

Betting on blue: how to improve NATO military forecasting for acquisitions

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Building on the recommendations of many well-regarded experts and on my recent analysis of nearly 500 cases of ground combat – most of which involved aircraft, drones and other diverse technologies – I propose here a more evidence-focused approach to defence forecasting.¹ My arguments are premised on the analysis presented in *Ground Combat*:

¹ I use the relative and necessarily subjective word “more” here while acknowledging only limited insight into the NATO foresight and forecasting programmes. However, having examined a wide array of forecasting methods across member countries, reviewed all foresight analyses published by NATO that are available in the public domain and received expert reviewer feedback from a leading participant in the Alliance process, I believe it is safe to generalize a relative shift away from the use of military evidence in forecasting. Please see below for additional explanations and citations that help substantiate this finding.

Summary

Effective acquisition strategies require a solid, evidence-grounded forecasting methodology and real-world data. But at least for land warfare, that baseline is inadequate.

Absent a global understanding of land war – by far the most common and strategically relevant type of conventional and irregular war – NATO acquisitions may not best address even the pressing threat from Russia.

Analysis of the new Ground Combat Database shows how important findings and questions relevant to acquisitions can be drawn from longitudinal case data.

Even better analytic approaches are readily available, as are better data. Action plan forecasting and acquisitions can be improved with aggressive and evidence-grounded analyses.

OUTLOOK

Puncturing the Myths of Modern War, and specifically on one of my key findings from my study of nearly 500 cases of modern warfare:² War as it is practiced has neither a permanent and unchanging nature nor a constantly changing universal character.³

While one might agree that war remains an inherently human endeavour, the idea of universality breaks down at the practical and tactical levels of combat. As I argue below, war is far too complex and diverse a phenomenon to be distilled into a universal character at any point in history.⁴ That restriction on universal knowledge applies equally to the present moment.

As NATO directly applies its Defence Planning Process (NDPP) and launches its new Defence Production Action Plan and Rapid Adoption Action Plan, it is time for a hard check on assumptions.⁵ All these plans might be well informed by the Alliance's strategic forecasts of future threat environments⁶ and appear to achieve at least a reasonable balance between the need to reinforce conventional fighting power and the need to innovate for a war in the near future.

However, our collective security requires a more evidence-driven baseline of war as it is practiced in Europe and in NATO's broader area of interest for Alliance forecasting, force development and technical-industrial investment. We can look to the global experience of modern war to distil common and less common characteristics to identify important innovations and steady trends.

A solid evidentiary baseline best prepares NATO to achieve its overarching purpose: "[to] ensure the collective defence of all Allies, from all threats, from all directions."⁷ In practice, this means the Alliance must at least prepare for a defence against Russian aggression on and around the European continent; to protect the southern flank from irregular threats; and, ideally, to prepare for any prospective engagement in the near abroad.

There is good news here for NATO force designers and policymakers: More effective war-focused methods and sufficiently good evidence are within reach. Together, improved methods and better data on global warfare can inform the implementation of the NDPP and both action plans.

Before examining these points and moving on to data and recommendations, it is necessary to acknowledge the practical geographic limits on Alliance interest in modern warfare. NATO and most member-state leaders may not need to understand how war is fought in, say, Myanmar in 2025 to prepare for a war with Russia in Europe, for some kind of intervention in North Africa or perhaps for an engagement against Russian forces in the near abroad.⁸ However, the evidence presented here suggests that broader knowledge is essential to help put narrower (e.g., Ukraine War) lessons in context and to help ensure the Alliance balances its investments most effectively.

A distinct lack of character (of war)

Given our collective understanding of Clausewitzian military theory, it may be difficult for some policymakers and even practitioners to accept the idea that war has no permanently applicable nature or universal character. It cannot be true that war, as it is fought in one place, at one time and between two specific forces – say, in Ukraine on the Donbas front in 2025 – will be broadly representative of all global wars, or even of a prospective Russian aggression against NATO. All global wars averaged together do not generate a coherent and universal character.⁹

² Please refer to the book for a more detailed explanation of these points as well as more extensive footnoting and citation: Ben Connable, *Ground Combat: Puncturing the Myths of Modern War* (Washington, D.C.: Georgetown University Press, 2025). Also see the Ground Combat Database (GCD-V1) from which the findings in the book are derived. This database is available online without cost or third-party advertising at <https://battleresearchgroup.org/database> and at <https://groundcombat.org/database>.

³ Military professionals across the Alliance are educated to embrace what is purported to be a core Clausewitzian idea: War ostensibly has a permanent and unchanging nature and a constantly changing but at least temporally universal character.

⁴ This finding is reflected in the 2016 British Army Land Warfare Manual and also in the glaring absence of either definition or explanation in capstone U.S. military doctrine. See, for example: British Army, *Land Operations*, Army Doctrinal Publication AC 71940 (Land Warfare Development Centre, 2016), 1-1; U.S. Marine Corps, *Warfighting*, MCDP-1 (Washington, D.C.: Headquarters, United States Marine Corps, 1997); and U.S. Army, *Operations*, FM 3-0 (Washington, D.C.: Headquarters, Department of the Army, October 2022). Both the U.S. Army and Marine Corps refer to characteristics of warfare but neither define nor describe the character of war. See, for example: U.S. Army, *Operations*, 2022, 1-8. My review of U.S. Navy, Air Force and Joint doctrine reveals similar gaps.

⁵ Angus Lapsley and Pierre Vandier, "Why NATO's Defence Planning Process will transform the Alliance for decades to come," Atlantic Council, last modified March 31, 2025, <https://www.atlanticcouncil.org/in-depth-research-reports/issue-brief/why-natos-defence-planning-process-will-transform-the-alliance-for-decades-to-come/>; "Updated Defence Production Action Plan," NATO, last updated 24 June 2025, <https://www.nato.int/en/about-us/official-texts-and-resources/official-texts/2025/02/13/updated-defence-production-action-plan/>; and "Summary of NATO's Rapid Adoption Action Plan," NATO, last modified 25 June 2025, https://www.nato.int/cps/en/natohq/official_texts_236539.htm

⁶ I did not participate in this process, therefore I cannot draw a definitive conclusion regarding the inputs or methods. See, for example: "Allied Foresight Conference 2025: Shaping Tomorrow's Security Today," NATO, last updated October 10, 2025, <https://www.act.nato.int/article/afc-2025/>

⁷ "NATO's Purpose," updated May 29, 2024, https://www.nato.int/cps/en/natohq/topics_68144.htm.

