37. *TASS*, 'Russian Armed Forces Complete Snap Combat Readiness Check', 21 July 2020.
38. Michael Kofman, 'Overview: Kavkaz-2020', Russia Military Analysis, 22 September 2020, <https://russianmilitaryanalysis.wordpress.com/2020/09/22/overview-kavkaz-2020/>, accessed 18 October 2020.
39. Lina Davudova, 'Udar ognem: motostrelki VVO pri podderzhke aviatsii i artillerii «unichtozhili» protivnika v Zabaykal'ye' ['Fire Strike: VVO Motor Riflemen Supported by Aviation and Artillery "Destroy" the Enemy in Transbaikalia'], *TV Zvezda*, 21 August 2020, <https://tvzvezda.ru/news/forces/content/20208215 39-SqDdl.html>, accessed 18 October 2020.

translated into strategically surprising NATO in Crimea in 2014, and could similarly enable fait accompli attempts in the future, whether in the Balkans, High North or further afield. Although Russian forces cannot bring all of their capabilities to bear,[40] the emphasis of their training and modernisation makes the readiness and responsiveness of NATO's higher echelons an important area of focus. Because NATO is an alliance of 30 states, this must take into account the political constraints that shape NATO's higher echelons and their roles in warfighting.

In NATO, the need to commit to decisive battle within favourable windows of opportunity – rather than accept attritional escalation – is reinforced by political considerations. Most states in NATO can, at best, generate a fully equipped division. Some that claim to be able to do this cannot, but it represents a reasonable level of ambition assuming that there is not a drastic increase in defence expenditure across the Alliance. Given that most members struggle to arm a division, however, it is not realistic for these formations to also concern themselves with the shaping fight. For divisional assets to be pulled into shaping actions – except for some recce and fires assets – they must necessarily deplete their combat power when eventually employed. Thus, the shaping battle will need to be overseen by forces held organically at higher echelons. While higher echelons have the distinct responsibility of framing the windows of opportunity for the commitment of tactical formations, they must also take under command a multinational force, since no individual member, save the US, can field a corps-sized formation. The decision to commit a multinational corps, while tactical with regard to the war, may be a fundamentally strategic calculation for the states providing the manoeuvre elements concerned. If destroyed or overly attrited, those states will have suffered the destruction of their national fighting power. In order to receive sufficient permissions to be able to exploit the windows of opportunity opened during the shaping battle, therefore, higher echelons will be forced to prioritise the preservation of the force under their command above the seizure of territorial objectives. This makes attack more politically constrained than defence, and in consequence places a greater emphasis on the need for NATO to deter and, if deterrence fails, prevent the initial seizure of ground, rather than its recapture. Thus, the persistent readiness of higher echelon enablers and coordination with sufficient manoeuvre elements is necessary prior to – rather than following – the outbreak of warfighting.

Shaping the fight to enable force protection remains a higher echelon responsibility once manoeuvre elements are committed to battle. Slowing adversary reactions through denial of communications, the targeting of infrastructure, enabling the isolation of targeted sectors, and the situational awareness to suppress enemy fires and protect the force from hostile air threats all require a level of coordination that rests above the divisional echelon. Nevertheless, this must be understood as tactical activity. Whether an opportunity is favourable can only be judged against a defined objective, and so the body tasked with shaping the fight must have received a definition of its operational objectives and the requisite permissions to pursue them.

Adversaries face similar constraints, albeit for different reasons. While the ability to field 11 combined-arms armies and a tank army sounds impressive,[41] in reality, most of Russia's

40. Connable et al., *Russia's Limit of Advance*.
41. Bowen, 'Russia's Armed Forces'.

subordinate divisions are undermanned and hold legacy equipment. The best equipped formations are concentrated in the Western Military District, while the most experienced are stationed in the Southern Military District. Sustainment capabilities across Russia vary considerably.[42] While Russia can project and sustain an army group – equivalent to a large NATO corps – from the Western Military District,[43] along most of its southern border it would struggle to sustain more than a division.[44] At reach, Russian sustainment capabilities can cover little more than a brigade.[45] Furthermore, spread across 13 time zones, the same dynamics of multipolar competition that make force protection a priority for US forces also fix a proportion of Russian forces across its territory. Those forces would be difficult to internally redeploy once fighting commenced, and the quality of Russian armaments would deteriorate rapidly if its first echelon were destroyed. Thus, Russia arguably has two armies that it could bring to bear, and would face a significant degradation in capability if they were lost, ensuring that its decisive commitment to an engagement would require the shaping of the environment to produce a highly favourable opportunity. Russia benefits, however, from being able to draw higher echelon capabilities – including strategic surface-to-air missiles and long-range precision fires – from its military district commands, and can centralise the operational level within its command structure, avoiding the frictions that exist in NATO from the political complexity of the Alliance.

Today, NATO finds itself in a curious position whereby these tactical functions sit above the echelon that comprises the maximum level of effort of most members. In this context, national field armies should be understood as sitting at the operational level, since these headquarters will determine the level of resource commitment to a given campaign. The US Army relies on theatre armies within each regional combatant command to provide combat and service support to major forward-deployed operational commands, but these are not designed to provide command and control (C2) of large manoeuvre forces such as divisions and corps. US Army Europe/7th Army fills this role in the US European Command. US Army corps and divisions would fight under the C2 of the Combined Joint Force Land Component Commander (CJFLCC). The CJFLCC would be responsible for operational-level C2, sustainment of these formations across multiple state borders and their allocation to tactical formations. Because the US has capability at all of these echelons, it is reasonable to assume that this structure would function in parallel to NATO – as the convening command structure for multinational formations – rather than be entirely subordinated to it. This presents a serious challenge for NATO. In theory, US forces would fit into the NATO structure, but given the efficiency of fielding a unified multi-echelon structure, the US may not accept the capability limitations this would impose. There is, therefore, a need for other NATO members to be able to effectively deconflict supply, prioritise resource, and avoid dislocation between the US and its allies.

42. Emily Ferris, 'Problems of Geography: Military and Economic Transport Logistics in Russia's Far East', *RUSI Occasional Papers* (October 2020).
43. Connable et al., *Russia's Limit of Advance*.
44. *Ibid.*
45. *Ibid.*

In theory, multinational corps would form around the NATO corps headquarters currently at readiness. These corps would then sit as tactical formations under NATO LANDCOM which would coordinate the operational level. This would fit below the Joint Forces Command (JFC) headquarters in Brunssum or Naples, which would be responsible for translating the strategic intent of SACEUR into operational priorities. Above SACEUR, member state governments must agree campaign objectives through the North Atlantic Council, which coheres the policy level of war, and invests SACEUR with the objectives and permissions to conduct operations. While NATO provides a coherent command structure, it cannot generate units to populate it. This is the responsibility of member states, and here there are significant gaps, which manifest most acutely in divisional and corps-level enablers.

The importance of the corps echelon does not herald a return to Cold War doctrine. During the Cold War, corps frontages were approximately 80 km in the defence, and closer to 24 km in the attack, with a depth of approximately 120 km.[46] Today, the corps echelon is liable to split C2 between command posts, with reach back support from the home base, and is liable to command a depth of approximately 200 km. The increased depth of the corps reflects the expanded depth of the anticipated recce battle, and the pushing back of the divisional deep fight owing to the increased range of tactical fires. This must threaten logistics hubs and enablers, and consequently lead to lower force densities until manoeuvre elements are committed to a decisive action.[47] Furthermore, while the corps' actual occupied frontage along its axes of advance may not be drastically larger than in previous conflicts, the divergence of axes of advance across such a significant depth, the increased tempo, the distortions created by geography and the lower force densities across the front compared with the Cold War mean that manoeuvre elements will likely have to operate with exposed flanks, expanding the frontage for recce and higher echelon fires elements to cover.

