THE BATTLE OF KYIV
– ASPECTS REGARDING THE CONDUCT OF MILITARY OPERATIONS AT TACTICAL LEVEL –

Major Senior Instructor Claudiu Valer NISTORESCU, PhD Candidate

"Carol I" National Defence University, Bucharest

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The military operations conducted on the territory of Ukraine during the conflict started by the Russian Federation on 24 February 2022 show that the chances for large-scale combat operations in Europe have significantly increased. Consequently, the way those operations are carried out must be carefully reconsidered. Adapting to the requirements of the modern battlefield requires a rapid multi-domain integration of new technologies and modern weapon systems. Therefore, doctrinal changes are required. There is no doubt that the Battle of Kiev is a valuable source of information for military leaders, regarding the conduct of military operations at each level. Therefore, a pertinent analysis in relation to the factors that have contributed to the battle's outcome could be very helpful.

The main objective of the analysis is to highlight lessons on the topic of planning and carrying out military operations at tactical level. It emphasises both the determining factors for the failure of the Russian offensive and the features that gave the Ukrainian forces the upper hand, ensuring the successful defence operation. The research methodology is based on the qualitative evaluation of the available information, to enable an assessment of the battle from the combat functions perspective with the aim to identify possible gaps in Western armies' way to carry out combat operations.

Keywords: combat operations; urban environment; new weapon systems; tactical implications; battlefield;

INTRODUCTION

In the morning of 24 February 2022, the whole world found out that the Russian Federation's launched a ground invasion of Ukraine. Despite the inherent risks and costs of a large-scale combat operation and in a context marked by a detailed exposure of the Russians' likely plans and courses of action, the Russian Federation decided to achieve its political goals through the so-called *special military operation* (Kagan, Bugayova, Barros, Stepanenko, Clark, 2021, p. 8). Consequently, for the first time after the Second World War, conventional combat operations were conducted on Europe's soil. The conflict put up into scene two conventional military forces, extremely lethal, apparently sufficiently determined and capable of multi-domain operations.

Taking in consideration the significant quantitative differences between Russian and Ukrainian forces, as well as the qualitative and technological gap regarding weapons systems, and military equipment, the Western's experts estimated a rapid defeat of the Ukrainians. The assumption that the overwhelming combat power of the approximately 105 Battalion Tactical Group/BTG deployed to Ukraine's borders would generate the decisive conditions for an easy defeat of the Ukrainian forces proved to be false. Achieving air supremacy in the early days of the conflict, an essential requirement for the success of ground operations, has also failed (Rice, Dan, 2022).

Several Western analyses regarding Russians' military options in Ukraine have identified the capital and other major urban centres as important military objectives. Therefore, seizing those objectives was essential to generate Ukraine's political collapse, affecting the armed forces' will to fight and also demoralising local population. Another assessment of the Institute for the Study of War/ISW, released just before the start of the conflict, indicated Kyiv as the main objective on the North Axis of advance from Belarus (Kagan, Bugayova, Barros, Stepanenko, Clark, 2021, p. 11). The same publication evaluated the importance of this objective, both for the Russian's operations and for the Ukrainians' necessity to preserve their main source of physical and moral power.

In the initial phase of the conflict, the Russian offensive indeed confirmed the estimates regarding their advance towards Kyiv. Western intelligence, as well as several military research institutes, has estimated that the Ukrainian capital will most likely capitulate within 72 hours (Watling, Reynolds, 2022, p. 1). President Zelensky was given the opportunity to leave the country, but his decision to stay transformed the city into one of Ukraine's centres of gravity. On 2 March 2022, the Royal United Service Institute for Defence and Security Studies/RUSI emphasised that *"It is only a matter of time before Russian forces reach and complete the encirclement of Kyiv"* (Davies, 2022). However, on 22 March, in the daily update regarding the conduct of military operations, ISW was assessing that Russian forces from Kyiv's area of operations most likely lost initiative and adopted defensive positions. That was the culmination point of the Russian forces' offensive operation (Kagan, 2022).

The battle for Kyiv, no matter how long the war will last, will most likely remain an symbolic episode of this armed conflict. It could be considered the *"turning point"* that transformed the Russian *blitzkrieg* into a war of attrition. Therefore, this battle will remain one of the benchmarks for the planning and execution of large-scale combat operations in the future, especially in severely restricted environments such as the urban one.

