



F-35B Lightning jets of 617 Squadron land on HMS *Prince of Wales* near Vest Fjorden, Arctic Circle, as part of UK-led exercise Joint Warrior, part of wider NATO exercise Steadfast Defender, March 3, 2024 (UK MOD/Amber Mayall)

2040 Vision

Designing UK Defence for Advantage in a Competitive Age

By Peter Rowell and Joe Fossey

If you want to go fast, go alone. If you want to go far, go together.

—AFRICAN PROVERB

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Some readers will have a close affinity for Scottish whisky and heroes (rebels?) such as William Wallace. We wonder if the request for us to write an article for *Joint Force Quarterly* was inspired by another Scottish icon, the poet Robert Burns, who

wrote, “Oh, would some Power the gift give us / To see ourselves as others see us!”¹ We are sure that we shall fall short of the literary genius of Burns, but we hope our observations will provide some of the value he describes of being seen through the eyes of others. It is

certainly a great privilege to write for *JFQ* and offer a United Kingdom (UK) perspective on the Joint Warfighting Concept (JWC).

As the UK leads for concepts and force design, we have been fortunate to participate in the Globally Integrated Wargame (GIWG) series since 2022. We appreciate the courage, willingness, and sheer hard work to open the GIWG to the Five Eyes partners.² We have learned an enormous amount, particularly about how a well-written concept helps us all to look at complex conundrums in ways that lead to actionable deductions. We hope the perspectives we and the other Five Eyes partners have brought have helped refine the JWC, and we offer this article in the same spirit.

The UK is also writing capstone concepts, which are critical to the modernization of military ways and means.³ They provide the clear, ambitious, and necessary aiming point to which all modernization efforts should be aligned. The JWC clearly lays out the modernization imperatives and priorities for the U.S. joint force. In the UK, we are also working hard to conceptualize our future Defence requirements. The UK Development, Concepts, and Doctrine Centre is nearing completion of a 3-year endeavor to deliver future UK capstone concepts in spring 2024. Put simply, the aim of the concepts is to articulate what UK Defence must do to create and maintain national advantage out to 2040, including how we must fight. The concepts are intended to drive modernization of UK Defence and evolve a fully integrated approach to future deterrence and defense.⁴

We observe that the U.S. approach to writing concepts is comprehensive. It starts with an operational problem, developing an operational design, and then deducing the concept's required capabilities. Applying the approach to the full range of operational problems yields a combination of the concept's required capabilities that ensure modernization efforts are not dissipated across several conceptual headmarks.

In the UK, we take a more generic approach to concept development,

starting with an articulation of the whole future operational environment and making recommendations to help senior leaders balance ends, ways, and means. Although this makes the initial articulations less focused than the U.S. approach, it avoids the need to combine several lists of requirements. Whatever the method, concepts do not free us from hard choices. Their irreplaceable value is that they do allow us to consider hard choices in a structured way and thereby develop actionable modernization efforts. Discussing our respective concepts allows us to test and challenge each other and encourages us to ask better, more searching questions.

Road to 2040 Capabilities

In this article we lay out the future needs predicted by the UK capstone concepts out to 2040 and set out key elements of our response. The first key argument in this response is the need to compete and to be ready to fight with a new mindset that is proactive, collaborative, and relentless. Following this, we cover how we intend to fight alongside allies and what characteristics the force must have to achieve this. The ability and will of a military force to fight is, after all, the bedrock. The article details the scope of changes required in the UK Defence Enterprise and how we propose to usefully adopt emerging technology.

Throughout, the analysis and findings from the UK capstone concepts are compared with those of the JWC to show key areas of compatibility and how they complement each other to build UK-U.S. alignment. It also describes how the UK force design process is working to operationalize this concept, building alignment and allied advantage through increased interoperability and interchangeability. The purpose is to make effective change so that our military forces are more interoperable, capable, and lethal. Rightly, we require political consent and support to enact these changes, which is why it is so helpful to test our ideas with others. Our combined thinking is more robust and should be more compelling as a result.