These considerations are not solely relevant to high-intensity peer-level conflict. Azerbaijan's use of ballistic missiles to strike a critical bridge between Armenia and Nagorno-Karabakh in October 2020,[48] the Iranian missile strike on Al Asad base in Iraq in January 2020[49] and repeated Houthi missile strikes on Yemeni army bases through 2018 and 2019[50] highlight how even sub-peer adversaries are now fielding long-range precision capabilities which are only likely to increase in both density and effectiveness over the following decade. Extensive sales of strategic surface-to-air missile systems by Russia, as well as growing Chinese defence partnerships with Iran and the Gulf, are liable to see precision strike technology rapidly proliferate. This is likely to cause Western powers to lose the freedom of access to operating environments that characterised the

46. Donn A Starry, 'Extending the Battlefield', *Military Review* (Vol. 61, No. 3, March 1981), pp. 31–50.
47. Jack Watling, 'The Future of Fires: Maximising the UK's Tactical and Operational Firepower', *RUSI Occasional Papers* (November 2019), pp. 37–41.
48. Jack Watling and Sidharth Kaushal, 'The Democratisation of Precision Strike in the Nagorno-Karabakh Conflict', *RUSI Commentary*, 22 October 2020.
49. *BBC News*, 'Iran Attack: US Troops Targeted with Ballistic Missiles', 8 January 2020.
50. Ian Williams and Shaan Shaikh, 'The Missile War in Yemen', Center for Strategic and International Studies, June 2020.

post-Cold War unipolar political order. It will also inevitably complicate the logistics and protection of relatively small expeditionary activities, since forces will need protection from high-end threats both in entering the theatre and setting up bases.[51] During the Global War on Terror, deployed BCTs tended to be co-located with large intelligence and support staffs.[52] If force protection requires the contraction of basing footprints deployed forward, many of these functions may be drawn to higher echelons. Thus, in geographically dispersed, politically complex and high-threat campaigns, corps-level headquarters may become the de facto interface between the operational and tactical level in conducting operations. A distinction must be drawn here between a corps-sized formation, replete with subordinate divisions, and the corps echelon, comprising a headquarters and its assigned enablers. The former is clearly less essential for low-intensity operations against sub-peer adversaries. The latter, enabling dispersed activity, the integration of high-end force protection and specialist assets, and a mature political interface with civilian and partner organisations, is likely to require a corps echelon. This was the case with Operation *Inherent Resolve*. France has also drawn on its corps headquarters staff periodically to oversee its operations in the Sahel.[53] If divisional formations remain tactical headquarters in warfighting, and manage rotations of their BCTs in competition, then the corps headquarters is likely to be the echelon left to coordinate campaigns. Thus, while this paper is primarily concerned with deterrence to prevent, or the prosecution of high-intensity warfare, the trends have wider applicability.

51. Consider the increased timeline for the Gulf War if the transportation effort had faced interdiction threats. See William G Pagonis and Michael D Krause, 'Operational Logistics and the Gulf War', *Land Warfare Papers* (No. 13, October 1992), <https://www.ausa.org/sites/default/files/LWP-13-Operational-Logistics-and-the-Gulf-War.pdf>, accessed 20 August 2020.
52. Harry Tunnell, 'Task Force Stryker Network-Centric Operations in Afghanistan', Center for Technology and National Security Policy, National Defense University, October 2011, p. 2.
53. Author interview with officer on the French Staff, June 2020.

II. The Future Corps

GIVEN THAT IT appears the corps will remain central to campaigns in the future operating environment, it is necessary to examine what exactly the corps echelon requires to perform its functions. Traditionally, a corps headquarters provides C2 for two or more divisions, but as previously stated, it is unlikely that NATO could muster enough divisions, even in an emergency, to warrant so many corps headquarters. Despite an apparent surplus in three-star headquarters, the US is adding yet another by reactivating V Corps which will be based in the US, but with a forward command post in Europe,[54] probably in Poland. Alone among its NATO allies, the US has retained the capacity to put more than one corps in the field, each with multiple subordinate divisions and with all the necessary supporting brigades. Although US corps structures are distinct – reflecting US doctrine – as the only state able to field a sovereign corps capability, and as NATO's framework nation, this chapter outlines the critical capabilities of a corps from a US perspective. Some of these functions are well understood – the provision of C2 and coordination of corps-level fires – but these tasks have been altered by changes in technology. The chapter therefore begins by focusing on the new responsibilities a corps now holds, before unpacking how these affect traditional corps functions.

The Corps in Multi-Domain Operations

The US Army's operational concept of 'Multi-Domain Operations' (MDO)[55] contains numerous insights into future warfare, but some are particularly relevant to the role of the corps.

First, MDO recognises that because the air, space and cyber domains extend across the entire planet, the battle can also be extended – all the way to the homelands of combatant states. This was once considered beyond operational depth, but the distributed networks that support space and cyber operations have blurred the spatial distinction between the levels of war.[56]

Second, the tempo of warfare is accelerating. Machine learning is increasingly enabling autonomous systems that think at computer clock speeds while hypersonic and light speed (directed energy) weapons are proliferating. The threat posed by hypersonic precision strike capabilities to critical infrastructure in the corps support area means that defending these

54. Michel Yakovleff, 'V Corps Could Serve Massive Role in Europe', Association of the United States Army, 22 June 2020.
55. US Army, 'The U.S. Army in Multi-Domain Operations 2028', TRADOC Pamphlet 525-3-1, 6 December 2018.
56. Alexandra Stickings, 'Space as an Operational Domain: What Next for NATO?', *RUSI Newsbrief* (Vol. 40, No. 9, 15 October 2020).

sites will be vital to sustaining close combat.[57] Yet, the speed of such engagements would also require highly automated countermeasures, with associated networked sensors, that will likely converge at the corps echelon so as to be far enough from the direct combat zone to be resilient, and to avoid bloating more vulnerable divisional headquarters. This is also the result of ranges and boundaries. As more tactical capabilities – like howitzers in the divisional artillery groups – become able to intercept munitions like cruise missiles,[58] exploiting this advantage requires coordination of these fires assets. A cruise missile strike is unlikely to be initiated within a division's boundary of responsibility, and so assigning a divisional asset to deplete a cruise missile salvo, for example, would require coordination from the corps echelon, which has sufficiently wide boundaries to identify the launch, track the trajectory and assign battlefield assets in a position suitable for achieving an intercept.

Third, the convergence of modern warfare's scale, speed and complexity is creating challenges in the cognitive dimension. Because the human brain is not advancing at the same rate as technology, it is becoming overloaded with information. The volume of data generated from a division's battlefield sensors vastly outweighs the capacity of the force to capture, analyse and understand it within a relevant operational tempo. Resolving this problem during the era of counterinsurgency relied on massive assigned intelligence resources at lower echelons,[59] but this would not be viable in a high-intensity conflict because the associated divisional headquarters would be too large to conceal and so be rapidly targeted. A corps, by contrast, holds its headquarters sufficiently far from the front to mass intelligence, and because of the slower tempo of decision-making enabled by that distance has a better chance of understanding the sensor data. This is exacerbated by capabilities like the F-35, since the terminals able to receive data from the airframe are highly sensitive, and cannot be integrated into tactical headquarters that could be overrun by the enemy. This data, therefore, is similarly more likely to be accessible at the corps echelon or above, but the corps' receipt of such information is especially important because, as the highest tactical echelon, the corps is still able to route relevant information to its subordinate fighting units to act on information received.

To cope, some control functions may be delegated to artificial intelligence-powered systems, but the ethical control of lethal force demands an appropriate role for human oversight. As weapons' ranges expand and situational awareness becomes universal, it is tempting to say that tactical echelons can also fight at the operational and strategic levels, thus rendering C2 at those echelons redundant. This is a mistake. Differentiating roles at echelon is an effective way to manage the cognitive load, because span of control no longer applies simply to the number

57. The proliferation of short-range ballistic missiles means the threat of long-range precision fires strikes is present even against sub-peer adversaries. See Joseph Trevithick, 'Video Points To Azerbaijan's First Use of Israeli-Made Ballistic Missile Against Armenia', *The Drive*, 2 October 2020. Precision strike hypersonic missiles are now proving deployable. See Anton Kolodyazhnyy et al., 'Russia Touts Test Launch of Hypersonic Missile on Putin's Birthday', *Reuters*, 7 October 2020.
58. Kyle Mizokami, 'The Army's Big, Dumb Guns Aren't Dumb Anymore (And Now They Can Shoot Down Planes)', *Popular Mechanics*, 10 September 2020.
59. Tunnell, 'Task Force Stryker Network-Centric Operations in Afghanistan', p. 2.

of subordinates a commander must control, but also to the number of domains and the expanse of their effects.