Thus, the study's main objective is to identify valuable lessons for future military leaders about this tactical confrontation between two near-peer adversaries. The manner in which tactics, techniques and procedures must be adapted to the battlefield's new requirements, as well as the implications generated by the new weapon systems constitute the subsequent objectives of this analysis. The research methodology is based on the qualitative analysis of several documents and studies considered to be relevant in the field of military art. The information regarding the conduct of operations comes from the periodic evaluations of international research institutions, experts' opinions, intelligence estimates and analyses managed by the North Atlantic Alliance and its members. The weapon systems' characteristics and equipment data come from the information provided by the developing companies. We need to emphasise that in spite of the available information, this approach analyses the military operations in the Kyiv area from a tactical perspective. The identification of the aspects and factors that influenced the operations' planning and execution of the combat forces also aims to find some lessons and consequently improve the operation process.

It should be noted that there still is the possibility that some information is distorted, biased or incomplete. And this is valid taking in consideration the need to preserve the operational security. The tendency of the belligerents to exaggerate and/or diminishing the effects or impact of some actions for propaganda purposes could be a reason for the inaccuracy of some data, as well as the aim to preserve the combatants' morale. Therefore, we point out once again the need to exclusively consider authentic and credible bibliographic sources.

THE BATTLE SCENE AND THE MILESTONES REGARDING THE PLANNING AND EXECUTION OF COMBAT OPERATIONS IN THE KYIV AREA OF OPERATIONS

Kyiv is an approximately 840 square kilometres size city and a population of nearly 3 million people. Its size is twice the one of Bucharest. It is located on the east and west banks of the Dnieper River. This natural obstacle is crossing the city from north to south and basically divides it into two large cities, with the ability to support each other in military operations. Most of the cities have a layout on the banks of a major river and this becomes a characteristic of large urban agglomerations. Therefore, there are major implications in terms of planning and conducting combat operations, both offensive and defensive ones. A hilly and wooded terrain is surrounding the city. The watercourses that converge to the Dnieper River in the northern area and the artificial lakes make offensive operations more difficult and provide the defending forces with an advantage.

The moment of the attack was carefully chosen. The Russian military planners relied on a rapid and forceful advance along the main lines of communication, with the possibility of manoeuvring outside them, exploiting the frozen ground conditions. The perspective of extending operations until the arrival of the spring was certainly out of the question, due to the swampy terrain north of Kyiv. Obviously, the Russian tried to avoid the *rasputița* that trapped the Guderian's tanks in the fall of 1941.

Ground attack on Russia's Northern axis of advance toward Kyiv was foreseeable. As a consequence, the forces were deployed as follows:

- on the Belarus-Kyiv Axis, 15 to 20,000 soldiers on the Western bank of the Dnieper River, in four armoured regiments;
- on the North-East Kyiv Axis, an approximately two-division sized force with the purpose to seize the capital by travelling through the Chernihiv and Sumy's districts (Vershinin, 2022).

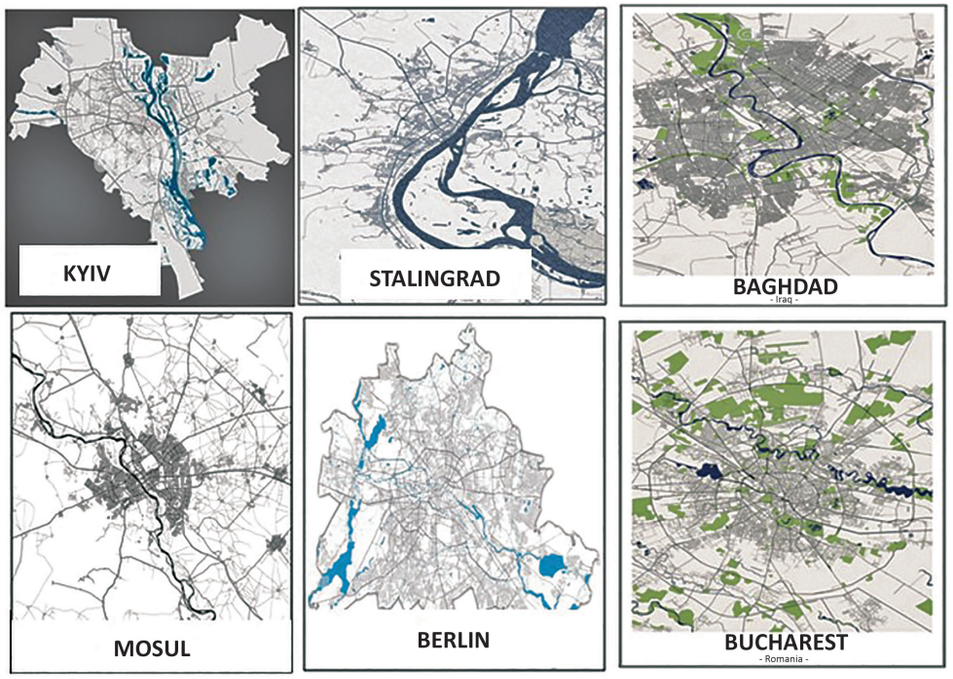

Figure no. 1: Cities on riverbanks
(https://freevectormaps.com/, retrieved on 21 August 2022).