⁸ Direct engagements with Russian forces can be imagined across at least the Middle East and North Africa. Many examples of near confrontation are publicly available. A significant close call occurred in Kosovo, and US forces engaged directly with Wagner Group combined-arms forces at Khasham, Syria, in 2018. Russia continues to deploy combat forces to Syria adjacent to NATO combat operations. See, for example: Trip Gabriel, "Michael Jackson, British General Who Disobeyed US Superior, Dies at 80," *The New York Times* (October 24, 2024); Asymmetric Warfare Group, *Russian Private Military Companies: Their Use and How to Consider them in Operations, Competition, and Conflict* (Fort Leavenworth, Kan.: US Army Training and Doctrine Command, April 2020), 73-75; Kateryna Zarkachenko, "Over 120 Russian Troops in Venezuela" Budanov Says Gen. Makarevich Is Leading Moscow's Mission," *Kyiv Post* (November 23, 2025).

⁹ On this point I refer to the Ground Combat Database as well as other databases cited in *Ground Combat*, including CDB90. See: Connable, *Ground Combat*, 2025, introduction.

Carl von Clausewitz, whose writing underpins most Western military theory, never made this wonderfully clear and dichotomous distinction between nature and character.¹⁰ In the translation of *On War*, Clausewitz wrote that each war differs in character and, more broadly, that war is “chameleon-like.”¹¹ Building on this perspective, British doctrine writers bluntly dismissed the idea of universality.¹²

Because each conflict is unique, a single description of the character of contemporary conflict is not possible.

If, as I argue, war as a *universal phenomenon* cannot be singularly characterized in a logically defensible way, then we cannot logically claim that war as a universal phenomenon is changing at an unprecedented rate. We also cannot logically argue that any new technology applied in a single war or even a handful of wars has altered or certainly will alter the way all wars will be fought going forward.

How, then, do we progress from this more restrained starting point to build the kind of practical knowledge necessary to design an alliance force that can ensure collective defence against all threats from all directions? Perhaps more importantly: How should the Alliance apply its plans to help its nations make sound investments that balance sustained combat power with some necessary innovation?

Study history and define your focus

At some point even the best of us have cited famous authors and subsequently ignored their most compelling advice. In this regard, Sir Michael Howard’s famous 1981 article, “The Use and Abuse of Military History,” may be the most victimized military work after *On War* itself.¹³

Howard – who also happens to have been one of several translators of Clausewitz’s unfinished magnum opus – argued that professionals must study military history in width, depth and context to truly understand war. In practice, this would require familiarization with the details of

many wars over time, intimate familiarity with a few campaigns and examination of the many and complex social and political factors that often shape the outcomes of war.

Howard’s admonition applies both to individual professionals and to organizations. So does the NATO alliance build its understanding of modern war and its forecasts of future wars from holistic knowledge? Have Alliance analysts factored in the width, depth and context of modern war to the assumptions underpinning NATO’s new action plans? Given the fact that these plans are classified, we cannot know for sure. But given the state of modern war studies in the West, it is unlikely these factors have been fully integrated into planning.¹⁴ Universal baseline knowledge is, as I describe below, wanting. And according to Florence Gaub, Director of the NATO Defence College Research Division, the Alliance’s foresight centres are dispersed, focused on varied time horizons, unevenly staffed and are not necessarily availing of similar information.

What would applying modern military history look like in practice for any of or all these alliance organizations? And we should include all NATO professionals, leaders and planners, not just those dedicated to analysis and forecasting. Given this broad and diverse requirement, what resources are available and what techniques should be applied?

This deceptively simple diagramme in Figure 1, below, provides a good conceptual starting point for systemic improvement. Applying Howard’s thinking and broader literature on forecasting, consider an *observation interval*, *present* and a *forecasting interval*.¹⁵ Plainly stated: Understand the past and present to better forecast the near-, mid- and long-term future.

This simple conceptualization can be devilishly challenging to put into practice. Successfully filling the gaps within the observation interval demands hard data collection, many (and perhaps costly) analytic hours, intellectual focus and a good bit of policy leeway to explore confounding evidence. All of this is of course possible if we can apply resources to each task. With top-level focus and funding to its organic teams, the Alliance can move Western military analyses away from their generally short-term and

¹⁰ This is a subjective expert judgment based on a review of three English-language versions of *On War* (J.J. Graham, O.J. Matthijs Jolles, and Howard and Paret). I refer primarily to the English-language translations of *On War* but also to expert readings of the original German manuscript by experts like Beatrice Heuser, Christopher Bassford and Hew Strachan. In his dialectic, Clausewitz refers to a broad theoretical nature of war but does not lay out the kind of immutable characteristics we tend to associate with his writings (e.g., ‘it is always chaotic’). He neither defines nor describes the character of war and refers instead to *characteristics*. I provide further depth on this point in: Ben Connable, *Ground Combat: Puncturing the Myths of Modern War* (Washington, D.C.: Georgetown University Press, 2025), introduction and chapter 9. Also see: Beatrice Heuser, *Reading Clausewitz* (London, UK: Pimlico, 2002); and Antulio J. Echevarria II, *Clausewitz & Contemporary War* (Oxford, UK: Oxford University Press, 2007).

¹¹ Clausewitz, *On War*, Jolles, tr., 1943, Kindle, location 735. Clausewitz refers obliquely to a changing character of war in some sections of this Jolles translation but neither defines it nor clearly distinguishes it from the nature of the practice of war. E.g., see location 3068, 3401, 3491, 3943 of this cited version.

¹² British Army, *Land Operations*, (2016), 1-1.

¹³ Michael Howard, “The Use and Abuse of Military History,” *Parameters*, 11, no. 1 (April 1981): 9-14.

¹⁴ This rightly qualified assumption is predicated on my in-depth examination of the publicly available survey of modern war analysis as described in: Connable, *Ground Combat* (2025), introduction and chapter 1. This point has been argued by other experts including Stephen Biddle, Michael Howard, Peter Paret, Eliot Cohen, Hal Brands, Allan Millett, et al. See, for example: Stephen Biddle, *Military Power: Explaining Victory and Defeat in Modern Battle* (Princeton, N.J.: Princeton University Press, 2004); Peter Paret, “Hans Delbruck on Military Critics and Military Historians,” *Military Affairs*, 30, no. 3 (Winter 1966), 148-152; and Eliot A. Cohen, “Distant Battles: Modern War in the Third World,” *International Security*, 10, no. 4 (Spring 1986), 143-171; Robert B. Townsend, “The Rise and Decline of History Specializations over the Past 40 Years,” *Perspectives on History* (December 1, 2015); Allan R. Millett, “The Study of American Military History in the United States,” *Military Affairs*, 41, no. 2 (1977), 58-61; Hal Brands and Francis J. Gavin, “The Historical Profession is Committing Slow-Motion Suicide,” *War On The Rocks* (December 10, 2018); and others. See below for more on CDB90 and on the contrast between deeply researched, primary-source military history of the past and the thinner studies available today.

