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Theatre nuclear weapons in NATO's deterrence

Towards the revival of
flexible response

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Summary

This paper analyses the role of theatre nuclear forces in NATO deterrence in the current and future threat environment. Drawing on established principles of deterrence theory and nuclear strategy, it argues that credible extended deterrence rests on flexible response strategy and on the ability to deny an adversary victory while threatening it with unacceptable costs. This requires a full spectrum of nuclear and non-nuclear capabilities, as well as a credible and effective doctrine for their potential employment.

In the contemporary threat environment, characterized by the prospect of multi-theatre

wars, NATO's nuclear posture – premised on assumed conventional superiority – is insufficient. A credible flexible response strategy now requires the US and NATO not only to posture nuclear forces to counter limited Russian nuclear use, but also to ensure the defeat of Russia's conventional forces. Such a mission would entail fielding larger and more diverse theatre nuclear forces. The paper reviews potential capability options and concludes that an additional in-theatre standoff nuclear capability is likely necessary for a credible flexible response strategy.

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Introduction

Russia's invasion of Ukraine has brought the threat of large-scale war back to Europe. NATO's posture has returned to its original purpose: deterrence and defence of Alliance territory against Russian aggression. In rapid succession, NATO has adopted a new military strategy, a new concept of deterrence and defence, a new force model, and regional defence plans.

Russia's nuclear coercion strategy has also resulted in a re-evaluation of the role of nuclear weapons in NATO's security. In this situation, the role of theatre nuclear weapons in NATO deterrence is acquiring new significance. The question of how to ensure that NATO's nuclear posture is fit for purpose in the new threat environment has attracted intense attention among scholars and experts.¹ Practical steps have been taken: modernization of theatre nuclear forces has been accelerated, nuclear planning capability is being strengthened, and the United Kingdom has decided to return to NATO's nuclear-sharing arrangements. Nonetheless, much like NATO's conventional posture before the security environment deteriorated in the 2010s, NATO's nuclear posture was designed for the security environment of the post-Cold War era. Despite ongoing adaptation, it may therefore not be fit for purpose in the current and future threat environment.

Since the inauguration of the new US administration in January 2025, the transformation of NATO's military posture has unfolded against the backdrop of a crisis in transatlantic relations. The hostility that President Trump has displayed towards US allies

has significantly undermined confidence in NATO deterrence, and European NATO members have good reason to doubt the willingness of the US under Trump to defend them against Russian aggression. However, while measures to ensure Europe's deterrence and defence without the United States are undoubtedly being considered in European capitals, it is the current force posture – with nuclear deterrence as its foundation – that deters war in Europe until alternative arrangements are available. Its continued development is therefore necessary despite the crisis in transatlantic relations. Europe must consequently engage more deeply in nuclear learning in order for NATO to develop strategies that are effective at preventing war. This Research Paper contributes to that end by analysing the requirements of NATO's nuclear posture – primarily the role of US theatre nuclear forces in Europe – from the perspective of the theoretical foundations of nuclear deterrence and strategy.

First, the paper reviews the principles of established deterrence theory and nuclear strategy. It then discusses the characteristics of the future threat environment and how they will affect NATO's ability to achieve its wartime objectives. Subsequently, it examines the characteristics of NATO's current theatre nuclear posture before recommending a return to the principles of flexible response and a significant strengthening of its theatre nuclear posture based on US nuclear forces. Finally, it provides a brief overview of theatre nuclear capabilities that could be used to strengthen NATO's nuclear posture.

1 Examples include Verstraete 2025; Alberque and Kacprzyk 2024; Edelman and Miller 2024; Kacprzyk 2023; Roberts 2023; and Weaver 2023.

1. Nuclear deterrence and strategy

“If you want peace, prepare for war.”² The theory of deterrence dates at least back to antiquity. The practice of deterrence is even older, predating the existence of *Homo sapiens*, and is an integral part of life itself. As Lawrence Freedman notes, the survival strategies of many species are based on convincing potential predators that they would offer deadly resistance if attacked. Some species that are unable to defend themselves instead signal through their appearance that they would be toxic if eaten, thereby exacting vengeance even in defeat.³ The message is simple: keep away, for your own good. Deterrence theory has labelled these two strategies ‘denial’ and ‘punishment’, but in real-life situations, this is a false dichotomy. The most powerful states have a full spectrum of military capabilities at their disposal, and in practice base their deterrence strategies on both the ability to deny and the ability to punish, convincing potential adversaries that an attack would not achieve their objectives and would incur costs far outweighing any possible gains.⁴ The efficacy of deterrence therefore rests on the ability to influence the adversary’s decision to avoid or stop war, which, as Clausewitz recognized, is based on the prospect of low probability of success and/or excessive costs.⁵

