



Revista Brasileira de Política Internacional

ISSN: 0034-7329

ISSN: 1983-3121

Centro de Estudos Globais da Universidade de Brasília

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Revista Brasileira de Política Internacional, vol. 67, no. 1, e003, 2024

Centro de Estudos Globais da Universidade de Brasília

DOI: <https://doi.org/10.1590/0034-7329202400103>

Available in: <https://www.redalyc.org/articulo.oa?id=35877575003>

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Revista Brasileira de  
Política Internacional

ISSN 1983-3121

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# Deep fires and the British strategic posture: does the war in Ukraine validate it?

DOI: <http://dx.doi.org/10.1590/0034-7329202400103>

Rev. Bras. Polít. Int., 67(1): e003, 2024

## Abstract

The Russia-Ukraine war presented an unintended chance to assess the British strategic posture regarding deep fires. The deployment of guided rocket artillery systems by Ukrainian forces in 2022 altered the land battle dynamics significantly, especially with the modern Western deep fires by the US, UK, and France. This study analyses the evolution of the UK defence policy and land force structure and the impact of deep fires in the first phase of the war, and discusses challenges ahead of Britain due to the ongoing conflict. This perspective might apply to other cases, including Brazil, as we drew upon critiques mainly directed to the over-reliance on technology over combat mass due to the re-emergence of conventional warfare.

**Keywords:** Deep fires; UK Strategy; Ukraine war; Conventional warfare.

Received: October 16, 2023

Accepted: February 28, 2024

## Introduction

Since February 2022, the world has watched the ongoing armed conflict between Russia and Ukraine. As this war continues to play out, it has taught several lessons to be learned and implications to observe (Bollfrass and Herzog 2022; Zabrodskyi et al. 2022). Among them, it is possible to identify the following:

1. Conventional Warfare as an unintended consequence of NATO expansion and its effect on redesigning the European security and defence environment.
2. The impact of deep fires on the dynamics of the battlefield demands an assessment of existing strategies, doctrines, and force structure in NATO member states.
3. Material and logistics are critical for the continuation of the war effort, particularly regarding the manufacturing

capacity and supply readiness, as in the case of ammunition (International Institute for Strategic Studies 2022; Cranny-Evans 2022).

Deep fires have become a crucial asset in battlefield dynamics, as demonstrated by the Russian invasion of Ukraine. Britain, the second largest provider of military assistance to Ukraine, maintains an official strategic posture on the role of deep fires in modern conflict established before the war. This article investigates if the initial phase of the conflict validated the British strategic posture for 2021, when the country announced investments in those capabilities.

Deep fires are precision fires capable of neutralising enemy targets deep in the battlefield or rear areas. In a land forces context, artillery and Multiple Launch Rocket Systems (MLRS) are the main platforms capable of causing strategic effects on a target with precision ammunition. Land forces can produce such an effect by deploying cruise missiles, rockets, or any other ordnance that provides deep-strike capabilities. The concept of deep fires hereby addressed stands for the expected effects rather than the platform deployed.

Both Ukraine and Russia were not new to deep-fire capabilities, but Russia managed to outgun and outrange Ukraine's artillery by deploying more capable artillery and MLRS systems. Thus, Ukraine became the testbed for modern Western systems such as the HIMARS, M270, and Caesar.

So, why analyse this phenomenon from a British perspective? The UK chose to increase these capabilities before this war, which became an unintended test to assess if this posture was effective. The British experience is a significant instance of a correlation between deep fires, modern military strategies, and force structure. Since 2021, and recently in 2023, the UK has published a new set of strategic documents and a new modernisation program for its army to adjust the course, clearly naming Russia as a threat. One feature of the modernisation programme, named "Future Soldier" (UK Army 2021), which is a "shift in emphasis from 'close' to 'deep'", is understood as acquiring the capability to perform in-depth attacks against a conventional force (Cranny-Evans 2022).

This marks a shift in the country's posture, which has mainly been focused on facing non-state actors since the end of the Cold War. The emphasis on stabilisation, counterinsurgency, and anti-terrorism operations implied not only in the relative downsizing of the branches of conventional warfare, like artillery and main battle tanks, but also in the lack of investments in new technologies such as theatre missiles or guided rockets capable of reaching the rear of the enemy lines. This context lays the groundwork for our research question on the British posture validation and the role of deep fires demonstrated during the first phase of the war in Ukraine, while also leaving room for reflections about to what extent technology assets can be a trade-off to combat mass, given the significant cuts that have occurred in the British Army personnel.

Although centred in one country, this case study can provide insights into comparable situations within NATO countries and further perspective on the political implications for countries with ongoing missile research and development programmes outside of Europe, such as Brazil.

