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ABOVE THE BATTLEFIELD, BELOW EXPECTATIONS? THE DIMINISHING ROLE OF ATTACK HELICOPTERS IN CONVENTIONAL WARFARE

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#### Introduction

Attack helicopters are being accused by media of being obsolete on the modern battlefield, citing heavy Russian losses in the Russia-Ukraine war. Japan's decision to replace attack helicopters with drones has further reinforced this perception. However, history has shown that weapon systems are often declared obsolete too soon. The Main Battle Tank (MBT) faced similar doubts after dramatic losses in Ukraine, yet demand for MBTs is strong. The MBT persists because a platform capable of absorbing enemy fire is still needed and can adapt to resist loitering munitions. To assess whether attack helicopters are still an important tool on the battlefield, key questions, are: What can attack helicopters do better than other systems, and what unique capabilities do they offer that no alternative can fully replace?

This research contends that attack helicopters are increasingly less capable of performing traditional battlefield roles in large-scale continental wars. Doctrinal evolution and technological advancements—such as new threats from Man-portable air-defence systems (MANPADS), Short range air defence (SHORAD), and loitering munitions—have curtailed their effectiveness in close combat attacks, deep operations, and anti-tank missions. At the same time, attack helicopters find themselves operating in the multi-domain operations framework to survive but this also pitches them to compete with other weapon systems like loitering munitions and artillery. The paper is structured in two sections: the first provides a historical overview of the attack helicopter's evolution and doctrinal role; the second analyses its vulnerabilities, emerging competitors on the contemporary near-peer battlefield and the decisions key Western nations are making regarding their attack helicopter fleets.

## 1. From Escort to Spearhead: The Doctrinal Rise of the Attack Helicopter

The development of the attack helicopter by the US in the Vietnam war was connected to air-mobility. The helicopter was crucial to transport troops to the battle quickly over difficult terrain without infrastructures. Soon it became apparent the need for protection for air convoys and close-in fire support for the disembarked air transported troops (US Army, 1962). The AH-1 Cobra attack helicopter was tasked to provide fire support or perform Close Combat Attacks (CCA), escort and reconnaissance missions. Defeating armour was a secondary role because of the visibility of the jungle environment, the focus on infantry and the difficult guidance of early anti-tank guided missiles (ATGM). Importantly, all these missions were confined to supporting ground operations (Burke, 2000).

The modern attack helicopter, especially the American AH-64, and their main functions were born out of the reorientation of the Vietnam fire support-oriented attack helicopter to the different landscape and enemy capabilities of eastern Europe and responding to tensions within the US armed forces. The Air Force contested the Army adopting a flying weapon platform which was less survivable compared to fixed-wing aircraft in providing close air support (Jones, 1997). The Army's response emphasised attack helicopters' unique capability to provide discriminatory fire power close to ground combat elements particularly against armour. On these premises, the Army launched in 1972 the Advanced Attack Helicopter programme aiming to address survivability concerns through increased armour, agility and longer ranged weaponry resulting in the adoption of the AH-64A Apache in 1984. The AH-64A ended up weighing almost double the AH-1G but also carrying about double its payload.

The primary function of the attack helicopter and their autonomy in respect to ground forces started changing from the 70s to the 80s (de Durand, Michel, Tenenbaum, 2011). Within the Active Defence doctrine, attack helicopters were primarily to act as mobile reserves anti-tank fires engaging in turns Soviet Union's armoured breakthroughs with ATGMs and rockets. The Army created aviation brigades in every division and corps. Divisions' aviation brigades started to be tasked with missions executed under their own command and control (Burke, 2000). This was the beginning of Air Maneuver as the third dimension of the battlefield of the land commander whereby attack helicopters are employed in operations exploiting their superior mobility to rapidly concentrate force, exploit enemy weaknesses, and increase the tempo of manoeuvres, acting independently from ground elements if needed (Burke, 2000).