Deterrence has always been an important part of statecraft, but it acquired newfound significance in the nuclear age. Before the invention of nuclear weapons, states could frequently threaten one another with war over minor political disputes and follow through on their threats. As Raymond Aron notes, because the conventional balance of power is difficult to assess, expansionist states and ambitious leaders could readily come to cherish notions – or delusions – of superiority and initiate wars they could not win. However, if nuclear weapons are

employed against opposing conventional forces in sufficient numbers, the potential result is obvious even to laypeople, as are the consequences of ultimate retaliation. The prevention of war thus acquired paramount importance even for the most powerful states. Nuclear weapons revolutionized warfare because, once states acquired the ability to strike back with absolute destructive power even after suffering total defeat, victory in terms of complete disarmament of the enemy and the imposition of one’s will – the preferred outcome of war before the nuclear age – became unattainable.⁶

Hence, the assessment of the utility of wars of aggression against nuclear powers rests on perceptions of the nuclear-armed adversary’s willingness and ability to use nuclear weapons in retaliation. Given their potential impact on the battlefield and possibly on the aggressor’s homeland, it would only make sense to initiate a war if the assessment were that nuclear weapons would not be used to this effect. If they were used during the war, their chief effect would be to cast that judgement into doubt.⁷ Hence, Quinlan notes that the nuclear revolution brought more fully into prominence the Clausewitzian notion of attacking the enemy’s resolve as one of the central aims of warfare – convincing the enemy that his best interests lie in not initiating or continuing war, and doing so before suffering unacceptable damage oneself. The nuclear revolution did not eliminate war completely, but it narrowed the concept of victory from complete disarmament of an enemy’s military capabilities to securing war termination on terms that reflect one’s key political aims.⁸ The enduring significance of this theoretical conception is reflected in the fact that the US and Russia have incorporated it as the central objective of their nuclear strategies.⁹

The deterrence relationship between Russia and the US during the Russo-Ukrainian war is one practical example of this dynamic at play, as are the recent conflicts between India and Pakistan. This problem also arises when deterrence is extended to allies because while it is clear that a nuclear power

2 A maxim (*Si vis pacem, para bellum*) derived from the writings of the Roman military theorist Vegetius (late 4th century AD).

3 Freedman 2024, 6.

4 Freedman also notes that certain species signal to potential attackers that they would be quick enough to escape if pursued. Although this strategy is also a form of denial of benefits, it is unfortunately not available to states, which are constrained by geography to look to other options when facing a threat of attack.

5 In the most elementary sense, deterrence – derived from the Latin *deterreere*, meaning to frighten away – can only be about the threat to impose costs. See Quinlan 2004. In most cases, however, the ability to deny is likely a requirement for the credibility of a threat of punishment.

6 Brodie 1959, 271–272. Regarding the difficulty in assessing conventional military balance, see Aron 1965, 210–211. On the nuclear revolution, see Quinlan 2009, 8–12.

7 Quinlan 2009, 64.

8 Quinlan 2009, 10–11.

9 US Department of Defense 2024, 3; The Ministry of Foreign Affairs of the Russian Federation, Provision 4.

would retaliate when facing an existential threat, it is less certain whether it would be willing to run the risk of a similar counterattack on behalf of its allies, despite any formal commitment to do so. The solution to this problem, and the basis of the contemporary US strategy of extended deterrence, draws on Schelling's formulation of the "threat that leaves something to chance". While nuclear retaliation is not guaranteed, it is the aggressor who has to decide whether to accept the risk of a war in which nuclear weapons could be used.¹⁰

In the early Cold War, the initial plan to fight and win a total nuclear war through a strategy of massive retaliation was abandoned because threatening such a war undermined the credibility of deterrence after the USSR had built sufficiently powerful strategic nuclear forces. Instead, NATO and its primary protector, the US, adopted a strategy of flexible response designed to communicate to Soviet leaders that they could not win a war at any level of violence, from the local to the strategic. These strategies are based on the concept of victory denial, whereby the goal is not to achieve total victory over the adversary but to ensure – and to convince the adversary – that all potential pathways to victory are blocked and dangerous, irrespective of the method or level of aggression chosen. Against states with strong nuclear forces, such strategies require a full spectrum of military capabilities, both nuclear and non-nuclear, as well as the potential to employ them in various circumstances. However, as Michael Quinlan, the leading British theorist of deterrence during his tenure at the UK Ministry of Defence, explains at length, flexible response strategies are not about relying on the early use of nuclear weapons or rigid commitment to specific plans for their use. Rather, the goal is to ensure that various options remain available:

The core of the flexible-response concept was always the timely use of the minimum force, whether conventional or nuclear, adequate to deny an aggressor success in his objective... providing a capability for apt and credible application of minimum effective force to fit any scenario therefore meant that there had to be plainly available

10 Schelling 1980, 187–203. See also Schelling 2020, and Freedman 2004, 16.

a substantial range of military options from which the Alliance could choose both for initial resistance and for how best to proceed if the first option did not succeed.

