

Lasha Tchantouridze

DOI:10.2478/cmc-2025-0004

VRNITEV GLOBOKE BITKE: REFORME IN PROTIREFORME V RUSKIH OBOROŽENIH SILAH

THE RETURN OF DEEP BATTLE: REFORMS AND COUNTER-REFORMS IN THE RUSSIAN MILITARY

Povzetek Članek raziskuje razloge za slabo operativno uspešnost ruskih oboroženih sil v začetni fazi vojne v Ukrajini (2022–2023). Pomembna ugotovitev je, da je bila slaba uspešnost rednih ruskih oboroženih sil v vojni v Ukrajini posledica ruskih vojaških reform v letih od 2008 do 2020. Te reforme so razgradile stare sovjetske modele kombiniranih in skupnih operacij in namesto njih ustvarile model kopenskega bojevanja, ki je temeljil na lahkih in mobilnih pehotnih bataljonih. Reformirane sile so pridobile veliko prednost v mobilnosti in manevrski sposobnosti, vendar ko so ukrajinski branilci to prednost nevtralizirali, se je izkazalo, da ruske enote niso sposobne izvajati uspešnih kombiniranih oboroženih operacij. Rusko vrhovno poveljstvo je našlo rešitev za neuspešni operativni načrt in do leta 2023 so se ruske kopenske sile vrnile k stari sovjetski operativni umetnosti.

Ključne besede *Rusko-ukrajinska vojna, ruske vojaške reforme, globoka bitka.*

Abstract This study explores the reasons behind the poor operational performance of the Russian armed forces during the initial phase of the Ukraine war (2022–2023). The key finding contends that the poor performance of the regular armed forces of Russia in the Ukraine war was due to the Russian military reforms of 2008–2020. These reforms dismantled the old Soviet models of combined and joint operations and, in its place, created a model of ground warfare entirely based on light and mobile infantry battalions. The reformed forces gained a major advantage in mobility and maneuverability, but once Ukraine's defenders neutralized that advantage, the Russian units turned out to be incapable of generating successful combined arms operations. The Russian high command did find a fix to the failed operational design, and by 2023, the Russian ground forces reverted to the old Soviet operational art.

Key words *Russo-Ukraine war, Russian military reforms, deep battle.*

Introduction

After the significant 2022 setbacks on the battlefields, Russia has managed to turn the tide of war in Ukraine thanks to returning to the old Soviet operational art. The Russian military reforms of 2008–2020 moved away from the Soviet-style organization of ground forces, and the relevant operational art was left behind with it. However, when the invasion of Ukraine turned into a disaster for the Russian army, the Russian high command had no choice but to abandon the reformed battle formations developed around individual battalion-tactical groups and resurrect the Soviet-style multilayered defensive and offensive operations, also known as deep battle (Kem, 2001). This change, more than anything else, has allowed the Russian armed forces to halt Ukraine's offensive in 2023, and start regaining ground in its offensive operations from Kharkiv to Kherson. At the same time, Kyiv's August 2024 Kursk offensive demonstrated that the counter-reforms in the Russian military were far from complete.

Observers of the war in Ukraine have noted that the Russian army did considerably better in 2023 and 2024 than in 2022 (Watling and Reynolds, 2024). In 2023, the Ukraine ground offensive progressed slowly and methodically, but the Russians avoided significant loss of territory and even managed occasional counterattacks. In 2024, the Russian army did even better in the Kharkiv, Donetsk, and Kherson regions. They established a foothold in Kharkiv, took Avdiivka and several villages in the Donetsk region, and pushed the Ukrainian forces from the left bank of the Dnipro River (Hodunova, 2024). Still, the 2024 Russian advances were diminished by Kyiv's Kursk operation, in which the Ukrainian forces captured almost as much territory in a week as the Russian forces managed in seven months of 2024 (Epstein, 2024).

The Russian campaign in 2022 was dominated by chaos and confusion. The infamous »meat grinder« push for Bakhmut, headed by the now deceased Yevgeniy Prigozhin, separated the first phase of Russia's invasion of Ukraine from its much-improved follow-up phases. Mercenary Wagner groups suicidal storms in Bakhmut tied down Ukraine's armed forces and allowed the regular units of the Russian army to rebuild and reform for conventional mechanized infantry ground battles. Wagner bought crucial time for the Russian army, but not enough to allow for the creation of strategic reserves. When Ukrainian forces successfully attacked Russia's Kursk region in early August 2024, Russian ground forces, once again, appeared to be in disarray. For two weeks in the Kursk battles, the Russian army could not assemble a credible force except for units of freshly conscripted youth, Chechen paramilitary detachments, and a hodge-podge of units borrowed from various services, including the Space Force (Kataev, 2024).