The coordination and synchronisation of those forces was a major challenge for the Russians commanders, given the hardship of the terrain, the line of communication's insufficiency and the Ukrainian army's resistance in depth. The failure to meet those manoeuvring warfare's requirements would have led to the exposure of the Russian formations' flanks on the riverbanks. Therefore, the Russian forces paid special attention to those aspects, at least in the initial phase of the operation. It is very likely that the planners of the so-called *special military operation* took in consideration several erroneous assumptions regarding the Ukrainians' fighting power, their determination and will to fight, as well as the local population's disposition to support Russian forces. However, certainly the planning of the operations at the operational level took in consideration the achievement of several objectives in order to ensure the premise for success. Assessing the modus operandi of the forces assigned to conquer the capital city, from the operational art perspective, it is obvious that the Russian military planners set certain main decisive

prerequisites to be met in order for their goals to be accomplished. In my opinion, those decisive conditions include:

- obtaining air dominance in the Kyiv area of operations, in particular by neutralising Ukrainian air defences;
- occupying and controlling the Antonov airport located in the city of Hostomel, west of Kyiv, in order to create an air bridgehead to sustain further operations;
- seizing the localities around Kiev and maintaining control over them as an essential condition for securing the lines of communication and ensure an efficient logistics' flow;
- capturing and controlling Chernihiv and Nizhyn, two large railway nodes, in order to facilitate the flow of resources from the east to Kyiv.

Undoubtedly, seizing a large city like Kyiv is not easy due to the hardship of offensive operations in urban terrain. Urban operations impose many challenges to ground forces that conduct offensive activities. Large cities make these operations difficult, due to the complexity of the terrain, the ability to absorb the shock of offensive actions and by inflicting attrition on the attacker. The urban terrain gives a tactical advantage to the defender, allowing those forces to build an in-depth, cohesive defence. Usually, the terrain's fragmentation generates the conditions for several simultaneous tactical clashes. Thus, relative combat power superiority is difficult to achieve. The three-dimensional character of the urban terrain requires a methodical approach to the operations and consequently they are time and resource consuming. The urban environment amplifies soldiers' physiological pressure and the rate of casualties is also exacerbated in this type of environment, both for the armed forces and the local population. An analysis of the Battle for Mosul (16 October 2016 – 17 February 2017) highlights several aspects that underline the difficulty of urban combat operations. These observations could be considered lessons learned and refer to: the impossibility of complete isolation of the city, the increasing pressure in time on the attacker and during their advance into the depth of the defence, the loss of initiative by the offensive forces once they entered town. The assessment also emphasises that the dense urban environment facilitates the support of operations and the achievement of objectives directly depends on the support of the population (Arnold, Fiore, 2022).

It is difficult to determine whether the Russian forces engaged in the operations to capture Kiev considered these aspects in their planning and preparing activities. Most likely, based on the information they had, they did not assume the possibility of extending the battle in time. The failure to achieve those decisive conditions to complete their objectives generated many other frustrations at the tactical level. And those frustrations severely diminished the combat power of the Russian forces.

The Battle for Kyiv expanded in time and space, and after a few weeks from the beginning of the operation, the Russian forces deployed in the Kiev area had to hold the offensive and consolidate their positions. By reaching the culminating moment, Russian forces needed to shift from an offensive to a defensive posture. In the offensive operations, a force reaches the culminating point in three distinct situations:

1. when the force no longer has fresh forces to go into battle in order to continue the offensive operation;
2. the logistic system is ineffective, and the forces' supply activities are no longer possible;
3. when the combat power of the attacker is exceeded by the defending forces' combat power.

Despite the fact that the force's ratio was a real advantage for the Russian forces, reaching up to 10:1 in some critical situations, the Ukrainian forces' combat power was most likely superior. It could be estimated that the failure of the offensive was largely a direct consequence of the insufficiency of fresh forces necessary to develop the offensive, as well as a deficient logistical system.