NATO thinking was always clear that a major conflict was not to be conducted in sealed compartments, whether of territory or of force category, and still less in sealed compartments imposed by an aggressor to suit his strengths and preferences. The idea of possible escalation, in the sense of being ready to change the terms of the encounter in scope or intensity beyond what the aggressor had chosen, was essential [...] Deterrence required making it as hard as possible for any adversary to form the view that NATO would shrink from decisions on raising the conflict's intensity, or to dare act on such a view. The range of options available must therefore be an unmistakable continuum without huge gaps. That in turn meant that there had to be nuclear forces, backed by will and doctrine for their possible use, intermediate between conventional forces and the ultimate strategic nuclear capability.¹¹

In the 1970s, the US modified its national flexible response strategy into the countervailing strategy, which introduced the concept of victory denial.¹² As the declassified 1982 Department of Defense guidance on the employment of nuclear weapons makes clear, while the US understood that it could not win a strategic nuclear war against the Soviet Union, it sought to deter aggression by ensuring that the Soviet Union, too, would reach the same conclusion under all circumstances:

Deterrence is best achieved if our defense posture makes Soviet assessments of war outcomes, under any contingency, so uncertain and dangerous as to remove any incentive for initiating attack.

11 Quinlan 2009, 36.

12 Gray 1984, 75; Glaser and Radzinsky 2022, 38. The US flexible response strategy, adopted during the Kennedy administration for its strategic nuclear forces, was something of a misnomer as it included only three major options, all massive according to today's standards.

*Consequently, we must continue to make the prospect of nuclear war even more remote by remaining capable, in all plausible scenarios, of waging war successfully so that the Soviet Union (or any adversary) would perceive that it could not achieve its war aims and, should it initiate an attack, would suffer losses that were unacceptable. Further, while we do not desire to fight an extended nuclear conflict, our possession of such a capability is the best deterrence of that eventuality because it increases the potential costs and risks of an attack and denies the attacker the prospect of a quick or eventual victory.*¹³

Although the threat landscape has shifted towards regional war scenarios involving limited nuclear employment, the principles discussed above continue to underpin the current US nuclear strategy, which remains based on both denial and punishment. These principles also illustrate why the capability requirements of deterrence are demanding. The gravity of the consequences of deterrence failure means that nuclear strategy must address even improbable contingencies, both before and during war. Moreover, while an aggressor's initial war plans may not include nuclear escalation, this option may be considered during the war if the aggressor finds that it cannot achieve its aims through conventional military capability or nuclear coercion alone. One example occurred during the Russo-Ukrainian war, when Russia appeared to consider a backup option of using nuclear weapons only in the event of US intervention in the war; however, after Ukraine achieved a series of operational successes in the autumn of 2022, the possible use of nuclear weapons to overturn Ukraine's military advantage was also discussed.¹⁴

In addition to changes in the battlefield situation, deterrence strategies must also take into account possible shifts in the national interests that drive states' wartime goals as a conflict unfolds. The

interests that initially led an aggressor to commit to an invasion may transform over time, and it may find itself fighting for greater stakes than it originally believed. The same applies to the defender, which may have to reconsider its interests and stakes during the war. The longer the war continues, the more likely these interests are to shift.¹⁵ These changes in national interests will inevitably affect the utility and impact of the warring parties' deterrence strategies because such strategies are based on threatening the adversary with costs that are at odds with the interests at stake.

Finally, while a failure of deterrence may result from miscalculations and misperceptions, such an outcome initially requires a calculation or perception of the feasibility of war as a means of resolving political problems. As Quinlan argues, a sound policy of deterrence seeks not only to deter aggression that is being contemplated, but also to deter the temptation to aggress by making the consequences so clear that the mere idea appears so far-fetched and misguided that a potential aggressor never seriously entertains it.¹⁶

In sum, while deterrence capabilities rest on the ability to attack the enemy's means of resistance and resolve during wartime, their primary function is to attack the adversary's perceptions of the utility of war in peacetime. Moreover, a cornerstone of a sound deterrence strategy is its ability to deal with uncertainty, both by taking into account the possibility of initial deterrence failure due to the adversary's misperceptions, miscalculations, and/or risk-acceptance, and by recognizing the possibility that the requirements of intra-war deterrence will exceed the defender's pre-war expectations. Rather than becoming an afterthought at the outbreak of war, deterrence becomes enmeshed in a state's overall grand strategy for securing its political war aims. The military capabilities available must be able to secure a military advantage while deterring the enemy from unleashing the full potential of its own military power to do the same. As has been the case in the Russo-Ukrainian war, the participants engage in coercion and counter-coercion continuously and simultaneously, attempting to limit

13 Office of the Secretary of Defense.

14 Woodward 2023, 152.

15 Freedman 2004, 113–115.

16 Quinlan 2009, 27–28. This condition is also called general deterrence in contrast to immediate deterrence, which seeks to deter aggression as it is about to happen. Morgan 2003, 80–116; Freedman 2004, 32; 41.

the scope and intensity of violence to levels at which they have an advantage and can pursue their goals successfully. Moreover, the effectiveness of intrawar coercion and deterrence is sensitive to changes in the battlefield situation, which can weaken or strengthen the bargaining positions of the warring parties.¹⁷

NATO's task is essentially the same as during the Cold War, when, as Colin Gray argued, it was to ensure that under no circumstances could the Russian General Staff brief Russia's political leadership on a plausible theory of military victory.¹⁸ The foundations of a prudent approach to NATO deterrence – and the capabilities required to implement it, including its theatre nuclear posture – are therefore based on the possible nature of a future war with Russia. This, in turn, is increasingly shaped by the geostrategic outlook for the 2030s, which could entail simultaneous or sequential conflicts in multiple theatres.