The current paper explores the reasons behind the poor performance of the Russian armed forces in the Ukraine war in 2022, and subsequent improvements starting from spring 2023. The key research question for the study was formulated as follows: why did the regular armed forces of the Russian Federation perform so poorly in 2022 in comparison to their performance in 2023? In 2022, the Ukrainian armed forces were

not as well equipped, supplied, and trained as they were in 2023. In the initial phases of war, NATO and other partners of Ukraine were slow to deliver their support. At the same time, the Russian forces invaded Ukraine in 2022 with better troops than they could afford to muster in subsequent phases of war. Despite this fact, less prepared, equipped, and supplied Ukrainian forces did better and inflicted more casualties on the invading force. The focus of the study here is the regular armed forces of Russia, not the mercenary groups (e. g., Wagner) or various irregular and auxiliary units formed by the drafted men from the occupied Ukrainian lands (primarily, Crimea, Donetsk, and Luhansk). The key finding that serves as the main argument of the paper contends that the operational failure of the regular armed forces of Russia in the Ukraine war was due to the Russian military reforms of 2008–2020. The reforms of the Russian ground forces dismantled the old Soviet models of combined and joint operations and instead created a model of ground warfare entirely based on light and mobile infantry battalions. The reformed Russian armed forces could not generate successful combined arms operations in 2022 because their main unit for ground war, the infantry battalion, was operationally incapable of participating in joint operations successfully.

This paper aims to demonstrate that the size of an armed force, both in terms of its numbers and the quantity of the equipment available to it, is not the sole decisive factor on the battlefield. The mode of organization of an armed force is no less crucial than its size, an old dictum that is very much relevant in contemporary warfighting. Napoleon's maxim that at the end of the day, the biggest battalion wins the battle is only correct if the said battalion is properly designed and organized. Bad operational design of armed forces cannot be mitigated even by superior fire capabilities, which is the most surprising outcome of the Ukraine war battles in 2022. The Russian troops fired far more of everything in 2022, and still failed to meet their objectives. Their full collapse was precluded by the Ukrainian armed forces' lack of armaments and equipment. That and tragic hesitation by Kyiv's Western neighbors to support Ukraine's fight for sovereignty and territorial integrity.

The research design for the current project is based on the case study approach. Case study research is concerned with the character and particular aspects of the case in question (Stake, 1995). The researched case here is the performance of the Russian armed forces in Ukraine in 2022. However, since the case deals with the organization and design of armed forces in joint and combined arms operations, the case in question is not analyzed in isolation but in comparison with both an ideal model, and also a case that the Russian armed forces presented after the counter-reforms of 2022–2023. The ideal model is taken from the joint force organization of the United States armed forces, designed around seven joint functions: command and control, fires, sustainment, information, intelligence, maneuver and movement, and protection. This model is formally taken as »ideal« because the United States armed forces are better organized and equipped than any other large armed force in the contemporary world. The comparison with the U.S. model is done implicitly

and for categorical analysis only, and not to judge the capabilities of the Russian conventional armed forces in comparison with those of the United States. Even though Russian officials and commentators themselves frequently claim that the Russian army is »the second in the world« after the U.S. army, such comparisons are effectively useless and beyond the scope of the current research. The comparison with the second case, the state of the Russian armed forces in 2023 and after, is more explicit but not detailed and thorough since operational planning and analysis are beyond the scope of this study. Instead, the strategic results or the general outcome of combat operations are used as the measure of success or failure.

The current study is conducted with the assumption of ontological and epistemological realism. War is a complex and dynamic social phenomenon that may not be computable, but it can be objectively researched, studied, and analyzed, because it is real. This complex social activity, although initiated by social actors, once commenced, war is no longer subject to individual actors' control or influence. Contemporary warfare is conducted by armed organizations that represent a subset of human institutions. Institutions are regularized patterns of behavior, and as such, they are real things with their own dynamic processes. Once created, institutions are difficult to reform effectively, which is the lesson the Russian armed forces' reformers had to learn in a rather painful manner.

There are several research gaps in this study, most of them due to the fact that the subject of the research project is a current and ongoing war. However, two main gaps have to be identified explicitly because further research in these areas might produce valuable lessons. One has to do with the lack of reliable information about the operational planning and design of the warring armed forces, those of Russia and Ukraine. This information is currently inaccessible for obvious reasons of secrecy and security in the ongoing conflict. This study is mostly based on publicly available information, but when researching this topic the author had access to some confidential information from Ukraine. The second gap in the current research is also tied to the fact that we are dealing with an ongoing war in which the success and failure of combat operations are assessed in contradictory manners by observers who are guided by their allegiances of sympathies. Information about the quantity and quality of the combat units, their efficiency, casualty rate, etc., is currently highly obscured by the fog of war. Planned or random propaganda efforts also distort the details of the ongoing operations that will, at some point in the future, become subjects of more detailed study and research.

1 THE RUSSIAN MILITARY REFORM

Neither the chaos of 2022 nor the competent performance of 2023 should have been unexpected for students of Russian military and security affairs. The chaos of the first months of the war resulted from the 2008–2020 military reforms initiated by President Putin and guided in part by General Valery Gerasimov, the Chief of the General Staff. The change of fortune in Russia's 2023 and 2024 campaigns was

occasioned by a reversal of those ill-conceived reforms and a return to old Soviet military textbooks on defensive operations (Svechin, 1992). However, not everything has been discarded from the ideas that informed the 2022 invasion. Specifically, small unit operations proved successful in Russia's 2024 offensive efforts, especially when operating in concert with conventional ground force formations.

Putin's military reforms centered around one fundamental concept: to elevate mechanized infantry battalions as the primary organizational unit on the battlefield. The newly conceived so-called battalion-tactical groups, known in Russia by their acronym BTG, were supposed to supplant the slower and less effective Soviet-style regiments and divisions that proved inadequate during the Afghan campaign in the 1980s, as well as the 1st and 2nd Chechen wars. The infantry battalion units were expected to achieve their battle objectives in coordination with the army and air force aviation, long-range artillery, and precision missile strikes (Golz, 2019). It appears that when reforming the Russian military, the high command assumed that the precision strike capability combined with professional and highly mobile ground forces would eliminate the need to mass troops for key ground operations.

