



(R)evolution on the battlefield

Lessons from the Russian-
Ukrainian war in 2024 and 2025

Institute of New Europe 2025



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We present to you a report on selected aspects of the Russian-Ukrainian war.

In the following report, the team of the Institute of New Europe addresses issues such as: tactical changes on the battlefield, the army of drones, Ukrainian air defense, and a summary of the Kursk operation. We hope that the discussed issues, as well as the drawn conclusions and recommendations, will serve decision-makers in formulating appropriate security and defense policies. Especially in times of increased public debate on the modernization and development of the Polish Armed Forces, the conclusions drawn from the currently ongoing conflict in Ukraine provide lessons whose proper implementation will increase the potential of the Polish Armed Forces.

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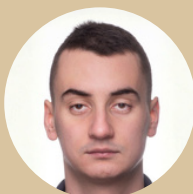
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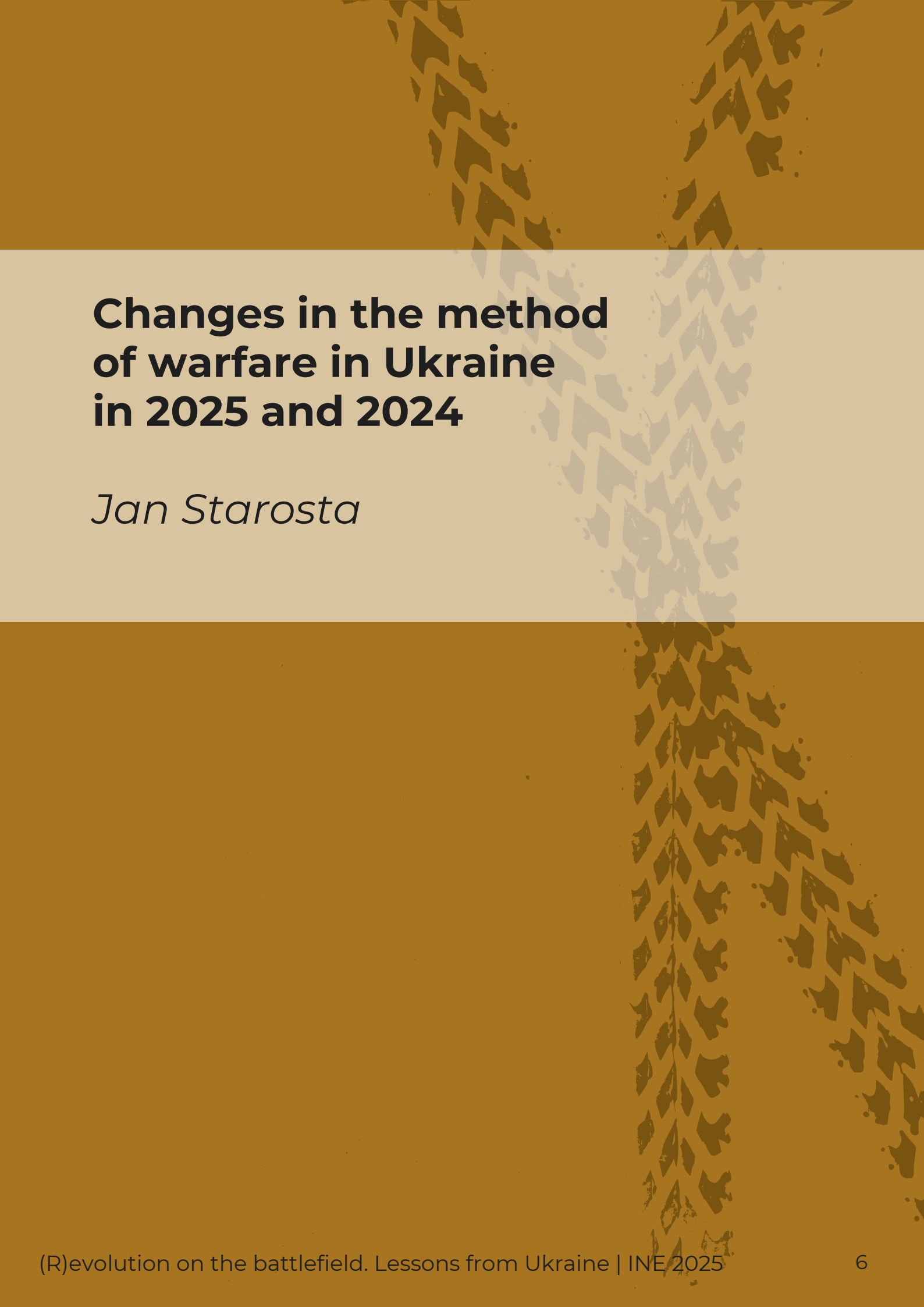
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Changes in the method of warfare in Ukraine in 2025 and 2024

Jan Starosta

Introduction

If one side in a protracted armed conflict does not achieve a clear advantage in the initial stages of the war, both sides will strive for adaptation and counter-adaptation to gain an leverage on the battlefield. The way of fighting during the war in Ukraine is constantly changing. Both sides are competing to invent new ways of affecting the enemy. Drones are beginning to dominate the air over the battlefield, while classic infantry is being reduced to a force for occupying and holding ground. This also depends on the terrain in which the fighting takes place. However, many commentators and military analysts are drawing incorrect conclusions from the ongoing military operations. A fundamental mistake is the belief that due to the accumulation of drones on the battlefield, armed with cheap warheads and ammunition (sometimes HEAT), the demand for classic combat assets, such as tanks, is decreasing.

Tactical-level combat in 2022-2023

The first years of the conflict were characterized by mobility and maneuver warfare. These battles were interspersed with bloody clashes in cities such as Bakhmut, Mariupol, and near Avdiivka. Drones were not yet used on such a massive scale as in the later years of the conflict. Russia assumed a quick breakthrough and the capture of Kyiv within a few days [1]. The tactics were largely based on political assumptions rather than battlefield realities, which included:

- **Column marches** – Russian units advanced deep into Ukraine in long, poorly protected armored-mechanized columns. They counted on the quick surrender of the defenders, so logistics were poorly secured.
- **Air assaults** – attempts were made to use airborne troops (e.g., the attack on Hostomel airport) to seize key points and enable a rapid capture of Kyiv. These operations resulted in heavy losses.

- **Massed artillery and rocket strikes** – as the rapid advance broke down, Russia returned to its classic pattern: intense artillery shelling followed by the slow advance of ground forces.
- **Tactical problems** – lack of coordination between different branches of the military (ground forces, aviation, artillery), poor reconnaissance, insufficient air defense cover, and low command flexibility.

Since then, the Russians have significantly improved their combat methods, reducing the waiting time for counter-battery fire from over an hour to a few minutes. They have systematized drone warfare, but even now they still use bloody human wave attacks with infantry [2].

From the beginning, Ukraine acted more flexibly, using its advantage in morale, knowledge of the terrain, and command effectiveness, which included:

- **Maneuver defense and ambushes** – small anti-tank groups destroyed Russian columns in areas with limited maneuverability (forests, villages, narrow roads). Javelins, NLAWs, and reconnaissance drones played a key role.
- **Dispersion and decentralization** – Ukrainian units operated in small, mobile teams, which made them difficult to destroy by Russian artillery.
- **Urban defense** – Kyiv, Kharkiv, and other large centers were defended by preparing barricades, firing points, and controlling communication hubs. Street fighting negated the advantage of Russian tanks.
- **Drones and reconnaissance** – from the very first days, commercial and military drones (e.g., Bayraktar TB2) were intensively used to correct artillery fire and destroy Russian vehicles.
- **Strikes on logistics** – Russian fuel and supply convoys were attacked, which quickly paralyzed the offensive.

The war for cities in the initial years was characterized by "micro-assaults" – small groups (5-10 people), sometimes Wagner mercenaries, were sent in waves against Ukrainian trenches. The attacks were often carried out at night. Infantry began to serve as "cannon fodder" – to capture a position at all costs, even with overwhelming losses (this thinking still dominates on the Russian side). On the Ukrainian side, infantry defended in a dense network of trenches, rotating soldiers to reduce exhaustion. Reconnaissance drones became increasingly important – a small infantry group would not move without the support of an "eye in the sky." In Bakhmut and Soledar, the defense consisted of holding ruins and basements, fighting "house by house." The initial years of the war became the dawn of drones; the scale of UAV use exploded: from Mavics to FPV kamikazes and Russian "Lancets." Drones became the "eyes" and precision ammunition at the platoon level – for correcting fire and hunting vehicles or personnel. Both sides simultaneously developed electronic warfare (EW), which degraded some precision munitions and forced the autonomization of drones. Despite the change over the years of the conflict from a war of maneuver to one resembling positional warfare, conclusions should also be drawn from the first years of the conflict in Ukraine, because the first weeks of a potential NATO conflict with the Russian Federation may resemble this stage of the war.

The use of armored vehicles in the initial years of the war as part of battalion tactical groups underwent a significant evolution during the conflict. Initially, vehicles in company-sized groups were intended to advance to operational depth, but due to significant losses and the shift from maneuver to positional warfare, they are now used in attacks on fortified points, maintaining a safe distance [3]. Russia uses (often ridiculed) older Cold War-era tank models—T-62/T-55—but these vehicles offer greater protection and stronger fire support than standard infantry fighting vehicles. Furthermore, by using vehicles of this type, the Russian Federation conserves modern equipment more suitable for maneuver warfare and engagement with a stronger opponent.

Tanks are also used for night raids. T-80BV tanks equipped with appropriate optics are used for this purpose. After approaching a position and firing as many shells as the combat situation allows in a short time, they retreat [4]. The Russians also modify their tanks with materials that hide their thermal signature, intended to deceive the guidance of anti-tank weapons. Moreover, they mount anti-HEAT and anti-drone cages on tanks, often expanding this to bizarre proportions. They also cover engine and exhaust outlets to further hide the thermal signature.

Tactical-level combat in 2024-2025

Recent years of the war show a continuation of bloody attrition warfare, where the goal is to neutralize the enemy's potential and manpower. The objective of Russian forces in the current fighting is to wear down the opponent's potential and manpower in battles, which brings to mind the principles of Napoleonic art of war, one of which was the elimination of the enemy's manpower in great battles. In the later years of the war, tactics shifted from using specialized battalion tactical groups to more specialized units on the Russian side. They were divided into: disposable/blocking units (intended for human wave assaults), line units (to hold fortification lines), assault units (to capture fortifications and follow disposable/blocking units), and specialized units (e.g., assault and reconnaissance subunits equipped with drones) [5]. These units are used depending on the needs of the battlefield. Line units, mainly based on mechanized units, mostly lack specialized training for assault tasks like units such as Spetsnaz, VDV (Russian Airborne Forces), or, in the early years of the war, units belonging to the Wagner Group. Assault units can be compared to the NATO equivalent of light infantry. After completing a task, they are rotated and generally do not hold ground [6]. Units belonging to the blocking detachments generally consist of *mobiks* (soldiers from partial mobilizations), prisoners, or poorly armed soldiers from the so-called people's republics—Donetsk and Luhansk.