The Game Is Changing

It is clear we face an era of global power competition—and even contest. Former Chairman of the U.S. Joint Chiefs of Staff General Mark A. Milley captured this neatly when he wrote that the “geopolitical situation has . . . changed fundamentally,” and “the rules-based international order established 80 years ago is currently under tremendous strain.”⁵ With global interconnectedness, more players from states, organizations, and even individuals seek to reshape international rules and norms to their benefit. These changes are of vital interest to us and our allies. Doing nothing is choosing to lose.

There are compounding challenges that will also impact our nations and militaries. The growing demands of humanity and the environment will cause shifts in economic power and intensified competition for resources. Global demand for energy will continue to increase, driving competition for fossil fuels, critical materials, and novel means of power generation and storage. With competition as the baseline condition, there is greater need for multilateralism and cooperation. In this complex and unstable future, the UK must adopt an increasingly proactive posture, constantly competing as well as managing multiple and extended crises while always being ready to fight alongside allies.

An Interplay Among Dilemmas, Advantage, and Choices

There is a clear mandate for change. With allies and partners across government, UK Defence must help shape the global strategic environment, create allied advantage, and impose multiple dilemmas—all to generate choice and keep ahead of our adversaries.⁶ The UK capstone concepts identify six tasks required of Defence:

- fight
- protect
- adapt
- endure
- engage
- constrain.⁷

They also propose the *Campaigning Approach*, a dynamic and collaborative way in which these tasks will be conducted. The Campaigning Approach enables UK efforts to be anchored to a long-term view while allowing for coordination, customization, and iteration to tilt the competitive balance in our favor and to prevail in conflict. Additionally, the Campaigning Approach best supports the mobilization of a whole-of-society response. While armies, navies, and air forces win battles, wars are won by nations—most usually in alliances.

The six tasks and the Campaigning Approach form the Framework for Advantage. We are conscious of the value of a galvanizing and memorable framework for orchestrating effects in competitive and congested environments. Having been part of two GIWGs, we have found JWC's Expanded Maneuver provides such a framework, optimized to create advantage in the future operating environment. It is useful to reflect these frameworks back onto our forces and organization to illuminate necessary changes. UK Defence is fully committed to achieving alignment and interoperability with the U.S. integrated combined joint force, which is a key JWC aspiration.

Fighting Together

The capstone concepts are clear that the UK cannot prevail alone, highlighting the need to organize our military forces to fight alongside allies and partners. UK forces also need to be designed to fight in an integrated way, with the aim of returning to a state of relative advantage in competition and deterring further escalation. Both the UK capstone concepts and the JWC acknowledge that deterrence is underpinned by a credible fighting force (comprising nuclear and conventional capabilities). To be credible, a fighting force must be equipped and organized to keep pace with the changing character of the battlespace.

The UK capstone concepts' characterization of the future battlespace broadly aligns with that of the JWC. The enduring nature of war is acknowledged. Conflict remains violent, chaotic, and

fundamentally a human endeavor. The “seismic change” in the way future wars will be conducted because of technology is echoed.⁸ The development and proliferation of sensors will create greater transparency. Artificial intelligence (AI) and robust connectivity will give almost real-time situational awareness and pinpoint targeting at significant range. Advances in missiles, directed-energy weapons, and offensive uncrewed systems will deliver much greater lethality. Recognizing these factors, the UK capstone concepts identify some key emerging technologies. They also underline the importance of capabilities that can rapidly amplify those of our friends as well as systems with extended range, dwell time, and a versatile munitions mix.

The UK capstone concepts have tracked the JWC's roadmap of how future wars will be fought. The battlespace has shifted into the space and cyber domains, and competing for information advantage is an important operational consideration. The future will see a greater range of actors seeking to continuously interact with others within the spectrum of competition, crises, and armed conflict. Persistent engagement also shapes conditions ahead of conflicts. Actions taken in competition either open or close off options in crises and conflicts. Conflicts will vary in form and geographical scope. Moreover, conflicts of the future will transcend the traditional intervention operations that have dominated UK military activities in the past few decades and demand a multidimensional response.