To address the limitations of the modestly sized 400-500-man strong Soviet-style battalions, the reform strategy aimed to restructure them into »battalion tactical groups,« each comprised of 900 to 1000 personnel. Official Russian government data indicates that prior to the Ukraine invasion, approximately 170 such combat-ready battalion tactical groups had been created. These battalions were purportedly maintained in a state of perpetual combat readiness. Indeed, conceptually, their constant battle readiness was the main reason for their formation. As conceived, the BTGs were supposed to act quickly, decisively, and effectively by operating independently or in concert with other Russian military units. The Russian invasion of Ukraine on February 24, 2022, was led by 125 of these BTGs with a complement of about 125 thousand troops – about 80% of all invading ground forces (Axe, 2022). Each BTG comprised three infantry companies, one tank company, 1–3 artillery batteries, 1–2 medium-range anti-aircraft artillery, and a logistics unit (Fiore, 2017). If we were to judge by their performance in Ukraine in 2022, such swift and decisive moves were aimed at capturing and holding towns and villages. It remains unclear if they were expected to form a unified front as their numbers proved to be inadequate for protracted battles in Ukraine, and what front lines formed there were due to natural (rivers, lakes, forests, etc.) or man-made (cities, railroads, industrial plants, etc.) obstacles.

Regardless, as Russia launched the full-scale invasion of Ukraine on February 24, 2022, these battalion tactical groups led the charge in the ground offensive. As planned, they were aided by paratroopers, the air force, army aviation, missile strikes, militarized police (*Spetsnaz*), mercenaries, militia from the Russian-occupied Ukrainian provinces, and clandestine Russian counterintelligence (FSB) units operating in Ukrainian cities. Overall, about 125 of these units were engaged in active military operations in Ukraine over an eight-month period spanning from February to October 2022. Their performance on the battlefield was abysmal. The

BTGs could not effectively fight independently or coordinate with other units or each other. As a result, the Russian paratroopers, *Spetsnaz*, and militia groups sustained massive casualties (Urban, 2022; Epstein, 2023). The quick advances by the BTGs stalled within a week everywhere except in Ukraine's south. The defenders of Ukraine sustained the most consequential losses in southern Ukraine. After successfully clearing the Perekop Isthmus, the narrow stretch of land that connects Crimea with the rest of Ukraine, the invading Russian battalions quickly spread and captured Ukraine's Azov Sea coastline in the east and Black Sea coastline to the west, including Kherson. Kherson was the only city captured by the Russian invaders in the initial phase of the war, which subsequently proved to be crucial in their assault on Mariupol, a city that was a major objective of Russian assaults on Ukraine since 2014.

Dimitry Utkin, a former Russian special forces officer with the call-sign Wagner (killed on August 23, 2023, in an aircraft explosion alongside Prigozhin), organized Prigozhin's mercenary group alongside the newly designed battalion tactical groups. The Wagner group performed well against insurgents and lightly armed infantry in Syria, where they were deployed in 2015. However, they suffered serious casualties when they encountered the American military force supporting the Kurdish militia in February 2018 (Gabidullin, 2022). That battle at the ConocoPhillips gas fields should have served as a warning signal to Wagner and its overseers in the Russian Ministry of Defense that battalion tactical groups were no match against mechanized infantry operating with air support. General Sergei Surovikin, the commander of the Russian regular troops in Syria and, subsequently, a key figure in Ukraine operations in 2022 and early 2023, should have understood the operational problems accompanying battalion-sized units, especially since he was one of Wagner's honorary commanders. When the tables turned against the invaders in Ukraine, Prigozhin and Utkin started to mass the Wagner troops in their operational area, but without heavy equipment. In the spring of 2022, Wagner started filling its ranks with Russian convicts. Wagner recruited more than 50 thousand convicts from Russian prison colonies. More than 17 thousand of these convicts were killed in the battle for Bakhmut, alongside 2.5 thousand other Wagner mercenaries (Ivshina and Prosvirova, 2024). Thus, the idea of the battalion tactical group formation was marked by this victory after a year-long battle for a narrow section of the 1,200-kilometer-long Russo-Ukraine front.

Under then-Prime Minister Putin's leadership, the Russian government initiated military reforms after the August 2008 Russo-Georgian war. The small Georgian army nearly humiliated the larger Russian invading force, which got temporarily stuck in the Caucasus mountains. The Russian ground forces were saved by the Black Sea Fleet, and a simple fact that without outside help, the Georgian army quickly ran out of ammunition and supplies. Unlike Ukraine, Georgia was not supported by its Western partners; instead, the American and French leaders urged the Georgian government to concede the disputed territories and sue for peace. In the months that followed, Western officials all but blamed Georgia for starting the war. In fact, the European-sponsored fact-finding commission headed by Heidi Tagliavini, an OSCE

official, did exactly that: their 2009 report concluded that it was Georgia that attacked Russia (Report, 2009). In February 2022, Belarus President Lukashenka borrowed a page from the Tagliavini report justifying the Ukraine invasion with claims that the coordinated Russian-Belarusian attack was preemptive as Kyiv was about to attack his country alongside Russia (NV, 2022).