The manoeuvring capabilities of the Apache were further recognised and its autonomy increased in the more offensive-oriented 1982 US AirLand Battle doctrine. The latter placed increased emphasis on the extended battlefield envisioning targeting supporting assets like artillery, air defence and command and control, and uncommitted enemy forces with "deep attacks" or "deep strikes" to shape frontline combat. The Army Aviation Branch was detached from artillery command structures (de Durand, Michel, Tenenbaum, 2011). As the helicopter started to be referred to as a manoeuvre asset (US Army, 1986), the AH-64s in virtue of their payload and range were given a new possible mission, to rapidly and unexpectedly penetrate hundreds of kilometres behind enemy lines in large numbers to carry out shaping or decisive operations (Burke, 2000). The first helicopter-based deep attack was not conducted until 2003 against the Iraqi Republican Guard Medina Division. The 31-strong Apache force fell into an ambush, sustaining significant damage and failing to achieve its objectives. The incident cast doubt on the effectiveness of deep attack operation. Only years later did poor planning, faulty intelligence, and a lack of coordination with the Air Force emerge (Stinger, 2009). However, in complementary roles, attack helicopters proved highly effective, destroying more armoured vehicles than any other platform during the war (Stinger, 2009).

Attack helicopters appeared in Europe only in the 1990s. Before then, utility helicopters were adapted to perform missions carried out by attack helicopters in the US, leading to inevitable doctrinal differences. However, doctrinal differences persisted even after the arrival of attack helicopters, due to varying operational constructs shaped by differences in force scale, geography, and military strategies reliant on US intervention. France, Germany, and Italy, which opted for European-developed attack helicopters, ended up producing lighter, medium-weight platforms primarily intended for anti-tank fires and not well-suited for deep attacks. These, however, underwent modifications evolving into multifunctional platforms. Initially driven by budgetary constraints, this transition was reinforced by the War on Terror, as these modifications improved CCA capabilities that had become relevant again. Their high mobility and firepower partially compensated for the limited manpower deployed in asymmetric conflicts (de Durand, Michel, Tenenbaum, 2011). Their discriminatory fire reduced collateral damage (Nativi, 2000). This was especially important because ground-based artillery was hard to deploy in rugged terrain, and guided munitions were scarce and expensive.

## 2. A Crowded Sky: Threats, Competitors, and a Shrinking Niche

Following the full-scale invasion of Ukraine, conventional peer-to-peer conflict returned to the forefront in Europe, sparking a debate over the relevance of attack helicopters in the face of modern technologies. The frontline has become increasingly dangerous due to deadlier air anti-access/area denial (A2/AD) bubbles and next-generation MANPADS as evidenced by Russia and Ukraine helicopters losses. Consequently, close combat attack missions involving prolonged exposure at the front are no longer viable in modern warfare. However, the viability of other traditional attack helicopter missions, such as deep attacks and the anti-tank role, remains a subject of debate. Deep attack missions are increasingly challenged by advancements in ground-based air defence (GBAD) systems, which have enhanced detection and engagement capabilities. Similarly, the anti-tank role is under scrutiny, as the conflict in Ukraine has demonstrated that the battlefield is already hostile to armoured assaults, raising questions about the risk-reward balance of deploying attack helicopters for this purpose (Moran, 2024). While some analysts argue that attack helicopters are becoming obsolete in their traditional roles, others maintain that, with tactical adaptations and technological enhancements, these platforms can continue to fulfil these missions effectively citing Russian attack helicopters contribution to stopping the Ukrainian 2023 summer offensive.

Two main arguments are often made in favour of the attack helicopter's continued relevance in conventional conflicts. First, only rotary-wing aircraft are capable of performing deep attacks—no other weapon system can currently fulfil this role (Moran, 2024). Second, technological advancements and the integration of attack helicopters into Multi-Domain Operations (MDO) are seen as ways to mitigate emerging threats and enable a precision fires role. These arguments will be explored in the following sections, though their underlying assumptions and limitations will also be critically assessed.

Moran (2024) believes that deep strikes are now the primary function of attack helicopters in conventional conflicts, while other functions can be better performed by other systems. This view finds some support among US Army officials. Major General Isenhower stated at the 2024 Maneuver Warfighter Conference that "your maneuver unit [in the division deep fight] as a division commander is the Apache battalions, no longer are we in the business of the pink team overhead (armed reconnaissance) or in direct support over an infantry platoon or a tank platoon" (Moran, 2024, 5:05-5:18). The Russian air assault on Gostomel airport and the Ukrainian Mi-24 raid into Belgorod show that penetration is possible if air defence is disorganised. Whether or not deep attacks are part of a country's operational plans might explain differing policies on attack helicopters (Moran, 2024). For instance, the Japanese Ministry of Defence plans to retire attack helicopters in favour of utility/attack unmanned aerial vehicles (UAV) (Japan MoD, 2023) aligns with a short logistics island defence. In contrast, Poland has acquired 96 AH-64E in preparation to fight across the plains of eastern Europe (Adamowski, 2024).