Therefore, we structured this article into two sections and a conclusion. The first section depicts the evolution of British strategic posture and the role of deep fires before the war in Ukraine. Given that the UK seeks to maintain its position as a strong NATO ally and a relevant military power, different contours emerge when addressing the country's military capabilities and strategic posture in the face of deep fires.

As the Ukraine war became a testbed for the main Western weapon systems, we discussed the country's utilisation of British deep-fire capabilities, demonstrating their role in the first stage of the war and how they improved Ukraine's military capability. This analysis underpins our assessment of the British strategic posture and the country's investment in those capabilities<sup>1</sup>.

Lastly, we assess that such validation occurs partially in light of the current strategic documents in force and the UK's position in the contemporary international system. We conclude that even though the investments in deep fires increased military capabilities, some incongruences put at stake the aspired position expressed by the country's strategic documents and credible deterrent capabilities.

## British Strategic Posture and Deep Fires Pre-Ukraine War

Despite its relative decline since the 20th-century world wars, the United Kingdom still sees itself as a major power. Consequently, it sustains armed forces tailored for missions far beyond the defence of its territory. British strategic postures and the size and structure of its military have undergone many modifications over the years. According to Dorman (2017), there have been three central tenets of British defence policy since then. The first is preventing a single state (or group of states) from dominating Europe. During the Cold War, it unfolded its active role in building the NATO alliance and committing the United States to the European defence against the Soviet Union. The second tenet is developing and maintaining its own nuclear deterrent. Even relying on a larger military alliance, the UK keeps its nuclear weapons for independent use. The third tenet regards sustaining a global diplomatic and military presence through international organisations, like the UN Security Council and the Commonwealth, but also through its overseas possessions and military bases abroad (Dorman 2017).

We infer that a fourth tenet could be added to the British defence policy: the long-lasting political and military alliance with the United States, often described as a "special relationship." These close ties were and are essential at different levels, such as sharing the technology for

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<sup>1</sup> The UK provided £2.3 billion in military aid to Ukraine until February 2023, making it the second-largest military aid in Europe. The aid includes 200 reconnaissance drones, 850 Black Hornet drone units, 3 WS-61 Sea King helicopters, and 1,350 loitering munitions. The UK also hosted an international programme to train 10,000 Ukrainian soldiers and announced resources to pay salaries. This level of engagement in mainland Europe has been unprecedented for many decades. Refer to Kiel Institut für Weltwirtschaft, 'Total bilateral aid commitments to Ukraine between January 24, 2022 and May 31, 2023, by type and country or organization (in billion euros)'; 'Number of disclosed number of aircraft and unmanned aerial systems (UAS) committed to Ukraine as of May 2023 by donor country.' Chart. July 6, 2023. Statista. <https://www.statista.com/statistics/1314494/ukraine-military-aid-aircraft/>

submarine-launched nuclear and conventional missiles or the roles the UK played as a broker of the relations between the United States and Europe, at least until Brexit. The combination of these four tenets guided most of the decisions successive cabinets made regarding the British strategic posture.

During the Cold War, the British armed forces had two main roles: to secure the empire and to perform nuclear and conventional deterrence with NATO allies against the Warsaw Pact. The nuclear deterrent commissioners were the RAF bomber units and the Navy SSBN<sup>2</sup> fleet. The three single services commissioned the conventional deterrent, with the British Army's heavy units deployed in mainland Europe playing a pivotal role. The end of the Cold War shattered this relatively stable picture, ushering in an era of constant change in the British armed forces' roles, force structure, doctrine, and deployment, following a long-term tendency of decrease in size and budget (Farrell 2008).

The fall of the Soviet Union and the quick and low-casualty (for coalition forces) victory in the Gulf War suggested the end of interstate high-intensity wars and the start of a new era in which threats would come primarily from non-state actors and could be dealt with using a combination of high-tech solutions and stabilisation operations. In the new security environment of the 1990s, where the major threats visualised were humanitarian crises, failed states, terrorism, or transnational crimes, the United Kingdom armed forces began to be refitted as a "force for good in the world," intervening in local or regional crises. In this regard, the 1998 *Strategic Defence Review* (SDR) clearly states that "in the post-Cold War world, we must be prepared to go to crisis, rather than have crisis come to us" (UK Secretary of State for Defence 1998). These new preventive and humanitarian roles demanded emphasising light and medium expeditionary joint brigades rather than heavy divisions reinforced with artillery.

The flip side of this shift toward joint and expeditionary forces was budget cuts and an overall trend of shrinking the military's size, arguably based on modularity and increasing effectiveness (Dorman et al. 2002). The RAF disbanded its strategic bomber fleet and, to sustain the rising costs of weaponry in constrained budget times, advanced towards a cooperative acquisition model for aircraft like the Eurofighter/Typhoon (developed with France, Germany, Spain, and Italy) and precision-guided ammunitions like the Storm Shadow missile (co-developed with France) (Svartman et al. 2023). The Navy decommissioned over half of its strike submarines and one-third of its frigates in the 1990s. However, it preserved its four Vanguard-class submarines to withhold nuclear deterrence capability and part of its carriers, which are suitable for expeditionary operations. The Army was cut by roughly 30%, shrinking from 152,800 to 109,800 troops (Dorman 2017).