2. The geostrategic outlook and the image of future war

The future threat environment casts doubt on the current NATO strategy, which relies on US conventional superiority and its ability to deter Russia from overturning that advantage with nuclear weapons. This stems from the transformation of the global military balance and the prospect of simultaneous or sequential wars in multiple theatres, which would strain the US ability to deter war and, if deterrence fails, to achieve military objectives.

In the 2010s, the US abandoned the force construct that was designed to enable it to engage successfully in two major wars.¹⁹ Its strategic nuclear posture was also – and still is – sized according to the requirements of a counterforce strategy against Russia. At the time, China's nuclear forces were significantly smaller than they are today, and North Korea had only recently developed its nuclear capability. Consequently, the US nuclear posture could address these two adversaries, as well as other potential contingencies, without difficulty as so-called “lesser included cases” of the Russian threat.

Since then, China has engaged in a comprehensive build-up of both its nuclear and non-nuclear forces. In 2020, China was estimated to possess a nuclear arsenal with a warhead count in the low-200s. Currently, its nuclear forces are expected to grow to about 1,000 warheads by 2030, with further expansion anticipated in the 2030s. In addition, China has been developing and deploying advanced intermediate-range nuclear systems that enable it to hold at risk various military targets in the Indo-Pacific. This marks a transformation of China's nuclear posture from one suitable only for assured strategic retaliation in the event of an attack against it to a nascent flexible response posture that can also be employed to support the operations of its conventional forces. This poses a military-strategic problem somewhat similar to that facing NATO in Europe in the event of a potential war with Russia. Meanwhile, advances in North Korea's nuclear programme further strain US deterrence capabilities.²⁰

China's growing military power and the large-scale expansion of its nuclear forces are putting pressure on the ability of the US and its allies to deter war or achieve their war aims in the event of concurrent or closely sequenced conflicts in Europe and the Indo-Pacific. A simultaneous war in two theatres would force the US to make trade-offs regarding the allocation of capabilities to each theatre. A sequential war could cause even greater difficulties for the theatre in which the second conflict begins, because available military capability might already have been diverted to the theatre where the first war was launched. Attrition of military forces could also be significant, to the extent that this window of vulnerability might last for years.²¹ The current US policy seeks to address this problem by concentrating its conventional military power on denying China's aims in the Indo-Pacific, while assuming risk in Europe.

Moreover, a war in one theatre would have spillover effects on deterrence or war in the other theatre, since both Russia and China hold at risk certain capabilities that are integral to operations in both theatres. These include the US strategic nuclear

17 Freedman 1998; Roberts 2025.

18 Gray 1979, 56. Gray argued for a strategy that went beyond victory denial, however.

19 Trachtenberg 2024.

20 Lawrence Livermore National Laboratory 2023; Lavikainen 2024.

21 Cancian, Cancian, and Heginbotham 2023; Lawrence Livermore National Laboratory 2023; Lavikainen 2024.

forces, which, in turn, are intended to hold at risk targets in both theatres. Space-based enablers could also be degraded by counterspace attacks by one adversary, which would then negatively affect the ability of the US and its allies to operate effectively against the other adversary.

Consequently, the potential for multi-theatre wars makes the military balance in any one theatre harder to assess because it depends on developments in the other. It also makes the circumstances under which a war would be fought more complex and likely more difficult for NATO. European Allies can and should address this contingency through conventional military build-up, but NATO's operational plans continue to depend on the ability of the US to reinforce Europe, provide critical enablers, and maintain sufficient nuclear forces to deter Russia. Therefore, regardless of the efforts that European Allies undertake to strengthen their conventional defences, Russia might, in an extreme contingency, enjoy – or believe that it enjoys – a measure of usable conventional military superiority in Europe. Additionally, Russia might perceive that, if the US were engaged in a war against China, the balance of resolve would be in Russia's favour, considering that Europe is a region of secondary importance to the US.

Such a war would be fought under a persistent nuclear shadow. NATO is preparing for Russia's nuclear signalling during war – an integral part of Russia's military strategy, as the Russo-Ukrainian war shows – or for the coercive use of nuclear weapons to terminate a conflict at a moment, or in a manner, advantageous to Russia. Russia currently maintains the largest and most diverse nuclear arsenal in the world, including an approximately ten-to-one numerical superiority over the US in theatre nuclear forces.²² Beyond coercive use, these forces provide multiple options for seeking military advantage, including through operations involving large-scale nuclear strikes against military and economic targets in Europe.²³ Russia's development and fielding of intermediate-range nuclear weapons, along with recent exercises involving its non-strategic nuclear forces, indicate a growing emphasis on these options in Russian military planning.

It is for reasons such as these that a bipartisan commission tasked by the US Congress concluded in its final report, released in October 2023, that the current US nuclear modernization programme is necessary but not sufficient to ensure that deterrence remains credible. Both stronger strategic nuclear forces and additional theatre nuclear capabilities will be required to enable the flexible response strategy.²⁴ The next section discusses the characteristics of NATO's current theatre nuclear capability and considers how strengthening NATO's theatre nuclear posture in Europe could redress this problem.