¹⁵ This specific language is drawn from a 1975 Soviet publication describing a technical approach to military forecasting and analysis. Figure 1, *Time components of military forecasting*, is derived from the same source. Yuri V. Chuyev and Yuri B. Mikhaylov, *Forecasting in Military Affairs: A Soviet View*, tr. DGIS Multilingual Section (Ottawa, Canada: U.S. Department of State, 1975), 10. Also see Connable, *Ground Combat*, 2025, 7-8.

Time components of military forecasting



Figure 1. Time components of military forecasting.
Author's generation.

too-often myopic geographic focus towards a more global, longitudinal and holistic process.¹⁶

As I describe in the following section, studying Ukraine, alone, is wholly inadequate: No forecast of a complex human-industrial phenomenon like war should ever be extrapolated from a single case. Finding the best possible approach to analysis and forecasting requires answering at least the following questions:

- What information do we need to understand war as it has been practiced and is currently being practiced around the world?
- What do we need to know to effectively assess changes in warfighting tactics and technologies over time?
- What is the best analytic and policy mindset to forecast war and inform military acquisition?
- And with the best data and mindset in place, what is the optimal analytic method for this problem?

It bears reiterating a key point from the introduction: NATO's geographic and threat interests are practicably narrow. Therefore, a fifth question must be asked as it applies to the Alliance: Which cases are essential to best understand the most pressing threats?

Gaps in our understanding of modern war

Now let us work to address these questions.¹⁷ At least four major gaps or shortfalls undermine our knowledge of modern war and our forecasting effectiveness. These are: (1) Weak observation-interval data; (2) devaluation of *military* forecasting methods; (3) a generally passive approach to data collection; and (4) policy-analytic fixation on only the most recent and highest-tech conflicts. Together, these four gaps and shortfalls set a base of sand for war and acquisitions forecasting. I address each in turn and then propose solutions in the following section.

Weak observation-interval data. We have inadequate and wildly uneven global accounting for and analysis of war as it is practiced around the world in the 21st century. In my research on the so-called character of modern war, I found only a single publicly available battle database that provided the necessary scope and detail to feed a robust forecast. This one resource – the Database of Battles – is quite useful, but it only fills the observation interval up to 1973.¹⁸ Other conflict databases like Correlates of War and the Uppsala Conflict Data Program both list and vaguely describe wars but provide nothing like the kind of detail that emerged from early-mid-20th century battles.¹⁹

What does this mean in practice? In short, we have little visibility into the real-world conduct of modern war. At least in the public domain, there are no detailed combat narratives, maps, orders of battle or similarly important technical and tactical details available for the vast majority of land wars fought since at least the year 2000.

¹⁶ Note the emphasis on the word *military* here. NATO *strategic* forecasting documents cited herein and many other forecasts across the Alliance have a global, long-term focus. Military analyses generally are far narrower and tend to trade broader analysis for immediate and narrow need. For example, during the Vietnam, Afghanistan and Iraq Wars, the vast majority of at least the U.S. defense analytic community fixated on ongoing conflicts within narrow geographic domains. Based on direct participation and observation in the Iraq and Afghanistan analytic efforts, I can attest to the fact that this myopia directly undercuts more global and longer-term military analyses. And by *longer-term*, I mean forecasting forward but also ensuring completeness of case analyses deeper into what I refer to here as the observation interval. A current example relevant to NATO would be the almost absolute fixation on the immediate events of the Ukraine War at the expense of analytic effort on other ongoing wars. I am arguing here for balance, not to (for example) ignore Ukraine.

¹⁷ I cannot fully address each question here. These are intended as a framing device to help the reader follow my argument and also to contribute to forecasting methods.

¹⁸ This database, also referred to as CDB90, was built by The Dupuy Institute for the U.S. Center for Army Analysis in the 1980s. A more robust version of the Database of Battles through the 1970s is privately held by the Institute. Public resource including citations: "CDB90," database, accessed October 29, 2025, <https://github.com/jrnold/CDB90>. Some cases were added in separate publications through 2010.

¹⁹ For a good accounting of available datasets see the Conflict Research Society website. It lists Correlates of War, Uppsala Conflict Data Program's various datasets, the Armed Conflict Location and Event Dataset (ACLED), and others. Accessed October 30, 2025, <https://conflictresearchsociety.org/crs-datasets/>

For example, there have been at least 21 significant irregular and conventional land wars in the 21st century.²⁰ As of late 2025, at least 18 of those are ongoing, and several – including the wars in Iraq, Syria, Pakistan, Somalia, Libya, Mali, Sudan and Ethiopia-Tigray, each of which involved Russian weapons and equipment and, in some cases, air and ground forces – might provide deep insight into the recent conduct of modern war. I tracked over 93 conventional and irregular battles in Syria alone. Yet no public database fully captures the details from even the key battles from all these wars.²¹ There is no repository of consistent and detailed case studies from these wars that might be usefully compared for analysis and forecasting.

These yawning gaps in basic military knowledge sharply undercut Alliance efforts to forecast and prepare for our next wars.²² Neither analysts nor leaders have a clear per-

spective on war as it has been practiced around the world throughout the first quarter of the 21st century.

Devaluation of military forecasting methods: Explosive proliferation of diverse computational methods, consumer saturation and a general loss of interest in evidence-driven process in some parts of the Alliance have compounded to devalue forecasting methodology as an essential tool and as part of a once-central dialectic in defence planning.²³ And even as interest in military-focused forecasting waned, Western academia, think tanks and policy staffs shifted their efforts away from studying the history and practice of war to work on broader political and social aspects of international conflict.²⁴ Both these trends are anathema to military forecasting methods.

How does this apply to NATO? Many structured forecasting methods do, of course, remain central to Alliance strategic planning. Allied Command Transfor-