Downsizing the armed forces is partially explained by the technological advances in weaponry. The new systems and processes introduced since the Gulf War increased weapons' range, precision, and lethality, reducing the mass and redundancy needed to achieve a designated objective. On the other hand, the high cost of developing and acquiring these new systems emphasised the trade-off

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<sup>2</sup> Ballistic Missile Submarines (SSBNs).

for personnel. At that time, the personnel reduction was in tune with the ‘peace dividends’ agenda and the mainstream ideas of reducing public spending<sup>3</sup>.

The British Post-Cold War strategic posture gained even more traction after the United States pushed the agenda for military transformation after the 9/11 attacks. It stresses that

military transformation involves major investment in the networking of the armed forces, a fundamental shift in military mindset from doing things (often violently) to achieving effects (ideally non-violently), and a move from the large-formation force structure of the Cold War to joint modular expeditionary force packaging (Farrell 2008, 777).

This new set of reforms, an offspring of the so-called Revolution in Military Affairs, was championed by the George W. Bush administration as the best way to prepare the military for the Global War on Terror. Network-centric warfare, effects-based operations, and expeditionary warfare became buzzwords in the Pentagon and within militaries worldwide due to the effects of diffusion and emulation triggered by the United States. NATO, for instance, created the Allied Transformation Command in 2003, and its members sought to implement adapted variations of the transformation kit individually (Terriff et al. 2010).

For the United Kingdom, there was a sheer convergence between its already adopted strategic posture, the transformation model, and its effort to remain a valuable ally capable of waging military operations alongside the United States. The harsh reality of the long wars in Iraq and Afghanistan showed the limits of the transformation, and the US literature progressively abandoned the expression. However, the US and UK armed forces have undergone reforms to perform the asymmetric warfare, stabilisation and state-building operations their governments require (Terriff et al. 2010). Britain took a nuanced and evolutionary approach to what it referred to as Network-Enabled Capabilities (NEC) and Effects-Based Approach to Operations (EBAO). On the other hand, it thoroughly embraced the expeditionary dimension of the transformation agenda.

The consequences for the RAF and the Navy followed the same path as the previous decade. In the Army, however, the changes affected more than its size but also its force structure. It abandoned the divisional structure in favour of specialised brigades that could be more easily deployed abroad. The commitment to counterinsurgency in the long interventions in Iraq and Afghanistan implied the reduction of its armoured regiments from 19 in 1990 to 10 in 2010, with only three of them equipped with main battle tanks. The number of artillery regiments fell from 22 in 1990 to 14 in 2010. In 2016, its inventory comprised 89 self-propelled 155mm howitzers, 126 105mm guns, and 35 M-270 MRLS (Dorman 2017, 42). Ultimately, the transformation agenda changed how the single services were deployed in the face of the conflicts, justifying an army with

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<sup>3</sup> According to the SIPRI Military Expenditure Database, the British defence budget dropped from 4% of the national GDP in 1990 to 2.4% in 1999.

constrained firepower and force structure. In this context, putting out deep fires became a mission for the navy's cruise missiles and RAF air strikes, not for the army. The 2014 Russian annexation of Crimea was an external shock that began to change this picture, laying the groundwork for responses also reflected in the UK defence white paper released in the subsequent year.

In addition to the mentioned context, the 2015 Strategic Defence and Security Review (SDSR) was released when "state-based threats"<sup>4</sup> re-emerged in parallel with the ongoing long-term interventions in Iraq and Afghanistan. The core of the state-designed threat was clearly Russia, whose behaviour had become perceived as "more aggressive, authoritarian, and nationalist, increasingly defining itself in opposition to the West" (UK Ministry of Defence 2015). The document also stressed modernising and upgrading. Although the 2015 SDSR stated that Russia was unlikely to pose a direct military threat against the UK, it also depicted the country as hard to predict and "tempted to act aggressively against NATO Allies", which would draw the UK into a European conflict.

The first British government response to Russia's annexation of Crimea was within NATO, urging its members to achieve a 2% defence spending target in order to deploy troops in Poland and the Baltic States and establish the Readiness Action Plan (Dorman 2017). On the bilateral level, the response involved assistance with defence reform and training Ukraine's armed forces. This new posture reverses the trend of a declining defence budget and shrinking armed forces in the United Kingdom. While expeditionary and asymmetric deployments remain, the perception of Russia as a "competitor" informed the Joint Force 2025 plan. According to the 2015 SDSR, the British armed forces must be capable of deploying a 50,000-troop force (comprising the three services) that is more integrated with civilian agencies and can perform a broader range of missions. In other words, preparedness for high-intensity combat operations was once more a requirement for the armed forces, in addition to their roles in counterterrorism, stabilisation and nuclear deterrence.