3. Flexible response and NATO's theatre nuclear posture

US theatre nuclear forces in Europe comprise fewer than 200 B61 bombs deployed at six military bases.²⁵ Recently, these bombs have been modernized to the B61-12 version, which includes a tail kit similar to the one used in conventional JDAMS, while the carrier aircraft are being upgraded to fifth-generation F-35A fighters. The system's penetrativity will increase significantly due to the aircraft's stealth capability, while the inertial navigation system (INS) guidance provided by the tail kit enables precision strikes using the warhead's lower-yield options.²⁶

During the 2023 and 2024 summits, the Alliance decided to strengthen its nuclear planning capability as well as training and exercises. Alberque reports that NATO also adopted a new nuclear policy in 2024 that expanded the basing and dispersal of aircraft. These decisions indicate an increasing emphasis on developing more militarily effective response options, which the modernized theatre nuclear forces will be capable of executing. There is, however, no evidence of the reintegration of conventional and nuclear planning, which would signify a comprehensive revival of flexible response in NATO planning.²⁷ After the Cold War, NATO instead assumed that its conventional superiority, provided by the US, could ensure battlefield victory, while nuclear deterrence would rest primarily on US strategic nuclear forces.

22 Kristensen, Korda, Johns, and Knight 2025.

23 Zysk 2018; Kofman, Fink and Edmonds 2020; Johnson 2018.

24 Creedon et al. 2023. See also Amato 2025.

25 Kristensen, Korda, Johns, and Knight-Boyle 2025. There are some indications that nuclear weapons have recently been deployed to the Lakenheath Airbase in the UK as well.

26 Kristensen 2011.

27 Alberque 2025.

Rather than providing the full range of flexible response options, NATO's theatre nuclear forces are postured for a limited response to coercive nuclear employment. Such a response would likely seek some military effect, but its primary purpose would be to convey NATO's resolve to continue fighting and linkage to US strategic nuclear forces, as was the case with the principles of initial response options during the Cold War.²⁸ One early Cold War-era precedent for this role involved the use of a small number of nuclear weapons against interdiction targets to hinder Soviet and Warsaw Pact operations locally.²⁹ Shortly before the end of the Cold War, NATO agreed on general political guidelines stating that the target of the initial signalling strike would be on Soviet territory.³⁰ Similar options could be available today, in addition to other fairly limited strikes. If these lower-level nuclear options failed to achieve their purpose, NATO would likely rely primarily on US strategic bombers to conduct further theatre-level strikes.³¹

However, not only are US strategic bombers expected to contribute similarly in a US-China war, but the increased targeting requirements for the strategic counterforce mission resulting from China's military build-up mean that strategic bombers will also have to cover some less time-sensitive strategic targets that would previously have been covered by ICBMs and SLBMs. Bombers which are generated from the US also lack promptness, making them less than ideal for striking certain mobile or relocatable targets.³²

The most significant challenge for NATO's current strategy, however, is the possibility of conventional inferiority in multi-theatre war contingencies. Hence, Weaver argues that a credible flexible response strategy now requires the US and NATO not only to posture nuclear forces to counter Russia's limited nuclear employment, but also to ensure the defeat of Russia's conventional forces. Such a nuclear mission would mean fielding larger and more diverse theatre nuclear forces and posturing them to hold at risk the full range of Russia's conventional forces and

other targets.³³ Durkalec has alternatively suggested examining a regional counterforce mission, which would involve holding at risk a portion of Russia's theatre nuclear forces with nuclear and non-nuclear weapons, thereby seeking to reduce Russia's confidence that it could employ these weapons successfully against NATO.³⁴ This option would also require a stronger theatre nuclear posture.

The strategic logic underpinning such a flexible response posture has been explained in more detail in another paper,³⁵ including the imperative to strengthen NATO's conventional forces. Suffice it to say here that, as a deterrence strategy, it is a traditional approach that seeks to ensure that even risk-acceptant or poorly informed Russian decision-makers will conclude that no plausible pathway to victory exists and that any such attempt would be excessively dangerous. During war, a flexible response strategy would not seek the complete defeat of the enemy, but rather to secure more limited war aims involving the restoration of allies' sovereignty and the preservation of their territory. The potential for sequential wars in Asia and Europe makes this notion even more relevant. Russia might question whether the US would be ready and willing to engage in another war in Europe shortly after a gruelling conflict against China, but strong and fully intact theatre nuclear forces could still give it pause. By contrast, a smaller arsenal with a restricted role might prove less effective.³⁶

As was the case with Cold War-era flexible response, a fundamental reappraisal of the role of nuclear weapons would not be necessary, since additional nuclear options would not compel NATO to commit to their use any more than the options generated by the US Strategic Command compel the US. While this would include the option of engaging in what is sometimes called 'nuclear warfighting', which is detested by some, any employment of nuclear weapons during war would, as Gray notes, qualify as such.³⁷ Furthermore, US strategic forces

28 Quinlan 2009, 38–39.

29 Maloney 2002.

30 Schulte 2012, 56.

31 For a brief reference, see e.g. US Airforce 2020, 18. The other legs of the nuclear triad are thought to be reserved primarily for the strategic counterforce mission because it requires nuclear systems capable of a prompt response.