Wars over time

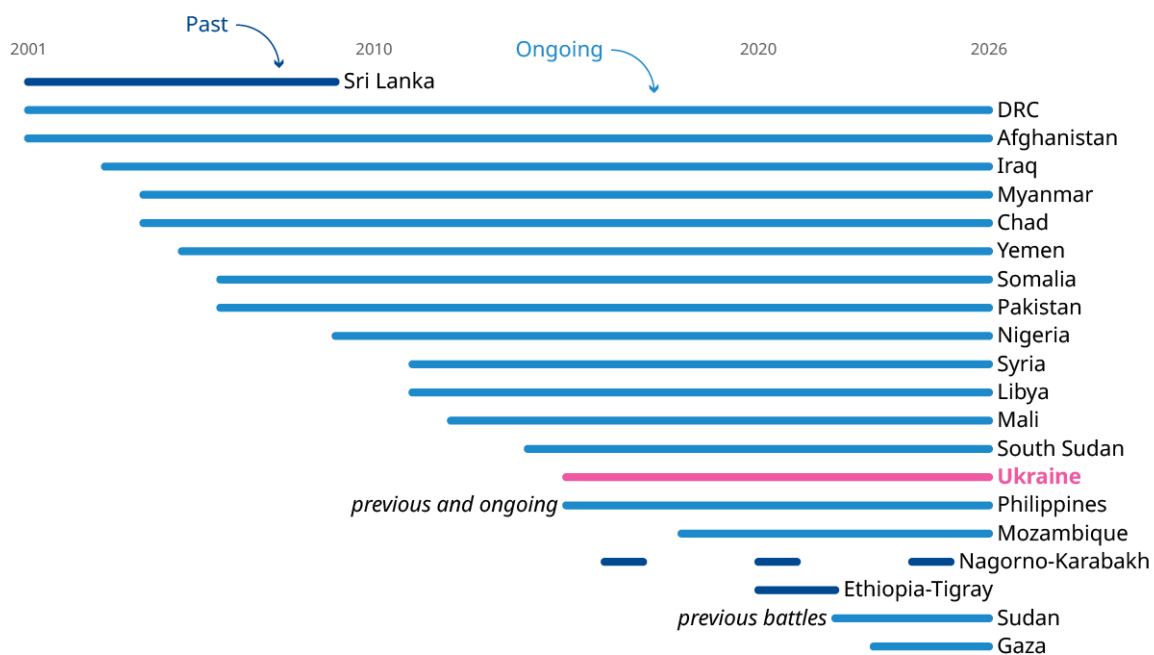


Figure 2. Selected 21st century land wars.
Author's generation.

²⁰ This list and graphic (copyright Battle Research Group) is derived from Connable, *Ground Combat*, 2025, and was aggregated from sources cited therein and in the Ground Combat Database (GCD), accessed October 30, 2025, <https://battleresearchgroup.org/database>. Note that this list does not include a range of small and/or brief but perhaps no less relevant conflicts in (for example) Somaliland-Puntland, Nepal, Liberia, Abkhazia-South Ossetia, Comoros, Tunisia, Thailand-Cambodia, Ivory Coast and Kenya. Battles from these conflicts are listed in the GCD.

²¹ I include here my own database (GCD) due to the major, acknowledged gaps from Ukraine, Ethiopia-Tigray and other wars.

²² Even if a thorough dataset and comprehensive array of detailed battle studies exist in some classified NATO domain, they would have limited value for the kind of broad policy analysis needed to feed the action plans. Opacity, isolation and inaccessibility to the broader analytic community are enemies of thorough and effective analysis and forecasting.

²³ These are subjective observations based on participation in a range of public and private forecasting activities. It is true that many summary intelligence forecasts in the public domain do not reveal deeper methods to preserve secrecy; those cannot be taken at face value. Many methods are applied with varying intensity and consistency across many different organizations.

²⁴ On this point see, for example: Ben Connable and James Sladden, "Battle Studies: The Need for Primary Source Research," Centre for Historical Analysis and Conflict Research (September 2022); Paret, "Hans Delbruck," 1966; Matthew Ford, "Between Academe and the Armed Forces: Professional Boundary Disputes and the Future of Military History," *Ares & Athena*, 14 (February 2019), 30-32; Cooling III, "Military History, 1972; Biddle, *Military Power*, 2004; Cohen, "Distant Battles," 1986; Townsend, "The Rise and Decline," 2015; Millett, "The Study of American Military History," 1977; and Brands and Gavin, "The Historical Profession," 2018.

mation continues to lead a robust effort supported by the NATO Defense College and other institutions.²⁵ Science and Technology Office teams and member-state analysts generate a wide array of threat environment forecasts. These are, however, mostly strategic analyses driven by geo-strategically tailored methods and data. Alliance methods tailored for detailed, holistic and *military-focused* trend and forecast analyses appear to be at least partially gapped.²⁶ And while both intelligence analyses and military technology forecasting methods are robust and widely used, they tend to convey no holistic understanding of war.²⁷ All these foresight and forecasting activities are necessary but, for our purposes here, insufficient.

Artificial intelligence (AI) use in forecasting renders methodologies even more opaque and therefore more vulnerable to serious error and/or dismissal by overloaded military leaders and policymakers. Unfortunately, the lure of AI – it is undeniably fast, exciting and cheap to employ – makes its increasing use in forecasting highly likely.²⁸ There is good chance that AI soon will become a widely used all-in-one forecasting methodology solution, rapidly gorging on data and spitting out answers likely to reinforce standing assumptions and capture the imaginations of key policy consumers. No small amount of intellectual laziness and bad decision-making will assuredly follow.

Passive versus active data collection: Extraordinary volumes of online digital data have lulled us into a passive approach to war knowledge that undercuts development of the kind of real, practical knowledge that might be used to improve NATO strategy and acquisitions.²⁹ Once-robust military history and lessons-learned field collection groups across the Alliance are now depleted or deleted. Even if teams of field collectors were ready to deploy, general risk aversion, the sheer scale and scope of global fighting and the perception of passive immersion make active collection less likely.

Ukraine offers the most visible and compelling example of this phenomenon. And, since the war in Ukraine has rightly fed a mindset of exigent crisis in the Alliance – Ukraine lessons dominate at least the European strategic discourse – leaders should be doubly aware of any risks in data skewing from the Ukraine War. Anyone with a mobile phone or a cheap laptop can immediately

access combat videos from both sides published by the hundreds each day on social media and aggregating sites. Frontline trace of ground forces is kept up by a network of expert-amateurs (e.g., Deep State).³⁰ The sheer volume of video content is so overwhelming that it must be cut up into rapid-fire compilations of helmet-cam combat, drone strikes, counter-drone strikes and other videos.

This dynamic immediately affects the way Alliance leaders perceive the value of drones in modern warfare; see below. In turn, this perception informs NATO acquisition decisions. Drone-strike videos dominate global feeds for a simple technical reason: Most combat drones have embedded cameras that stream back to analysts who then chop them up and immediately post them online. Frontline soldiers, artillerymen and armoured vehicle crews using helmet cams need to individually post their videos, assuming they make it back from their missions. Written reporting, once the gold standard for war analysis, stands no chance of capturing or keeping our attention.

Therefore, all observers of the Ukraine War are positioned to accept at face value claims like ‘drones cause 70% or 80% of all casualties.’³¹ Given all the other gaps and shortfalls listed here, it is then a short leap in logic to assume that drones do and will cause the same high percentage of casualties in all current and future wars. But if one yanks the thread on these numbers, they fall apart like a cheap sweater. Drone casualty statistics from the Ukraine War are unreliable guesses.³² And even if those guesses were accurate, they would apply only to the narrow context from which they were drawn.