Some elements of warfare have not fundamentally changed from previous years, especially regarding artillery fire and the layout of trench defenses. However, differences are often visible in how these trenches look, especially with the significant presence of anti-drone nets on the fortification lines and in the logistical channels leading to the front lines. In previous years, walking along the first line of contact was not as risky as it is now due to the numerous presence of drones in the air. Russian defense is based on its doctrine with minor changes since the Cold War. Depending on the situation, it consists of 2 to 3 lines of fortifications; the first line is parapets and trenches made ad hoc by infantry, the second consists of properly made fortifications, firing and observation points, and field obstacles [7].

As in previous wars, Russian artillery still reigns on the battlefield, now supported by additional sensors in the form of reconnaissance drones. Like the Ukrainians, the Russians prefer to group their artillery into tactical task forces. Infantry on the battlefield is mainly supported by mortars, often firing even at minor targets. Firing is conducted according to patterns. The first, called the "roving gun," is used to draw counter-battery fire from mobile firing points with harassing fire, or to conduct artillery raids. The next, called the "fire carousel," aims to maintain a stable artillery barrage while ensuring the survivability of the firing positions. The concept of the "roving platoon" aims to maneuver the guns and maximize the weight of the salvo (number of shells fired) on a particular target. Then, the "protective umbrella" concept is used to suppress the enemy while maintaining the safety of the battery crew; the battery moves to the firing position just before the fire mission and changes position after completing the mission [8].

Russian forces use a specific "triad" on the line of contact. First, infantry and mechanized troops are used to suppress and locate defense lines and their weak points. Then, drones and loitering munitions come into action, whose task is to isolate the battlefield, blocking access for potential support and medical evacuation. The third element is UMPK glide bombs and artillery, which destroy defensive positions. The use of glide bombs began to be applied on a large scale in 2024, and in 2025, an increase in the use of this means of destruction is still visible [9]. The increase in the production of glide bombs from 40,000 in 2024 to 70,000 in 2025 increased the losses of Ukrainian troops on the defensive. The fear of this type of effector caused the AFU (Armed Forces of Ukraine) to "dig in" more, often leaving observation of the foreground to unmanned vehicles, thermal imaging cameras, or drones. Drones used by Ukrainian forces are responsible for about 60-70% of Russian losses, mainly due to the lack of artillery at the tactical level. For example, a brigade defending an 18km area had only 4 functioning howitzers available. Mechanized units complain about shortages of artillery ammunition, as it is usually prioritized for artillery brigades (which are used mostly in specific operations) and according to front-line needs. Due to the threat from drones, artillery units on both sides disperse their gun sections, maintaining up to 500m between guns. Additionally, significant emphasis is placed on proper camouflage and using the natural concealing properties of the terrain. The fire missions themselves are often quite short, followed by a change of position [10].

The Russian assault on fortified positions still, on the one hand, resembles the old Soviet "reconnaissance in force." It begins with a rapid advance of infantry subunits, sometimes supported by a fire element (a tank or IFV). After identifying Ukrainian positions and the infantry taking cover, the elements for isolating and destroying the battlefield go into action. Poorly trained blocking units or units formed from recruits are often used for assaults. Their task is to occupy positions, detecting Ukrainian positions and waiting for the next waves [11]. These are usually: artillery, FPV drones, and UMPK glide bombs [12].

Glide bombs are one of the more interesting Russian "inventions." Old, Soviet-era 1.5 or 3-ton FAB-1500/FAB-3000 bombs have been adapted to function as guided munitions; dropped from a high altitude, they find their way to the target thanks to a satellite guidance kit. Such a weapon is almost impossible to intercept and is also devastating to defenders' positions [13]. It should be mentioned that many Ukrainian wounded complain of barotrauma, which is caused by the fall and explosion of such a weapon nearby. After achieving a breach or breaking through the first line of defense, it is occupied by infantry subunits and the attack is continued. The goal of the destroying and isolating elements, besides destroying manpower, is to prevent the arrival of support, rotation, or relief for the first line of defenders [14]. The presence of drones on the battlefield often forces fire support elements like tanks or IFVs to fire from a distance of about 3km, sometimes using indirect fire. Ukrainian offensive tactics differ significantly from Russian ones. Assaults are often conducted by groups of about 20 people, who are rotated after completing the task by units holding the ground.

The entrenching tool has once again become the soldier's best friend. Often, upon capturing any area, "digging in" is the soldier's primary activity. This is also often caused by the isolation of sapper units far from the front line and keeping engineering machinery about 7km behind the front line, motivated by the desire to minimize losses and out of fear of FPV drone units. Maneuver and fire at the tactical level of Russian forces is often absent. The center of gravity is more visible in moving quickly to cover and waiting for artillery and drones to pin down/eliminate the defenders [15]. Light vehicles, quads, or small trucks are used for maneuver. Depending on the weather, attacks are conducted by a varying number of soldiers. Usually, these are squad/platoon-level attacks of a wave-like nature. North Korean troops operate quite differently—they prefer company or battalion-level attacks on a single sector. Interestingly, North Korean troops are often perceived as cohesive, well-motivated, and well-trained—similar to the Russian contract soldiers present in large numbers at the front.

Russian forces often occupy company-sized defensive positions with platoon-strength forces, using decoys, which are present on both sides. Ukrainian forces often significantly disperse their troops, due to a shortage of soldiers and to avoid losses from artillery fire [16]. Often, one section in defense is responsible for 70-200m of terrain. A particular problem on the battlefield is the evacuation of the wounded according to MEDEVAC/CASEVAC procedures; usually, this involves adapting various vehicles for this purpose, i.e., CASEVAC. However, due to the isolation of the Ukrainian front lines, the evacuation time for the wounded can extend up to 12 hours, due to repeated attacks and the lack of a suitable operational window. Stabilizing the injured often takes place on the front line according to TCCC procedures. Experiments are being conducted with unmanned ground vehicles to evacuate the wounded from the front line. There are also problems with troop rotation, due to the isolation of supply routes by Russian drones and artillery.

Ukrainian forces employ a "kill zone" where there is a high concentration of drones. They generally reach 15 km into the enemy's lines. Both sides try to use FPV reconnaissance and attack drones behind enemy lines [17]. A constant number of drones is often kept in the air to ensure continuous observation of the enemy and, should a favorable situation arise, to carry out an attack from the air. This creates difficulties in replenishing supplies, concentrating troops for offensives, and evacuating the wounded. This makes the concentration of troops for the Kursk operation in 2024 all the more commendable, which is discussed later in this report.

Recommendations for the Polish Armed Forces

Observing the battlefield in Ukraine can bring significant benefits for the development directions of the Polish Armed Forces. Firstly, the systemic use of drones should be treated as a priority. Drone units existing only at the brigade level are insufficient in the realities of modern armed conflict. In Ukraine, these drones are already present at the platoon level, in addition to specialized drone units for specific tasks, where there are even more of them. Drones are now the eyes and ears of infantry and artillery; having such a tool available to an infantry platoon is crucial. Furthermore, there is a need to implement battlefield medicine solutions from Ukraine; a full-scale conflict is nothing like the wars known from Afghanistan or Iraq, where air dominance allowed for MEDEVAC within 10 minutes. Procedures and, above all, training are needed to enable the stabilization and assistance of the wounded on the front line for a longer period before evacuation is possible. Additionally, the individual equipment of each soldier is very important, especially personal protective equipment (plate carriers and helmets). About 75% of battlefield wounds are caused by shrapnel, resulting in hemorrhages; the trend on the Ukrainian battlefield often forces soldiers to wear protection reminiscent of medieval knights.

However, one should not fall into the "drone-mania" that is widely visible in the analytical community (fueled by successive videos of drone use in Ukraine), or the results of spectacular operations like Operation Pawutyna, where drones deep in the Russian rear managed to neutralize about 40 aircraft belonging to Russian strategic aviation. **Drones of various categories are and will be an element supporting the actions of conventional armed forces; they will not replace infantry or tanks in maneuver or defensive operations.** Their integration into combat systems is crucial, but firepower and maneuver will still be provided by classic means of warfare. Still in NATO crucial are factors like "speed, surprise, violence of action".

Summary

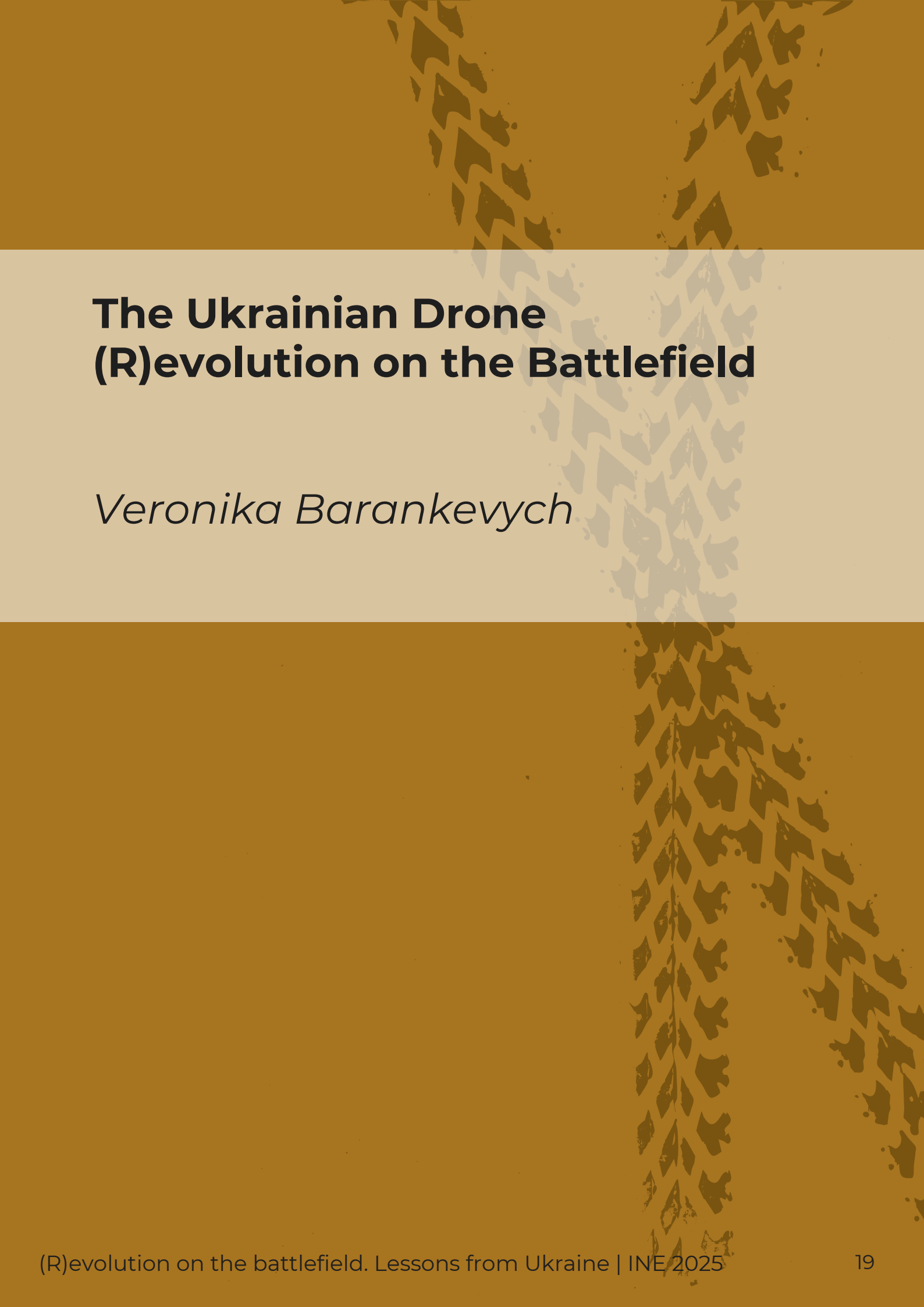
Russian forces lack a concept for achieving breakthroughs on the battlefield without incurring overwhelming losses. In many cases, the successes they achieve on the battlefield are due to their insensitivity to losses and "mass." Nevertheless, this does not mean it is an army to be underestimated. The Russians have managed to implement drones into their armed forces system at every level.