The V (US) Corps's forward command post headed to Europe is more than the advance element of a large, self-contained corps. It will be in Europe because, within US Army concepts, MDO against a peer adversary *require* a corps echelon to integrate cross-domain effects in time and space, no matter how many divisions are engaged. The speed and complexity of MDO is simply too great for a single echelon to manage effectively. Furthermore, to fully appreciate how a particular theatre's operational environment affects each domain, you must 'soak' in it. Even in the age of information technology, virtual presence means actual absence. If a force cannot maintain physical access to information infrastructure then it cannot assure access. A force that lacks a presence, and the relationships this creates, will invariably be slow to react in reaching a theatre. Adversaries also tend to discount the deterrent effect of forces that lack a physical presence.[60]

Finally, MDO acknowledges that shaping is a continuous process that begins prior to the onset of actual hostilities; it refers to this phenomenon as 'pre-conflict competition'. As competition continues during and after the conclusion of hostilities, shaping is not considered an operational 'phase', which would connote a beginning and an end after the completion of decisive operations. Instead, MDO posits a return to competition once hostilities conclude, during which shaping would be employed to secure gains or reverse losses resulting from combat.

Competition can take various forms: diplomatic, economic, informational and military, each of which obey a distinct logic. Non-lethal examples of military competition include shows of force through large-scale exercises, weapons demonstrations, surveillance and various types of electronic warfare. Competition can also assume a lethal aspect through unconventional warfare. This has often been referred to as the 'grey zone' in which covert, proxy and paramilitary forces operate.[61] Because military competition often combines the tactical level of war with the strategic, where it is used in concert with non-military forms of power, it must be handled by a sufficiently senior command to ensure the requisite experience and authority is present. This extends beyond the mere seniority of a three-star general, but includes the relevant experience of the supporting staff, for which a corps headquarters is often appropriate. To help the commander deal with these complex considerations, corps staffs should include experts in civil-military operations and a civilian political adviser. The interface with local political factors is best held at the corps level for several reasons. There is a need for a political interface at the tactical and operational levels, as distinct from strategic discussions. Yet, civilian organisations function at a tempo that often conflicts with brigade or divisional planning cycles. The corps level has a sufficient breadth of perspective – and a longer planning horizon – that enables civilian organisations to interface with the staff.

60. Bryan Frederick et al., *Understanding the Deterrent Impact of U.S. Overseas Forces* (Santa Monica, CA: RAND Corporation, 2020).
61. Lyle J Morris et al., *Gaining Competitive Advantage in the Gray Zone: Response Options for Coercive Aggression Below the Threshold of Major War* (Santa Monica, CA: RAND Corporation, 2019).

In a time of pre-conflict competition, forward-stationed multinational corps unencumbered by permanently assigned subordinate units can concentrate their efforts on war planning and major exercises. In a complex environment like Europe, these activities require intense coordination with multiple agencies and governments. Because of the seniority of the commander and their staff, corps headquarters can engage at the right level with governments to secure necessary approvals. Most European chiefs of army hold the same rank as a corps commander (though they clearly have different spans of responsibility), which eases important discussions about resources and authorities. And, because of the geographic orientation of NATO's multinational corps, they should be able to develop detailed plans for reception, staging, onward movement and integration of additional forces deployed from other parts of the continent or North America, in collaboration with NATO's Joint Support and Enabling Command, based in Ulm, Germany. Furthermore, as each of these corps is staffed by different combinations of troop-contributing states, they should also be able to focus on the unique challenges of their constituent forces' interoperability. These plans and exercises are an important form of competition, as it forces Russia to react to NATO initiatives, rather than the other way around. Cost imposition on an adversary is a desirable effect, as it favourably shapes the environment prior to and during hostilities.

The Corps' Role in Multi-Domain Battle

While a corps headquarters can play a useful role during pre-conflict competition by ensuring convergence of multi-domain effects within a specified part of a theatre of operation, its raison d'être is to fight at the interface between the operational and tactical levels of war, to defend, seize, destroy or hold at risk objectives of strategic value, and to conduct independent campaigns when necessary.

Ironically, the advantages enjoyed by unencumbered corps headquarters during competition can become liabilities in a conflict. In the crucible of battle, it is better to have corps that are warfighting formations rather than mere headquarters. To be a formation, a military organisation must train together so that its staff and subordinate units understand how to employ their enablers in mutual support and do so in accordance with the commander's vision. The sweat expended by a corps headquarters on the training and readiness of its divisions and separate brigades before combat will save a great deal of blood and tears while in it. This is especially important in a multinational context, where inter-echelon C2 systems must be integrated and maintained, and incompatibilities in national C2 architecture bridged or worked around.

Indeed, corps commanders earn much of their pay prior to battle. In addition to forging a warfighting team, they also play a critical role in the planning process. Once corps commanders formulate their proposed operation or campaign to implement their commander's strategic intent, they must justify their operational needs to the joint force commander and, if necessary, with local government leaders. They must do this in sufficient time to obtain resources from echelons above corps and synchronise them with the plan. Through their battle staff, corps commanders then allocate these resources, manoeuvre forces, fires (lethal and non-lethal),

logistics (to include the capacity for reconstitution of depleted units), ISR, engineers (mobility, counter-mobility, survivability) and more to the main and supporting efforts.

One of the important insights of the US Army's AirLand Battle (ALB), developed in the 1980s,[62] was the importance of fighting enemy forces that are out of contact with friendly forces in order to limit their ability to affect future operations. This was called 'deep battle'.[63] Some critics of MDO say that it is just old wine in a new bottle, an updated version of ALB, and that multi-domain shaping is the same as deep battle. While there are similarities, there are also important distinctions. Due to the rapidly growing importance of the cyber and space domains, the battlefield has expanded in space while being condensed in time. MDO takes these factors into account. However, to properly execute MDO, shaping requires a senior headquarters that is neither consumed with theatre-level sustainment and protection, nor with supporting the thrust and parry of the close battle in real time. The corps echelon is ideally positioned for this role and it is why shaping operations must be the primary role of the future corps and its critical enablers; assuming its staff and critical enablers are trained to conduct shaping operations in all domains.

It is important here to emphasise the distinction between synchronisation and convergence. For the synchronised pre-planned use of multi-domain capabilities, the most appropriate echelon is the JFC. For example, an SSGN might be made available by the naval contingent to conduct short-latency precision strikes to open a corridor for an air strike package to penetrate a section of a battlefield and thereby enable planned ground manoeuvre. However, maximising the effects deliverable through cross-domain convergence will often rely on windows of opportunity that are too short to be synchronised by such a high echelon. Suppose, for example, that the hypothetical F-35 strike package, while returning from the mission initiated by the JFC outlined above, picked up the signature of an SA-17 command vehicle within a friendly brigade boundary. It could not organically strike the target having already used its munitions. Nor could it push the target data to the divisional fires group because of restrictions on secure communications downlinks to a lower echelon headquarters. Routing the data through the JFC would also be problematic, because the latency between the launch and impact of a long-range precision strike initiated by the JFC would give the command vehicle sufficient time to pack up and move, while the length of the kill chain for the JFC to pass the data received to an available lower echelon shooter would likely exceed the duration of the F-35 having a track on the target. The corps headquarters, by contrast, would be a high enough echelon to securely receive the data from the F-35, and through its fire control headquarters would have a direct link to the divisional fires group, with authority to conduct a fire mission with a short enough latency to catch the target. This kind of exploitable multi-domain convergence at the heart of MDO is therefore likely to place a distinct emphasis on the corps echelon.

62. US Army Training and Doctrine Command, 'FM 100-5 Operations 1982', 1982.
63. Building off the Soviet doctrine promulgated in 1936. See People's Commissariat of Defense of the Soviet Union, *Vremennyy Polevoy Ustav RKKA 1936* [*Provisional Field Regulations for the Red Army 1936*].

Corps Responsibilities

One of the most time-tested military tactics used to gain an advantage over the enemy is to force the adversary to fight in multiple directions. While that has not changed, it is now possible to force an opponent to fight simultaneously in multiple domains throughout the full depth of the battlespace, as well as in multiple directions. The future corps must leverage an advantage in one or more domains to create windows of opportunity against peer adversary forces in others to support the fights of subordinate commands. Meanwhile, the theatre army commander, who is further removed from the close battle, handles a vast set of responsibilities, both geographically and functionally, ensuring that critical locations and lines of communication are protected and that sustainment is adequate. The theatre echelon allows corps, divisions and brigades to focus on their respective roles. As a rule of thumb, brigades fight the current fight, divisions shape their next fight, corps shape the fight after the next fight, and theatre armies support them. A division-level staff engaged in supporting the brigade-level knife fight could find it difficult to simultaneously play a multi-domain chess game, which is why these considerations sit better at the corps level.