Soon after the short war with Georgia was concluded, the Russian government started to hold hearings behind closed doors to review the lessons learned and outline the new military reforms. In this, they concentrated on what they took as positive experiences from the Second Chechen War, 1999–2000, in which Valery Gerasimov took part first as the army chief of staff, and subsequently as its commander. In the second Chechen war, battalion-size Russian units performed well, especially in the battles for mountain villages. Smaller Russian units were more mobile, nearly self-sufficient, and effective in fighting Chechen resistance, which numbered at most 3–4 thousand active combatants throughout Chechnya. The Chechen resistance did not have an air force, artillery, drones, or armored units. It had a limited number of armor-piercing weapons and was poorly supplied and provisioned. The Chechen fighters operated in small groups, with mountainous villages serving as their bases of operations (Oliker, 2001). Predictably, Russian battalions had much success against them as the Chechen resistance could not sustain conventional battles and could only remain in their military areas of operation for a couple of days. Presumably, the reforms of the Russian military decided that the model of that war was good enough to conclude that mobile infantry battalions would operate successfully against any opposition, insurgent or conventional, provided the infantry battalions received sufficient support from the air and missile forces.

The Russian military reforms were motivated by Russian ground forces' performance in Chechnya and Georgia and, to some extent, by Soviet experience in Afghanistan. The key objective was to improve the movement and maneuvering of the mechanized infantry units, which presumably they achieved by virtue of their smaller size. Command and control (C2) was judged to be improved as well at the tactical level, provided the hypothetical adversary was small and did not engage in conventional mechanized warfare. Insurgents and militias from Chechnya were definitely small and lacked mechanized armored capabilities, while the Georgian army in 2008 was disorganized and ill-equipped. The reformed battalion tactical groups had less firepower, but this weakness was judged to be compensated by their much-improved mobility and maneuverability, which was expected to generate a decisive surprise element. Still, the reformed battalions continued to be depended on centralized logistics chains for their sustainment. Similarly, they depended on a combined force for intelligence unless it was something immediate and tactical. Finally, information warfare was not considered to be in the purview of the battalion tactical groups. In short, the linchpin of the reforms was mobility and maneuverability, while all other functions of combat operations were heavily tilted toward other joint components, e. g., the army aviation, the air force, logistics units, and targeting and guidance systems.

2 SHORTCOMINGS OF THE BATTALION-BASED GROUND FORCES

According to the pre-reform Russian military field manual, each battalion tactical group is given a frontline of 3 kilometers (1.86 miles) in depth and 5 kilometers (3.12 miles) in width, which can be narrowed down to 2 kilometers (1.25 miles) during the offensive operations (MoD RF, 2006). When attacking the enemy on their own, aided with an element of surprise, the Russian battalions would naturally form single-echelon offensive formations. When the element of surprise was lost for the Russian invasion of Ukraine, it was expected that the Russian battalions would somehow combine to mass troop numbers when engaging the opposition. Forming two echelons (and a reserve) was a standard operating procedure in the Soviet army, with the echelons controlled by the same combined arms commander. The size and strength of the enemy dictate the composition of the echelons – a Soviet-style mechanized infantry regiment with a complement of 3,000-plus (enhanced during wartime) combatants could organize themselves into two echelons (Mansfield, 1979). In comparison, the contemporary Russian ground forces have to have three or at least two battalion tactical groups producing two-echelon formations with different commanders controlling each echelon. Such loss of the unity of command affects the outcome of both offensive and defensive operations, as the ongoing war in Ukraine has repeatedly demonstrated (Pukhov, 2024). When the Russian troops bogged down in spring 2022, it became very difficult to mass the troop numbers. Even when new battalions were sent in for that exact purpose, they would engage in battles on their own, after which coordination among them became nearly impossible. The war in Ukraine has also demonstrated that smaller operational units may be more maneuverable but not necessarily more effective when the units are expected to control larger spaces. A frontline of 5 kilometers in width is unrealistic for an 800 to 1000-men-strong battalion, especially if they are facing drones and precision-guided ammunition.

The compromised unity of command and an inadequate structure of the ground forces were not the only headaches the Russian command faced during the opening months of the Ukraine war. Inadequate command structures were exacerbated by untested or outdated combat communications equipment (Panova, 2024). When the Russian army prevailed over the ill-equipped and undersupplied small Georgian army in August 2008, the Russian leadership discovered it had significant problems with the combat communications systems. After the war with Georgia, Moscow decided to develop new »world-class« communication systems for the army. Thus, the Russians invaded Ukraine equipped with two new communications gear: the army radio »Azart,« and the military smartphone »Era.« Neither of them worked well or at all from the very first days of the war, so much so that most Russian army units abandoned them in favor of the older and outdated equipment or cell phones equipped with Ukrainian SIM cards (Cranny-Evans and Withington, 2022). Therefore, it was relatively easy for Ukraine's military intelligence to intercept communication among Russian military commanders. The older, outdated communications equipment did not work effectively either because, with a limited range of up to 4 kilometers (2.5

miles), it required more supporting equipment, e. g., relay trucks and towers, and more support personnel, e. g., truck drivers, communications engineers to erect and operate those towers, and cipher clerks (Dobrynin and Krutov, 2022). These are the types of military professions that are not normally employed full-time by military organizations during peacetime but have to be mobilized and deployed during wars. However, the Russian command did not plan for such additions, and their battalion-tactical groups did not have the means to seamlessly incorporate new communications personnel. Often, new communications personnel would be sent on their own to aid units engaged in battles unaccompanied by the armor or air defenses. Traveling in soft-skinned vehicles, they were an easy target for Ukrainian drones and artillery.