Conclusions for solutions and possible modernizations, not only for the Polish Armed Forces but also for other NATO armies, should be drawn from the beginning of the conflict. **Advantages must be built in elements where the potential adversary is weak.** Russia is implementing drones at a systemic level. It is a difficult task to match this potential, but an advantage must be built in areas such as air forces, deep strike capabilities, ISR effectors and sensors, and SEAD/DEAD capabilities.

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The Ukrainian Drone (R)evolution on the Battlefield

Veronika Barankevych

The full-scale war waged by Russia against Ukraine since February 2022 has brought about a series of groundbreaking changes in the conduct of armed operations. One of the most prominent phenomena of this conflict has been the mass use of unmanned aerial vehicles (UAVs), which have redefined the realities of the modern battlefield.

Ukraine was the first country in history to implement the concept of a "Drone Army" on a massive scale, transforming previously dispersed groups of UAV operators into a coherent element of its military doctrine [1]. The program, initiated on July 1, 2022, by the UNITED24 platform in cooperation with the General Staff of the Armed Forces of Ukraine and the Ministry of Digital Transformation, aimed to create a comprehensive system for purchasing, servicing, and replacing drones, as well as training operators. The first stage involved the purchase of 200 reconnaissance drones and the collection of thousands of commercial drones from donors worldwide. The equipment was intended to enable the Ukrainian army to constantly monitor the 2,470 km front line and react quickly to enemy actions. Drones were delivered, among other places, to warehouses in Poland and the USA, from where they went directly to the Armed Forces of Ukraine [2].

Just a year later, the "Drone Army" transformed into a full-fledged state program. Bureaucratic barriers were removed, including VAT on drone imports, and a fast-track certification process was introduced, which enabled the dynamic development of the domestic UAV industry. Prime Minister Denys Shmyhal announced that Ukraine had become the world's largest producer of combat drones – in 2024, over 1 million drones were produced, covering about 100 different types, from light reconnaissance quadcopters to larger machines with wingspans of almost 20 meters [3].

At the beginning of the invasion, Ukraine relied mainly on drones imported from China; today, most of the equipment is produced internally. As early as 2024, Ukrainian factories delivered over 2 million FPV drones [4].

Despite the large scale of production, drones in combat conditions usually last only 3-6 flights. Monthly losses reach up to 10,000 units, which forces constant replenishment of stocks [5]. Despite this, unmanned vehicles have become a pillar of Ukrainian tactics – they perform reconnaissance functions, support artillery, conduct attacks on enemy vehicles and positions, and also enable precision strikes deep within enemy territory.

In the remainder of this chapter, we will look at how this unique system works in practice – from its organizational structure, through specific combat operations, to an analysis of its strengths and weaknesses and the conclusions that can be drawn from it – also for Poland.

Command, Cooperation, and Decentralization of the Drone System

The Ukrainian Armed Forces have dynamically adapted their structures to maximize the potential of drones. As early as 2023 – in cooperation with the General Staff – the world's first UAV strike companies were formed within line brigades. By July, there were 11 such "drone companies," and by August, 17 – each with its own operators, equipment, and logistics, integrated into the new doctrine for the use of unmanned vehicles on the front. At the same time, drones were also used in the activities of other services – including the National Guard and the Security Service of Ukraine – for special operations, reconnaissance, or sabotage [3].

The next step was the formal creation of the Unmanned Systems Forces – the decision was announced in February 2024, and the structures began operating on June 11.

The new component is responsible for the overall planning and conduct of operations using drones: from purchasing and servicing equipment, through personnel training, to cooperation with the domestic technology industry. Russia, however, reacted with a delay – it was not until the end of 2024 that it announced plans to create a similar component, which was to start operating in the third quarter of 2025 at the earliest [6]. In this way, Ukraine maintained a several-month institutional advantage, becoming the first country in the world to integrate drones on such a scale as part of a separate branch of the armed forces.

A unique feature of the Ukrainian UAV system is its consciously implemented, far-reaching decentralization, which enables cooperation between state institutions, the private sector, foundations, startups, and local drone schools. Hundreds of small technology companies, volunteers, and NGOs work in parallel with military programs, bringing a continuous stream of improvements and ideas. This diversity – vertical and horizontal, from official government programs (like Bravel or Ukroboronprom projects) to garage startups of enthusiasts – creates fertile ground for innovation and the rapid development of new designs. An example is the Ukrainian-Estonian company Farsight Vision, which has been providing UAV solutions for infantry, the National Guard, and the Border Guard since 2024 [7]. According to reports from 2025, the Ukrainian UAV market has grown from a few companies in 2022 to over 500 manufacturers, planning to produce up to 4.5 million drones annually. These numbers testify to the effectiveness of the decentralized production model with minimal bureaucracy and maximum mobilization of various entities [8][9].

Use of Drones on the Battlefield — Case Studies

To understand how drones work on the battlefield, it is worth looking at case studies. In May 2025, the Main Intelligence Directorate of the Ministry of Defence of Ukraine (HUR) publicly unveiled the Magura family of maritime drones, which played a key role in weakening the Russian fleet in the Black Sea. The presentation took place in Kyiv, where four models were showcased: Magura V5, V6P, and two versions of Magura V7 – one armed with a machine gun, and the other equipped with AIM-9 Sidewinder air-to-air missiles. The specialized unit Group 13, operating within HUR, is responsible for the operational use of these drones. Since its establishment in 2022, this group has successfully carried out attacks on 17 Russian sea and air targets, destroying 15 of them, including 2 Mi-8 helicopters, 2 Su-30 fighters, and several key units of the Black Sea Fleet, such as the "Sergey Kotov," "Ivanovets," and "Caesar Kunikov." The losses incurred by Russia as a result of these operations are estimated at over 500 million dollars [10].



Figure 1: Photo of Magura V7 drones

Source: HUR - Main Intelligence Directorate of the Ministry of Defence of Ukraine (Ukr. Головне управління розвідки Міністерства оборони України)

At the end of 2024, Group 13 conducted a breakthrough operation that resulted in the destruction of two Russian Mi-8 helicopters. The first was shot down by a Magura V5 drone, and the second, despite being damaged, managed to return to base [11]. The Magura V5, initially used as a kamikaze drone with an explosive charge, has undergone a significant evolution. It was adapted to use R-73 "SeaDragon" air-to-air missiles, which enabled more advanced missions. The Magura V5 is a compact drone, 5.5 meters long, weighing up to 1000 kg, with a range of up to 800 km. After being adapted for the new missiles, it became a key element of the Ukrainian arsenal, used for eliminating both air and sea targets [12].

The next step in the development of this technology was the Magura V7 model, which, thanks to its increased payload (up to 650 kg) and range of up to 870 km, became a versatile drone capable of performing various functions – from air defense using AIM-9 Sidewinder missiles, through patrol missions, to attacks on surface units and countering submarines [13]. During an operation in the Novorossiysk area on May 2, 2025, three Magura V7 drones fired AIM-9X missiles at two Russian Su-30SM fighters. The first fighter was destroyed, and its crew was rescued by a civilian ship. The second aircraft was also hit, and its crew was killed. The value of the destroyed machines is estimated at about 100 million dollars. This was another breakthrough event that went down in the history of the war [14].

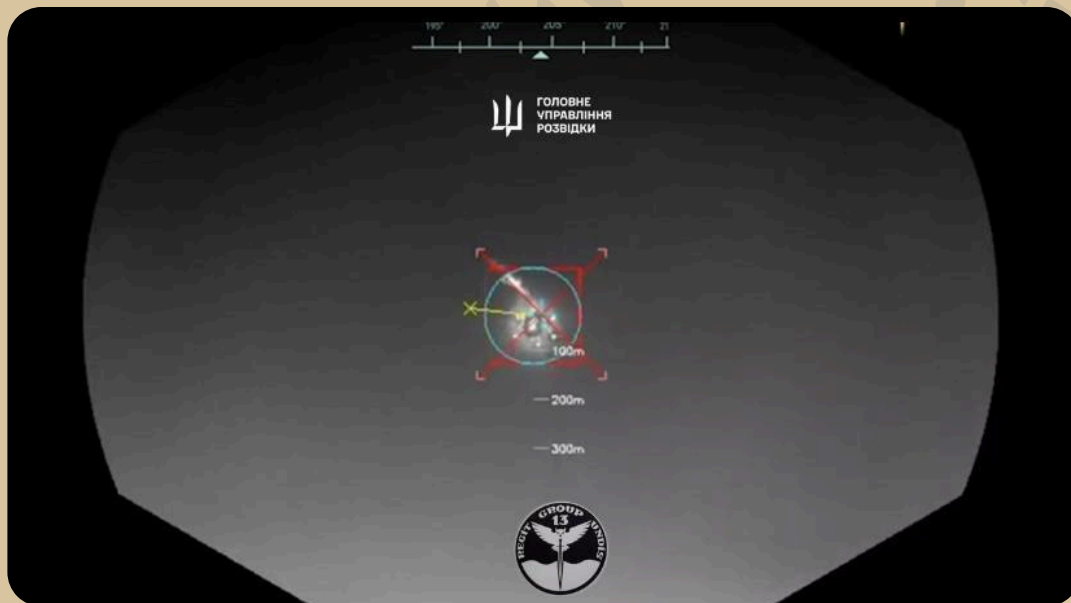


Figure 2: The moment a Russian Su-30 aircraft is shot down by a Ukrainian naval unmanned vehicle.