Hence, the British Army underwent a new redesign. It resumed the divisional formation model, with one division optimised to conduct warfighting missions, eventually deployed alongside NATO allies in Poland or the Baltic States, and the other two divisions designated to perform the types of missions the army has done in the past decades. It also incorporated specialised brigades to enhance strategic communications, hybrid warfare, and battlefield intelligence.

Besides, new "Strike Brigades" were created to provide the army with an "infantry force able to sustain the movement, manoeuvre, and long-range patrolling, under armour, for distances that a 'heavy' tracked force cannot match" (Owen 2017). It means a mainly wheeled battle force able to undertake an extensive road march and to fight dispersed against Russian forces, trading protection for speed and lethality. The concept intends to be a solution not only to regain a conventional

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<sup>4</sup> For disambiguation purposes, when we refer to 'state-based threats', we refer to conflicts that occur within specific geographical regions, be they performed by state or non-state actors. Conversely, 'state threats' exclude non-state actors but also comprise the cyber domain (Refer to 'state threats' concept available at the UK National Cyber Security Centre - <https://www.ncsc.gov.uk/collection/annual-review-2022/threats-risks-and-vulnerabilities/state-threats>).

land warfare deterrent but also to tackle the improved A2/AD capabilities attained by Russia (Watling and Bronk 2019). This new arrangement, however, did not involve the acquisition of more firepower, particularly regarding deep fires. Instead, it was a reshuffle of the existing means to be reinforced with new armoured vehicles yet to be delivered (the Boxer multirole AFV and the Ajax IFV). The issue of the British Army's deep fire capabilities was not addressed until the following periodic strategic posture review.

The 2021 *Global Britain in a Competitive Age: The Integrated Review of Security, Defence, Development and Foreign Policy*, usually referred to as the *Integrated Review*, is the first one after Brexit and was published under the unfolding consequences of the Covid-19 pandemic. It is a comprehensive document complemented by others that are more specific, like *Defence in a Competitive Age* and, regarding the Army, *Future Soldier: Transforming the British Army* (UK Army 2021). It assesses the forthcoming strategic context strongly influenced by the Chinese rise and by a “more competitive and multipolar world” of “growing contest over international rules”.

Despite its concerns with China, the proclaimed “Indo-Pacific Tilt”, and the persistence of asymmetric threats, the document clearly defines Russia as the “most acute direct threat to the UK”. To address it, it emphasised the British commitment to the collective deterrent under NATO and announced a £24 billion increase in the defence budget to modernise the British Armed Forces. The “development and integration of new technologies – including those required for near-peer, high-tech warfighting” was a priority. More details were presented a few months later in the Ministry of Defence publication *Defence in a Competitive Age*. This complimentary document indicates that the UK and its allies' technical advantage has diminished in the past two decades. Consequently,

Russia has the capability to conduct precision strikes at range and to deny freedom of action to the UK and our allies through a highly capable integrated air defence system. Russia can therefore present a significant threat to the UK's ability to support our forces and protect our interests in Europe, the eastern Mediterranean and the Middle East (UK Cabinet Office 2021, 9).

That is why the UK decided, amongst other initiatives, to improve the British Army's deep fire capabilities. The reliance only on missiles fired from naval platforms or aircraft wasn't enough for a conflict with a “peer competitor”. Such an altered threat perception highlighted that the Strike Brigade arrangement was viable only if supported by indirect long-range fires.

Therefore, it is planned to provide the Army with new guided rockets and extra funds of more than £1 billion to make it “able to deliver a more precise and lethal response and attack potential adversaries at greater depth”, alongside a digitisation programme (UK Army 2021). M-270 MLRS was the chosen platform for guided rockets, as the United States and other NATO members also deployed it. The new and modernised assets are meant to be integrated into the

armoured brigades and the Deep Recce Strike Brigade, a fighting formation for executing long-range strike and reconnaissance activities.

It is worth noting, however, that the announced inversions in firepower and other non-kinetic capabilities did not imply expanding the force size (roughly 85,000 regular troops in 2021) or acquiring new means, namely MLRS and tube artillery<sup>5</sup>. In this sense, there is an increasing concern regarding the British Army's lack of mass, deep-fires, and air defences in the face of Russia's perceived capabilities. A House of Commons Defence Committee report made a harsh assessment, pointing out not only that an equivalent Russian division would outgun a deployed British Army division, but also that the deliverance of artillery and armoured means to the Army in the scheduled time would be "unlikely", i.e., by 2025 (House of Commons Defence Committee 2021).