Deep Battle

Future windows of opportunity to strike targets are likely to be fleeting, and setting them up requires extensive planning, while improvements in the range and accuracy of enemy weapons have increased the risk to forces from adjacent areas of operation and beyond. Attacks on friendly electronic systems from the space and cyber domains can bring a unit to a standstill as surely as a physical obstacle on the ground.[64] Even when targets can be engaged in or through other domains, the effects of information, cyber and electronic warfare attacks may not be confined to a specific target area. Consequently, these must be carefully coordinated to ensure they do not disrupt adjacent unit operations. Such effects often require intense planning and preparation. Space-based delivery platforms might require modified orbits and terrestrially based assets sometimes require specific logistical support and protection. The future corps staff will require the wherewithal to appreciate how the manoeuvre of ground forces affects operations in other domains and where ground forces are dependent on those domains. They should also consider whether other domains may constitute the main line of effort within certain timeframes, requiring support from ground forces and corps assets.

Close Battle

As with any command echelon, once a battle is joined, the corps must retain the ability to affect it by committing its reserves or other resources at the critical place and time. For this, corps commanders must have a sufficient feel for the battle. In other words, they must be able to see, understand and visualise the fight in space and time, today and in the future. There are technical

64. Bryan Clark, Whitney M McNamara and Timothy A Walton, *Winning the Invisible War: Gaining an Enduring U.S. Advantage in the Electromagnetic Spectrum* (Washington, DC: Center for Strategic and Budgetary Assessments, 2019).

and human dimensions to this requirement. Although prior experience is a good teacher, it can also form a trap for those who fail to appreciate the impact of 21st-century technological trends. Multi-domain situational awareness of both friendly and enemy forces is necessary for corps commanders to know what is happening in the air, space and cyber domains and in adjacent maritime spaces. This enables them to have a 'feel' for the tactical situation two echelons below (namely, the brigade level), so that they can judge how, when and where to employ joint and organic fires in support of brigades' manoeuvre. To do this, corps commanders must see more than icons on a display; they must also know the strengths, weaknesses and tendencies of their subordinate commanders. It is also vital for subordinate commanders to trust the corps commander's judgements, which will often demand placing portions of the force at higher risk, and for officers to have confidence in the accuracy and thoroughness of reports being passed to them. Interoperability for the close fight goes beyond the standardisation of procedures, to encompass the melding of a formation into a cohesive fighting force. The pre-eminent role of the future corps commander, then, is to create a team of teams with strong bonds of trust developed in training, so that the formation is ready for battle.

Command and Control

To execute all its C2 functions, the corps battle staff must create shared situational awareness through a common operating picture. In a multinational corps, differences in doctrine and procedures between states can be ironed out, but it is far better to do this prior to the initiation of hostilities. In theory, NATO Standardisation Agreements (STANAGs) mean that member states' units are highly interoperable by design. In practice, capability gaps are often undeclared, and how doctrine is implemented diverges as units adapt them to fit their operational context. Thus, without training and exercising together, multinational formations are often far less interoperable than they may appear on paper. To ensure they are, the staff must be tested by challenging exercise scenarios that force it to overcome its shortcomings to succeed. These exercises also provide opportunities for commanders to assist the staff in developing a 'battle rhythm' of meetings that enable decisions at the right time. Every commander has their own decision-making requirements and the staff must structure itself to meet them. This is easier said than done because a corps staff is not a self-contained organisation. It relies heavily on augmentation from subordinate units for expertise in fires, aviation, intelligence, logistics and so on. If these supporting headquarters do not regularly exercise with the corps staff to ensure that their procedures are nested with the corps, little is gained by training. Notwithstanding the popularity of modularity for purposes of economy, habitual relationships are the foundation of building cohesive teams of teams, which is what a corps formation should be.

Communications

The infrastructure through which information is collected and disseminated across a corps-sized formation is its network. Creating shared situational awareness is often predicted to be getting easier in an era of instantaneous 5G data networks, big data and artificial intelligence. Unfortunately, this promising technology is a double-edged sword. Inadequate data protocols, inconsistent security measures, and greater bandwidth provided by commercial nodes and links

– to name but a few causes of friction – have expanded the vulnerability of forces, turning an Achilles heel into a threat to its entire neural system.[65] Adversaries can exploit the many gaps in a network to disrupt and defeat us if our internal inefficiencies do not do the job first. In a scenario in which NATO fights Russia, it will be up against a single state with a set of data systems and standards designed and controlled by a single party – an important advantage. To have the necessary skills to mitigate this risk, a corps must be supported by a signals brigade at all times, with multinational elements attached to work through interoperability challenges prior to the first shot fired. As communications architectures continue to develop at pace, it is also worth reiterating that the most effective capabilities of many member states will be dependent on systems that for security reasons cannot be brought in line with NATO STANAGS. Standardisation agreements therefore cannot overcome the challenge of building workarounds within a team.

Due to the scale and complexity of multi-domain shaping operations, the corps echelon is likely to be where the NATO C2 network will be under the greatest stress in future combat. A warfighting corps network must enable information to flow smoothly and securely horizontally and vertically, while orders flow rapidly downward. Every command must have the means to see and share their situation in real time while sharing intent, concept, supporting tasks and coordinating instructions between headquarters from multiple states. Network integration and protection efforts are only possible with the active participation of all key members of the corps team.

Intelligence

Seeing and understanding the enemy is the basis for all plans and orders. The intelligence process within a corps is ideally conducted by three groups: reconnaissance units, a military intelligence (MI) brigade with the expertise to process collected intelligence, and an intelligence staff that fuses it for use by the commander, the plans and operations staffs. The future corps will require all three of these to conduct MDO. To properly cover the full range of domains and distances, the reconnaissance and surveillance (R&S) assets should be a mix of air and ground based, while the MI brigade should be multinational, to ensure access to the unique capabilities of member states and their contributions to the threat picture.

US corps no longer have ISR capability under their direct control, which is a gap in their current design. Not long ago, US corps and divisions had dedicated armoured cavalry regiments (brigade-sized units) for R&S. Today, that capability has been transferred to the BCTs, each of which has a full squadron (battalion equivalent) of cavalry for this purpose. At the division level, commanders have an air cavalry squadron (battalion) with Apache attack helicopters and tactical UAVs that operate in tandem with the crewed aircraft. Within the divisional combat aviation brigade, there is also a company of long-range UAVs called ‘Gray Eagles’ (MQ-1Cs). Consequently, these assets must be tasked by the corps to meet corps-level security and intelligence collection requirements. This is, unfortunately, a recipe for friction between

65. John P Carlin with Garrett M Graff, *Dawn of the Code War: America’s Battle Against Russia, China, and the Rising Global Cyber Threat* (New York, NY: Public Affairs, 2018).

echelons. Future corps will again require a brigade-level force on the ground, specifically trained for ISR tasks, and direct control over crewed and uncrewed aerial ISR platforms. This is not to say that subordinate units will not be tasked with specific ISR collection requirements in their own areas of operation.

Another gap in US intelligence at the tactical and operational levels is human intelligence, which is too often limited to the interrogation of enemy prisoners. This is where multinational corps with local sources have a great advantage. But these human intelligence reports must find their way into the all-source intelligence process at the appropriate echelon, to be analysed and 'fused' into a coherent picture of the enemy by a team with access to all levels of classification, from open-source to top-secret compartments. In a multinational formation, the greatest obstacles to achieving fusion are not technical, but political. Intelligence-sharing agreements must be in place, with safeguards for secure data transmission between national systems. It is not too early to resolve this problem – once hostilities begin, it could be a critical Allied weakness. The 'Five Eyes' club cannot win wars alone, especially in Europe. Conversely, however, there is little point rotating NATO members through the intelligence support to corps if there is insufficient trust to allow the intelligence structure to function properly. It must be emphasised here that the bureaucracy of intelligence liaison is often far more restrictive than is compatible with operational requirements. Overcoming this is only possible with significant personal trust within an intelligence staff, which reinforces the need for standing structures between personnel who have worked and trained together.

Fires

The principal means by which a future corps will fight is through a mix of lethal and non-lethal cross-domain effects. To do this, a corps must be supported by a robust force field artillery headquarters (FFA-HQ), which controls a brigade-level counter-fire headquarters. The corps staff and FFA-HQ must be able to plan, monitor and adjust joint fires in its area of operations on both sides of the fire support coordination line, which effectively separates the close and deep battles in a geographic sense. Not all joint fires will be in support of the ground campaign, however. Land forces may be called on to support air or maritime operations with fires. Therefore, a corps command post must have the right team of airmen present to enable the commander to synchronise organic and joint fires, perhaps augmented by naval warfare experts.