Source: HUR - Main Intelligence Directorate of the Ministry of Defence of Ukraine (Ukr. Головне управління розвідки Міністерства оборони України)

The operations of Group 13 with Magura drones are an example of modern warfare, in which advanced technology allows for effective counteraction against a much stronger opponent, changing the dynamics of the conflict in the Black Sea.

Another event that shook the Russian strategic rear was the secret SBU operation codenamed "Pavutyna" (Eng. Spiderweb) – an example of a deep strike against the enemy's vital targets. On June 1, 2025, Ukraine surprised the world with a coordinated drone attack on strategic aviation bases located hundreds, and even thousands, of kilometers from the front line – from Siberia to the Arctic. According to President Volodymyr Zelenskyy, the preparations took exactly one year, six months, and nine days – from the planning stage to execution – and were conducted in strict secrecy, without the involvement of foreign services, with the operation coordinated from Russian territory, in the immediate vicinity of the local FSB directorate [15].

The operation involved 117 drones with an artificial intelligence-based guidance system, launching autonomously from truck containers. They struck simultaneously across three time zones, hitting the Belaya (Irkutsk Oblast), Dyagilevo (Ryazan Oblast), Olenya (Murmansk Oblast), and Ivanovo-Severnoy air bases – hundreds of kilometers from the front line. According to the SBU, the targets were 41 aircraft, including Tu-95MS, Tu-22M3, A-50, and the latest Tu-160. The destruction or damage of at least 12 bombers (8 Tu-95MS and 4 Tu-22M3) – about 10% of Russia's strike potential – and an An-12 transport aircraft was confirmed. The SBU estimates that 34% of the strategic cruise missile carriers were eliminated. The most serious losses were suffered by the Olenya base, where aircraft were stationed in full combat readiness. The attack on Belaya was the first-ever Ukrainian strike on a target in the Asian part of Russia, showing that Ukraine can hit any point on the territory of the Russian Federation [16].



Figure 3: Head of the Security Service of Ukraine (SBU) Malyuk during the special operation "Pavutyna" (Eng. Spiderweb)

Source: Volodymyr Zelenskyy

Technological Innovations – from DELTA to Gamification and Online Recruitment

The Ukrainian drone ecosystem is not just about hardware production but also extensive digital tools and innovative methods of engaging operators. DELTA – a cloud-based situational awareness system – combines data from drones, satellites, intelligence, and open sources, enabling planning, target designation, and real-time image transmission [17].

Based on it, in August 2024, the pilot stage of the "Army of Drones: Bonus" program was launched – a system of electronic points for documented hits: 40 points for a tank, 50 points for a launcher, 6 points for a soldier. Points can be exchanged for equipment in the Brave1 Market, which significantly increased the motivation of operators [18]. In over 10 months of the program's operation, more than 400 formations have joined, which corresponds to about 95% of all drone units operating along the entire front line [19]. The program is accompanied by monthly rankings of the most effective formations, but challenges also arise – delays in verifying hits or the lack of automatic registration of some results force operators to create additional documentation [20].

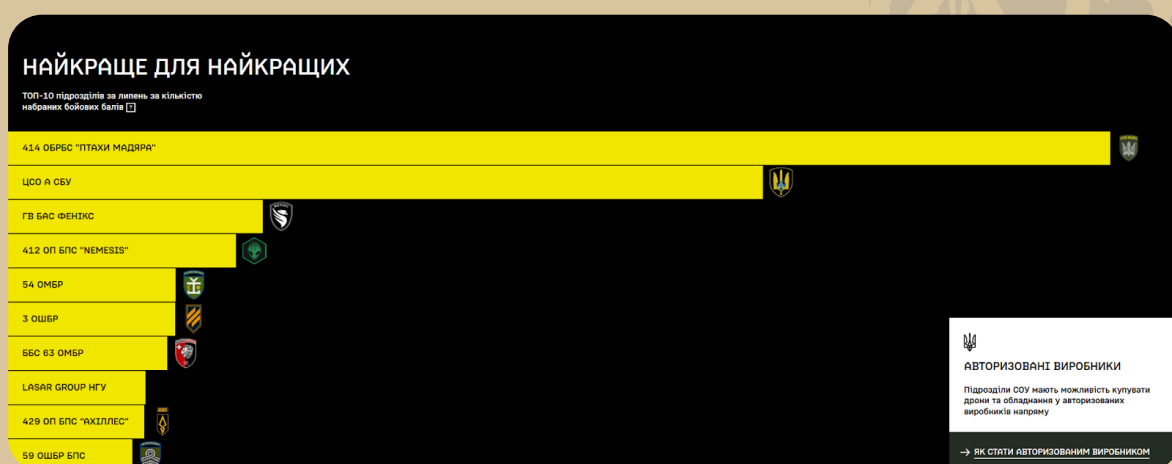


Figure 4: Ranking — TOP-10 units for July by the number of combat points earned. A screenshot from the Brave1 website, showing the classification of units of the Armed Forces of Ukraine by the number of points earned in July 2025.

Source: Brave1, <https://market.brave1.gov.ua> [accessed: 28.08.2025].

Also noteworthy are the innovative forms of recruitment for UAV units. In the Diia application – the Ukrainian equivalent of the Polish mObywatel app, which brings together public services and electronic documents in one place – a "Drone Line" module was launched. It allows candidates to apply directly to selected formations of the Defense Forces, including the most experienced drone units [21].

Simultaneously, the Unmanned Systems Forces of Ukraine, in cooperation with the marketing agency TWID, developed an interactive training and recruitment game "Find the Enemy." Users analyze real photos from the front, learning to recognize camouflaged enemy equipment. After completing the tasks, a message is displayed encouraging them to join the ranks of UAV formations, along with a link to a website with an application form [22].

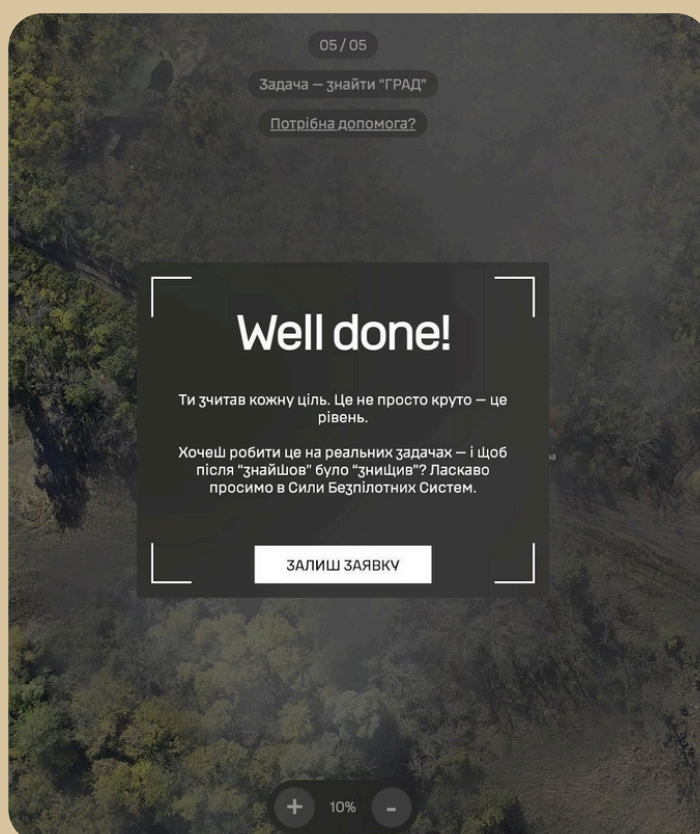


Figure 5: Screenshot from the game "Find the Enemy" – a message displayed after completing five tasks: "You found all the targets. Great job – you have a keen eye. If you want to do this for real – and for 'found' to be followed by 'destroyed' – join the Unmanned Systems Forces of Ukraine."

Source: Screenshot from the website of the game "Find the Enemy" – a simulator of the Unmanned Systems Forces of Ukraine.

The recruitment process is also conducted through social media. A number of units maintain active profiles on platforms such as Instagram or TikTok, where informational materials and recruitment content are published [23].

Challenges and Limitations

The Ukrainian drone system, despite its impressive achievements, faces a number of challenges arising from both operational pressure and organizational-technical limitations. The most tangible problem remains the burnout of operators, whose intensive service on the technological front line quickly leads to a decline in motivation and mental exhaustion [24]. The initial euphoria gives way to routine and the awareness of constant threat – drone crews have become a priority target for the enemy, exposed not only to signal jamming but also to physical hunting. In 2024, in the Kherson Oblast, the Russians executed nine captured operators, which illustrates the scale of the risk. This level of stress necessitates personnel rotation similar to practices in aviation – after a certain number of missions, operators are sent for rest [25]. By mid-2023, about 10,000 drone pilots had been trained, and another 10,000 were in training, but the pace of operations still often forces veterans to work at the limit of their endurance, and losses among small FPV teams remain high [26].

A second significant challenge is the lack of full standardization of equipment and procedures. The rapid expansion of the UAV fleet meant that individual units and volunteer groups produced their own designs, often incompatible with others. This fragmentation complicates logistics (e.g., spare parts) and operator training, as those trained on one type of drone cannot always easily operate another. In 2023, the Ministry of Defence introduced a system for recording and evaluating effectiveness, including a ranking of UAV units, which made it easier to identify the most effective designs and teams.

Despite this, the diversity of models still complicates command – there have been cases of sending an expensive drone on a mission that could be performed by a cheaper FPV. It was only at the end of 2024 that communication and fire support procedures for UAVs were unified, and commanders began to fully utilize the data provided by young operators. However, the lack of institutional anchoring of the Unmanned Systems Forces means that many decisions are still based on improvisation and the goodwill of officers [24].

Added to this is the issue of funding and logistics. As late as February 2025 – according to soldiers' reports – most drone units did not have a permanent central budget, and equipment purchases were often based on donations and volunteer assistance [24]. In the spring of 2025, the 3rd Assault Brigade did not receive a single FPV drone for three months, as confirmed by its commander, Colonel Andriy Biletskyi. According to reports from soldiers of other formations, only about one-third of the drones reach the military directly from the state, while the rest are purchased with the units' own funds or provided by volunteers [27].

The final group of challenges consists of technical limitations. Russian EW systems effectively jam or take control of some UAVs, which forces a reduction in operational distance and increases equipment losses. Weather conditions – strong wind, rain, or fog – can ground small drones, and improvised anti-drone screens on Russian vehicles force Ukrainians to use larger payloads at the expense of flight range. The lack of a unified identification friend-or-foe (IFF) system increases the risk of errors during swarm operations, which requires close coordination with manned aviation and artillery [28].