Where control of domains is contested, the UK capstone concepts agree with the JWC methodology and recommend a “pulsed” approach. The underpinning operational logic is sound—the orchestration of multidomain activities to generate or exploit our advantages over an adversary. Deploying short and concentrated pulses enables us to respond effectively to rapidly changing dynamics. The aggregation of pulses conducted repeatedly and over a longer period can support both operational and strategic objectives. Alignment of the UK and U.S. operational approaches creates

a win-win scenario, providing a solid framework for combined key tenets of the JWC and key requirements of the UK Campaigning Approach.

The Key Battle for Integration

The epigraph that opens this article—the African proverb “If you want to go fast, go alone. If you want to go far, go together”—is, to our minds, profound. The challenges we face to keep our nations and world safe, secure, and prosperous are multidomain, multidimensional, and multinational. Integration and interoperability may be hard to achieve, but they are vital if we are to prevail in competition and conflict. To achieve the high level of competence required to conduct pulsed actions, we will need to ensure our doctrine is aligned and increase the breadth, depth, and frequency of multinational and multidomain training.⁹ We sense that high-fidelity virtual environments could provide a large portion of this need while recognizing we must still conduct live training together—in part to demonstrate our ability and resolve. To achieve the endurance required in future conflict, we must strive to make our equipment and consumables interchangeable. We have precedent and imperative.¹⁰ The drive for interchangeability does not need to force us into uniformity; there is strength in the diversity of our cultures, capabilities, and permissions that we can leverage by picking the “best athlete” for the task. The key battles for advantage in the JWC are powerful drivers for change. We offer an additional one: the key battle for integration.

Shifting Our Mindset

It is useful to reflect Expanded Maneuver back on ourselves. We must see the challenges of the infinite game clearly and recognize the critical part of all national and alliance levers of power. There are chronic challenges that will take decades to deal with. There are also acute challenges we must be ready for. Our approach must deal with both, and Defence cannot do so alone.

To keep in the game and get ahead requires that the diplomatic, informational, military, and economic levers of national power work together. The complexity and constant competition of our environment require us to shift our mindset to the Campaigning Approach. This new integrated approach has been at the heart of the UK's recent refresh of the Integrated Review and Defence Command Paper, and it will be at the heart of our capstone concepts.

Because competition and conflict are relative, we need to keep tracking our adversaries. In the same way that a good reconnaissance force keeps in contact with the adversary, so must our thinking and development. Continual adaptation is required to seize and hold the initiative. UK Defence cannot do this alone. We know how fundamental our allies and partners are, as are our partners across government. What we seek to change is our relationship with our industry and commercial partners.

We have recently launched a charter for greater collaboration with defense industry and suppliers. At the heart of this charter is trust, as well as a recognition that defense business practices have, over time, led to transactional relationships that are focused more on the contract than the military outcome. UK Defence also recognizes that its organizational design and processes are optimized for stability rather than adaptability. Our senior military and civilian leadership in Defence are committed to overhauling this in an ambitious and far-reaching change initiative that we refer to as Defence Design. We are clear that being unambiguously ready and lethal is core military business. We are equally clear that we need to retune the business of defense to keep our forces ready and lethal and ensure that we can outlast our adversaries.