With the growing importance of cyber and electronic warfare and dependence on space-based effects, the US Army has experimented with a multi-domain task force (MDTF), led by a brigadier general.[66] As currently envisioned, the MDTF will work for the theatre army commander. So, to properly integrate its capabilities into the corps scheme of fires, it must work closely with the FFA-HQ commander while remaining integrated with the combined joint force air component

66. Sean Kimmons, 'Army to Build Three Multi-Domain Task Forces Using Lessons from Pilot', US Indo-Pacific Command, 15 October 2019, <https://www.pacom.mil/Media/News/News-Article-View/Article/1989387/army-to-build-three-multi-domain-task-forces-using-lessons-from-pilot/>, accessed 18 October 2020.

commander (CJFACC). In summary, the corps FFA-HQ will likely control multiple artillery brigades in the fire support and counter-fire role, and will need to coordinate with both the CJFACC and the MDTF for cross-domain effects. In the days of ALB, the Corps Artillery HQ was a higher headquarters led by a brigadier general. Given the greater range and complexity of MDO, this is the least a future corps should have. But, because this organisation must now operate in all domains and its responsibilities extend beyond just artillery fires, it should probably be relabelled as the Multi-Domain Fires Headquarters (MDF-HQ). Given that long-range precision fires are likely to be a critical corps capability, and striking defended nodes increasingly relies on delivering convergent effects mixing electronic warfare and kinetic strikes, the integration of electronic warfare and long-range precision fire kill chains within the MDF-HQ will be critical.

Information operations and military deception require a mix of specially equipped organisations and standard units playing their respective roles. An example of a unit specially equipped for military deception operations is an electronic warfare company that can emulate signatures of critical assets. These were once found in US divisions and corps, but were largely eliminated over the past 20 years of counterinsurgency operations for the sake of economy. Fortunately, some NATO member states retained limited electronic warfare capability, which has allowed the US to leverage their expertise as it plays catch up. Because of the nature of the electromagnetic spectrum, control of these assets at the right echelon is important to avoid 'mixed messaging'. While the divisional echelon may be appropriate in some instances, deceptions that impact multiple divisions will be coordinated at the JFC level, and implemented by the corps echelon. A dedicated team of experts at the corps level is necessary if NATO is to go head-to-head with the originators of the term, *maskirovka*.[67] Consequently, these assets and operations should be controlled by the Corps MDF-HQ to ensure they are integrated with other cross-domain effects, and with operational manoeuvre.

Manoeuvre

Operational manoeuvre is intended to seize positions of strategic importance, like a major port, economic hub or city. It can also be intended to destroy key enemy formations like Iraq's Republican Guard during the First Gulf War.[68] In MDO, manoeuvre can occur across domains, from the sea and through the air, as well as on the ground. While this is not new, the objectives of these manoeuvres may be. A ground force could be used to negate an enemy space or cyber capability or gain control of a position that can be used to interdict the enemy's maritime operations. Obviously, this goes well beyond defeating the enemy forces in front of you. In the absence of formations like a field army, a corps would be called on for these missions.

67. It is notable that operational-level deception was a central component of Russian doctrine as early as the 1920s and is persistently refined and exercised. See David Glantz, *Soviet Military Deception in the Second World War* (Abingdon: Frank Cass, 1989), pp. 5–20.
68. Douglas W Craft, 'An Operational Analysis of the Persian Gulf War', 31 August 1992, <https://apps.dtic.mil/dtic/tr/fulltext/u2/a256145.pdf>, accessed 20 August 2020.

Protection and Mobility

All commanders must take appropriate measures to preserve their force so they can apply maximum combat power to accomplish the mission. Six important subsets of this function are: air defence; rear area security; cyber defence; CBRN defence; operational security; and deception. To this end, a US Army corps is typically supported by an air defence artillery brigade, a military police brigade, an engineer brigade and a chemical brigade. While the roles of these units are self-explanatory and remain relevant, in the 21st century other forms of protection are also needed.

Operational security is not new and is the responsibility of all organisations and individuals. But it now extends far beyond mere camouflage, information, noise and light discipline. Cyber security has evolved from information security – namely, the proper handling of sensitive information – into perhaps the most important aspect of protection. As our reliance on computerised networks grows, so does our vulnerability. Therefore, a dedicated cyber defence organisation is needed at every echelon down to the brigade, typically within the signals organisations.[69]

Combat engineers assist with protection, mobility and counter-mobility. In addition to 'digging in' vulnerable assets, they provide critical support to manoeuvre forces in crossing gaps such as rivers. In the era of precision-guided munitions, bridges are highly vulnerable and mobile bridging will be critical in Europe. Moreover, the accuracy in timing of movements to emplace and cross wide 'wet gaps' demands practice, especially if it is to be accomplished without detection through extensive communications. Indeed, the challenge presented by wide 'wet gaps' is perhaps one of the best examples of where multi-domain manoeuvre is critical. Under real-time space-based observation, preventing an emplaced bridge from being struck by fires requires a truly multi-domain approach, cutting off adversary space-based observation, sanitising the area of penetrating sensors, creating multiple false positives for adversary standoff ISR, and using coordinated air and missile defence to keep crossing points viable. The ability of Allied forces to rapidly emplace large obstacles is far lower today than it was during the Cold War, as a result of popular objections to scattered minefields that have grown in the West (although not among its adversaries). Significant investment in both obstacle emplacement, as well as in obstacle reduction capabilities, is critical for all NATO forces. Until these assets become widely distributed, it makes sense for corps to retain and employ them in support of their subordinate units, either to weight main efforts or to economise force elsewhere.

Sustainment

Another critical corps responsibility is to assure sustainment within its designated area of operations. Sustainment includes supply, maintenance, personnel services and medical care. A US Army corps relies on a sustainment command led by a brigadier general to organise this function within its area of operations. Any multinational corps must have a robust organisation

69. It is for this reason that the UK has formed 13 Signal Regiment. See Alistair Bunkall, '13th Signal Regiment: British Army Creates New Cyber Unit to Protect Forces', *Sky News*, 5 June 2020.

to ensure this critical function is properly executed. Existing corps headquarters in NATO must make it their business to sort through the vast differences in arms and equipment among their troop-contributing states. While personnel services such as mail, pay and so forth can and must be left to each state's internal processes, medical care cannot. Uniform quality of treatment of casualties within a formation is essential if the corps' constituent forces are to conduct rapid manoeuvre and flexibly support one another. Again, while STANAGs should make this simple, in reality different levels of medical capability and political risk tolerance regarding casualties among NATO members often produce less aligned procedures. Therefore, joint exercises of units that will in fact work together in combat is critical.

Finally, it must be noted that the protection of sustainment assets represents a critical corps function that is becoming increasingly complex with the extensive proliferation of ballistic missiles and loitering munitions, and therefore accentuates the pressure on corps-level air defence and counter-fires networks.

III. Implications for NATO

HAVING ESTABLISHED THE capabilities required within the future corps echelon, it is worth considering the actual state of NATO corps today. NATO currently has 10 corps headquarters in Europe, discounting V (US) Corps:

- NATO Rapid Deployable Corps (RDC) Italy.[70]
- Allied Rapid Reaction Corps (ARRC).[71]
- NATO RDC Turkey.[72]
- EUROCORPS.[73]
- Multinational Corps Northeast (MNC-NE).[74]
- I German-Netherlands Corps.[75]
- NATO RDC Spain.[76]
- Rapid Reaction Corps (RRC) France.[77]
- NATO RDC Greece.[78]
- Multinational Corps Southeast.[79]

In theory, all NATO corps have associated divisions. In practice, these divisions are usually not permanently assigned to their respective headquarters and their units are deployed on a range of tasks. Few of the headquarters routinely exercise with their divisions, and few hold organic enablers to be able to function as a corps echelon, even if their associated divisions were available. RDC Italy has a support brigade under command including a signals regiment, while RDC Spain maintains its organic signals support. Both are premised on being assigned divisions from those currently available across NATO in a crisis, though neither country has