Recommendations and Conclusions

The development of the Ukrainian drone sector—encompassing the state program "Army of Drones," volunteer initiatives, and commercial production—is a unique case of the rapid transformation of armed forces toward next-generation warfare technology. According to data from the Ministry of Digital Transformation of Ukraine, approximately 2.2 million drones were produced in 2024, with a target of 4.5 million units for 2025 [29]. However, the pace of development of the Russian UAV program is equally impressive. The Russian Federation is conducting local production of "Geran" type kamikaze drones (serial versions of the Shahed-136) at a factory in Alabuga, planning to produce thousands of units annually [30]. According to assessments by the Institute for the Study of War (ISW), Russia may be able to conduct up to 2,000 drone attacks in a single night as early as November 2025 [31]. Meanwhile, analyses by the Atlantic Council indicate that the Russian drone industry is accelerating not only in terms of scale but also quality, enabling the organization of massive, coordinated raids on Ukrainian cities [32].

In this situation, maintaining a technological advantage for Ukraine requires continuous modernization—both in UAV design and in supporting systems, such as rapid certification procedures, incentive programs for operators, and integration with new AI solutions. It is also crucial to solve internal problems, including the rotation of qualified personnel and structural barriers like corruption. Examples revealed by NABU in 2025, concerning inflated contracts for drones and electronic warfare systems, show that even in wartime conditions, a lack of transparency in procurement processes can seriously reduce operational effectiveness [33].

Ukraine's experience in conducting military operations in an environment of mass UAV use is a practical laboratory of modern warfare for Poland and NATO countries.

Cooperation with Ukrainian experts, training centers, and manufacturers can significantly accelerate the development of their own capabilities, helping to avoid delays and implementation errors. However, it is important to remember that not all Ukrainian solutions are compatible with the rigorous operational security (OPSEC) standards in NATO. Systems based on open rankings, public data analysis, or wide access to operational information may require far-reaching adaptation or replacement with more secure variants.

Key lessons from Ukraine for Poland and NATO countries include:

- **Scale and pace of production** – mass production of cheap drones must go hand in hand with the development of advanced models; the ability to rapidly increase manufacturing capacity in crisis situations is needed.
- **System integration** – drones must be part of a coherent command, reconnaissance, and electronic warfare system; this requires interoperability standardization within NATO.
- **Tactical adaptation** – battlefield advantage comes from the ability to quickly modify procedures, algorithms, and software in response to enemy actions.
- **Resilience to EW** – in the face of the dynamic development of Russian jamming systems, investments in drone autonomy, communication redundancy, and anti-jamming safeguards are necessary.
- **Human resource management** – systems for personnel retention, reservist training, and continuous skill improvement for operators must be developed.
- **Countering corruption and improving logistics** – full transparency in procurement processes and effective oversight are prerequisites for maintaining system efficiency.

The final conclusion is unequivocal: technological advantage is not a permanent state. Maintaining it requires constant adaptation, rapid response to new threats, and close allied cooperation. For Poland and the West, this means the necessity of implementing the lessons from Ukraine now—before similar challenges appear on their own borders.

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The Fight in the Sky – Ukrainian Air Defense in 2024 – 2025

Szymon Bielak

Ukrainian Air Defense Until 2024

After the collapse of the Soviet Union, Ukraine inherited one of the most extensive air defense systems in Europe from the former Soviet Army. Before 1991, the territory of present-day Ukraine was protected by two corps (49th and 60th) of the 8th Independent Air Defense Army and the 28th Corps of the 2nd Independent Air Defense Army [1]. After taking over the equipment of these operational formations, the Armed Forces of Ukraine were able to field over a hundred anti-aircraft missile battalions of various types, grouped into regiments and brigades, the total number of which was around 18 tactical formations.

In terms of equipment, the Ukrainian Armed Forces were also at a satisfactory level. The anti-aircraft systems inherited from the Soviet Union were largely quite modern and very well preserved. Of course, there were older systems (e.g., S-75), but their tasks were limited to protecting individual cities, administrative and industrial centers, mainly in the west of the country. Thus, the short-range protection of Ukrainian troops was provided by the Tor, Osa, and Strela-10 systems; medium-range by the Kub and Buk-M1 systems; and long-range by the S-75, S-200, and S-300 systems. In addition to the effectors themselves, Ukraine also had a very well-developed and maintained radar infrastructure from the USSR period. This system was prepared for defense against missiles and aircraft, the main means of air attack during the Cold War.

At the turn of the 20th and 21st centuries, Ukrainian air defense did not undergo major reforms. The main changes were the withdrawal of obsolete systems and minor, often purely cosmetic, modernizations of the equipment remaining in service. This was the result of general cuts in funding for the armed forces during this period. However, the equipment being withdrawn from the line was preserved and stored in warehouses, which allowed for its quick restoration and an increase in Ukrainian capabilities in both 2014 and 2022. At the same time, no major modernization programs in air defense were undertaken.

The first real idea was the concept contained in the document Air Force Vision 2035, which appeared in 2020. The authors assumed that the main threat in a future war would be Russia (in this case, its Aerospace Forces), and therefore a number of solutions were proposed to increase the capabilities of defense against an enemy strike. It was postulated, among other things, to purchase between 36 and 40 medium-range systems between 2020 and 2025, to purchase between 72 and 108 modern combat aircraft (examples given were the Swedish JAS 39 Gripen or the latest versions of the American F-16) between 2025 and 2030, and to acquire a few aircraft (up to 12 units) earlier for pilot training purposes. None of the proposed solutions were started before 2022. Only minor modernizations of post-Soviet MiG-29 and Su-27 aircraft were undertaken, and some of the equipment withdrawn in the early 2000s was returned to service [2]. Despite the omissions in terms of equipment, the Ukrainians were aware of what a Russian attack would most likely look like and tried to prepare for it as best they could. In 2021, during the "United Efforts 2021" exercises, Ukrainian air defense forces were tasked with repelling a simulated air and missile attack. The target of the simulated attack was the destruction of Ukrainian air defense systems, military airfields, and critical infrastructure. As it turned out, it was almost identical to the attack that took place on February 24, 2022, and in the following months of the war.

Despite strong Russian strikes at the beginning of the invasion in February 2022, Ukrainian air defense managed to avoid complete destruction, while ensuring the defense of key cities, infrastructure elements, and its own troops. Although the first Russian attacks hit about 75% of the stationary elements of the air defense systems, the mobile ones were successfully attacked in only 10% of cases, which allowed for maintaining a relatively cohesive defense of the Ukrainian sky. However, it was clear from the beginning that further saturation attacks would quickly drain Ukraine's defense capabilities, mainly in terms of ammunition.

Therefore, the Ukrainians turned to Western countries for help, which provided it, supplying ammunition and post-Soviet systems (vide S-300 from Slovakia), but also trying to rearm the Ukrainian air defense with Western systems as much as possible, which would ensure the continuity and certainty of ammunition supplies. Systems like the MIM-104 Patriot, NASAMS, IRIS-T, but also older systems like the MIM-23B Hawk began to appear in Ukraine [3]. As events on the front developed, gun-based anti-aircraft artillery systems, which were slowly being forgotten in the West, also appeared. The ZU-23-2 cannons returned to service, as did the Gepard self-propelled systems donated by Germany.

Evolution of Ukrainian Air Defense in 2024 – 2025 – Equipment Changes

Due to the inevitable problems related to the availability of ammunition used in post-Soviet anti-aircraft systems used by Ukraine, it was clear from the beginning of the invasion that Ukraine's Western allies would want to rearm the country over the Dnieper with Western anti-aircraft systems that could be maintained in combat readiness in the event of a prolonged conflict. Therefore, along with the first aid packages that delivered materials for the then-used Soviet/Russian-made systems, the delivery of Western-made anti-aircraft systems to Ukraine was announced as early as 2022.

Initially, mainly short, medium, and long-range missile systems were delivered to Ukraine; examples include the NASAMS, IRIS-T SLM, and MIM-104 Patriot systems, respectively. In total, since 2022, the delivery of 62 missile systems of all ranges has been announced; by February 2025, 30 systems and a certain number of individual components (mainly launchers) intended to supplement losses incurred as a result of hostilities have been delivered. In 2024, 12 of the announced deliveries were completed.

Western Anti-Aircraft Missile Systems Delivered to Ukraine in 2024			
Name	Type	Quantity	Supplier
IRIS-T SLM	Medium-range missile system	3	Germany
NASAMS	Short-range missile system	1	Norway
IRIS-T SLS	Short-range missile system	4	Germany
MIM-123B I-Hawk	Medium-range missile system	1	Spain
SAMP/T	Long-range missile system	1	Italy
MIM-104 Patriot	Long-range missile system	2	Germany, Romania

Source: Own work based on <https://www.iiss.org/online-analysis/military-balance/2025/02/ukraines-ground-based-air-defence-evolution-resilience-and-pressure>

After some time, in addition to supplying new weapons, work began on adapting the equipment used by Ukraine to Western effectors. An example of such work in the field of anti-aircraft systems is the FrankenSAM project. The name of this project refers to Frankenstein's monster, which was brought to life from various human body parts joined together. Ukrainians carried out similar operations (though not on the human body) with their anti-aircraft systems. The most famous example is the adaptation of the BUK-M1 launcher to fire Western RIM-7 Sea Sparrow and AIM-7 Sparrow missiles. Work on integration began back in 2023, but the first combat use took place in January 2024, when a BUK-M1, using a Western missile, shot down a Shahed drone from a distance of 9 kilometers. In addition to integrating BUKs, similar operations aimed, among other things, to connect Patriot system launchers with S-300 system radars, adapt the OSA-AKM system to fire R-73 air-to-air missiles used on Soviet/Russian aircraft, or a British project to mount two AIM-132 ASRAAM missiles on a SupaCat HMT 600 vehicle.

In February 2025, Russia carried out attacks using almost 4,000 drones, and in the first week of March, this number was 870. The Shahed family drones used in these attacks cost between \$20,000 and \$50,000, while missiles for the Patriot or NASAMS systems cost \$3.8 million and \$1 million, respectively. This creates a huge disproportion in which to repel an attack, one would have to use missiles that are 28 to 85 times more expensive than the target they are supposed to shoot down [4]. Therefore, all kinds of gun-based anti-aircraft systems have been given a second life in Ukraine. Ukraine inherited a large number of ZU-23-2 cannons and a limited number of ZSU-23-4 Shilka vehicles from the Soviet Union. With the intensification of attacks using drones, the demand for small arms and gun artillery capable of combating Russian unmanned vehicles at low cost increased. On the one hand, Ukrainian soldiers use all kinds of rifles for this purpose, starting from AK and AR family rifles, which are often the individual armament of soldiers, often coupled into improvised gun systems, but their effectiveness is negligible.



Improvised system consisting of six AK-74 rifles.

Source: <https://geekweek.interia.pl/technologia/news-genialna-samorobka-polaczyli-szesc-karabinow-ak-74-i-drony-n,1d,6883676>

Another way to increase the effectiveness of combating unmanned vehicles is the use of machine guns, both newer ones like the Soviet PK or the American M2, but also older designs such as the heavy DShK and even the DP-27 from World War II or the Maxim machine guns from the Great War. Moving on to larger caliber weapons, the Soviet-made ZU-23-2 guns have come back into favor, and the Soviet S-60 cannons are also popular.