A few other military professions are not employed full-time during peacetime but are essential for combat operations. Those who followed news reports from the Ukraine war in 2022, saw Ukrainian farmers towing away Russian tanks and armored vehicles. Such disabled equipment was supposed to be towed away by Russian tow trucks driven by drivers mobilized explicitly for this purpose. However, this was not done until seven months into the war when Moscow announced a »partial mobilization.« Prior to the invasion, the Russian military leadership did not add heavy equipment maintenance crews to their infantry battalion complements either. The Russian tank and armored personnel drivers are trained mechanics – they are officially called »mechanic-drivers« as they can perform routine mechanical maintenance. However, they need additional help when things go wrong because they do not carry specialty equipment into battle and cannot hoist heavy machines or bend metal.

Further, for seven months, the Russian ground forces did not mobilize combat medics (they are called »sanitars« in the Russian tradition). These are medics who accompany troops into battle, give first aid to those wounded, and evacuate them from the battlefield. During the combat operations over the eight-month period from February to October 2022, the Russian ground forces did not have nearly enough combat medics, and the wounded were evacuated, if at all, by other combatants. In other words, for each wounded combatant, the Russian troops lost one or two additional soldiers who would withdraw from the battle to evacuate their wounded comrade. Battlefield commanders cannot simply leave their wounded men unattended or ignore their pleas for help – it creates a highly demoralizing factor for the others still engaged in a battle. Once evacuated, the wounded were sent to under-supplied and underfunded field and local hospitals that primarily relied on volunteers and fundraising efforts to provide necessary treatment (The Insider, 2023).

One of the most significant weaknesses of the 2022 structure of the Russian ground forces was the subject of leadership. Military organizations are by nature conservative everywhere, and even more so in Russia. Even if the structure of armed forces may change, the military ranks and respect and authority they carry do not necessarily change with it. The old, Soviet-style regiments were commanded by colonels or junior general officers, i. e., they were senior officers with significant

experience and authority. Historically, these military ranks also carry certain gravitas and charisma in the Russian armed forces. The Russian military reforms of 2008–2020 reduced the number of senior officers and assigned important posts to more junior officers. Majors and lieutenant colonels now commanded the battalion tactical groups, mid-level officers who were less influential and effective. In the context of the ongoing war in Ukraine, the Russian battalions initially suffered significant personnel and equipment losses. According to Russian officers' phone calls and Ukrainian intelligence intercepted and posted on YouTube in 2022, Russian battalion commanders were not at all effective at demanding and receiving replacement personnel and equipment. One officer even noted in the early days of the war that his battalion commander (traditionally called *kombat* in Russian) did not even know what their objective was and what they were supposed to be doing to start with.

The Soviet armed forces were created, trained, and maintained for a continental-scale infantry war (FM-100-2-1, 1984). The lessons of World War II and the creation and proliferation of strategic arms informed the Soviet armed force's doctrine and preparation in the second half of the 20th century. The Soviet leadership saw NATO, led by the United States, as its main enemy and expected to fight the next war with NATO troops somewhere in central-eastern Europe. The main Soviet army unit for ground operations was the mechanized infantry regiment, which numbered 2,500-2,800 troops in peacetime but was supposed to reach 3,000-3,500 personnel in wartime (FM-100-2-1, 1984). The planned wartime increase in personnel numbers was a tacit acknowledgment that, although massive and well-equipped, the Soviet regiment was not fully combat-ready for a protracted war. The Soviet infantry regiments and other units in the Soviet army were supposed to be enhanced by adding personnel with professionals that were not required in peacetime or were only required in small numbers. There are many professions that support contemporary large-scale military campaigns, such as communications technicians, combat medics and medical personnel, engineers and builders, mechanics, metalworkers, fuel management specialists, tow-truck drivers, etc. The Soviet army doctrine also envisioned requisitioning civilian equipment and vehicles during wartime, such as fuel and delivery trucks and construction and engineering equipment. Each Soviet battalion was rated to consume two trucks of fuel daily, and each infantry regiment had 3 to 4 battalions plus additional support units. Daily fuel consumption includes not only battle but driving to and from the battlefield and idling. This does not account for losses due to attacks on fuel vehicles and their personnel. In wartime, fuel trucks do not last very long – they are easy targets with soft armor – there can never be enough of them to support the fighters.

The Russian military reforms of 2008–2020 replaced these large, complex, and sluggish units with small and maneuverable tactical battalion groups. Theoretically, these new battalions or BTGs were supposed to be permanently battle-ready, meaning that they carried their own munition and fuel supply for immediate needs.

Additionally, it was not envisioned that the BTGs would be further enhanced by extra personnel and equipment in wartime. It is not that Russian military leaders were not aware of such needs during wartime – after all, most of them had been educated in Soviet military schools (Golz, 2019). However, they did not expect their reformed army to face such a strong challenge as they encountered in Ukraine. Having their new design guided by experiences from the small wars in the recent decades – Afghanistan, Chechnya, Georgia, Moldova, Tajikistan – caused them to forget or overlook essential lessons from large conventional wars (Golz, 2019). In addition, the reformed Russian battalions seemed to be entirely unprepared to deal with aerial drones. Not only did they fail to consider important lessons of the past, but they also failed to anticipate the threats of ongoing technological innovations (Pukhov, 2024).