In addition, in 2023, the same committee held a special meeting, where one of the main concerns regarding the British armed forces' readiness was its ammunition stockpiles. This last concern was based mainly on the possibility of an ammunition shortfall and uncertainty regarding the defence industry's capacity to sustain the intense resupplies demanded by the ongoing conflict, which emerged as central concerns for the UK and the whole West (Cranny-Evans 2022).

Besides possessing one of the world's major arms industries and producing a wide range of equipment for air, land, sea, and nuclear systems, the UK also supplies national and international markets with components, equipment, and even systems (Hartley 2019)<sup>6</sup>. Shortages concern both domestic and international markets. This issue was brought to the spotlight when discussing the readiness and resilience of the UK armed forces in the latest refresh of the Integrated Review (UK Ministry of Defence 2023b).

Another highly stressed capability was credible deterrence, a point we will recover in our concluding remarks. However, were expectations fulfilled when concepts and weapon systems were tested in Ukraine? This will be discussed in the following section.

## British Deep Fires in Ukraine War: employment and effects

The 2022 Russia-Ukraine war has significantly altered our perspective on conventional warfare in the 21st century. Despite high expectations about how cyber, drones, and electronic warfare could disrupt the battlefield, one of the great novelties of the war is the rise of artillery as the dominant weapon (Peck 2022). Therefore, why and how did deep fires emerge as an issue during the Russia-Ukraine War?

<sup>5</sup> In 2023, 14 second-hand 155mm "Archer" howitzers were acquired from Sweden, mainly to replace legacy batteries donated to Ukraine.

<sup>6</sup> Refer to the dataset "Identifying the UK Companies of Arms Production and Military Services and the MoD Range of Investments." Harvard Dataverse, Available at: <https://doi.org/10.7910/DVN/K76CQB> and to the statistics of Kiel Institut für Weltwirtschaft. "Total bilateral aid commitments to Ukraine between January 24, 2022 and May 31, 2023, by type and country or organization (in billion euros)." Chart. July 6, 2023. Statista. <https://www.statista.com/statistics/1303432/total-bilateral-aid-to-ukraine/>

In the first year of the Ukrainian conflict (2014), the combination of artillery and drones demonstrated how fire support combined with new target acquisition could work as an enabler for directing artillery fire, causing massive losses among the enemy ranks. The Russian attack on the Ukrainian forces in Zelenopylya in 2014 demonstrated such a combination (Márk 2021). Although ‘Hybrid Warfare’<sup>7</sup> became a hot topic of strategy and the future of war in the last decade, artillery was a crude part of combatants’ reality in the field. That is why improving artillery and deep-fire capabilities was mandatory for Ukrainian authorities even after the beginning of the hostilities. As stated by RUSI’s report,

Since March 2014, Ukraine has focused on recovering its artillery capabilities<sup>8</sup>. As a result, five new artillery brigades and a separate artillery regiment of the Ground Forces were created, as well as one artillery brigade and a separate artillery regiment of the Navy (Zabrodskyi et al. 2022, 16).

In fact, “in terms of the number of artillery systems, Ukraine fielded the largest artillery force in Europe after Russia” somehow “the difference in numbers between Russian and Ukrainian artillery was not so significant at the beginning of the conflict”<sup>9</sup>.

**Table 1 – Barrel and MLRS Numbers Between Russia in Ukraine 2022**

Artillery System	Russia	Ukraine
Barrel Artillery Systems	2,433	1,176
Multiple Launch Rocket System (MLRS)	3,547	1,680 <sup>10</sup>

Source: Authors based on Zabrodskyi et al. (2022, 16).

Accordingly, from what is known of Russian military doctrine, it was expected that its manoeuvre forces would set in place enemy forces for artillery fire to wipe them out (Johnson 2022). Nevertheless, during the first phase of the war (from February to March 2022), the expected Artillery Offensive Manoeuvre was not set in motion (Souza Filho and Gabriel 2022). Despite poor performance and operational flaws, the first stage of the so-called “Special Military Operation” ended a month after the beginning of the war. According to Colonel General Sergey Rudskoy, one of its main official goals was that “the combat potential of the armed forces of

<sup>7</sup> Since Russia’s annexation of Crimea, Hybrid Warfare and Hybrid Threats have emerged as a hot topic within NATO’s debates. An example of this is the ‘Hybrid Warfare Research Guides’ provided by the NATO library, available at: <https://natolibguides.info/hybridwarfare>. Far from being only an academic debate, Hybrid Warfare played an essential role in the shaping of NATO’s strategic framework (NATO, 2022).

<sup>8</sup> According to Zabrodskyi et al. (2022, 16), “By 2019, the number of artillery battalions had doubled”.

<sup>9</sup> Op. cit.