On the other hand, equipment from the West has arrived in Ukraine and is being massively used to combat drones. Victor systems, consisting of 14.5mm KPV machine guns used in Soviet and Russian armored personnel carriers, were delivered to Ukraine from the Czech Republic and the Netherlands. Another very popular source from which weapons for combating drones were sent to Ukraine is the Balkans. The main commodity delivered to Ukraine from there is the Yugoslav 20mm Zastava M55 cannon. Of the larger caliber guns, it is worth mentioning the 40mm Bofors L 70 guns transferred by Lithuania [5].

Furthermore, the German Gepard system is very popular among Ukrainian soldiers. Delivered to Ukraine for the first time in July 2022, it turned out to be a very effective weapon against drones and cruise missiles. This system became so liked by Ukrainian soldiers that in October 2022 there were problems with ammunition supplies, due to the fact that Switzerland, which produced the cannons for these systems, did not want to militarily support either side; however, ammunition production was resumed in Germany.

Evolution of Ukrainian Air Defense in 2024-2025 – Systemic Changes

Russian air attacks on Ukraine over the past year are characterized by:

- A relatively low flight speed of most effectors (while cruise missiles can reach speeds of several hundred kilometers per hour, drones rarely exceed 200 km/h)
- Cruise missiles and drones mostly move at low altitudes, tens or at most hundreds of meters above the ground
- Hundreds of effectors are used in a single attack to saturate Ukrainian air defense

The specifics of these attacks strongly define the tactics for combating them by Ukrainian air defense. In the case of drones, their low flight speed, low altitude, and the sound made by their engines allow them to be detected without the use of radars. However, this makes them difficult to intercept with missile-based air defense systems, which may have problems tracking and destroying such low-flying and small targets. In return, it is much easier to shoot them down with smaller caliber weapons, which on the one hand is more economical, but on the other hand, the limited range of small arms forces frequent relocation of anti-aircraft teams. To deal with such a threat, the Ukrainians developed so-called Mobile Fire Groups, which are a response to the requirements of the battlefield.

Mobile Fire Groups initially appeared in the Air Force, both in air defense units and in radio-technical brigades. Similar formations were established by the National Guard, and for the defense of Kyiv, by the Ukrainian Border Guard. In addition, the Ukrainian river flotilla was assigned to the task of defending the capital in a similar manner.

The armament of such groups is usually gun-based anti-aircraft systems mounted on off-road vehicles, a solution resembling so-called "technicals," i.e., all kinds of improvised combat vehicles. Less often, such groups are equipped with strictly combat wheeled or tracked vehicles, as the main advantage of such MFG operations is the speed with which they can move. In addition, such groups may be equipped with rifles and machine guns, MANPADS launchers, and anti-aircraft searchlights, which help perform tasks at night.

Due to the limited range and accuracy of fire, MFGs mainly destroy drones, which are intended to confuse the next echelons of Ukrainian air defense. This helps in the effective destruction of cruise missiles by missile defense systems, whose effectiveness is much greater but whose impact on multiple targets is severely limited.

Summary

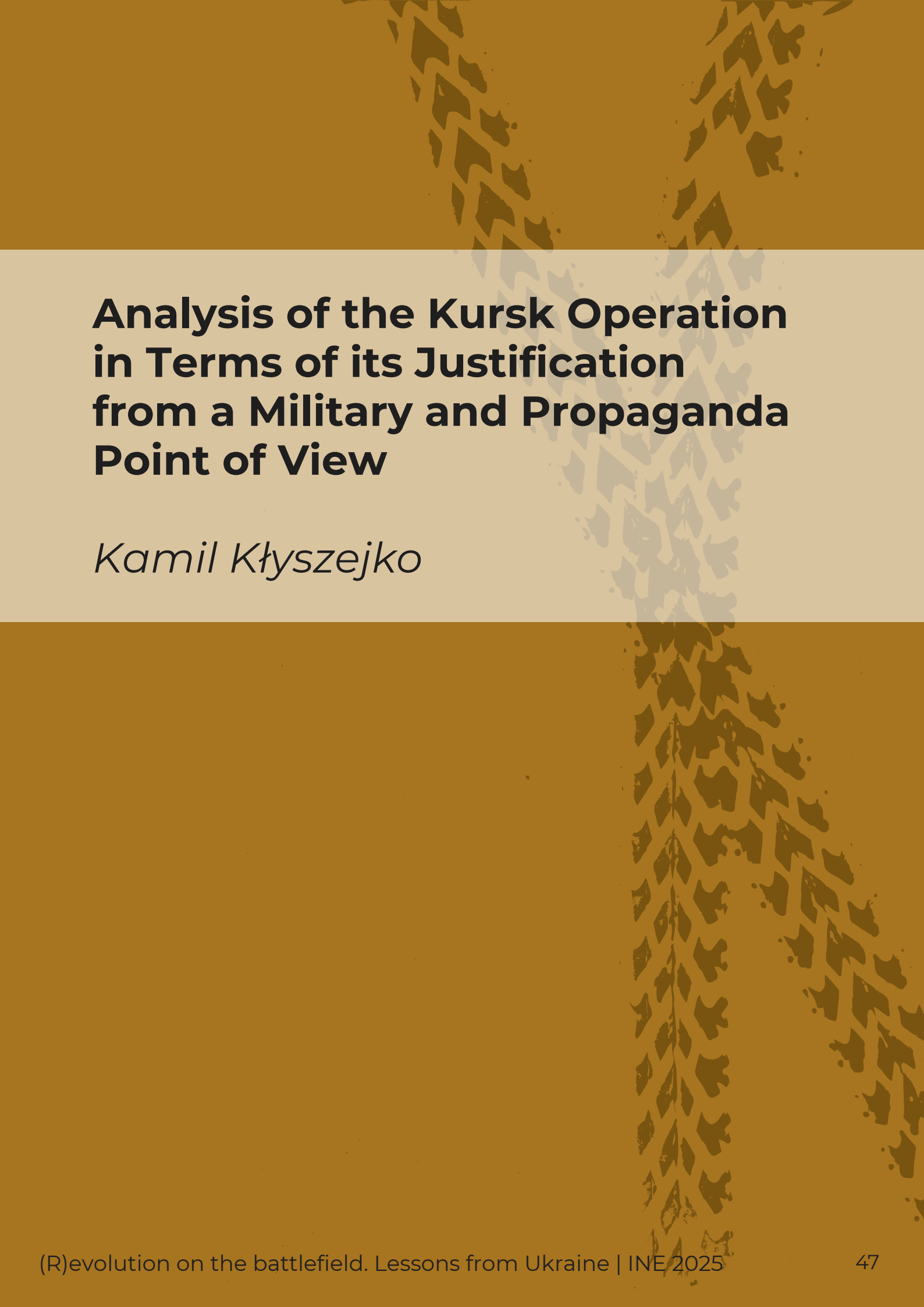
Despite Ukraine's attempts to counter air threats, Russia's situation is not optimistic. In response to the evolution of Ukrainian defense, the Russians are not idle and are trying to regain the advantage. The Shahed family drones received from Iran are being upgraded in Russia; they are able to fly higher, which makes them harder to shoot down by MFGs, and they also carry heavier warheads. The Russians are also exploiting gaps in radar coverage and attack detection on the Ukrainian side; this has a major impact, especially in the defense of coastal cities like Odesa, where limited detection from the sea is an additional problem for the city's defenders [6].

Problems with the demand for ammunition for missile systems are also returning; combined with the growing intensity of Russian saturation attacks, this creates a great challenge for the defenders. In 2024, about 90% of the Russian drones used in these attacks were successfully shot down or jammed; currently, these numbers are falling to around 30%. Deliveries from the West are increasingly less able to cover the needs of Ukrainian air defense, especially since more systems themselves are needed to more effectively counter Russian saturation attacks [7][8].

Ukraine needs further support from the West, both within the framework of currently functioning initiatives (such as FrankenSAM) and in areas not yet addressed. Increased cooperation with Western partners will allow for more effective translation of experience into practical solutions that may appear on the front in the near future. Furthermore, a more advanced and developed training system is needed, in which commanders will be taught about new types of air threats and trained to command specialized groups to combat air attacks, modeled on the currently existing MFGs [9].

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Analysis of the Kursk Operation in Terms of its Justification from a Military and Propaganda Point of View

Kamil Kłyszczewski

As the war between Russia and Ukraine drags on, both sides are losing strength and resources with each passing day [1]. Inevitably, due to the clear difference in potential between the participants of this war, Ukraine will face a greater problem each day, mainly because the military actions are taking place on its territory, and despite support from Western countries, its forces and resources are lower than those of the Russian Federation.

Despite the fact that Russian forces failed to capture Kyiv in the famous "three days" in the first days of the invasion in 2022 and had significant problems achieving their strategic goals, they are consistently taking the initiative in the conflict (according to Professor Sułek's combat model, in the case of war, the weaker side feels the effects more).

Ukrainians must, by necessity, take certain actions to show that they are still able to demonstrate initiative in this conflict. One such action was the so-called "Kursk operation," which involved the capture of part of the Kursk Oblast by Ukrainian forces in August 2024.

Reasons for the Kursk Operation

Several reasons prompted Ukraine to launch the Kursk operation. One of the primary reasons is considered to be the desire to draw Russian forces away from the offensive in Donbas, which would relieve the defenders of that region.

Another reason was the desire to surprise the Russian side, which, looking at the forces it had left in the Kursk Oblast, did not expect a Ukrainian offensive in this territory. This was also linked to moving part of the military operations to Russian territory, which in turn allowed some Russian troops to be drawn away from attacks on objects in Ukraine.

Another argument for the Kursk operation by the Ukrainian side was the desire to gain additional leverage in potential negotiations with the Russian Federation. With Donald Trump taking office as President of the United States, the American administration's approach to the Ukrainian issue changed. Biden's successor did not hide during his campaign that he would want to end the Russian-Ukrainian war as quickly as possible, so it was reasonable from Ukraine's point of view to gain some initiative and a bargaining chip at the negotiating table. The attitude of Trump himself undoubtedly had an influence on this; after his re-election as President of the United States in 2024, he repeatedly made it clear that it would be extremely difficult for Ukraine to regain its territories and that sooner or later it would have to sit down at the negotiating table. A symbol of this understanding was the cold and distant reception of President Zelenskyy in the Oval Office on February 28, 2025. This meeting ended in a row and the Ukrainian head of state leaving the White House early, which undoubtedly shocked many observers of this event. During this meeting, Trump mentioned that Zelenskyy "has no cards in his hand" [2], which only confirmed his earlier words regarding his perception of the situation on the front.

Taking this into account, it is understandable that the Ukrainians took steps intended to give them these proverbial "cards," because the new host of the White House clearly indicated that he expected progress on the front and that future support for Ukraine would depend on it. Aware that one of the potential hosts of the White House for the next four years would be Donald Trump, the Ukrainians took preemptive actions, including the offensive in the Kursk Oblast, to prepare for negotiations with Donald Trump.