The Russian army invaded Ukraine with the BTGs leading the charge, but unsurprisingly, they turned out to be battle-ready for only 2–3 days or as long as their own ammunition and fuel supplies lasted. Since they were not designed to be enhanced in wartime with additional personnel or additional equipment, after a few days of battle, they were not even capable of mounting defensive operations. Further, the invading battalions were not given proper communications and logistical support. The new Russian battalion formations were designed to fight with relatively unprepared, ill-equipped, and ill-trained opposition. However, when they encountered a battle-ready and determined armed force in Ukraine, they faltered, created chaos, and had to be rescued by paratroopers, long-range artillery, and the air force. The Russian paratroopers (better known in Russia by their force acronym VDV) were thrown everywhere on battlefields to fill in gaps or prevent a rout. However, as the paratroopers were not heavily armored or mechanized, they sustained severe losses, rendering most of their units not battleworthy (Urban, 2022).

The battle order of the Russian troops invading Ukraine further exacerbated the chaotic invasion phase of the war dubbed »special military operation« by Moscow. The battle order was so unusual that many observers, including Ukraine's leaders, did not believe the invasion was imminent a day before it commenced. Not only did the Russian units deployed at Ukraine's borders not form any recognizable battle formations, but they also did not appear to have troops in reserve. A combat-capable reserve force was a key element in the old Soviet doctrine – deployed behind the two echelons of the ground forces, the reserve force allowed for maximum flexibility and adaptability in both offensive and defensive operations (Mansfield, 1984). Indeed, the absence of a strategic reserve, or any reserve for that matter, became the loudest item in the topics of the complaints leveled against the Russian high command by Russian ultra-nationalists. The Russian command's inept and sluggish response to Ukraine's Kursk invasion of August 2024 was occasioned by the absence of a strategic or any combat-capable reserve in the Russian army (Psaropoulos, 2024). Remarkably, the Russian leadership dubbed the Kursk battle a »counter-terrorist operation« and continued to deny that anything was wrong with their ground force preparation (TASS, 2024).

When invading Ukraine, the largest country in Europe, the Russian command declined to follow the rules of conventional mechanized infantry operations. Instead of creating coherent front lines and advancing slowly and methodically, the Russian BTGs rushed toward various Ukrainian settlements, including Ukraine's capital city, sometimes deep into the enemy territory (Pukhov, 2024). The Russian ground forces attacked from all directions available to them by the local roads and geographic features. The quickest and farthest were the attacks from the north and northeast. The troops invading from the north, primarily from the territory of Belarus, quickly reached the outskirts of Kyiv. The troops advancing from the northeast, presumably in concert with the northern group, advanced deep into the Kharkiv region and surrounding areas. The attack from the east could not follow this new scenario because the entrenched Ukrainian troops stalled them in the Donbas region. The Russian attack from the south, the Crimean Peninsula, proved to be most effective in prosecuting the war objectives. Ukraine experienced the most significant defeat of the 2022 campaign in the south – the loss of Mariupol, the city controlling the land bridge between the previously Russian-occupied Crimea and Donbas, was the war's most significant setback.

As soon as the element of surprise was gone, the Ukrainian defenders halted and then started to inflict heavy damage on the invading Russian battalions. Once the quickly moving Russian units lost their mobility due to the lack of fuel, munitions, provisions, communication links, and, most importantly, Ukrainian resistance, they became increasingly overstretched, isolated, and vulnerable. Their advance and temporary control over various Ukrainian towns and villages resembled a chessboard at *Mittelspiel*. Subsequently, the Russian troops were disrupted by the *rasputitsa*, seasonal rains that visit the Dnipro River basin in the fall (Roza, 2022). Amazingly, it appears that this, too, was not anticipated by the Russian command: the uniforms and gear of the Russian infantrymen proved to be inadequate for the *rasputitsa* and the winter season that followed it so much that some even died of hypothermia (Potter, et. al. 2023).

The Russian battalions that took control of random settlements in the north and northeast of Ukraine in the first phase of the war became convenient targets for counterattacks, and they soon started experiencing massive losses. As the war progressed and the Ukrainians acquired more air defense systems, Russian efforts to support their pieces on the battlefield chessboard were extremely difficult and ineffective. When combat units on a battlefield resemble chess pieces in the middle of a chess match without a coherent front formation, the logistical lines for their support increase exponentially. To support their troops in Ukraine in spring 2022, Moscow had to come up with hundreds of additional helicopters, trucks, fuel trucks, and communication relay trucks and operate all these under constant enemy fire. Moscow never prepared this sort of logistical support for its troops – the Kremlin expected to win the war in a handful of days, and besides, the Russians did not have this much equipment and trained people to operate it. They had sent their battalions into battle as if they were highly competent special forces units that had to rely

primarily on their speed, the element of surprise, and military prowess to achieve a quick victory. When they failed, the war in Ukraine became a protracted series of battles for tactical gains or political victory points.