70. NATO, 'NATO Rapid Deployable Corps Italy', <http://www.nrdc-ita.nato.int/>, accessed 20 August 2020.
71. NATO, 'Allied Rapid Reaction Corps', <https://arrc.nato.int/>, accessed 20 August 2020.
72. NATO, 'NATO Rapid Deployable Corps Turkey', <http://www.hrf.tu.nato.int/>, accessed 20 August 2020.
73. EUROCORPS, 'A Force for the EU and NATO', <https://www.eurocorps.org/>, accessed 20 August 2020.
74. NATO, 'Multinational Corps Northeast', <https://mncne.nato.int/>, accessed 20 August 2020.
75. Headquarters 1 (German/Netherlands) Corps – 1GNC, 'About', <https://1gnc.org/>, accessed 20 August 2020.
76. Spanish Ministry of Defence, 'HQ NRDC-ESP', <https://ejercito.defensa.gob.es/en/unidades/Valencia/emincgtad/>, accessed 20 August 2020.
77. NATO, 'Allied Rapid Reaction Corps France Under New Leadership', 29 August 2019, <https://shape.nato.int/news-archive/2019/rapid-reaction-corps-france-under-new-leadership>, accessed 20 August 2020.
78. NATO Rapid Deployable Corps – Greece, <http://nrdc.army.gr/>, accessed 20 August 2020.
79. Currently a divisional headquarters. See Multinational Division Southeast, <https://mndse.ro/>, accessed 20 August 2020. It is, however, becoming a corps headquarters. See Romanian Ministry of National Defence, 'Establishment of the HQ Multinational Corps South-East'.

the requisite enablers to provide the corps echelon around the headquarters without further support, and it is unlikely that NATO allies would therefore fold under these staffs. RRC France holds a permanently assigned support battalion, while its headquarters personnel are routinely rotated out of the corps to support French national missions.[80] The formation of a three-star headquarters is probably best suited for the French army, but France is unlikely to be able to field more than a single warfighting division.

I German-Netherlands Corps commands a signals battalion and headquarters battalion, while EUROCORPS holds under command a headquarters support battalion and a brigade headquarters. Both of these formations are more closely aligned with their assigned formations, and there are parallel multinational structures at lower echelons including the German-Netherlands 414 Tank Battalion and the Franco-German Brigade. As a headquarters, I German-Netherlands Corps provided the headquarters to the International Security Assistance Force in Afghanistan for a rotation. However, both corps are in large measure a reflection of the political project for greater European integration rather than primarily formations advancing a NATO strategy. In a warfighting context, the three countries could bring together a significant proportion of the enablers for a single corps echelon, but between them they maintain four corps headquarters, which necessarily imposes a disaggregation of training and exercising that could be concentrated to create a more effective corps formation.

Turkey and Greece's RDCs have assigned sovereign units that are more consistently exercised as formations, with the Turkish corps controlling an armoured and infantry division, and the Greek corps having two infantry brigades and two infantry regiments under command. Both have a limited allocation of corps enablers. However, these headquarters are both double-hatted as national military commands, designed to take up defence of the sovereign territory in the event of crisis. Furthermore, owing to mutual mistrust, neither state is likely to be politically willing to push these corps with their subordinate divisions to elsewhere in NATO, although Turkey has deployed its headquarters to Afghanistan. The ARRC in the UK – as the designated NATO high-readiness headquarters at the time of writing – does have assigned units and has been using the past year to work up its subordinate staffs. The ARRC is probably uniquely well suited to acting as a multinational corps alongside the US because there are Five Eyes reporting lines that run from the bottom to the top of the formation, making integration into US C2 much easier.

MNC-NE is unique. It has been designated NATO's regionally focused headquarters and has assigned to its command a brigade from each of the Baltic states, along with Poland, and all of the NATO Enhanced Forward Presence battlegroups. This means it has significant forces under command, a clear area of responsibility, and the ability to develop robust procedures. However, MNC-NE is most valuable as a means to coordinate deterrence and competition along Russia's border, rather than as a warfighting formation. This is because, in the event of an escalation, all

80. Lieutenant General Tim Radford – then COM ARRC – stated in 2017 that 80% of RRC-France's taskings were national. See Radford's speech at RUSI Land Warfare Conference, RUSI, 'RUSI LWC 2017 – Session 7', 00:09:10-00:09:35, <https://www.youtube.com/watch?v=_EcrrD1dBhg>, accessed 18 October 2020.

of its subordinate units border Russia, and are from states that either border Russia or placed troops under its command as a tripwire. National defence priorities therefore mean that all of its assigned units would be fixed in territorial defence across a very large area in the event of conflict. While MNC-NE thus performs a critical function, it is not likely to be available as a corps formation. The Multinational Corps Southeast, based in Romania, is intended to play a similar role in the Balkans, but it has yet to be formed as it was only recently established.

In theory, all of these headquarters are capable of exercising command at the corps level, and could therefore transform – with the allocation of subordinate divisions and units at echelon – into the nexus of corps formations. Unfortunately, this is not the case. Member states have invested in developing corps headquarters but very few have the enablers to support a corps echelon, let alone offer subordinate forces. This is the case across the Alliance, and since members cannot generate enough enablers to transform these headquarters, they are offering NATO cheques that the Alliance cannot cash in a crisis. The problem gets worse when theory is translated into practice. While these formations might be able to carry out the tasks of a corps headquarters, as emphasised in the previous chapter, actually performing these tasks requires extensive exercising alongside subordinate commands, since there will be a large number of kinks to iron out in any multinational formation. Under the current system, therefore, NATO members are investing in capabilities that when brought together become less than the sum of their parts.

Since most states cannot afford to maintain a consistent corps echelon to offer NATO without extensive augmentation from other members, and because each state wishes to take a turn at the helm, NATO accepts corps headquarters being held at readiness on a rotational basis. While this may satisfy the political needs of the Alliance, and has worked in environments where there was a significant limit to the adversary's ability to escalate, as in Afghanistan, it creates serious problems when trying to maintain a deterrence posture against Russia. The biggest challenge is that, because the units assigned to headquarters rotate, there is a cycle of readiness as these corps work up and integrate. It is rarely smooth, and leads to long periods where formations have not exercised with subordinate units. For example, when the ARRC stepped up as NATO's high-readiness corps headquarters, it experimented with forming a multinational field artillery brigade (FAB), since no single state could generate sufficient artillery pieces to offer a whole FAB. However, because states had different fire control procedures, brought a wide range of equipment – some of which was not suitable for a corps echelon fires capability – and had different legal frameworks for employing artillery, this formation proved complicated to field. How, for example, could a multinational fires brigade function when some members could use cluster munitions and others could not? Through the ingenuity of the corps staff, these issues were ironed out, but it was neither quick nor simple. It took months of consultation with both the artillery units, and several member states' legal advisers.[81] This is just one example of how standardisation in theory does not mean interoperability in practice unless corps are exercised and have had the time to develop a warfighting team. Another example of the challenge between

81. General Officer's Briefing on the Multinational Fires Brigade to International Fires Symposium, Lark Hill, 18 October 2019.

member state contributions and the aspiration for a corps echelon comes from Exercise *Defender Europe*. The ARRC was scheduled to play a prominent part in the group of associated exercises, though these activities were significantly curtailed owing to the coronavirus pandemic.[82] Because the UK's 104 Logistics Brigade was tasked for ongoing defence commitments, the ARRC lacked an echelon in its logistics chain, leaving some tactical formations with an 800-km gap in their supply lines.[83] This was not the fault of the corps headquarters, but rather a reflection of the fact that they had not been fully resourced for exercising. Thus, a critical part of the corps sustainment effort had not been exercised alongside the rest of the staff.

A Change in Mindset

The proliferation of NATO corps headquarters in the 1990s and early 2000s – with the ARRC serving as a model – preceded the era of counterinsurgency campaigns in Iraq and Afghanistan. This context is critical because it explains why so many corps lacked requisite warfighting enablers.[84] In essence, these headquarters allowed a range of NATO members to rotate through command roles in expeditionary activities, where their officers could take turns at performing command tasks, and a wide range of NATO members could strengthen support for their contributions by showing the prominence of their roles in the campaigns. The proliferation was thus driven by primarily political – rather than military – considerations. Arguably, as national militaries have declined in size and capability since the end of the Cold War, NATO's military effectiveness has suffered from jostling for prestige posts among its members.