One could also venture to say that a significant argument that prompted the offensive in the Kursk Oblast was the desire to improve the approval ratings of Ukrainian President Volodymyr Zelenskyy himself and his Servant of the People party. In mid-2024, Ukrainian media reported on several corruption affairs and scandals involving politicians associated with the presidential camp in Ukraine. Among other things, at the end of April 2024, the Minister of Agriculture of Ukraine, Mykola Solskyi, was arrested, suspected (along with a group of other state officials) of attempting to appropriate several thousand hectares of land in the Sumy Oblast. Then, after Russia began a new offensive in the Kharkiv Oblast in May 2024, information began to reach the public that the money that was supposed to be allocated for the construction of defensive lines in this region was "disappearing" as a result of purchasing materials (wood for fortifications) at significantly inflated prices or signing fictitious contracts for the construction of fortifications with "front" companies. Along with these media reports, Ukrainians received information about regional military administrations responsible for the construction of fortifications hindering the work of journalists. These administrations, trying to silence the media's exposure of abuses, denied journalists access to information about companies that did not fulfill their contractual obligations to build fortifications [3]. An additional factor that could have prompted the Ukrainian staff to this offensive was the propaganda dimension, described in more detail in the next subsection.

In view of the above factors, it is worth considering whether the "Kursk operation" ultimately improved Ukraine's situation on the front and contributed to renewed interest in the conflict among Western societies, or not necessarily.

Propaganda Dimension of the Kursk Operation

With the first news of Ukrainian troops entering the territory of the Russian Federation, media around the world, especially in the Central European region, eagerly reported on the course of these actions. They cited lofty-sounding headlines and statistics indicating that this was the first time Russian territory had been occupied by foreign troops since the invasion of Nazi Germany into the Soviet Union as part of Operation Barbarossa in 1941. The actions of the Ukrainians also allowed for renewed interest in this conflict among the societies of Western countries, which had been overshadowed by, among other things, the next chapter of the conflict in the Middle East between Israel and Hamas.

Photos and videos of the white-blue-white flag, identified with the Russian opposition, being raised circulated on the internet, which briefly boosted the morale of Ukrainian citizens and achieved the aforementioned goal of restoring the world's public opinion's interest in Russia's invasion of Ukraine.



North Korean soldiers in Kursk. Source: <https://euromaidanpress.com/2025/06/16/north-korea-troops-russia-kursk-losses/> accessed: 29.07.2025

Regardless of the final outcome of the Kursk operation, the initial actions of the Armed Forces of Ukraine confirmed the badly damaged image of the Russian army as the "second army of the world" from the beginning of the war, at a moment when, after an initial lack of spectacular successes in the first days of the invasion (failure to take Kyiv in three days), the Russians had begun to show initiative on the front line. Another action that, in the eyes of some public opinion, could be seen as a reputational defeat for Russia related to the Kursk operation was the inclusion of several thousand North Korean soldiers in the fighting in the Kursk region at the end of 2024 [4]. The use in the conflict, by a country that wants to aspire to the role of a regional hegemon, of troops with no experience in military operations, without morale, proper training, and knowledge of the equipment and Russian military tactics, had its reflection in the infosphere. Although the North Korean soldiers underwent training in Russia before being sent to the front, practice on the battlefield showed that they were not prepared to fight Ukrainian drones.

This is evidenced by both the statements of representatives of South Korean intelligence [5] and videos published by the Ukrainian military, which show, for example, a North Korean soldier trying to hit a Ukrainian drone and accidentally shooting his comrade [6]. According to various analyses and media reports, the Koreans suffered heavy losses in the Kursk Oblast, which makes the Russians' decision to use their support possibly perceived by some of the public as an act of desperation on their part, although, of course, from the point of view of the current Russian geopolitical situation and *raison d'état*, it was a justified move.

The presence of North Korean soldiers in Kursk was the subject of ridicule and jokes, and also gave the Ukrainian side the opportunity to spread rumors, for example, about alcohol abuse by the Koreans [7].

Additionally, what is very important and dangerous, especially from the Russian perspective, the Kursk operation allowed some of the war to be moved to Russian territory in a way that the Kremlin cannot hide from its citizens, which helps to undermine the propaganda narrative of a "special military operation" taking place somewhere far from the daily affairs of Russians [8].

At the same time, from a propaganda point of view, the actions of the Ukrainians in this regard also gave some propaganda opportunities to the Russians. They had a pretext to lend credibility to their narrative regarding the expansive nature of Ukraine, which in their opinion is not an independent entity, but merely an instrument of American interests in Europe used against Russia in international competition [9], which threatened to attack the Russian Federation, and therefore Russia started the war by carrying out a preemptive strike.

Additionally, in their propaganda, the Russians referred to the Orthodox culture of their country. For example, in April 2025, one of the largest circulation newspapers in Russia, "Komsomolskaya Pravda," reported on the desecration of the Gornalsky Monastery by retreating Ukrainian armed forces [10]. Russian propaganda emphasized such alleged events to underscore their narrative that behind the current regime in Ukraine are Western forces that want to destroy the Orthodox Russian culture, which in the eyes of Kremlin propagandists appears as a bastion of defense of conservative values against globalization and the decadent Western civilization.



Depiction of a Ukrainian soldier in the Kursk direction according to Russian media. Source: <https://www.kp.ru/daily/27633/4983783/> accessed 12.07.2025

Russian propaganda also showed the soldiers participating in the operation in a specific way. The photo above can serve as an example, showing a Ukrainian soldier sitting in a trench with his hand covering his face. This soldier is poorly equipped, has no helmet, uniform, and no weapon is visible. He is holding a cigarette, which suggests the soldier's nervousness. Smoking in this context is to be interpreted as a way of coping with stress, which reinforces the message of a soldier under great pressure, which is further emphasized by his posture [11].



The city of Sudzha after an attack by the Ukrainian armed forces. Russian state media mainly showed this type of photo in the context of the Kursk operation, intended to show the brutality of the Ukrainian armed forces towards civilian infrastructure. Source: <https://www.kp.ru/daily/27619.5/4970261/> accessed 12.07.2025



Ukrainian soldiers in Sudzha in front of the Gazprom building. Source: <https://kyivindependent.com/ukrainian-troops-allegedly-take-control-of-gazprom-facility-in-kursk-regions-sudzha-media-says/> accessed 6.07.2025

Analysts' Predictions on the Justification and Effectiveness of the Kursk Operation

Analysts' approach to this chapter of the Russian-Ukrainian war was not uniform. There were some analyses and expert statements suggesting certain opportunities for Ukraine, especially at the beginning of the conflict. The Institute for the Study of War wrote in its report, for example, that "the Ukrainian operation in Kursk Oblast and further possible Ukrainian cross-border incursions are forcing the Kremlin and the Russian military command to decide whether to treat the thousand-kilometer international border with northeastern Ukraine as a legitimate frontline that Russia must defend, rather than treating it as a dormant area of the theater of operations, as has been the case since the fall of 2022.

Moscow's response, according to the institute, may require the Russian military command to consider the manpower and resource requirements needed to defend the international border as part of its campaign across the entire theater of operations and could therefore impose long-term constraints on operational planning that Russia had not previously faced." [12] Some analysts were skeptical about the success of this operation from the beginning. American military analyst Rob Lee, for example, spoke about the possible risks associated with the Ukrainians starting an offensive, pointing out that the Ukrainians could suffer greater losses in offense than in defense [13].

Analysts also saw the political and military reasons for this then-surprising offensive. They noted that Ukraine's goal was to capture as much Russian territory as possible, thereby putting pressure on Moscow. This would give Kyiv a stronger position in any peace negotiations. Ukrainian territory occupied by Russia could be exchanged for conquered Russian lands. From a military point of view, an attack on Russian territory could create a buffer zone for the population in the disputed, contested areas of Ukraine. They also saw an element aimed at weakening the Russian army [14].

Many military personnel placed hope in the operation that the bold Ukrainian action would force Russia to move more soldiers and make the Russian pressure in the east not as great as it had been so far.

Course of the Kursk Operation

The Kursk operation began on August 6, 2024. At eight o'clock, Moscow time, Ukrainian troops crossed the Russian border. According to the Russian side, Ukrainian troops equipped with tanks and armored vehicles were heading towards the localities of Nikolaevo-Darino and Oleshnya [15].

Nevertheless, contrary to most information provided by Kremlin-controlled media, the beginning of the Kursk operation should be described as a success for the Ukrainian side. As early as August 9, 2024, according to Western media reports, Ukraine controlled from 100 to 250 square kilometers of the Kursk Oblast [16]. Eighteen days after the start of the Kursk operation, the Ukrainians controlled an area of about 788 square kilometers. On that day, the Ukrainians also announced that they had taken control of the town of Sudzha, inhabited by over 5,000 people [17]. It was the largest town captured by Ukrainian troops during this operation. The maximum area controlled by Ukrainian troops during the cited offensive was, according to the declaration of the Commander-in-Chief of the Ukrainian Army, Oleksandr Syrskyi, as much as 1,000 square kilometers [18]. Ukrainian troops then showed that the Russians, despite significantly larger human resources and military potential, are unable to secure their territories from attack in a conflict they themselves started. According to independent Russian media, almost two weeks after the invasion of the Armed Forces of Ukraine in the Kursk Oblast, there were still fewer Russian soldiers there than Ukrainian ones, so units, including conscripts, began to be brought in from other regions of Russia, including from the military districts in Leningrad and Moscow – a total of about 5,000 soldiers [19]. On September 6, according to their state media, the Ukrainians controlled 1,300 square kilometers and 100 settlements in the Kursk Oblast [20].