32 Weaver 2025.

33 Weaver 2025; Weaver 2023.

34 Durkalec 2025.

35 Lavikainen 2025.

36 Although the deployment of new weapons would primarily redress a potentially unfavourable balance of power, it would also signify interest in deterring war in Europe.

37 Gray 1984, 4.

are already expected to act in this role if necessary. The primary question, then, is whether the strategy, whatever it is, results in an effective deterrent or the ability to achieve objectives during war.

While keeping the most limited options available is sensible, relying solely on them in a situation where conventional forces cannot, with great confidence, be expected to fully defeat Russia's aggression in all contingencies would be dubious. As Buteaux noted during the Cold War, the militarily ineffective use of nuclear weapons might even be interpreted as a sign of a lack of resolve and could weaken NATO's bargaining position. Hence, during the Cold War, the US favoured a strategy in which the employment of nuclear weapons was delayed for as long as possible before they were used on a sufficient scale to ensure at least a temporary military advantage.³⁸

The difference between the militarily ineffective use of nuclear weapons and strikes designed to secure a military advantage is, as Gray once argued, that in the latter case the enemy would be forced to weigh whether to continue its aggression in a situation in which it had not secured territorial gains and, due to the destruction of its local forces, would be unable to achieve its objectives, at least in the short term. Not only would a warning of immeasurable costs be communicated to Russia, but the probability of successful aggression would also be much lower than if its conventional forces were still largely intact and occupying NATO territory.³⁹ As would have been the case for West Germany during the Cold War, this difference could be important to frontline states today, considering that the current policy in the event of an adversary's nuclear use is to restore deterrence and terminate the conflict on the best achievable terms,⁴⁰ making it uncertain what this would mean for those who had borne the brunt of Russia's aggression.

That being said, no strategy can guarantee that deterrence would be restored as long as the enemy

retains the capability to continue fighting. However, the primary goal of deterrence is to persuade the potential aggressor, before war, that it, too, cannot escape the risk of escalation. Deterrence is fundamentally based on the concept of risk, since otherwise it would be possible for the aggressor to identify a degree of military action that one could initiate safely and still achieve victory.⁴¹

It has also been argued that NATO does not require theatre nuclear forces, since conventional high-precision weapons can assume roles previously assigned to nuclear weapons. However, aside from the fact that no other weapon can deliver the psychological effects of nuclear weapons, their explosive yield makes them uniquely effective in destroying certain types of targets. While advanced conventional weapons may also be scarce and subject to conservation requirements, they also depend on the availability of GPS guidance, unlike current nuclear weapons, leaving them vulnerable to jamming and the effects of counterspace attacks. Hence, the most effective approach to flexible response today is, as Verstraete also argues, to integrate conventional precision strikes with the use of theatre nuclear weapons to maximize the effect of an attack.⁴²

Advances in precision guidance and sensor technology also mean that ensuring the credibility of a flexible response strategy would require fewer nuclear weapons than during the Cold War. Nonetheless, ensuring the defeat of Russia's conventional forces would probably be best achieved by striking targets other than the forces themselves, although the option of striking the forces should not be excluded as a matter of policy. As Gifford shows, owing to the way ground forces are dispersed in the field, a 10 kt nuclear blast is unlikely to render even a brigade combat-ineffective.⁴³ Given the scarcity of nuclear weapons, the most effective targets for theatre forces would likely include logistics, command posts and airbases. The increased precision of

38 Buteaux 1977, 791.

39 Gray 1974, 9.

40 US Department of Defense 2024.

41 Quinlan 2009, 62–67. This remains a seminal treatise on nuclear escalation.

42 Verstraete 2025, 16.

43 Gifford 2025, 21–22. Analysis of the effects of several weapons might produce a different result, however.

modern nuclear weapons allows such targets to be struck with airbursts above the fallout threshold, with minimal collateral damage.⁴⁴ Hence, the enhanced precision of modern nuclear weapons could, in some circumstances, allow NATO to plan airburst strikes against targets also within NATO territory.

A flexible response strategy would nonetheless require a larger and more diverse theatre nuclear arsenal. It is unlikely that NATO would need to duplicate Russia's capabilities or seek parity with Russia in theatre nuclear forces. Rather, it requires forces capable of implementing its strategy under duress. This would entail taking into account not only attrition rates, but also leveraging the advantages of different nuclear delivery systems. The next section provides a brief overview of some available options and illustrates how an appropriate mix of theatre capabilities could contribute to a stronger nuclear posture.