<sup>10</sup> It is necessary to stress that there are differences in such numbers depending on which think tanks and research institutes we acquire our data. For instance, the International Institute for Strategic Studies (2022) diverges from RUSI in this matter.

Ukraine has been significantly reduced, which allows... us to focus our efforts on achieving the main goal – the liberation of Donbas”(RT Internattional 2022).

Despite accounting for Russian casualties in engagements like The Battle for Kyiv, the overall impact of the operations conducted between 24 February and 25 March was a reduction in Ukraine’s conventional military capabilities. This was achieved without massive artillery support. Barrel and MLRS artillery subsequently assumed a prominent role in the conflict, particularly in the Donbas fronts and during the Ukrainian counteroffensive in the Kharkiv region.

In the following phases, Russia and Ukraine turned to artillery and deep fires as a fundamental part of their warfighting efforts. For Russia, massive firepower, supported by the organic fire support within the Battalion Tactical Group structure, made clear the option for a strategy of attrition (Souza Filho and Gabriel 2022). From the Ukrainian perspective, despite the highly evaluated performance of the Ukraine Armed Forces (UAF) of anti-tank weapons, artillery became fundamental as part of its efforts to hold and gain ground. More than a simple fire support role, “Ukrainian defence plans aimed at using manoeuvre forces to fix and canalise tackers to enable their destruction by concentrated artillery fire”(Zabrodskyi et al. 2022, 16–17). Ukraine was to employ its own interpretation of the Artillery Offensive Manoeuvre.

Though the expected results of the Russian version of “Shock and Awe” were not completely met, Ukraine struggled with high levels of “equipment losses and ammunition expenditure”(Zabrodskyi et al. 2022, 36). Despite a narrow parity in artillery numbers, Ukraine suffered a fast degradation of material and personnel. Especially after the second phase of the War, mainly in the Donbas region (Donetsk and Luhansk oblasts), the UAF was usually outgunned by the effects of the mass and range of Russian barrel and MLRS artillery. These days, lack of mobility and smaller range compared to Russia’s artillery reduced the survivability of UAF in the field, generally in the range of Russian counterbattery fire (Peck 2022). According to the RUSI report on the War,

Therefore, the early stages of the offensive on Donbas saw the UAF at its most vulnerable from the point of view of equipment. The question was whether material support would accelerate sufficiently to meet the imminent threat. While Ukraine managed to maintain artillery parity in the first stage of the war, in the second stage, thanks to the absolute superiority in the volume of ammunition, Russia began to achieve fire dominance (Zabrodskyi et al. 2022, 36).

Therefore, how did Ukraine try to match or neutralise Russian counterparts? Western weapons delivery appeared to be a solution in a fast-degrading situation. Western countries contributed to the Ukrainian war effort despite the risks of escalation. Due to the centrality of artillery gained in the Russia-Ukraine War, Western MLRS deliveries help to understand battlefield dynamics from a political and operational point of view. At the political level, countries like the US, the UK, and Germany coordinated Western assistance to Ukraine (US Department of Defense 2022).

For example, the US decision to deliver the High Mobility Artillery Rocket System (HIMARS) to Ukraine was followed by the United Kingdom's<sup>11</sup> decision to “supply M31A1 munitions at scale”(International Institute for Strategic Studies 2022; UK Ministry of Defence 2022). From an operational perspective, the UK's decision,

[...] comes in response to requests from Ukrainian forces for longer-range precision weapons to defend themselves from Russian heavy artillery, which has been used to devastating effect in the eastern Donbas region(UK Ministry of Defence 2022).

The US-made “High Mobility Artillery Rocket System” was Ukraine's first and most famous western MLRS fielded. HIMARS fires both rockets and missiles. The system “supplied to Ukraine has a range of up to 50 miles (80 km), which is over twice the range of the howitzer guns which the US has previously given to Ukraine”(Military Today, 2022). Having MLRS like HIMARS in its arsenal gave the UAF ground forces the chance to attack Russia deep behind the frontlines, surpassing the tactical-level effects expected on the battlefield. Examples of target selection illustrate it well. Military Today reported that “multiple Russian command posts, ammunition storages and concentrations of troops and armoured vehicles, bridges were destroyed by these artillery rocket systems”(Military Today, 2022). Accuracy is another feature that highlights the strategic impact of this weapon system. Although the HIMARS version delivered to Ukraine lacks its entire range (Gordon and Lubold 2022), it is considered more accurate than similar systems, such as Russian Urugan. This is particularly relevant because HIMARS's guided rockets were less affected by Russian countermeasures and interception by anti-air capabilities(Military Today, 2022).