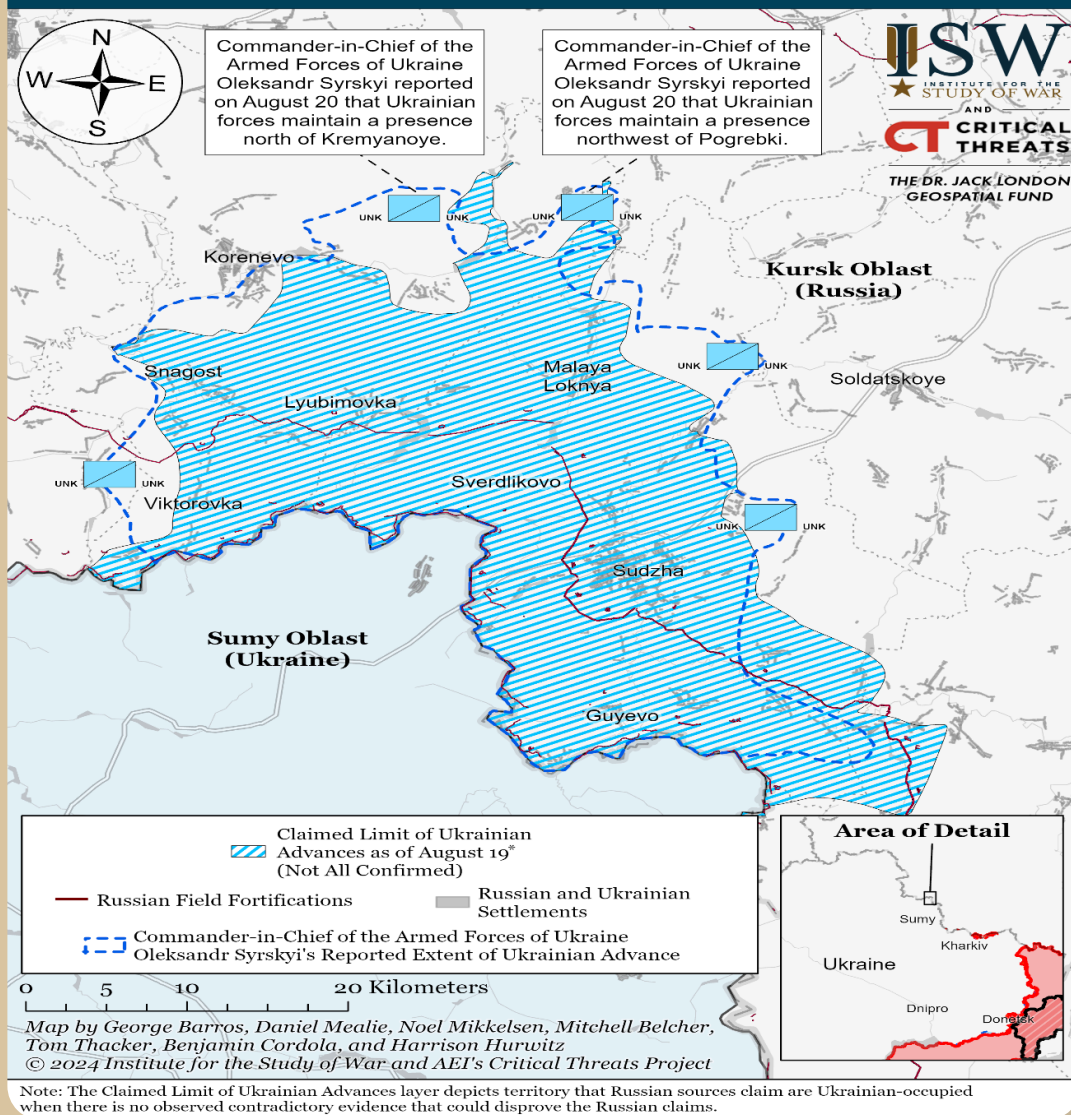
This was not the first such action by the Ukrainian side. During the first Ukrainian counteroffensive that began in September 2022, the Ukrainians had been conducting raids into the Belgorod Oblast since May 2023, using military formations of Russians fighting on the Ukrainian side, including the "Freedom of Russia" Legion and the Russian Volunteer Corps. Nevertheless, the actions in the Kursk Oblast were the first operation in this war where the regular Armed Forces of Ukraine entered the territory of the Russian Federation.

The Kursk operation showed that the Russians, despite being aware of the Ukrainians' capabilities to operate on Russian territory, did not secure their border areas, which inevitably affects the local population and the perception of the Russian army among conflict observers. This does not, of course, mean that the Russians did not have the ability to defend this territory. The Russians' actions indicate that the main command of the Russian army, in the person of Vladimir Putin, probably did not care about the situation in the Kursk Oblast and did not treat it as a priority. Of course, the Russians could not allow further occupation of their territory by Ukrainian troops or the maintenance of the then-current state. The Russians consistently brought the 810th Naval Infantry Brigade from Crimea and the 155th Naval Infantry Brigade to this area in September, which reinforced the "Akhmat" special forces already operating in the Kursk Oblast and carried out the first counterattacks in the second half of September [21]. On September 10, 2024, the Russian army launched a counteroffensive operation aimed at retaking the territories captured by the Ukrainians [22].

As early as October 14, Russian media reported, citing statements from people serving in the military and Russian services, that the Russians had retaken fifty percent of the territories captured by the Ukrainians [23]. It is also worth noting that, according to media reports, North Korean troops also appeared in the Kursk Oblast this month, supporting Russian forces. Nevertheless, the presence of North Korean soldiers should not be considered a breakthrough factor in this phase of the conflict. The troops from North Korea had no battlefield experience and were not prepared for this conflict. Additionally, the media also reported on manifestations of racism towards the Koreans from the Russians and Chechens serving in the Russian army [24]. In view of the above, the Koreans were used primarily as "cannon fodder" which was to advance in a large wave on heavily defended Ukrainian positions [25].

On March 12, the Russians retook Sudzha and occupied the vast majority of the Kursk Oblast, and Ukrainian troops began to withdraw from the Kursk Oblast and secure the remaining sections of the front to stop the Russian advance [26]. This basically marked the end of the Kursk operation, which lasted from the beginning of August 2024 to April 2025, although it should be noted here that according to Russian media, some actions by the Ukrainian side are still taking place [27], but these actions are likely not aimed at re-occupying enemy territory, but rather at putting pressure on the Russian side and thus forcing the Russians to maintain some units there, which may reduce Russian pressure on other sections of the front.

Ukrainian Colonel General Oleksandr Syrskyi's Reported Ukrainian Frontline in Kursk as of August 20 Compared to Information Available in the Open-Source



Map from August 20, 2024, showing the maximum advances of Ukrainian troops in the Kursk Oblast. Source: <https://www.understandingwar.org/background/russian-offensive-campaign-assessment-august-20-2024> accessed 4.07.2025

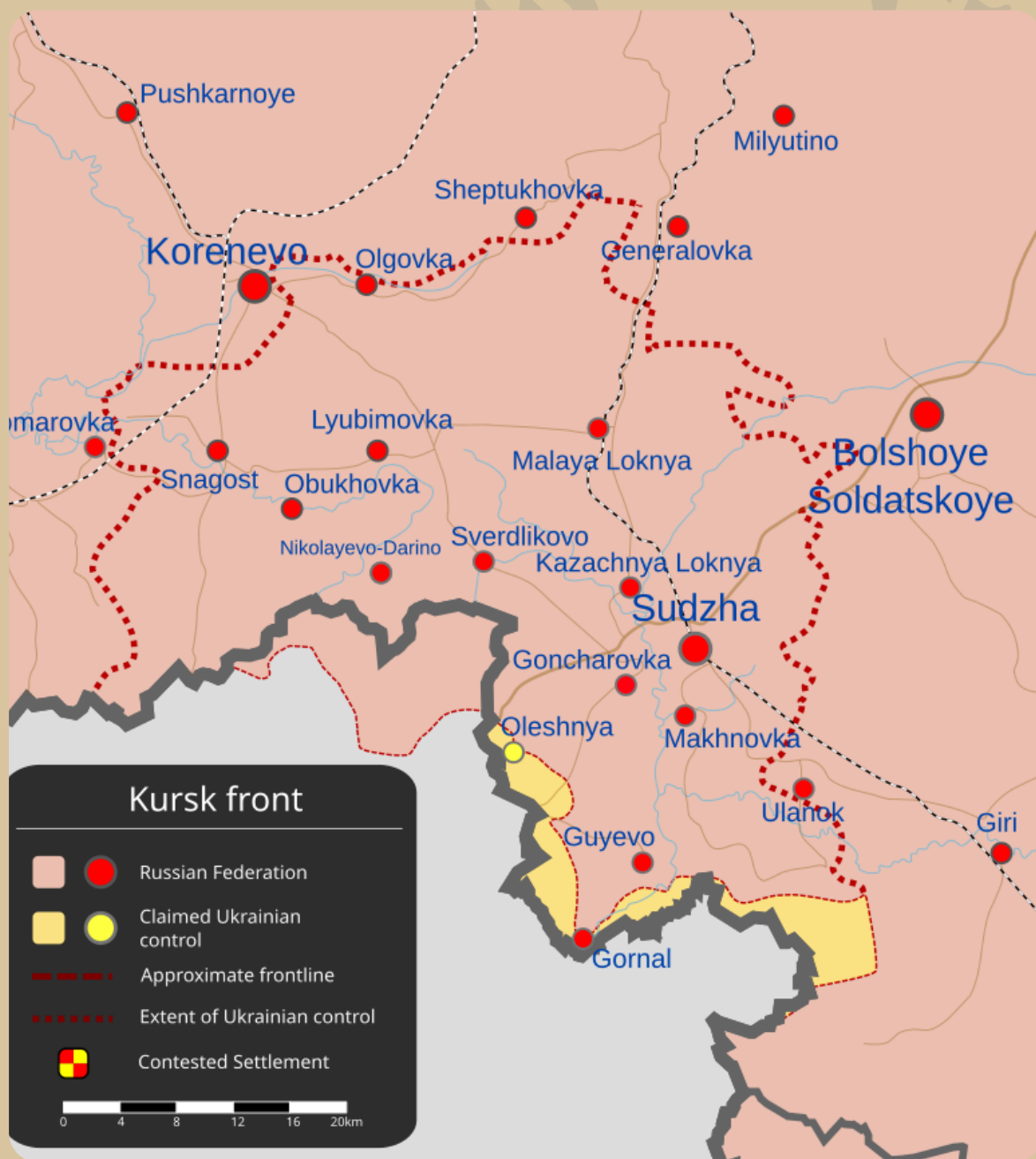
Summary of the Kursk Operation

The Kursk operation did not allow for the realization of most of the goals that the Ukrainians set for themselves, especially the key ones. Ukrainian troops did take the initiative on the front for a while, but in the long run, this did not stop the Russian advance in eastern Ukraine. Moreover, looking at the dynamics of actions on the front, it can be concluded that the Russian advances in the Donetsk Oblast accelerated after the Kursk operation [28].

Despite the initial successes of the Ukrainian army in this area, they were unable to hold the occupied territories, which also made it impossible to achieve the goal of having a kind of "bargaining chip" in the context of possible peace negotiations.

At the same time, in the information sphere, the Kursk operation, after initial interest, or even excitement from some media about its course, was not able to restore significant interest from the international community in Russia's invasion of Ukraine, which the authorities in Kyiv certainly wanted. This is primarily due to the prolonged military actions without a significant breakthrough on either side, but also to other events in the world, primarily the next chapter of the war in the Middle East between Israel, Hamas, and Iran. Additionally, the Ukrainian offensive in the Kursk Oblast gave additional fuel to Russian propaganda, which gained greater opportunities to lend credibility to the theses it had previously proclaimed, saying that a neo-Nazi regime rules in Kyiv, which, being supported by the West in general, wants to destabilize and, by default, destroy the Russian Federation.

It should be noted that the Kursk operation is an interesting case that allows for the analysis of many aspects of modern armed conflicts, both purely military actions and the propaganda opportunities that arise during a given conflict.



Current situation in the Kursk Oblast. Source https://pl.wikipedia.org/wiki/Operacja_kurska accessed 10.08.2025

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