4. Capabilities

As theatre nuclear capability would be required to support conventional military operations, professional military planners would need to consider various contingencies involving an extended war, including an extended nuclear conflict, and test their analyses through extensive wargaming in order to identify the necessary force structure.⁴⁵ In more general terms, Weaver argues that the requirements of a flexible response strategy in a two-peer environment should allow for a robust range of response options to restore deterrence, counter the military impact of an adversary's limited nuclear use, and achieve war objectives in a limited nuclear-use environment. Therefore, theatre nuclear forces that ensure credible deterrence should have four key attributes: they should be 1) survivable against pre-emption; 2) able to hold at risk different types of adversary targets to maximum operational effect; 3) capable of penetrating advanced air and missile defences; and 4) deliverable within operationally relevant timelines. Weaver concludes that the

current nuclear posture in Europe is insufficient because the F-35A/B61-12 system, if operating from fixed locations, is not pre-launch survivable and lacks sufficient penetrativity due to the bomb's limited range. Consequently, Weaver recommends strengthening the US theatre nuclear posture with a sea-launched cruise missile (SLCM-N), currently in development, as well as considering the deployment of air-launched cruise missiles and ground-launched cruise and ballistic missiles.⁴⁶

While enhanced survivability and penetrativity of theatre nuclear forces could be achieved by replacing the B61-12 with a standoff capability, the requirement to counter the military impact of an adversary's limited nuclear use – and to achieve maximum operational effect – results in capability requirements resembling those of conventional forces. Strikes would not only be based on pre-planned options, but would also be generated through adaptive planning during a dynamic conflict.⁴⁷

In these situations, the diversity of the force structure has a quality of its own. Targets are prioritized, and if a critically important target or vulnerability is detected, a team of planners will select the most suitable weapon for that target, thereby maximizing the probability of its destruction.⁴⁸ Having a wide range of options is useful because not all systems are equally suited to all missions, and attrition means that the ideal weapon may be unavailable or may need to be reserved for other missions. The next section provides a brief description of the capabilities that could be available for NATO's theatre nuclear posture.

The main advantage of the F-35A/B61-12 system is its flexibility. Assuming that the B61-12 operates on principles similar to those of conventional bombs equipped with JDAM kits, it is guided to strike specific coordinates. The target can therefore be almost anything, from static targets such as air defence systems and bridges to moving targets such as conventional ground forces. Target data are pre-programmed, with updates received from the aircraft prior to release. Unlike conventional JDAMS,

44 Lieber and Press 2017; Jamison 2022.

45 I am indebted to Greg Weaver for this point. See also Jamison 2022, 23.

46 Weaver 2025.

47 For a brief discussion of adaptive planning in air force nuclear operations, see us Airforce 2020, 15–16.

48 For an overview of weaponeering, see us Airforce 2021, 50–52.

the B61-12 is not GPS-guided. Its INS guidance nonetheless provides sufficient accuracy for low-yield nuclear options, while being less vulnerable to target-area interference than precision conventional weapons that rely on GPS. Although the aircraft is vulnerable to air defences because the bomb must be released close to the target, the bomb itself is highly likely to penetrate defences because of its flight speed and short flight time.⁴⁹

Due to the bomb's short range, however, the F-35A/B61-12 system is suboptimal for certain long-range missions inside enemy territory protected by advanced air defences. Although the F-35's stealth capability reduces the probability of detection, a high probability of mission success would require the suppression and defeat of enemy air defences. One example of how this would affect mission planning is US Operation Midnight Hammer against Iran's nuclear facilities, which did not commence until Iran's air defences had been sufficiently degraded. Under NATO's current posture, F-35A/B61-12 aircraft operate from bases far from any of their potential targets, meaning that such missions would also likely require tanker support.

The disadvantages of the B61-12 could be addressed by enhancing NATO's theatre nuclear posture through the addition of cruise missiles such as the SLCM-N or an air-launched nuclear variant based on the JASSM. Attack submarines armed with the SLCM-N, in particular, have two key attributes that make them an unparalleled deterrent in the contemporary threat environment. First, because the missile is invisible to the adversary before launch, the adversary must assume that it is present and holding various targets at risk. Second, because the attack submarines armed with the SLCM-N are unknown, the adversary must assume that any given submarine carries it and factor in the risk of prompt retaliation at all times.⁵⁰ In more general terms, the most prominent advantage of cruise missiles over the B61-12 is their range, which increases the survivability of the aircraft while airborne. The flight path is pre-programmed, with optimal paths

and conditions taken into account, which also complicates interception because the missile's target cannot be identified early in flight. Modern cruise missiles such as the JASSM utilize GPS to correct errors in their flight path, meaning that the system's precision depends on satellite guidance being available. Cruise missiles are best used against fixed targets because their flight time is measured in tens of minutes. The JASSM-ER, however, is expected to have a retargeting capability in the future.

Additionally, NATO could consider adding ground-launched ballistic missiles to its theatre nuclear posture. The advantages include range, flight speed and penetrativity. Disadvantages include the ability of ground- and space-based early warning systems to identify the missile's likely target, although interception would nonetheless be very challenging, given that theatre-range ballistic missile flight times are measured in minutes. As for the sea-launched alternative, both US and UK Trident D5 SLBMs have low-yield options that could be used for non-strategic missions, although the UK no longer associates its nuclear arms with the concept of 'substrategic nuclear weapons'. While not an ideal solution, this would strengthen NATO's theatre nuclear posture until the SLCM-N becomes available.