Policy and analytic myopia: Many Western leaders and thinkers fixate on only the most recent, visible and high-threat war at the expense of many other considerations. Policy-makers have good reason to be myopic and think primarily about the most recent crises and threats; they work in and are overwhelmed by the present. Current-intelligence analysts also get a pass because their work forces them to think in the present and near future. The rest of us have little excuse for our horse-blinkered fixation on Ukraine, and before that the Nagorno-Karabakh War of 2020, before that Iraq, and so on.

In which complex human endeavours do we learn our most important lessons only from a single applicable

²⁵ E.g., Allied Command Transformation, *Strategic Foresight Analysis 2023* (Norfolk, Va.: NATO Allied Command Transformation, 2023); and Allied Command Transformation *Regional Perspectives Report on Russia* (Norfolk, Va.: NATO Allied Command Transformation, 2021). Also see “Allied Command Transformation Strategic Foresight Work,” accessed October 30, 2025, <https://www.act.nato.int/activities/allied-command-transformation-strategic-foresight-work/>. Also see: Przegląd Nauk o Obronności, “Strategic Foresight in NATO and Strategic Commands – An Analysis of Methodologies and Institutional Architecture,” *Defence Science Review*, no. 21 (2025), 4–16.

²⁶ This observation cannot possibly reflect all NATO and member state forecasting activities; it may therefore be inaccurate. As noted above, classified data and reports may fill these gaps. However, a review of publicly available forecasts from a range of NATO organizations supports this assessment. On related challenges see: Sayed Hadi Sadeghi, “A Critical View of NATO’s Science and Technology Trends 2025–2045,” *The Defence Horizon Journal* (September 29, 2025). Accessed October 30, 2025, <https://tdhj.org/blog/post/nato-science-technology-trends-2/>

²⁷ For insight into these methods, see: Alexander Kott and Philip Perconti, *How Accurate Is Forecasting of Military Technologies* (Rome, Italy: NATO Defense College, April 2025); and NATO Science and Technology Organization, *Science and Technology Trends 2025–2045* (Brussels, Belgium, NATO Headquarters, 2025).

²⁸ Literature on the use of AI in forecasting methods is thin. Most relevant articles found were published by authors or companies that had a vested interest in the increased use of AI.

²⁹ See: Connable, *Ground Combat*, 2025; and Connable and Sladden, “Battle Studies,” 2025, accessed on October 31, 2025, <https://battleresearchgroup.org/publications/battle-studies/>.

³⁰ Deep State, accessed October 31, 2025: <https://deepstatemap.live/en#11/47.6001443/35.2482605>.

³¹ For a detailed analysis of these claims see: Ben Connable, *War Stats Do Not Measure Up: Exploring the Limits of Knowledge With Military Casualty Statistics in Ukraine and Other Wars* (Arlington, Vir.: Battle Research Group, October 2025).

³² Connable, *War Stats*, 2025.

case?³³ No field of science recommends this approach to learning or forecasting. Even historians, notorious for their sometimes narrow fixation on single cases and rejection of statistical large-*n* studies, tend to recommend learning in breadth, depth and context; see again Michael Howard's well-regarded recommendation on this point.

We must of course learn from the war in Ukraine. It is the most pressing case, and, for NATO, it is at least broadly emblematic of the threat should Russia choose to directly attack the Alliance. However, it does not follow that we should only learn from the most recent events and technological adaptations in Ukraine:

- War as it was fought in Ukraine in late 2025 might not look like the same war in late 2026, nor like any other war in the near future; wars have important idiosyncrasies related to time, geography, technology, policy, human will and other factors.
- A Russia-NATO war will look quite a bit different from a Russia-Ukraine war for many reasons; lessons and assumptions are not automatically transferrable.³⁴
- Preparing for most-dangerous cases does not innately prepare a military for the diverse array of most likely threats...
- ...which means that study of the Ukraine War, alone or as a central fixation within broader analyses, cannot prepare NATO for "all threats, from all directions."³⁵

What other cases of war must NATO prepare for? Most wars are irregular in nature.³⁶ Afghanistan, the Alliance's largest and longest running conflict, was an irregular war. In late 2025, NATO was engaged in irregular operations in Kosovo, Iraq, in the Mediterranean and Aegean seas and elsewhere. Russia is presently engaged in a range of irregular short-of-war operations against Alliance member states and retains extensive capacity to conduct high-order, irregular-conventional wars like the one it executed in Ukraine from 2014 to early 2022; each of these offers direct and indirect insights into Russian strengths and weaknesses.

Prospective southern flank conflicts will almost assuredly be irregular in nature. And while NATO leaders might not wish to or plan to deploy to a far war again, they may have to do so at any point in the future. There-

fore, at the very least, we should look to readily available cases of irregular war to inform Alliance acquisitions and action plans.

Insights from 432 battles in the Ground Combat Database

Passive analyses are not adequate to prepare for future wars. They can, however, provide at least a starting point for more focused work. In 2025, I published the Ground Combat Database (GCD), version 1, to help Western military analysts fill the observation-interval gap.³⁷ I took an inductive approach to case selection, recording and coding all available instances of battle on ground involving two or more sides, platoon or larger, employing combined direct-fire and indirect-fire arms like machine guns and mortars. Most battles – including in so-called irregular wars – took place at the company-to-battalion level or above. (see Figure 3).

My research showed extraordinary discontinuities between wars and battles as well as some shared characteristics that allow analysts to draw many useful conclusions. No universal character of war was revealed. Military technology evolved unevenly and, when placed in broader context and matched against human, terrain and other factors, appeared to have a generally mixed impact on the outcomes of battles.³⁸ Analysis of these 423 cases of ground combat from early 2003 through to the end of 2022, including 61 cases from Ukraine, generated important findings and raised equally important questions. For example:

Finding: *Most irregular wars involve lots of conventional combat.* War in Syria is a good case in point. This is generally considered to be a civil war, a counterinsurgency, a counterterror war or some mix thereof. The Ground Combat Database includes 93 coded cases of ground combat from this war, including many battalion-on-battalion-equivalent conventional fights involving tanks, infantry fighting vehicles, artillery, missiles and drones on both sides. Russia and several NATO states provided direct and indirect fire support in many battles in Syria, employing fourth- and even

³³ For more on the recommended alternative approach see: Connable, *Ground Combat*, 2025, introduction and chapter 9; and Biddle, *Military Power*, 2024. Biddle specifically applies and recommends an approach that mixes large databases with smaller case studies for reciprocal amplification, clarification and analysis.