Regardless of the errors made by the Russian commanders when planning and carrying out the operation, one of the main causes of their defeat were the effectiveness of the Ukrainian forces' resolute defence. On the night of 22-23 February, based on valuable information about the Russia's imminent attack, the Ukrainians redeployed forces from their initial positions, along the Belarus-Kyiv Axis, thereby misleading the Russians about the future combat disposal (Rice, 2022). By organising a defence in-depth concentrated on the key terrain, Ukrainian forces drew the enemy's forces into several killing areas. Over there, they were blocked, pinned-down and subsequently destroyed by ground mobile detachments, massed artillery fire and strikes of the Bayraktar TB 2 systems. The decisive moments, such as preventing the Russians to create an air bridgehead at Hostomel, the Brovary's ambush, the battles of Moschun Forest or the clashes in the Ivankyiv, Bucha and Irpin areas created the premises for successful defensive operations. Also, the

ingenious use of terrain and infrastructure allowed the Ukrainian forces to gain a position of advantage in space and time. Finally, there were able to repel the attacker and recapture the occupied territory. A relevant example is the controlled flooding and the temporary rising of the rivers in the Northeast of the city causing drastically effects for the Russian forces' mobility and their logistic capabilities.

IDENTIFIED LESSONS REGARDING THE PLANNING AND EXECUTION OF COMBAT OPERATIONS AT THE TACTICAL LEVEL

It should be mentioned that there is not a strictly time and space framing for the Battle for Kyiv. Many analyses identify 24 February as the moment of its start. And most likely the battle ended in early April with the regaining of the lost territories by Ukrainian forces. From a spatial perspective, the decisive moments of this confrontation are located inside the city's adjacent areas. Although, the attacking forces reached positions about 10 km from the city centre, they failed to penetrate the defence systems and were stopped in the outskirts of Kyiv.

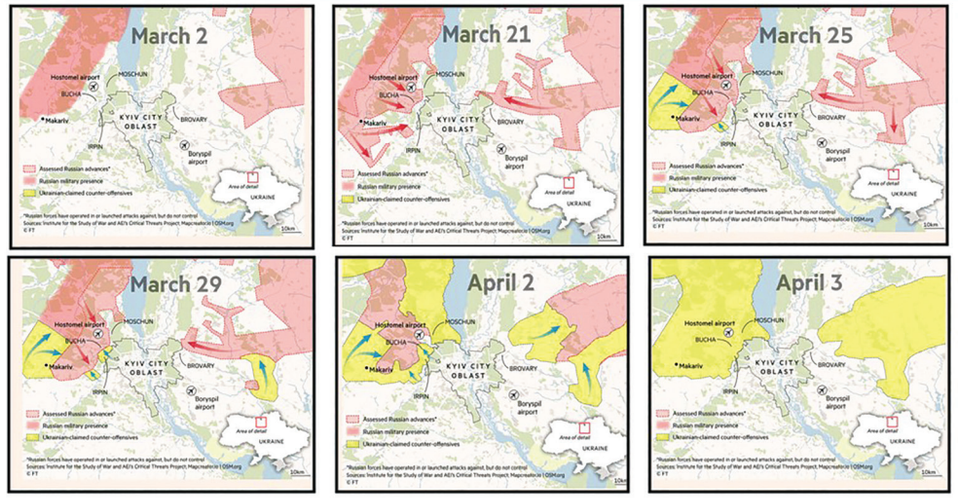

Figure no. 2: Conduct of operations on the Kyiv Axis of effort
(https://www.understandingwar.org retrieved on 21 September 2022)

It should be emphasised, once again, that the study is mainly focused on the relevant aspects regarding tactical activities conducted in the Kyiv area of operations. The analysis of several critical situations that generated the outcome of the battle enabled the identifying of interesting information. The identified

lessons are grouped in relation to the combat functions. We have also identified some relevant aspects related to the force structure and composition, new weapon systems' exploitation, soldiers' morale and will to fight.

Force Structure and Composition

The backbone of the Russian ground forces in the Kyiv area of operation has been a structure based on the Battalion Tactical Group/BTG format. This kind of tactical unit is one of the solutions identified by the Russians after the Russo-Chechen wars. It was developed after the conflict in Georgia in 2008 and its main purpose is obtaining a flexible unit with sufficient combat power to conduct manoeuvre operations. This transformation proved to be effective in Eastern Ukraine conflicts during the 2014 conflict in Donbas. The operational framework and operations' requirements specific to low-scale and low-intensity conflicts facilitated successful operations in case of BTGs employment. Therefore, their development was continuous and official data shows that the Russian Federation had 66 BTGs in 2016 (Grau, Bartles, 2022), 136 in 2019 (Ramm, 2019, p. 25) and about 168 in 2021 (Ibid.).