Even a cursory glance at the complementary attributes of long-range missiles and guided bombs indicates that a theatre nuclear posture capable of implementing an effective flexible response strategy would likely require both. As it can be used against a wide range of targets, the F-35A/B61-12 system will likely remain a useful component of the posture despite its short range, while its shortfalls in penetrativity and survivability could be addressed by enhancing theatre nuclear forces with the SLCM-N once the system becomes operational. Soofer and Karako note that a modest deployment could be sufficient to allow the US to execute its nuclear strategy against both Russia and China.⁵¹ However, because of the military geography of the European theatre, it is possible that ground- and air-launched missiles could be more effective than the SLCM-N

49 The Office of the Director, Operational Test and Evaluation. Information on the conventional JDAM is available at Joint Direct Attack Munition GBU- 31/32/38, US Airforce, <https://www.af.mil/About-Us/Fact-Sheets/Display/Article/104572/joint-direct-attack-munition-gbu-313238/>.

50 Harvey and Soofer 2022.

51 Soofer and Karako 2023.

at holding certain targets at risk. Additionally, ground-launched systems are easier to operate than sea-based systems in some respects – for example, in terms of reloading. If dispersed, they are also survivable against pre-emption. Nevertheless, even if the US decides to develop new air- or ground-launched theatre nuclear weapons, these systems would likely become available too late to be considered near-term solutions.

Some of these capabilities could also be used to pressure Russia into serious nuclear arms control negotiations. At present, after downsizing its own theatre forces, the US has few bargaining chips with which to persuade Russia to enter talks on its theatre nuclear forces. As the dual-track approach during the 1970s and 1980s showed, deploying additional deterrent capabilities that Russia takes seriously can incentivize it to accept constraints on its own posture.

In the short term, enhanced credibility of NATO's theatre nuclear posture could be achieved by leveraging currently fielded capabilities. The survivability of the F-35A/B61-12 system could be improved by exercising the dispersal of dual-capable aircraft (DCA) from their main operating bases. Additionally, nuclear sharing could be expanded to include new Allies such as Poland, which has expressed interest. This could involve either full integration into nuclear basing and DCA missions or participation in the DCA mission while operating from existing bases.⁵² The latter solution would be easier, as it would be less politically contentious and would not require new infrastructure. Extending basing arrangements could make these forces more vulnerable to Russia's shorter-range systems, but this is less of an issue today, given Russia's development of intermediate-range ballistic missiles, which means that it could soon hold theatre nuclear forces at risk within minutes even at their current locations.

Moreover, since the UK decided in 2025 to join NATO's nuclear sharing arrangements, it could consider reviving the concept of substrategic nuclear weapons and associating low-yield Trident warheads

with NATO's nuclear planning in this role as part of a comprehensive revival of the flexible response strategy. As a longer-term solution, the UK could also consider developing a nuclear-tipped air-launched cruise missile for a substrategic role. This would also strengthen its position as NATO's second centre of nuclear decision-making and provide a hedge against a possible future in which the US no longer extends its nuclear deterrent. In the long term, enhanced cooperation between the UK and France could be essential in addressing this contingency.⁵³

Conclusions

In the post-Cold War era, NATO had the luxury of not giving serious consideration to nuclear weapons and their role in war prevention. Understanding of the basic principles of nuclear deterrence and strategy atrophied because there was no immediate need to address the difficult questions that are bound to arise from security that relies on nuclear weapons. Meanwhile, as NATO withdrew most of its theatre nuclear forces, Russia modernized its own, revitalized its nuclear thinking, and applied the lessons learned in its invasions of Ukraine. The deteriorating security environment now compels NATO – and especially the European Allies – to revive their muscle memory for nuclear strategy and its intellectual origins. This thinking can no longer be externalized to the United States, even if most of NATO's nuclear capability continues to be provided by its pre-eminent military power. The fact that this can no longer be taken for granted only reinforces the need for NATO and Europe to once again become attuned to the culture of deterrence.

Any arrangement in which nuclear deterrence is extended to protect an ally from nuclear-backed aggression, regardless of where the external protector is physically located, requires the protector to formulate a policy capable of denying the adversary a quick or eventual victory while threatening it with a risk of immense proportions, despite facing a similar risk. To make this credible, the protector must

52 Kacprzyk 2023; Edelman and Miller 2024.

53 For the rationale behind the substrategic capability supporting the second-centre role, see UK Ministry of Defence.

possess a full spectrum of nuclear and non-nuclear capabilities, along with a credible and effective doctrine for their potential employment. To be sufficiently robust to serve as the foundation of defence policy, an extended nuclear deterrence policy must likewise provide the capability to implement a flexible response strategy. It may be prudent to explore alternative collective deterrents, but currently, and likely even in the medium term, only the US possesses sufficient military power to fulfil this role.

Hence, NATO must continue to make its existing nuclear posture, based primarily on US weapons, as effective a deterrent to war as possible. In a threat environment characterized by potential wars in multiple theatres, an effective deterrence posture requires substantial in-theatre forces and capabilities that would not be diverted to a conflict in another theatre. Although the capability for strategic retaliation continues to be the foundation of nuclear deterrence, the same requirement applies to theatre nuclear weapons. By the same logic, the conventional defence of Europe should increasingly be borne by Europeans. NATO should therefore revive the concept of a credible and effective flexible response and work towards restoring its theatre nuclear posture, as doing so would help to prevent war and preserve peace in Europe. ◆

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