³⁴ For example, NATO has a robust and highly advanced air fleet specifically designed to attack and destroy Russian and Chinese integrated air defense systems, command nodes, logistics and frontline combat units (etc.). Aviation is likely to make a significant difference in a prospective war between NATO and Russia. Also, given NATO strategy, we should (or perhaps at best might) anticipate a war against Russia occurring on NATO territory. Common scenarios include a Russian attack to seize the Baltic states or to secure a corridor to Kaliningrad. In both scenarios, Russia will have to extend itself well beyond its currently established super-dense drone networks along the Donbas front. Neither NATO nor Russia will be able to replicate the conditions in Donbas (or other Ukraine War fronts) in at least the first few months of a prospective war. Therefore, the dynamics most commonly attributed to the war between Russia and Ukraine – most prominently, dense drone networks and at least partial transparency – are not likely to be present.

³⁵ This is NATO's overarching purpose: "NATO's purpose," NATO, last updated May 29, 2024, https://www.nato.int/cps/en/natohq/topics_68144.htm

³⁶ This is a broad generalization drawn from the Correlates of War and Uppsala databases cited above. Coding wars by type is a highly subjective activity made all the more subjective by the hazy barriers between so-called conventional and so-called irregular wars.

³⁷ GCD is freely available online with relevant copyright restrictions, a detailed explanation of methods and transparent sourcing, <https://battleresearchgroup.org/database>.

³⁸ Note that I did not code for *cause of outcome*. Therefore, this is a subjective expert judgment not directly tied to empirical findings.

Selected 21 st century land wars

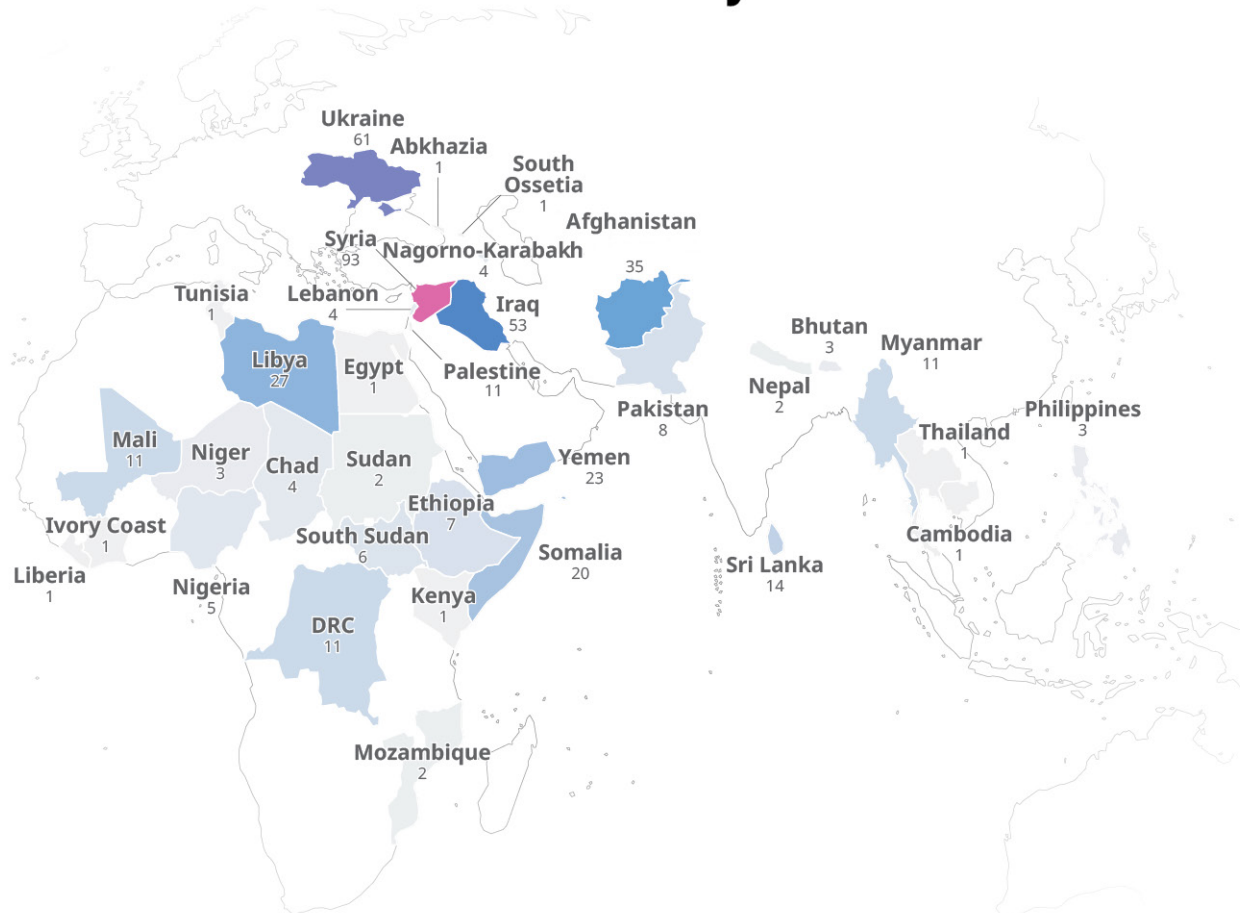


Figure 3. Location and frequency of modern battle cases through December 2022.
Author's generation.

fifth-generation fighter-bombers, guided missiles, heavy artillery fires and other assets. Conventional Russian Wagner mercenary forces fought directly against U.S. ground forces at Khasham, Syria, in 2018.³⁹ While relative volume cannot be clearly quantified across all cases, most instances of conventional combat in 21st century occurred within irregular conflicts.⁴⁰ Inversely, conventional wars included lots of irregular combat.⁴¹

Finding: *Ground was taken and held only by infantry-centric combat teams.* Infantry was a constant for both sides in every case. Consistent with historical cases through at least the 20th century, all other arms supported infantry assaults and defences. For example, despite the application of near-

ly the full weight of American surveillance and precision strike capabilities in Iraq from 2015 to 2017, the Islamic State was only defeated on the ground after risky, high-cost assaults by many tens of thousands of Iraqi military and irregular infantrymen. Urban terrain placed particularly high demands on infantry while sharply reducing the efficacy of even the most advanced precision fires. Given that approximately 70 percent of all coded cases involved some kind of urban terrain, and given infantry's 100-percent ubiquity in all irregular and conventional cases, infantry retains a high degree of relevance in modern war.