The BTG's structure and composition is usually based on the organic mechanised or motorised infantry battalion. The unit is reinforced with both manoeuvre and combat support elements and logistical support as follows: 1-2 tank companies, 1 self-propelled artillery battery and/or 1 multiple rocket launcher system/MLRS battery, 1 anti-tank battery, 1 air defence company, 1 combat engineer company, 1 armoured reconnaissance company, electronic warfare/EW capabilities, unmanned aerial systems/UAS capabilities, and additional logistics support elements (Keith, Oliker, Nichiporuk, 2019, p. 32). Even if this kind of unit seems to be a robust and lethal structure, it proved to be difficult to integrate it into major ground operations. Consequently, Russian BTGs proved to be ineffective in the initial phase of the Russian-Ukrainian conflict. By extensively using this type of units, the fighting power of their higher echelon units was consequently diminished, as well as their ability to integrate and coordinate the actions of those BTGs.

For several reasons, some political and others tactical ones, the Ukrainian forces were not into battle position during the night of 23 to 24 February. The city, apparently, was not prepared for defence. However, the capital's defence plan ensured the capacity to swiftly build a versatile force able to successfully repeal the attack. The regular formations having an adequate level of training received the rapid augmentation of the territorial defence units formed during the mobilisation process. Those units deployed into combat positions around the city and blocked

the keys of the terrain. The need for rapidly increasing fighting power through mobilising the local population in order to create territorial defence units forced the Ukrainian commanders to deploy professional personnel to ensure an appropriate level of training for the recruits. These initiatives create adequate conditions for recruits to effectively handle their basic weapon systems as assault rifles, mortars, anti-tank guided missile systems or MANPAD air defence systems (Reynolds, Watling, 2022, p. 17). Moreover, the Ukrainian defence system in the Kyiv area was consolidated by the use of mobile and small-sized tactical structures that operated mainly in sensitive points in order to conduct attacks on Russian armoured formations and logistical units or to coordinate the fires of own forces.

Command and Control

The inefficiency of the Russian command and control/C2 system during their attempt to seize Kyiv is well-known. This fact has significantly contributed to their overall failure. Having in mind the aim to realise an adequate analysis about how C2 was integrated to operations, I have tried to answer the following research question: *"Which were the main factors that contribute to an ineffective C2 for the Russian ground forces?"*

Undoubtedly, there are many reasons for the Russian C2 failure and it is obvious that an exhaustive answer is not possible. However, several relevant aspects were identified. First of all, it should be highlighted the existence of a diminished capability to plan and conduct large-scale combat operations at the brigade and division level. The existing dysfunctions in the Russian operational planning process come from their philosophy of command. A detailed command philosophy does not give the subordinate commanders the chance to be creative in pursuing of their objectives. Usually, *"the solution"* for a specific problem is provided by the higher echelon and therefore the answer to the question *"What is the purpose of the operation?"* becomes irrelevant. Many times, the Russians field commanders were facing situations where they strictly received directives about the way that a mission must be accomplished.

In a comprehensive study about the Russian way to fight, Lester W. Grau and Charles K. Bartles identified another factor that justifies the Russian's approach regarding the planning of operations at the tactical level. By evaluating personnel categories, the authors conclude that the ground forces of the Russian Army do not have enough staff officers, especially at the tactical level of the operations and the available non-commissioned officers are not adequately integrated

in the units' chain of command. As a consequence, this reality creates the conditions for an overuse phenomenon of the disposable officers (Grau, Bartles, 2016, p. 9).

The problem was partially solved by dispatching staff officers in support of BTGs from the higher echelons. Even this solution was functional during the small-scale operations from Eastern Ukraine, it has accentuated the problems related with the ability to plan and coordinate large-scale operations.

The Battle for Kyiv validates the existing deficiencies regarding divisions and brigades' capabilities to conduct offensive operations. The battalion tactical groups were independently engaged into the battle without an adequate and coherent support. The successive engagement of Russian BTGs in combat, especially in urban clashes, generates the gradual decrease in their combat power (ISW, 2022).

Those problems related with the coordination and synchronisation of the operations at the divisional level caused a direct involvement of the high-ranking officers, including army and army corps commanders. As a consequence, they moved very close to the frontline and gave Ukrainians the chance to eliminate them through precise artillery fires targeting command posts or snipers actions.