The legacy of prioritising politics over military effectiveness is discernible in how NATO has responded to Russia's renewed assertiveness in Eastern Europe. For example, one response was the formulation of the NATO Readiness Initiative, whereby members committed to offer 30 battalions, 30 squadrons and 30 ships at 30 days' readiness for the Alliance.[85] Such a well-rounded set of numbers could theoretically translate into effective and useful military formations, but the commitment when made was fairly meaningless. The details had not been worked out before the announcement. Instead, a militarily hollow commitment was made, and it was left to military planners to turn a commitment of mass into useful military formations.[86] Another example might be the UK's commitment to AJAX armoured vehicles in 2014. Announced one year before a Strategic Defence and Security Review, this sudden decision on a specific platform without – at that point in time – a surrounding concept was driven by the political

82. Jen Judson, 'COVID-19 Dampens European Exercise, But US Army Chief Says All is Not Lost', *Defense News*, 18 March 2020.
83. Author interview with senior British logistics officer responsible for arranging supplies between the corps and divisional support area, August 2020; author interviews with corps staff, November 2020.
84. Anthony King, *The Transformation of Europe's Armed Forces: From the Rhine to Afghanistan* (Cambridge: Cambridge University Press, 2011), pp. 77–79.
85. NATO, 'NATO Readiness Initiative', June 2018, <https://www.nato.int/nato_static_fl2014/assets/pdf/pdf_2018_06/20180608_1806-NATO-Readiness-Initiative_en.pdf>, accessed 20 August 2020.
86. Author observations of the subsequent discussions surrounding what the NATO Readiness Initiative should actually constitute.

need to be seen to be doing something in response to the annexation of Crimea.[87] These examples speak to a consistent trend, where political commitments pre-empt military planning, rather than occurring in unison. The result is members offering the Alliance capabilities that often align poorly with a wider framework. This problem has been recognised among NATO militaries, and a great deal of work has been done to turn these political commitments into effective structures. The transformation of MNC-NE and the underpinning NATO deterrence strategy are good examples of a shift in mindset. The NATO Readiness Initiative is a much more credible proposition today than it was when initially made, though members still try to double-hat capabilities between it and other responsibilities.

This shift in mindset needs to permeate NATO's political leadership. Members' contributions need to be more closely judged by their effective outputs rather than simply being mass put into the system. NATO officials often stress the importance of the message sent by big statements of commitment,[88] but given that Russian military analysts will have no difficulty in appreciating the gap between promises made and capability available, it is difficult to see how this can achieve a deterrent effect.

A further issue in the rational structuring of higher echelons within NATO is that there is a perception among militaries that the right to field higher echelon headquarters is earned by the scale of commitment a member makes in subordinate tactical formations. At a basic level, members are reluctant to put units under the command of another member with fewer troops in the frontline. Although instinctively reasonable, this attitude is increasingly outdated. Higher echelon activities are no longer insulated from combat. A corps may find itself under significant attack from air and missile attacks, extensively engaged in counterbattery exchanges, conducting deep strike operations with its organic aviation, and defending critical ground lines of communication with large numbers of kinetic clashes against enemy special forces and long-range reconnaissance units. These activities are likely to see casualties at the corps echelon, but they are also critical to enabling subordinate divisions to continue to fight. So long as the perception persists that troops assigned to the corps echelon mean a NATO member has 'less skin in the game', countries will continue to field and seek to support frontline units, leaving contributions to higher echelons as a secondary consideration, which dooms higher echelons to being left hollow, or needing to rapidly amalgamate new units in a crisis.

87. This is not a criticism of AJAX's capability, merely that the decision on the vehicle pre-empted working out how it was to be employed. See *BBC News*, 'Nato Summit: £3.5bn Armoured Vehicle Deal to be Signed', 3 September 2014.
88. The Wales Declaration, for instance, was lauded at the time for being a clear statement of intent, with the commitment to 'providing the resources, capabilities, and political will required to ensure our Alliance remains ready to meet any challenge,' despite the lack of military coherence in the subsequent slew of rapidly announced military spending decisions. See NATO, 'Wales Summit Declaration', 5 September 2014, <https://www.nato.int/cps/en/natohq/official_texts_112964.htm>, accessed 25 November 2020.

Perhaps the most important change in addressing this weakness is to move away from the emphasis on 'rapid reaction'. A post-Cold War nomenclature, rapid reaction implies the ability to quickly respond to a threat by bringing together a multinational force. While comfortably defensive, it is a mindset out of kilter with national operating concepts. US MDO stresses competition to deter aggression and set the conditions for victory. The UK's Integrated Operating Concept envisages continuous operations to *constrain* adversaries through deterrence by denial. There is no point being ready if the responsive force is not competitive with its adversary, as demonstrated by Task Force Smith in Korea.[89] It may be argued that NATO's corps headquarters have a clearer understanding of the threat. Yet, since they rapidly rotate their responsibilities and have few permanently assigned troops, and given the need to exercise to ensure effective performance, it must be doubted whether these formations are in fact up to the task. The upshot is that 'rapidly deployable' needs to shift towards being long prepared, and actively engaged in upholding NATO's deterrence posture. In this sense, the MNC-NE is an important signifier of the necessary direction of travel.

Rationalising NATO's Corps Echelon

If we consider how many corps NATO needs to fulfil its mission, we come to a force that is well within the means of its members. As regards high-intensity warfighting, NATO's primary mission remains deterrence of Russia in Europe. Any future conflict between China and the US would likely not require a NATO response – occurring beyond the North Atlantic area – though NATO members might well participate. There also remains the possibility of NATO requiring the ability to conduct interventions against sub-peer adversaries, however these operations could in many instances be facilitated by framework joint staffs held by member states. Given the threat environment, it is reasonable to argue that either because of the complexity of the operating environment and the span of responsibility of deployed forces, or the severity of the threat environment and the need to protect sustainment assets, a corps echelon will often be necessary in expeditionary interventions. Where the level of threat has required a corps headquarters, as with the campaign to defeat the Islamic State, the need has been fulfilled by III (US) Corps and XVIII (US) Airborne Corps, though NATO corps headquarters could fulfil a similar role if the capabilities required to perform the tasks of a corps echelon were made available by members.

For NATO's central task of deterring Russia, it is necessary for the Alliance to critically evaluate the level of force that is needed. NATO cannot prescribe what its members offer the Alliance, but members need to rationalise their contributions. The number of corps headquarters necessary may be debated, but should be matched by the ability to bring together fully equipped corps echelons, alongside enabled subordinate divisions, with headquarters staffs who know one another, have exercised together and have assured their interoperability.

89. T S Allen and Jackson Perry, 'Task Force Smith and the Problem with "Readiness"', Modern War Institute, 17 July 2020, <https://mwi.usma.edu/task-force-smith-and-the-problem-with-readiness/>, accessed 20 August 2020.

The deterrence task may be broken into three distinct roles. There are those forces that remain prepared to defend NATO's eastern flank, those that are formed further west to retake ground should deterrence fail, and those ready to compete along and secure NATO's flanks in the High North and Black Sea. The emphasis for formations prepared to defend NATO from Russian aggression would be to provide multi-domain effects in support of national defence forces, facilitate the entry of rapid reaction forces into the area of operations, arrange for resupply, and gather and fuse sensor data to support the commencement of SEAD/DEAD operations. Crucially, these forces would aim to protract Russian ground operations to prevent a gap between the initial incursion and NATO's reclamation of territory. On one level, these forces would struggle to hold a rigid structure of units, because available forces would largely depend on where Russia impinged on NATO territory. Nevertheless, this would make exercising a corps level of command and enablement even more important, as many procedures for ensuring resupply and reinforcement would need to be adapted to circumstances. A further peculiarity of these forces would be the political sensitivity of their operations. Because of the direct territorial threat posed to states bordering Russia, national defence priorities are likely to trump any Alliance requests for military activity. In order to ensure the cooperation of NATO members bordering Russia, therefore, these forces must be supported by a commander who is politically attuned to those states' requirements and has strong interpersonal relationships with political and military leaders in the area of operations. This suggests the need for a permanent headquarters with significant participation from the region, and staff rotations that retain relationships and corporate memory. This is not a task that is appropriate to rotate through numerous multinational corps with high staff turnover and frequent transfers of responsibility. MNC-NE is already moving in this direction, and likely represents the best framework for delivering such a capability. However, as already mentioned, its subordinate units would be rapidly fixed, while the headquarters itself lack many assets at echelon to support its subordinates. This highlights a key priority for other NATO members to support.

The deterrent value of such forces in place is only assured if a counterattack to secure ground taken by Russian forces can be launched within a politically relevant timeframe. The US currently conceptualises forces in place as 'contact forces' aimed at deterring or slowing the advance of an enemy. But these must be backed by 'blunting forces' able to counterattack and stabilise the front, and 'surge forces', arriving later to reimpose the status quo ante. The US contribution to the blunting force would be spearheaded by V (US) Corps, with American enablers supplemented by niche Allied capabilities such as human intelligence companies attached to the V Corps MI Brigade. Similarly, Allied CEMA specialists would likely need to support the US signals brigade to facilitate access to systems in Allied countries. Nevertheless, V Corps is to be a US corps with international augmentation, not a multinational corps. The surge force component, taking longer to mobilise, would be drawn from across NATO.