Question: *Is the tank still relevant in modern war?* Main battle tanks were used by one or both sides in approximately 70

³⁹ See, for example: Thomas Gibbons-Neff, "How a 4-Hour Battle Between Russian Mercenaries and U.S. Commandos Unfolded in Syria," *The New York Times* (May 24, 2018), accessed November 1, 2025, <https://www.nytimes.com/2018/05/24/world/middleeast/american-commandos-russian-mercenaries-syria.html>

⁴⁰ This subjective interpretation of coded cases is drawn from multiple conflict databases including the Ground Combat Database, Correlates of War (CoW) dataset, the Uppsala Conflict Data from the Peace Research Institute Oslo (PRIO), the RAND How Insurgencies End dataset and the Ground Combat Database cited herein. Many cases, notably including the Vietnam War, the Syrian Civil War, the Yemeni Civil War, Libyan Civil War and others, fall into a gray area between conventional and irregular war, having many properties of both. All of these databases are readily available online, and the author can provide a copy of the How Insurgencies End data upon request. For findings from that dataset see: Ben Connable and Martin Libicki, *How Insurgencies End* (Santa Monica, Calif.: RAND Corporation, 2010).

⁴¹ This finding is drawn from the GCD. Each of the 423 cases cited from 2003 to 2022 included some form of combined-arms combat, which generally involves a mix of direct- and indirect-fire weapons and movement of forces onto objectives. Well over half of these 423 cases – so at least 200 – involved forces operating at the company-to-battalion level; some cases had insufficient available data to accurately quantify combatant quantity on both sides. Sixty-nine percent of all 423 cases included main battle tanks, and 82 percent involved manned aircraft; etc.

percent of all 423 cases. In some cases, they were highly effective, while in others, they had little impact or even proved to be a liability. For example, separatist and Russian forces made good use of Soviet-era main battle tanks to besiege and eventually seize Donetsk Airport in Ukraine in 2015. In the 2003 invasion of Iraq at the Al-Faw Peninsula, British tank forces directly engaged a brigade of Iraqi T-55s that had reportedly been left unscathed by pre-invasion aerial bombardment. Expert gunnery and modern tanks led to a lopsided British armoured victory that allowed infantry to seize contested ground. But some analysts of the Nagorno-Karabakh and Ukraine wars have concluded that drones now render tanks redundant.⁴² I found the Nagorno-Karabakh data to be skewed,⁴³ while Ukraine provides only one data point regarding the viability of tanks in modern warfare. More data and analyses are needed.

Question: *Have drones replaced manned aircraft for ground support operations?* Do ground forces still need modern aircraft to support them in modern warfare, or can they shift to more organic, direct-control drones and autonomous drone swarms to help seize and hold ground? Manned aircraft were used for strike and assault support by one or both sides in approximately 82 percent of the 423 cases I coded.⁴⁴ Aerial bombing, rockets, air-launched missiles and gun-runs provided primarily Western, and specifically NATO-member, ground forces with essential firepower in Iraq, Afghanistan, Mali, Kenya, Somalia, Ivory Coast, Chad, the Central African Republic, Syria, the Philippines, Yemen and probably in other locations.⁴⁵ A key distinction emerged between NATO-member forces and other militaries involved in combat during this period: Only Alliance militaries routinely employed professional close-air support and had the aircraft on hand to make it work. Therefore,

Increase in Observed Drone Use in Ground Combat Over Time

2003-2022, %

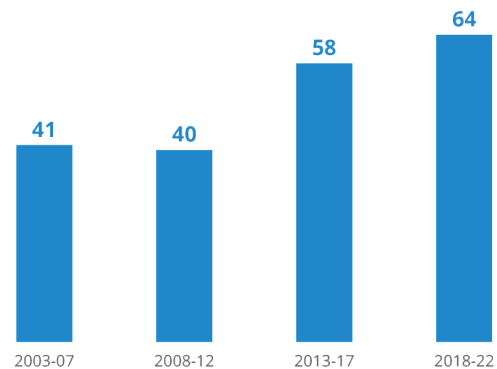


Figure 4. Increase in observed drone use in ground combat over time.

Author's generation.

the question about drones and manned aircraft cannot be answered by examining wars conducted by other states and actors not affiliated with states.

All questions about the role of drones in modern warfare feed directly into acquisitions and force-design planning. Data from these 423 cases shows a sharp global increase in drone use in ground combat from 2003-2022; see Figure 4. During the same period, *observed* use of small (group 1) drones by infantry – think quadcopter surveillance, grenade-dropping and first-person video attack

⁴² For more on this debate see, for example: David Johnson, “The Tank is Dead: Long Live the Javelin, the Switchblade, the...?” *War On The Rocks* (April 18, 2022), accessed November 1, 2025, <https://warontherocks.com/2022/04/the-tank-is-dead-long-live-the-javelin-the-switchblade-the/>.

⁴³ See Connable, *Ground Combat*, 2025, 198-199, 204-206.

⁴⁴ For more on the coding process see the GCD, 2025, and Connable, *Ground Combat*, 2025, Appendix. Here is a summary of the coding process: Qualitative coding is a method designed to isolate and organize phenomena within individual cases and then to compare and contrast (usually the frequency of) codes across cases. I began the coding process by building a deductive starting set of approximately 220 codes across nineteen categories, including a catch-all other category that ultimately included use of earthworks and SVBIEDs. I built this initial set based on my subject-matter expertise in the study of warfare. Throughout the course of the research, I expanded this list to include 432 codes (~100% increase). For example, I added a code for horse-mounted cavalry after examining the battle of Changde, 1943; Polish cavalry operations in 1939 would also qualify. I later removed 41 codes for various reasons. Most of these were cut after I decided to code only two sides per battle rather than up to four sides per battle. I made this decision after it became clear that isolating more than two actors was generally a highly subjective choice, and that in the vast majority of cases – approaching 100% – there clearly were only two sides engaged in combat, often with supporting actors. Coding a characteristic was a fairly straightforward process. If I observed a ground combat characteristic (e.g., use of a type of mortar) in a video, read about it in a book or report or heard it referred to in an interview (et al.), I included it as a code. I did not and could not verify the accuracy of all these sources, so inaccuracy, uncertainty and subjectivity are built into the coding process at the first step. Source reliability did, however, feed directly into my case confidence rating. I coded by source, recording characteristics as they appeared, recorded the codes in the Excel database, added new codes as necessary and then described the coded characteristics in a separate cell. This narrative description of the codes included identification of key equipment by side, an overview of tactics employed and use of probabilistic language to help add stratification to the data (e.g., emphasis added: ‘the Islamic State fighters probably used primarily iron-sight AK-variant rifles’). Once the research was complete, I retroactively assigned confidence-subjectivity ratings of 1-4, green to red, to each of the remaining 391 (432-41) codes. These ratings were based on my experience with each characteristic, some of which were readily observable and typically binary (a cannon is or is not present), and some of which were hard to observe and/or required subjective interpretation. For example, the code Infantry Side 1 was clearly observable and required minimal subjectivity, so it received a rating of 1 (green) for confidence and subjectivity. The code Ground Changed Hands 3x, indicating a swap of ground control on three occasions within a battle, was both difficult to observe and required subjective judgment regarding control. That code received a 4 (very low) rating for confidence and subjectivity. After reviewing all the available evidence and both coding and describing the characteristics within each case, I assigned two additional codes. First, I gave the case one of nineteen possible type ratings that described the combatants in comparative terms (see chapter 9, above). Then, I gave the case itself a confidence rating of 1 to 3, with a 1 denoting high confidence in the overall coding and findings, a 2 denoting middling confidence and a 3 poor confidence. I based the confidence rating on the availability and perceived reliability of sources and also on four criteria that I determined were essential to building case-specific knowledge.