The communication system planned and executed by the Russian forces was also poor on the Belarus-Kyiv Axis. Intelligence indicates that they extensively used high-frequency radio stations, easy to intercept and cellular phones as an alternative to their military equipments. Moreover, the Russian forces did not have GPS type navigation systems and they relied on classical outdated maps. The Russian electronic warfare/EW was successful in the very beginning of the confrontation, but the effectiveness of those operations significantly decreased after the first week of combat. The failure to properly securing the lines of communications hampered the dislocations of EW systems to the frontline due to the risk of capturing them. Therefore, Ukrainians gained the chance for a better coordination of their own actions and the opportunity to foresee the Russian plans using interceptions. (Cranny-Evans, Withington, 2022).

On the other hand, the Ukraine Army's C2 system proved to be more flexible and efficient than the Russian one. Ukrainian's concept of operations tried to avoid patterns in the C2 projection. Therefore, they chose where the tactical command post should be deployed. In order to confirm this supposition, I will mention the media information that announced the Russian strikes on schools and local institutions around Kyiv, in the very beginning of the conflict. Those strikes most likely targeted Ukraine's C2 system, especially the CPs, but also logistics facilities

and ammo warehouses. Taking in consideration that both armies' doctrines include the same principles regarding combat disposal layout, those targets were predictable and therefore Ukraine's commanders took in consideration a second best option regarding the location of sensitive combat disposal elements. A Western-based mission command philosophy allowed Ukrainians to preserve the C2 system despite the Russians multiple attempts to disrupt it through EW operations and precision munitions strikes. As a consequence, it could be concluded that freedom of movement and disciplined initiative at the tactical level ensured Ukraine's chances for survival in the first days of the war.

Intelligence

Despite the constant effort of the covert Russian intelligence officers to provide reasonable information regarding the determining factor for the military operations, the ground forces on the Belarus-Kyiv Axis did not have them. Thus, the intelligence preparation of the battlefield was complete without knowing the essential elements necessary for determining the enemy's probable course of actions. There was also not enough time to make a viable assessment about the enemy's capabilities, terrain and weather implications and local population ability to influence the operation. The available 72 hours to plan the air assault operation to seize the Hostomel Airport as well as the approximately 24 hours ensured for the BTGs planning process did not cover the necessary time requirements (Watling, Reynolds, 2022, p. 3).

Ukrainian's forces managed to obtain a relative informational superiority taking advantage of a terrain's attentive analysis in order to foresee the enemy's options. A thorough reconnaissance allowed them to identify the key terrain like avenues of approaches, ambushes favourable areas, easy to flood terrain. These aspects facilitated a cohesive in-depth defence with successive positions that absorbed the shock and the energy of the Russian offensive actions. By covering key terrain with ISR sensors, Ukraine's forces obtained essential information about the enemy's courses of actions and consequently an accurate localisation of enemy forces was possible. The local population constantly reported about the enemy's activities in the occupied territories. Ukrainian intelligence verified the information and passed it to the conventional forces in order to take further actions. The communication's interception has also allowed Ukrainians to take advantage and to outrun their enemy regarding informational and decision-making cycles.

Fires and Manoeuvre

Taking in consideration the doctrine's stipulations, it should be highlighted that fires and manoeuvre are separately described but they are also strongly related. The *joint action* in land environment is the result of the fires and manoeuvre's combination with the contribution of information activities and CIMIC. This kind of action is designed to strike both the enemy's combat capabilities, their will to fight and the understanding of the situation. It is directed through the intelligence and command and control and supported by the protection and sustainment functions (AJP 3-2, 2022, p. 44). Bearing in mind these theoretical aspects, I chose to address in an integrated manner the way fires and manoeuvre where used in the Battle of Kyiv.

The Russian forces ability to conduct manoeuvre operations was severely affected by the lack of time for planning and appropriate preparations. The plan for the seizure of Hostomel Airport was made in less than 72 hours and the ground forces had even less of this amount of time. The lack of information about the Ukrainian resistance hampered both the Russian's ability to manoeuvre and fires capabilities and the way in which they were allocated. This caused the failure of the air assault detachment tasked by VDV[1].

A reinforced company-level unit was tasked to seize the Antonov Airport in the morning of 24 February in an attempt to exploit the shock and surprise of this kind of action. However, the forces of the 4th Rapid Reaction Brigade had swiftly counterattacked and liberated the airport until the last hours of the day, forcing the Russian forces to withdraw in the surrounding forests. Even if the Russian forces managed to recapture the airport with the support of the ground units, it was impossible to build an air bridgehead in order to develop further operations. Consequently, the attacker, by losing the effects of surprise and the initiative, reduced his chances to seize the city (Kofsky, 2022).