Tuning the Machinery

Competition and conflict are evolutionary, so we need the workforce, structures, and processes to change at pace. Iteration is critical, and so are interoperability and interchangeability. UK Defence is adjusting some of its key processes to achieve this necessary



Soldier from 2nd Battalion (The Yorkshire Regiment) uses drone to scan for enemy during exercise Wessex Storm, Salisbury Plain Training Area, May 10, 2023 (UK MOD/Nathan Tanuku)



HMS *Queen Elizabeth*, HMS *Defender*, RFA *Tidespring*, and HNLMS *Evertsen* from UK Carrier Strike Group 21 meet up with Japanese Self-Defense Force ships JS *Izumo* and JS *Ise*, along with Canada's HMCS *Winnipeg*, as part of exercise Pacific Crown, September 9, 2021 (UK MOD/Jay Allen)

pace and interoperability. The International Joint Requirements Oversight Council (i-JROC) provides the formalized process to drive U.S., UK, and Australian trilateral collaboration, avoid duplication of effort, and increase process efficiency through deeper information-sharing. In the UK, the i-JROC is complemented by the Defence Force Development Board, which provides strategic direction and guidance across the full range of Defence Force Development activities, in line with UK Defence policy and strategy and in accordance with the higher direction it receives from the Strategy Development Group, the Defence Delivery Group, and the Executive Committee.

The recently established Integration Design Authority acts on behalf of the Defence Force Development Board to drive strategic and operational integration across the five domains.

Additionally, the Defence Equipment and Support organization is undergoing a thorough transformation to conduct acquisition at pace and with much more collaboration with industry. Our future workforce must be conceived so that we can generate the mass and replenishment necessary to prevail. Key decisions must, of course, be based on robust analysis and testing. Fortunately, there is a wealth of useful analysis across allies and partners, so an early win would be to draw this analysis together more routinely and systematically to better identify key points and trends. Testing activities such as the UK Planned Force Testing series and the U.S.-led GIWG allow collaboration with allies and partners to determine how we should integrate and fight *together*. The UK relies on evidence from such force-exploration events to determine key capability requirements.

Don't Rush to "Things"

Because new equipment is the most tangible outcomes of our concepts, there is a tendency to rush to procurement. Equipment is certainly vital, and the UK is investing in deeper precision-strike capability, notably land, sea, and air munition mix and inventory stockpiles (all classes of supply) to endure longer. However, we observe that some of the most profound capabilities are less visible, either because they are less obvious or because they relate to how systems are held together or facilitated. It is important for us to hold our nerve to first set out how we operate. Thereafter, we should articulate which competences and permissions are required.

We should consider how we amplify alliance capabilities, permissions, people, and networks. We should do all this before considering force structures and equipment. This is not an argument to

replace the attention to detail needed across the DOTMLPF (or in UK parlance, TEPIDOIL) to guide efficient acquisition.¹¹ Rather, it is an exhortation to look beyond the obvious—to avoid the *Wunderwaffe* fallacy.¹² That said, there are specific technologies and capabilities we can be confident will be required. With this being the case, we are examining capability areas such as the requirements to deceive, hide, and operate more freely in and across the electromagnetic spectrum; critical alternative navigation systems; future medical care; and the UK's continuous at-sea nuclear deterrent. We have identified some underpinning and transformational technologies. For example:

- novel computing and AI to transform C5ISRT (command, control, computing, communications, cyber, intelligence, surveillance, reconnaissance, and targeting) and virtual environments for training and prototyping.
- novel materials, manufacture, and energy to shift production forward and automate distribution.
- autonomous systems to augment and amplify crewed systems.

The space domain is growing in importance and must be exploited to integrate, protect, and defend key services to UK critical national infrastructure and to support the earth-based warfighter. We also recognize the increasing transparency of the battlespace and greater range, and precision needs to be not only grasped but also countered. And last, perhaps the most universal and least visible capabilities: connectivity and command control. There is significant opportunity and challenge ahead to ensure that we can all remain connected to coordinate across the globe in a contested and degraded environment.

Conclusion

We have made five key arguments in this article. First, we must compete constantly and be ready to fight. Second, with competition as the baseline condition, there is greater need for multilateralism and cooperation,

and we must have a mindset that is dynamic, collaborative, and relentless. Third, the UK will fight alongside its allies and partners. Fourth, the Defence Enterprise must change to adapt faster and endure longer than our adversaries. Fifth, UK Defence is fully committed to achieving alignment and interoperability to maximize its role within a future U.S.-integrated combined joint force.