The need to either compete and secure NATO's flanks, or support a secondary line of effort alongside V Corps, demonstrates the need for a further multinational force made up of NATO members in the blunting force. This force will likely draw on certain members disproportionately for key capabilities. For instance, only the UK and the Netherlands have combat aviation suitable to provide an equivalent to a US combat aviation brigade (with over 100 aircraft of various

types).[90] No NATO state other than the US currently possesses sufficient long-range precision fires to enable a multinational fires brigade without drawing on units that are also critical to the divisional echelon. Whichever NATO member resources a commitment to multiple launch rocket systems for the corps echelon therefore needs to have that contribution recognised as comparable to providing a divisional artillery group. Non-lethal fires, such as cyber capabilities, will likely need UK participation for offensive capabilities, and Eastern European support to enable access to the battle area. Corps ISR assets are also in short supply. The challenge in fielding an ISR brigade at the corps echelon is that it must be supported by an integrated communications network, but the security of such a network is hard to assure across a composite formation. Realistically, therefore, an ISR brigade and corps-level reconnaissance structure will need most of its platforms fielded by one or two NATO members. Robust ISR is vital for contact forces to counter enemy reconnaissance and maximise the effect of their fires on an attacking adversary, and for blunting and surge forces to inform the plans for counterattacks. Italy and France both have medium-weight recce forces that could provide a credible formation. ISR assets are scarcer. Again, rewarding states for making brigades available to the corps echelon is important if the assets to make up a credible corps echelon are to be resourced.

Air defence is also lacking in NATO. Germany and the Netherlands maintain Patriot systems, but not in numbers sufficient to leave any available for protection of corps assets. The provision of air defence also likely requires links to F-35 and airborne ISR to benefit from available eyes forward. This creates an integration challenge, especially for states that do not operate the F-35.[91] The two areas that would be relatively simple to resource are infantry for rear area security and corps-level logistics, interfacing with NATO's Joint Support and Enabling Command. Space expertise could be drawn from the European Space Agency and other bodies, given expanding European space infrastructure. But these personnel would need to learn how to integrate into military operations and obtain the policy permissions in advance to divert these assets to other purposes. This is a non-trivial issue and is why the US recently undertook to create a sixth branch of their armed forces, the Space Force.[92]

Given the shortfalls in NATO's ability to provide the enablers for even a single multinational corps echelon without US support, the usefulness of retaining 10 corps headquarters should be debated unless members are prepared to increase their contributions to provide these headquarters with their echelon troops.

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90. The UK's 1 Aviation Brigade holds competitive platforms, which could be augmented by Dutch attack aviation. See British Army, 'Army Establishes Its 1st Aviation Brigade', 5 May 2020, <https://www.army.mod.uk/news-and-events/news/2020/05/army-aviation-brigade/>, accessed 20 August 2020.
91. Justin Bronk, 'Maximum Value from the F-35: Harnessing Transformational Fifth-Generation Capabilities for the UK Military', *Whitehall Report*, 1-16 (February 2016).
92. US Space Force, 'About the United States Space Force', <https://www.spaceforce.mil/About-Us/About-Space-Force>, accessed 20 August 2020.

Conclusion

THE CORPS ECHELON is likely to be the keystone in future operations between the operational and tactical level of war. This is because tactically relevant effects can now be applied throughout the operational depth of a force, and because MDO require a level of command that would cognitively overload or dangerously bloat divisional headquarters. Moreover, as informational and political factors have an increased shaping effect on tactical activity, these elements must be managed as part of the tactical level, while necessitating senior officers to provide an appropriate interface with civilian counterparts. Higher echelon headquarters are required to ensure an appropriate span of responsibility and not just the span of control of subordinate formations.

However, the nature of corps-level warfighting has evolved from the Cold War. The corps is no longer just a command function but a critical warfighting echelon engaged in its own fight. If that fight is under resourced, subordinate echelons will find themselves either running low on supplies or facing adversaries that have not been subjected to shaping, and therefore be at a disadvantage. This shaping activity is not just critical in warfighting but central to deterrence and to the period of prolonged competition preceding and following combat operations. It is also increasingly necessary in low-intensity expeditionary operations, especially as long-range precision fires and strategic anti-aircraft systems proliferate among sub-peer adversaries.[93]

During the unipolar post-Cold War era, NATO corps headquarters have multiplied, but the corps echelon has been inadequately resourced and insufficiently exercised. Today, states maintain corps headquarters while having insufficient enablers to support divisional operations, which leaves corps to draw on the often inappropriate and incompatible remnants of national capability. The corps level of command has been left to political jockeying and turn-taking at the expense of military effectiveness. With the return of great power competition and a renewed threat from Russia, the lack of a resourced corps echelon in NATO threatens to undermine the Alliance's central mission of deterrence.

93. Justin Bronk, 'Air Forces: Approaching a Ford in the Sky', in Jack Watling (ed.), *Decision Points: Rationalising the Armed Forces of European Medium Powers*, Whitehall Paper 96 (London: Taylor & Francis, 2020), pp. 52–62.

To conduct its shaping, C2, force protection, sustainment and fighting responsibilities, a credible corps echelon needs more than just a headquarters. Its organic assets should include:

- A signals brigade.
- A fires command, capable of controlling multiple brigades with organic target acquisition radar systems.
- Electronic warfare-, information operations-, psychological operations- and cyber-capable companies.
- An aviation brigade.
- A reconnaissance brigade.
- A military intelligence brigade, including:
    - An ISR battalion equipped with multi-role long-range unmanned aerial systems and manned and/or unmanned ground surveillance assets.
- A logistics command able to control and support multiple logistics brigades, including:
    - A medical brigade.
- A chemical defence brigade.
- A combat engineer brigade.
- An air defence brigade.
- An infantry brigade with organic mobility for force protection or a military police brigade.
- A civil affairs brigade and political liaison team.
- An air support operations group, with sufficient air support squadrons to support subordinate divisions.
- A space support element.

This is a considerable force package, comparable in scale and complexity to a frontline division. Yet, without it, NATO's frontline divisions are liable to lack survivability or endurance, becoming less than the sum of their parts. It is therefore essential that the Alliance – in regenerating its conventional deterrence posture – encourages and rewards states for offering capabilities to this echelon. NATO must also prioritise exercises that link this to divisional headquarters. The need for this echelon of capabilities does not alter the requirement for NATO members to ensure there are a credible mass of warfighting divisions. But the Alliance as a whole must judge the value of contributions by the effectiveness of the combined force, rather than on the balance of inputs.

Finally, it must be clearly acknowledged that after a brief dalliance with prioritising highly enabled brigades in the Russian Ground Forces, the Russian Federation has concluded that they lack endurance and combat power,[94] and has returned to divisional structures for warfighting.[95] Moreover, Russian divisions are supported by a robust higher echelon structure through the

94. Igor Sutyagin, RUSI, 'RUSI LWC 2017 – Session 7', July 2019, 21:54–48:00, <https://www.youtube.com/watch?v=_EcrrD1dBhg>, accessed 8 April 2020.
95. Lester W Grau and Charles K Bartles, *The Russian Way of War: Force Structure, Tactics, and Modernization of the Russian Ground Forces* (Fort Leavenworth, KS: Foreign Military Studies Office, 2016), pp. 31–34.

army group command and military district command, which possess the enablers outlined above. Russian Ground Forces conduct regular snap drills that link tactical dispersed drills with the centralised C2 structure, practise operational manoeuvres and are currently well placed to conduct operations at scale.[96] Russia is taking their warfighting capability seriously. To maintain conventional deterrence, NATO must do the same. Revitalising the corps echelon would be a powerful signal of intent.

96. Not only have the Russians engaged in large, complex drills for several years, but these are also increasingly being combined with more connected serials. See Michael Kofman, 'Assessing Vostok-2018', *Russia Military Analysis*, 28 September 2018, <https://russianmilitaryanalysis.wordpress.com/2018/09/28/assessing-vostok-2018/>, accessed 20 August 2020; Davudova, 'Udar ognem' ['Fire Strike'].

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As a brigade combat team commander in Ramadi, Iraq, he is credited with fostering the Sunni Arab 'Awakening', which was instrumental in turning the tide of the war. While commanding III Corps, he also commanded all coalition forces in the war against the Islamic State in Iraq and Syria from 2015 to 2016, during which time coalition forces recaptured nearly half of the Islamic State's territory and set the conditions for their final defeat.