Deep attacks rely on air defence being scarcer few kilometres behind the frontline (Moran, 2024). Whilst this still holds true, increased dangers posed by technological and doctrinal developments threaten the feasibility of deep attacks. Mass use of reconnaissance drones and orbital intelligence, surveillance, and reconnaissance (ISR) capabilities make extremely difficult covertly preparing large-scale attacks. Mobile short-range air defence systems (SHORAD) are becoming more widespread due to cheaper tracking and engagement systems. Army National Guard Colonel Jeremey Davis has recommended repurposing SHORADs as mobile rear area defence (Davis, 2024). Non-radar detection systems could detect and track low-flying helicopters guiding SHORAD formations to the anticipated engagement area. The Ukrainian Sky Fortress system has used decentralised microphones to track Shahed-136/Geran-2 drones with outstanding results (SOFX, 2024).

Most NATO countries that plan to retain attack helicopters are integrating them in Multi-Domain Operations (MDO). MDO were conceptualised by the US in preparation of conventional conflicts and posit that the total connection of domains grants the initiative and prevents adversaries from regaining it. At the combat asset-level, this is enabled by integrating advanced sensors and data fusion capabilities providing superior situational awareness. An extension of this concept is Manned-Unmanned Teaming (MUM-T) allowing control of unmanned systems from manned platforms to enhance mission effectiveness and safety. A recent development of MUM-T is Launched Effects, whereby unmanned systems are launched from the controlling manned platform. The US Army abandoned plans to develop a successor to the Apache under the FARA programme but has still integrated attack helicopters into the MDO doctrine by upgrating the AH-64. These modernisations have introduced, inter alia, a cognitive decision aiding system, data links to share information with aircrafts and missile defence systems, MUM-T capability, and Launch Effects (Boeing, 2024). Three out of the four European operators of European attack helicopters decided to continue investing qualitatively in their fleets. Spain and France have launched in 2022 the Tiger MKIII Mid-Life Update. This is understood to include new avionics, sensors, weapons and battle management system, and MUM-T capabilities (Charpentreau, 2023). Italy has purchased the AW-249 Fenice, a domestically designed attack helicopter with flight characteristics comparable to the Apache and a net-centric architecture (Leonardo, 2025).

Helicopters survivability is also enhanced by Defensive Aids Systems. However, defensive adaptations are limited by counter-adaptations and by inherent constraints in helicopter design. Electronic countermeasures will play a key role in countering loitering aerial interceptor drones, which are becoming commonplace in Ukraine to counter reconnaissance UAVs and large loitering munitions. But missiles and drones will adapt to bypass new defences, diminishing their initial effectiveness through more sophisticated sensors, Al-aided terminal guidance and EW-hardened designs. The appearance of interceptor drones represents an increase in the spectrum of threats that helicopters face. Additionally, rotary-wing platforms are mostly limited by their concept itself to the first three layers of the integrated survivability onion (Don't be Seen, Don't be Acquired, Don't be Hit). The fourth layer—Don't be Penetrated—remains weak, as airframes cannot be significantly reinforced to withstand anything beyond machine gun fire due to weight constraints. This poses a significant challenge for operations in enemy territory that put helicopters within range of self-propelled anti-aircraft guns (SPAAGs) whose heavy gunfire cannot be jammed. While SPAAGs are not new, their integration with the broader air defence network enables doctrinal developments like mobile area defence groups mentioned above.