Closely joined by HIMARS, another US-made MLRS has made its name in the Russian-Ukrainian War: the M270 multiple-launch rocket system. Even though it consisted of a US-made system, the M270 were a gift from the UK to Ukraine's ground forces. Initially brought in small numbers, three pieces till 6 June 2022, those “gifts” contributed to elevating Ukraine's deep fire capacity. As informed by the BBC in June 2022, “the multiple-launch rocket system can fire 12 surface-to-surface missiles within a minute and strike targets within 50 miles (80km) with pinpoint accuracy - far further than the artillery Ukraine currently possesses” (Durbin 2022).

The third Western MLRS that stood out was the French CAESAR 155mm self-propelled howitzers in 8x8 configuration. Although a modernised project<sup>12</sup>, CAESAR shares an essential feature with its counterpart: accuracy. As part of the international efforts to bolster Ukraine's fighting capabilities<sup>13</sup>,

<sup>11</sup> According to the UK Ministry of Defence, ‘the UK was the first European country to supply lethal aid to Ukraine, and has since provided thousands of anti-tank missiles, anti-air systems and armoured vehicles to Ukrainian forces’ (United Kingdom 2022).

<sup>12</sup> According to Global Security (2022), “The 8x8 variant of the CAESAR is the second generation of 155mm wheeled self-propelled howitzer in the CAESAR family.”

<sup>13</sup> Denmark participates in this effort regarding CAESAR. “The technical discussions are being finalized, the three countries including France, Denmark, and Ukraine are in the final stage to accept the delivery of six CAESAR 155mm self-propelled howitzers in 8x8 configuration.” (Global Security, 2022).

On 22 April 2022, French President Emmanuel Macron announced military aid to Ukraine, including French-made CAESAR 155mm self-propelled howitzers and tens of thousands of shells. On 16 June, during a visit to Kyiv, President Macron announced France would provide another 6 CAESAR 155mm self-propelled howitzers in addition to the 12 that had already been delivered (Global Security 2022).

If CAESAR is praised for its accuracy from the operational perspective, politically, it displays other risks, such as the fear of its capture by Russian forces. This is seen as something that could backfire with regards to the equipment's credibility on the battlefield and CAESAR's critical technologies getting into the enemy's hands.

Western weapons delivery to Ukraine, especially MLRS systems, left its mark on the battlefield dynamic, although this was not independent from preceding events. Zabrodskyi et al. (2022) stated that, since 2015 “the development of Ukrainian artillery has not been limited to increasing the number of artillery systems and units. Much effort was also put into qualitative improvement” (16–17). There was an increase in ISR capabilities by adopting UAVs, combat control systems (“Kropvva”) and personnel training. These changes contributed to a more capable UAF.

Regarding artillery, one of the effects was better command and control, fire coordination and reduction of time in artillery deployment and counterbattery fire (Zabrodskyi et al., 2022). Improving UAF artillery and deep fires laid the groundwork to make the MLRS a game-changer in their operations. According to Zabrodskyi et al.,

Once Ukraine obtained long-range precision fires through military-technical assistance, the mapping of depots and unit support areas allowed for the systematic targeting of this logistics infrastructure and, through this, means the denial of the Russian concept of operation. Therefore, introducing HIMARS and M270 firing GMLRS into the UAF can be seen as the point where the Russian offensive on Donbas ended, and the war entered a new phase (2022, 43).

Despite massive Russian firepower, in the first phase of the war, Russian barrages did not produce the expected “wall of fire” that would allow its forces to manoeuvre, nor the manoeuvring of its infantry and cavalry to position the enemy for artillery fires. Instead, the Battalion Tactical Group (BTG) was the great “novelty” in force employment, mainly due to its massive fire support (Souza Filho and Gabriel 2022). It brought a problem for the Russians and an opportunity for the Ukrainians. Although the BTG structure provides an impressive artillery fire support structure at the battalion level, the decentralisation means and personnel provided easier targets to Ukrainian long-range MLRS, such as BM-30 Smerch and Tochka-U (Zabrodskyi et al. 2022, 42), mainly through the second phase of the war and beyond.

The importance of MLRS in Ukraine demonstrates how ground forces nowadays are fundamental in contemporary battlefields and how long-range and deep fires have all to do with it. In an operational theatre crowded with air-defence systems, airpower may lack the freedom

to operate, in which deep fires can provide similar effects at the tactical and operational levels of war (Peck 2022). Moreover, these systems increase UAF survivability (Zabrodskiy et al. 2022, 26).

We identify three opportunities for Western support for deep fires in Ukraine: 1) Despite MLRS being primarily employed against stationary targets in Ukraine, they were vital to the degradation of Russian military capabilities, including power projection and logistics. MLRS, such as HIMARS, M270, CAESAR, and others, have been employed to target command centres, ammunition depots, and Russian military barracks. 2) They are additionally employed in missions such as interdiction, where they are tasked with demolishing bridges, thereby severing avenues for resupply, offensive manoeuvring, or withdrawal (Jones and McCabe 2022). 3) MLRS also utilised targeted strikes, including the elimination of Russian high-ranking officers, such as generals (Army Recognition 2022).