As soon as the element of surprise wore out, the Russian units found themselves stuck in locations where they managed to get before they ran out of fuel and, in most cases, ammunition. All functions of joint or combined operations failed so much that the Russian infantry units became prisoners of geographic features of their surrounding environment. It seemed that the Russians had done no intelligence preparation whatsoever before the invasion or that they were utterly incompetent. Comments on that effect were made in North American mass media during the early phases of the war. However, the primary reason the Russian operation was unraveled was the failure of their command and control function in joint operations. The battalion tactical groups were too dispersed in the operational area, and occupied locations not easily accessible by sustainment units. The Russian joint commanders could not even combine forces for numerical superiority. As a result, the invading Russian force went through a succession of commanding officers until October 2022, when General Sergey Surovikin started to organize defensive lines and withdrew troops from Kherson. By the time Surovikin was also relieved (and disappeared) due to his association with the Wagner rebellion in May 2023, the Russian troops had managed to organize heavily defended front lines.

3 DIALING BACK THE REFORMS

By mid-spring 2022, Russian military observers, supporters of the Kremlin's »special military operation,« understood that the Russian strategy in Ukraine had severe structural problems. Remarkably, Moscow initially tried to fix the army's structural problems by frequently changing commands and rotating general offices. It took a forced retreat from Kyiv and a rout in the Kharkiv region for the Russian military leadership to understand that their military reforms led to a dramatic failure in Ukraine, requiring an immediate and drastic change of strategy. Even President Putin had to acknowledge certain »weaknesses and shortcomings« in the Russian armed forces (Regnum, 2023).

The changes came in the fall of 2022. The Russian command stopped deploying troops in the battalion formations, and the Russian president announced »partial mobilization« of the reservists (Bowman, 2022). These changes signaled a transition to the old Soviet model of military operations, with the Russian ground forces in full strategic defensive mode. However, the change required time and space, and a combination of factors, including the winter season and the insufficiently equipped and supplied Ukrainian armed forces, allowed for a relatively successful transition. The Russians had to continue fighting and reform their mechanized infantry into a more conventional ground force. At that time, the hesitation by Ukraine's Western partners and the slow delivery of heavy equipment and ammunition to Ukraine gave the Russians enough space and time to make successful changes. Ukraine had

an excellent change in the second half of 2022 to end the war had they had enough heavy equipment and munitions. How and why Ukraine's Western partners refused essential aid is perhaps a subject for a separate study, but had Ukraine in 2022 been given the equipment and weapons they were allowed to have later in the war, the war could have ended by fall 2023 (Pukhov, 2024).

Ukraine's lost opportunity was a gain for Russia as they used it counter-reforms in their ground forces. Still, the changes were significant and dangerous to undertake during ongoing battles. They would not have happened successfully and in a timely manner as they did without Prigozhin's Wagner group. Wagner's months-long storm of Bakhmut, a relatively insignificant strategic outpost in Ukraine's Donbas region, kept Ukraine's armed forces occupied from late fall 2022 to spring 2023. Prigozhin's mercenaries, composed mostly of Russian convicts, sustained appalling losses estimated at 22 thousand killed, and 40 thousand wounded (Camut, 2023). However, Wagner did give the Russian ground forces enough breathing space to create layered ground defenses, this time by a textbook, against the anticipated Ukraine's 2023 spring-summer offensive. And it worked.

The Russian army's return to a traditional battle formation and defensive strategy in 2023 made the task of Ukraine reclaiming its territories extremely difficult. By spring 2023, the Russian military deployed hundreds of thousands of mines, very likely more than a million, across all lines of contact with Ukraine's armed forces. These were both anti-tank and anti-personnel, buried and scattered, installed by sappers and deployed remotely (Russia has an advanced remote mine-laying system, *Zemledelye*). The Russian military engineers constructed hundreds of kilometers of anti-personnel and anti-tank trenches and concrete strongholds or *ukreprayons*. Some key towns in the Donbas region were completely surrounded by defensive structures resembling medieval fortresses (Segura, 2023). If they were constructed under Soviet specifications, they are rated to withstand nuclear blasts. These layered defensive installations were accompanied by traditional anti-tank hedgehogs, assault guns, artillery batteries, and army aviation. The changes designed to return the Russian ground forces to their old structure and modes of operation were successful enough to repel the much-anticipated Ukrainian counteroffensive of 2023. In 2023, the Ukrainian forces still lacked the necessary equipment in sufficient numbers to inflict significant damage on Russian defenses. They had no air force to speak of, very limited army aviation, and no long-range weapons. Ukraine did achieve modest success against the well-fortified Russian positions but at the cost of high losses among its troops.

Carl von Clausewitz's assertion that defense is a stronger form of warfare with negative aims once again proved correct in the Russo-Ukraine war. As soon as Russia transitioned to a strategic defensive posture, its operational success improved. By the ground campaign of 2023, the Russian mechanized infantry units were sufficiently reorganized to improve their effectiveness considerably compared to the 2022 performance. At the same time, Russia lost a significant

number of its best troops in 2022, while the 2023 cohort was mostly composed of »temporarily mobilized« civilians and convicts. After forming a unified front line, the Russian ground forces were observed to have better command and control and fires. At the same time, logistical support became more coherent and stable. The Russian armed forces still lacked significantly in the protection function, which became evident through high casualty rates, even though the rates were less than those sustained in 2022.