Helicopter-launched anti-tank guided missiles (ATGMs) benefit from increased weight capacity and aerial launch platforms, granting them longer engagement ranges compared to man-portable air-defence systems (MANPADS), which are constrained by the necessity for individual portability. In dynamic frontline scenarios or shortages in anti-air assets as in the case of the Ukrainian summer offensive, the rapid deployment of GBAD capable of countering such threats may lag, providing a critical window for attack helicopters to execute strikes. However, advancements in radar technologies and the data-link capabilities of medium- and long-range missiles have heightened the risks associated with these operations. Additionally, the proliferation of active protection systems (APS) on modern

tanks is expected to reduce the effectiveness of ATGMs (Cranny-Evans, 2025). Notably, this anti-tank role can be fulfilled by utility helicopters equipped with ATGMs, eliminating the exclusive need for dedicated attack helicopters.

Helicopter survivability improvements due to increase in line-of-sight (LOS) ATGMs range are at a certain point offset by the increased exposure to GBAD as helicopters must ascend to higher altitudes to overcome terrain-induced obstacles. To address this challenge, non-lineof-sight (NLOS) missiles have been developed. Rafael's 6th Generation SPIKE NLOS missile can reach targets at 50 kilometres when launched from a helicopter (Rafael, 2025), this range introduces a new role for helicopters in delivering precision fires beyond the frontline. NLOS missiles rely on coordinate data acquired by other systems, which also enable many other fires, and/or inertial guidance with terminal man-in-the-loop guidance through video feed. In this capacity, helicopters compete with artillery systems, offering greater mobility at a higher cost, and with loitering munitions, which are generally more vulnerable but less expensive. These missiles are heavier and can only be mounted on "massive" helicopters, excluding light and medium (utility or attack) helicopters (Rafael, 2025). However, heavy utility helicopters can also perform this role, not necessarily attack helicopters.

The Russia-Ukraine war has raised two broader criticisms of MDO's transposition which apply to attack helicopters. First, MDO enabling assets are complex and therefore costly. The AH-64E per-unit cost is now around half of a F-35's, even though the cost per flight hour remains noticeably lower (American Machinist, 2024). High cost may lead to smaller than needed fleets which may also increasing vulnerability. Secondly, complexity demands highly trained personnel, and if losses are expected, replacements may lack the skill to operate them effectively, leading to further losses of already scarce equipment. For example, the use of MUM-T capability could increase pilot workload and contribute to task saturation (Gaydos & Curry, 2015). These criticisms align with the decision by some countries to adopt alternative approaches to MDO's adaptation of medium or heavy attack helicopters, without fully abandoning rotary-wing platforms in combat roles—such as Japan. Germany is delaying upgrades, citing costs, but retaining its Tigers and planning to replace them once depleted with ATGM-equipped H145M utility helicopters; even though Bundeswehr officials called the measure a "bridging solution" until more capable drones and loitering munitions are deployed (Sprenger, 2023). The Republic of Korea (RoK) is still investing the attack helicopter, while reconsidering expanding its heavy AH-64 fleet citing high costs and vulnerabilities shown in the Russia-Ukraine war to drones and MANPADS (Joo-young, 2025), it is pursuing a high-low mix strategy by investing in a large fleet of light attack helicopters (Global Security, 2025).

#### Conclusion

The role of the attack helicopter in modern continental warfare is increasingly constrained. Once vital for delivering precise and mobile firepower in support of ground operations, these platforms now face a hostile battlefield characterized by dense and integrated air defences and pervasive surveillance. While Close Combat Attack is clearly no longer viable, deep strikes may also be increasingly untenable, and both anti-tank and precision fire missions face growing competition from cheaper, more survivable, or more versatile alternatives such as loitering munitions and artillery. The analysis reveals that most NATO countries and like-minded partners are not investing heavily in growing their attack helicopter fleets. Instead, many are adopting half-measures: upgrading existing systems, integrating manned-unmanned teaming (MUM-T), or developing hybrid solutions, such as light armed utility helicopters. This trend reflects a growing scepticism over whether attack helicopters can justify their high cost, training demands, and limited survivability in a peer-topeer war environment. Moreover, Europe remains divided on their relevance, hampering coordinated development. While they may retain value in specific contexts-such as dispersed or archipelagic warfare—their broader utility is diminishing. Their future may lie not in standalone missions, but in operating within a highly integrated, multi-domain ecosystem. Even then, the sophistication and cost of such systems may ultimately favour platforms with greater survivability and flexibility. As such, Western attack helicopter fleets are unlikely to grow and may gradually be replaced or relegated to niche roles in the evolving landscape of modern warfare.

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