Although deep fires significantly affect the battlefield, they also have certain limitations. The first limitation is related to numbers. Despite the importance of weapons systems like HIMARS, M270, and CAESAR, only a few had been fielded by that period. According to Military Today (2022), “By September 2022, a total of 16 M142 HIMARS and 9 M270 MLRS systems were delivered [...]”. Ammunition shortage comes in addition, accounting not only for shells, but also missiles and rockets – a critical issue in a conflict marked by a high volume of artillery fire. The other two problems relate to logistics, as different weapons systems pose challenges to training and logistical support and to Ukraine’s dependence on foreign aid and donations (Souza Filho and Gabriel 2022; Gordon and Lubold 2022; Zabrodskiy et al. 2022). However, despite its limits as a battlefield game changer, deep fires validate the main expectations on the future of war displayed in British strategic posture.

## Conclusion

Since the conclusion of this war remains uncertain, our final remarks are more concerned with further inquiries and concerns than with reaching a definitive conclusion. In this sense, analysing facts should always be accompanied by “so far” to be fair enough with our assessments. We infer that, so far, the use of deep fire systems in Ukraine validates what the British strategic posture expected. From this perspective, the ongoing war became a live experiment that displayed implications on various levels of war, posing questions regarding the effectiveness of a force structure centred on deep fire capacity.

Based on the analysis of Ukraine’s war, particularly during its first phase, it is expected that the acquisition of deep fires will improve the UK’s military capabilities, particularly bridging (some of) the gaps opened by Russia while the British were focusing on asymmetric warfare in Afghanistan and Iraq. The “integrated” approach presented by the Integrated Review should provide the UK with armed forces capable of superior situational awareness, acquiring targets quickly, and employing assets of the three services effectively and efficiently.

For both sides, the importance of the deep fires in the Russian-Ukrainian war validates the British choice of developing and acquiring this capability for its army, particularly the Deep Recce BCT and its new guided munitions with enhanced range. However, the level of friction and the amount (and cost) of ordnance spent in the war brought severe concerns regarding the planned force structure of the British warfighting division, formed by only two armoured brigades sided by a single Deep Recce BCT, and with no more than one-tenth of MLRS Ukraine had in the eve of the 24 February invasion.

We question whether the current British military's force structure is able to deliver credible deterrence, as emphasised by the refreshed Integrated Review and Defence Command Plan. The documents suggest a greater emphasis on cutting-edge technology, particularly artificial intelligence, engineering biology, semiconductors, and quantum technologies, to gain operational advantage on the battlefield (UK Ministry of Defence 2023b; 2023a). Despite combat mass being considered "still indispensable" (Martin 2023), this has not been reflected in the country's plans, suggesting that the military's focus on the mentioned technologies alone might not be enough to ensure effective deterrence at the onset of conventional warfare.

Despite not posing an immediate driver of changes in the UK's force structure, the conflict provoked a more significant engagement from the British towards the European counterpart. Considering Brexit, the Indo-Pacific "tilt", and the aspirations of "a more global Britain", as expressed in the UK strategy in 2021, such an engagement towards the region highlights Europe's relevance for the UK. The 2023 refresh reinforces such aspects, emphasising the UK Joint Expeditionary Force (JEF) as an attempt to gather additional margin for manoeuvre and autonomy for the UK and the European allies – notably France (UK Ministry of Defence 2023a; 2023b; Flynn 2022).

Nonetheless, such an engagement comes at a price. The way Britain will manage its new liability in Europe, combined with its global ambitions, presence in Asia, commitments with the United States, and domestic pressures, remains to be seen, especially in light of its plan to increase the number of active warheads in its nuclear stockpile to increase deterrence (Reif and Bugos 2021).

Finally, the Ukraine War highlighted the re-emergence of conventional warfare in the 21st century and the need for the UK to reassess its military capabilities beyond jointery in light of the resurgence of conventional warfare in the twenty-first century, particularly considering the role of each single service. This reassessment seems necessary to accommodate the country's ambitious political aspirations and current status based on the economy, political momentum, and international context, notably for the British Army's structure and design. For countries developing deep-fire capabilities, like Brazil, these remarks can be helpful for academic purposes and decision-makers at the Ministry of Defence. Understanding contemporary warfare characteristics, technology's role, limits and impacts on force design and effectiveness was the main remainder highlighted by the deployment of deep fires in this war. Ultimately, the effectiveness of technology relies heavily on the political and strategic environment in which it is utilised.

## Acknowledgements

This study was financed in part by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior - Brasil (CAPES) - Finance Code 001. Project Procad Defesa, entitled “Mísseis e Foguetes na Defesa Nacional: o Sistema ASTROS 2020 como elemento de Transformação Militar”.

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