The assessment of this part of the battle emphasises the fact that the Russian lack of heavy weapons and inadequate air defence protection generated the failure in keeping the airport under their occupation. Also, it is true that the late junction with manoeuvre ground forces amplified the chances for failure of the air assault element. In conclusion, mention should be made that the airborne and air assault operation must be carefully planned and synchronised with the actions conducted by other forces tasked to contribute to the overall objective of a major operation.

[1] Vozdushno-desantnye voyska Rossii/Russian Airborne Forces.

The ground units' operations were also far from the plan's directives. Despite a rapid advance along the Belarus-Kyiv Axis facilitated by the Ukrainian's poor defence in the border area, the Russian BTGs gradually diminished their combat power. Their forces were permanently exposed to the enemy's raids and ambushes conducted along the lines of communications. The frequently exposure to artillery and UAS fires contributed to the degradation of BTGs combat power, too. The lack of combat support units, especially long range artillery and medium range air defence systems, did not allow the Russian BTGs to effectively counter this threats. Moreover, the existence of serious logistic dysfunctions regarding resupplying with ammo, daily ratios and carburant put a significant pressure to the forces engaged in operation. Several battalions managed to breach the Ukrainian defence and reached the outskirts of Kyiv, but the difficulty to reinforce them made their gains irrelevant on the battlefield (Jones, 2022).

The Ukrainian layered and in-depth defence system dramatically reduced the Russian ground forces ability to manoeuvre. The defence of the key terrain along the main roads toward Kyiv enabled the Ukrainian forces to hamper the BTGs movement. The ambushes conducted along communication lines created opportunities to block and fix the Russian armoured formations. The FGM-148 Javelin anti-tank guided missiles system allowed Ukrainian forces to strike and stop Russian armoured columns, targeting their security elements. The Next Generation Light Antitank Weapon/NLAW was successfully employed in urban terrain where the capability to hit targets from a short distance proved to be decisively. As a conclusion, the necessary conditions to destroy the Russian forces with the concentrated fire of artillery and UAS were met by their opponent.

The failure to capture the capital within days by the unified action of airborne and BTGs' forces generated an orientation to a methodical approach with the purpose to seize the city. Thus, the Russian forces tried to isolate it and block the main lines of communication. Taking in consideration the huge size of the city and the great number of adjacent roads existing nearby, sealing the city was impossible due to the lack of sufficient forces.

Moreover, in their attempt to obtain a large number of armoured units, the Russian commanders did not ensure sufficient infantry elements within the BTGs formation (Spencer, 2022). Considering this aspect, I appreciate that the insufficiency of medium and light infantry proved to be fatal in urban battles. Thus, the lack of security elements to ensure an appropriate *screening* task of the armoured columns created the opportunity to ambush them in choke points.

A good example is the destruction of a Russian armoured column in vicinity of the Brovary village, on the East side of the capital. The *hit and run* tactics conducted by small and mobile Ukrainian units facilitated the permanent harassment of the attacker. The insufficient quantity of infantry inside the BTGs formation generated several problems, such as the impossibility to secure the lines of communication, to control the key terrain, the inadequate protection of tanks and heavy infantry formation in restricted areas. Moreover, the unified action of the infantry and tanks units, which is essential in urban terrain, did not work properly during the offensive operation to capture the city.

The destruction of bridges situate on the Dnieper's tributary rivers was another tactical action that restricted Russians' ability to manoeuvre and gave Ukrainians the chance to target their forces with artillery and UAS capabilities. The controlled destruction of the infrastructure was synchronised with the controlled flooding of the terrain and raising the rivers' debit in order to impede the obstacle's crossing. That generated traffic jams and huge agglomeration of forces, creating the opportunity for the Ukrainian forces to mass the artillery fires that produced heavy losses. The crossing operation was impacted by the lack of crossing means. The initial plan of the operation did not anticipate the need to conduct river crossing operations. To make things worse, the controlled flooding transformed the terrain in a huge marsh, where the armours transit was severely restricted. Consequently, the advantage of the frozen soil was practically cancelled by Ukrainian forces (Spencer, Collins, 2022). Several points of crossing were intentionally left open and they were used by the Russian forces that were then ambushed. The destruction of a column of one hundred armoured vehicles in the vicinity of Bucha and Irpin towns became a well-know example of this kind of tactical operation (Bowen, 2022).