Concepts are not the whole answer. But they are the first essential step to identify the characteristics and interrelationships of our complex challenges and illuminate options more clearly. They help us think all the way around the problem. Concepts embody the important creative and clear thinking that is necessary before tough choices (and sometimes compromises) are made. The plans of action must be developed and implemented swiftly thereafter. The Five Eyes' involvement in the GIWG series has opened a network of partnerships that encourages us to ask better and more challenging questions. Some of the most helpful and robust feedback we have received on our capstone concepts has come from Five Eyes partners, a key component of the developmental cycle necessary to iterate to our best solutions.

With our combined fighting ability in contested domains as our bedrock, we know that going forward our interoperability, interchangeability, and ability to adapt and endure are vital. We end as we started this article—with an exhortation that however the JWC and our own concepts unfold, our shared aim must be to go far together. **JFQ**

Notes

¹ Robert Burns, "To a Louse, On Seeing One on a Lady's Bonnet at Church," 1786. The original lines read, "O wad some Pow'r the giftie gie us / To see oursels as ithers see us!"

² The Five Eyes are Australia, Canada, New Zealand, the United Kingdom (UK), and the United States.

³ A UK *capstone concept* describes how a force should operate across a wide range of contexts. Below capstone concepts are *keystone concepts*, which focus on functions (for example, medical) or domains (for example, land).

⁴ The integrated approach aims to enhance

deterrence and defense effects through orchestrated activities of the UK Defence Enterprise (the whole of UK Defence as well as the supporting agencies, industries, commercial partners, and suppliers) across all five domains, with those of our allies and partners and the wider levers of state power.

⁵ Mark A. Milley, "Strategic Inflection Point: The Most Historically Significant and Fundamental Change in the Character of War Is Happening Now—While the Future Is Clouded in Mist and Uncertainty," *Joint Force Quarterly* 110 (3rd Quarter 2023), <https://ndupress.ndu.edu/JFQ/Joint-Force-Quarterly-110/Article/Article/3447159/strategic-inflection-point-the-most-historically-significant-and-fundamental-ch/>.

⁶ *Integrated Review Refresh 2023: Responding to a More Contested and Volatile World* (London: UK Cabinet Office, updated May 16, 2023), <https://www.gov.uk/government/publications/integrated-review-refresh-2023-responding-to-a-more-contested-and-volatile-world>.

⁷ *Integrated Operating Concept* (London: UK Ministry of Defence, August 2021), <https://www.gov.uk/government/publications/the-integrated-operating-concept-2025>.

⁸ Milley, "Strategic Inflection Point."

⁹ In addition to our doctrine of "how to conduct military tasks," we should strive to align our practices and procedures for the less obvious common tasks, such as testing, evaluating, and certifying capabilities and consumables.

¹⁰ The American, British, Canadian, Australian, and New Zealand Armies' Program (ABCANZ) was established in 1947 to optimize interoperability and standardization of training and equipment among the armies of the Five Eyes nations plus the U.S. Marine Corps and Royal Marines. Its first resolution was that all screws should tighten right and loosen left. Indeed, "righty-tighty" and "lefty-loosey" were driven by a desire for greater military interoperability. The gifting of artillery systems and ammunition to Ukraine provides another—albeit less rosy—example. Six North Atlantic Treaty Organization nations supplied nine different 155mm artillery systems to Ukraine, each with bespoke ammunition.

¹¹ The UK TEPIDOIL acronym stands for training, equipment, people, information, doctrine, organization, infrastructure, and logistics, while the U.S. DOTMLPF acronym stands for doctrine, organization, training, materiel, leadership and education, personnel, and facilities.

¹² *Wunderwaffe* is a German word meaning "wonder-weapon" that was used by the Nazi propaganda ministry to describe superweapons that would guarantee victory.