Conclusion On February 24, 2022, Russia attacked Ukraine, planning a short and victorious war with a new pro-Russian regime in Kyiv. Despite what its planners expected, the Ukraine war turned out to be an old-fashioned clash of mass armies aided by contemporary surveillance and targeting technology. As the speed and military prowess of Russian special units failed to produce desirable results and the invasion settled into a protracted ground war, Russia's special units turned out to be nothing but light infantry undersupplied and ill-equipped to defend themselves. At the same time, the defenders of Ukraine used what little they had in addition to limited supplies obtained in the West to inflict significant defeat on the Russian invader.

In the battles of 2022, Ukraine's armed forces fully exploited the weaknesses demonstrated by their adversary. The key vulnerability of the invading Russian army was its profound dysfunction in command and control. Aside from a couple of exceptions, the Russian command could not control its troops due to the lack of reliable communication links and secure lines for intelligence transmission. This dysfunction in command and control profoundly affected sustainment – a 40-mile-long traffic jam of supply vehicles north of Kyiv was a great visual representation of that. The failed sustainment operations affected everything that the Russian troops needed on the battlefield to survive, let alone fight and win. As a result, the Russian battalions that had invaded Ukraine from the north and northeast soon got their fires' function disrupted, essentially rendering many units not battleworthy.

The Russian high command did find a fix to its immediate problems by November 2022. The fix was relatively easy to find – the old Soviet method of organizing ground forces was still available, but its re-adoption still required time and a vital breathing space. Wagner mercenary groups' mindless battle for Bakhmut from July 2022 to May 2023 gave the Russian regular forces that breathing space. Russia's re-adoption of Soviet strategy marked a new reality for Ukraine and its allies. It also outlined the opportunities missed and changes in Moscow's military thinking. Most crucially, it allowed the Russian ground forces to absorb Ukraine's attempts to liberate the country in 2023 and launch its own offensive operations in 2024. The armed forces of Ukraine could no longer breach the Russian defensive lines without mass casualties, which they less readily sustain than their Russian enemy. Ukraine had a golden opportunity to rout the Russian invaders in 2022, and they would have managed it had they had enough proper equipment and ammunition.

Ukraine's battle with Russia has continued to face challenging conditions due to internal and external factors. Internally, the choice made for the so-called »counteroffensive« campaign in 2023 was Kyiv's biggest mistake. External challenges were created for Ukraine by its Western allies due to irrational fears of supplying the country with proper heavy equipment, e. g., missiles, tanks, aircraft, etc. The picture changed somewhat in 2024, but the damage to the morale and resilience of Ukraine's armed forces had been done. Still, in the first seven months of 2024, Ukraine's ill-supported army was outgunned by Russia's much larger force, which only got better organized, led, and supplied. In addition, the Russians managed to blunt many advanced Western weapons or make them outright useless. Many precision strike systems deployed by Ukraine were only effective for a couple of weeks, after which the Russians would adapt and defeat their precision-guiding and targeting instruments by electronic warfare. Russians further perfected their technology of GPS spoofing and jamming by denying whole swaths of frontline landmass to GPS-assisted targeting and guiding action (Zorri and Kessler, 2024).

To break the deadlock, relieve its besieged forces, raise the morale among the troops and general public, and find new venues of usefulness for the advanced weapons, Ukraine's high command initiated a surprise incursion into Russia's Kursk district. The incursion across the border by Ukrainian troops on August 6 2024, was initially viewed as a relatively minor raid by observers. However, as the Russian defenses collapsed within hours, Ukrainian troops gained around 1000 square kilometers of Russian land within a week. The Kursk offensive also exposed weaknesses in the Russian operational planning, specifically the absence of a combat-capable reserve force. The fact that the Russian command had to send infantry units assigned to the country's Space Force, whose regular duty is to safeguard Russia's strategic weapons and equipment, further demonstrates the level of stress Ukraine's surprise attack induced on the ill-prepared Russian defenses.

The success of the Kursk operation demonstrated that the Ukrainian armed forces did not lose their warfighting spirit or capabilities. However, with their ability to sustain the gained initiative now diminished, the long-term success of the Ukrainian armed forces' offensive operations remains in doubt. On the other hand, the Russian ground forces' return to the Soviet-era deep battle formations has strengthened their ability to perform offensive operations that produce limited but steady gains, albeit with significant casualties.

The Russian leaders started the large-scale invasion Ukraine war, threatening the nation with retribution and schooling of historic proportions. As their intended victim turned out to be strong and resilient, Moscow changed its tune, now claiming to be defending the motherland from potential NATO aggression. This claim is as disingenuous as their 2022 charges of Ukraine's offenses were imaginary. Had they feared NATO or anticipated a war with NATO troops, they would not have transformed the ground forces created precisely for that purpose by the Soviets into something entirely unprepared and untrained for continental-scale warfare. The Russian military

reforms of 2008–2020 changed that ground force into smaller units that were mobile and flexible but only suited to be effective against a smaller opposition force that was not conventionally armed and supplied. The result of the reforms turned out to be entirely ineffective and unsuitable for conventional large-scale ground operations, as the failure of the key joint operation functions demonstrated soon after the beginning of the full-scale invasion. However, with the counter-reforms implemented, the old Soviet deep battle theory once again demonstrated its utility for mechanized infantry operations. Henceforth, Russia is expected to remain committed to its operational variants in the long run.

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E-mail: lacha.tchantouridze.civ@ndu.edu

ORCID ID: 0000-0003-2380-053X