⁴⁵ By “probably,” I refer to the near certainty that NATO member states are conducting at least counterterror operations in other countries without identifying those operations in the public domain. Some public documentation lists at least some of those ostensible operations, though it is not my place to reinforce those suppositions or leaks here. US (NATO member) military forces supported operations conducted by the government of the Philippines against various insurgent groups and, specifically, the Maute Group in operations in (for example) Marawi in 2017. For more on various operations in the Philippines see the GCD.

models – increased even more sharply from just six percent from 2003 to 2007 to 35 percent by 2022.⁴⁶

However, prior to approximately 2015, drone use by all forces was generally considered sensitive and was rarely advertised.⁴⁷ Extremist use of drone videos and the rise of social media account for what may be the mistaken impression that drones have suddenly proliferated in all wars and are changing the character (and perhaps very nature) of war. Thinking about this specific technology in width helps to put modern drone use in a more reasonable context. These facts about drones put the GCD case data in longitudinal context:

- First radio-controlled drone tested by 1908
- First strike drones tested by 1918
- First remote-guided drones used in combat in World War II
- Missile fired from drone in combat in the 1973 October War
- Routine global drone combat use by the early 1980s
- Fiber-optic guided strike drones operationally ready in the 1990s
- Routine global use of group 1 (small) drones by the mid-2010s

Global drone proliferation is a more important dynamic than technical innovations or adaptations in places like Ukraine. Commercial availability and mass parts distribution through online retailers put strike drone capability into the hands of groups that previously had no air power. Alliance efforts to keep pace with counter-drone technology and fielding have badly lagged. Given the fact that war technologies evolve through a constant process of adaptation and counter-adaptation, we can expect that counter-drone capabilities will catch up and render drones somewhat, or perhaps significantly, less relevant on the modern battlefield than they were in late 2025.

Given these findings, questions, technical analyses and the partial fill to the observation-interval gap, it is easy to see how a modern historical, evidence-driven approach to analysis and forecasting could directly improve NATO acquisitions decisions and elevate the action-plan outcomes. That leads us to the final challenge: How might the Alliance build the capacity to integrate an even better set of data and far more thorough analyses into its forecasting-foresight processes?

Four for forecasting: recommendations

Building up the capacity to effectively fill the observation interval will serve both immediate and long-term purposes.

In the near-term, rapid movement to staff and resource this kind of analysis will support pressing decisions related to NATO planning and, even more directly, to the support of member state acquisitions and force design. In the long-term, the development and use of these capabilities will significantly empower the Alliance's network of foresight capabilities. I offer four recommendations:

1. *Build a military-focused case analysis process and staff it.*

Expertise necessary to design and build a more robust military-focused analytic process is organic within the Alliance. Taking the lead from examples cited here, including databasing and case analysis methods, it will be possible at reasonable cost to build small teams focused primarily on building collective understanding of recent and global military past – at least through the 21st century, and at least in NATO's area of interest – and to then apply empirical evidence from those analyses to make all Alliance forecasts more robust and dependable. This staff can help stitch together some of the foresight capabilities listed by Gaub, above. Back-of-the-napkin estimate: Hire ten staff, give them office space and basic network capability, and give them reasonable computing and travel budget.

2. *Build a database of war relevant to NATO analytic needs.*

Taking existing data from (for example) the Ground Combat Database can be helpful. But borrowing existing data is insufficient. Alliance leaders have specific questions that require tailored analyses. Classified information must be integrated into publicly available data. A newly staffed war-analysis team can design and build the first iteration of this database in a matter of months. It is essential that the database captures as many member state military operations as possible, and in detail. First step to filling the observation interval is to address the yawning gaps in knowledge of our own operations.

3. *Gather field evidence and integrate it into the database.*

Passive desk analysis is necessary but insufficient to fill the observation interval. It is necessary to get more observers into the field to witness fighting, interview combatants, gather digital and physical evidence, build relationships for even better data collection over time and bring back a first-person perspective to flesh out the details of specific battles. This is the study-in-depth Howard mandated. Some risk acceptance will be required. And it is essential that observers are sent not just to Ukraine but also to other global battlefields to ensure a holistic approach to understanding modern war.

4. *Produce technology studies with longitudinal context.*

Building from the new database and field evidence collection, the war analysis team should produce studies of specific technologies of interest to Alliance leaders. These studies will put the evolution and global employment of those technologies into historical context and show clearly how the technology may be more or less effective in varying

⁴⁶ Ground Combat Database, 2025. Note that observed use dropped from six percent in the first five-year period (2003-2007) to approximately two percent in the second period (2008-2012), so one could also consider the 2-to-35-percent increase in a shorter period of time even more significant. However, as noted here, the public data are skewed.

⁴⁷ For more on this issue with relevant citation, see Connable, *Ground Combat*, 2025, chapters 6-9, and the GCD.

contexts and against differing adversaries. My analysis of drone use over time and in recent context is a good representative approach, but other examples abound.

The more you know, the more you succeed

NATO must forecast effectively to help its member states acquire the necessary technologies and build the right forces to deter and, if necessary, to defeat Russian aggression. And at the same time, it must forecast both the near and at least mid-futures to build the industrial capacity. Ideally, NATO would generate collective force sufficiently robust and flexible to meet a wider array of threats than the two it has recognised (Russia and terrorism) and to potentially deploy further abroad as needed and accurately forecast needs to keep those forces ready for all contingencies.

Each of these requirements would be confoundingly complex on its own. Together, this is a daunting forecasting and policy challenge that can overwhelm decision-making and render leaders vulnerable to making ill-informed or unintentionally biased decisions. No imagined universal character of modern war will shed light on an ideal path forward for all challenges.

Sadly, there are no viable shortcuts to clarity. In war, complexity is an endemic problem that is at best reducible. Neither the firehose of digital data nor artificial computation can get us around the requirement to apply traditional field collection and analytic methods. Humans working for other humans must be resourced so they can apply themselves to the hard, unremitting task of checking assumptions, building original and detailed knowledge, dispassionately analysing real-world evidence and feeding decision-making with transparent empirical results.

Happily, we have not lost the ability to apply these traditional methods. A range of reasonable, possible solutions – mine and others – are at hand. NATO should press forward immediately.

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