By analysing the factors that influenced the fires and manoeuvre in the Battle for Kyiv, it could be emphasised that the cooperation between state institutions is fundamental from the national defence perspective. The wisely manipulation of the infrastructures is not possible without civilian expertise and the integration of fires and manoeuvre in an urban environment requires a solid knowledge about critical urban objectives.

Force Protection

One of the Ukrainians' biggest challenges during the Battle for Kyiv was to ensure their ability to operate in the electromagnetic spectrum. Knowing the Russians' EW capabilities, Ukrainian military planners anticipated the enemy's superiority in this

operating environment. An EW specialist of the Ukrainians stated: *"We thought we were going to be denied the entire electromagnetic spectrum around Kyiv"* (Watling, Reynolds, 2022, p. 2). Indeed, in the first days of the conflict, the effects of the EW operations significantly reduced the defence capacity of the Ukrainians, creating the conditions for airborne infiltration and the rapid advance of ground units. However, as Russian forces advanced into Ukrainian territory, the EW effects were no longer so effective. The unsecured lines of communication frustrated the deployment of these capabilities to the contact zone due to real risk of being destroyed or captured.

Despite the initial annihilation of a large number of radars and air defence means, the Ukrainian air defences system could not be completely neutralised. Ukrainian soldiers successfully used MANPAD systems to target Russian attack helicopters tasked for Close Air Support/CAS and Close Combat Attack/CCA missions. The protection of air capabilities designated for airborne or resupply operations was not properly carried out, causing the Russian forces to abandon them due to very high losses, in particular because of the portable anti-aircraft missile systems. On the other hand, the Russian BTGs did not have adequate air defence capabilities and therefore the armoured units were frequently exposed to UAS attacks.

Another aspect that should be brought to attention concerns ballistic protection requirements. The effectiveness of the 30 mm cannons and heavy machine guns mounted on the Russian armoured vehicles was reported in many situations by the Ukrainian personnel. Their reports showed that these weapon systems were extremely lethal in close combat. In conclusion, their use in combat could bring the next advantages: the need to use of a smaller number of dismounted personnel and higher power of penetration of light armour, buildings and shelters. As a conclusion, we believe the following aspects are essential: blocking and engaging these capabilities before they can reach their weapons' effective range and building (especially in the urban environment) adequate shelters using materials that neutralise the penetrating projectiles' effect.

The effects of artillery strikes could be amplified in the urban environment, due to a congested electromagnetic environment that affects the accuracy of precision guided munitions. Taking into consideration that the complete evacuation of the civilian population in a large urban area like Kiev is unlikely, military commanders and local authorities must consider providing shelters and bunkers for them. When the population must use their own homes as a shelter, barricading the windows with sandbags could be useful because the glass from broken windows

could cause serious injuries to both civilians and military personnel during shelling. The large number of civilian casualties could overwhelm the medical system and obstruct military operations.

The manner in which the tactical movement of the Russian BTGs' manoeuvring elements was conducted did not integrate the requirements of force protection. The lack of forces deployed to secure the terrain and the main routes of advance created opportunities for the Ukrainians to strike the armoured formations without any warning. The security of stationary forces, including the ground manoeuvre units and logistical support elements, was inadequate due to the insufficiency of guard detachments. The unsecured signal communications further deepened this problem and a lot of information about the location, composition and intentions of the Russian forces was compromised. Therefore, from this perspective, the need to ensure a proper mix of forces to perform security operations both to contact and rear areas of operations should be once again emphasised.

Sustainment

The logistic system of the Russian ground forces is significantly based on the railway system due to the need to transport heavy equipments that belongs to them. Recent western studies and analysis reveal that manoeuvre ground units rely on an insufficient number of wheeled trucks and special purpose trucks for transportation of food, fuel and equipments. Moreover, the poor technical conditions and the lack of spare parts deepen the existing problems in resupplying process and maintenance activities. These are the main factors that explained the failures of the Russian logistical system in support of the offensive in the Kyiv area of operation.

The railway network East and West of the Dnieper is deficient, limiting the possibilities to supply the manoeuvre units. Obtaining a viable chain of supply from the East depended on the timely take over and control of two main railway junctions in the cities of Chernihiv and Nizhyn. But those objectives were not achieved by the Russian forces. All these aspects were carefully analysed by the Ukrainians and therefore action was taken to obstruct the railway links with Russia and Belarus, from the very first days of the conflict. These objectives were completed by destroying several railway junctions or bridges along the main routes of supply (Gibson, 2022).

By managing to create a bridgehead at Hostomel Airport, the Russian forces would have achieved the capability to reinforce the battlefield with both manoeuvre forces and logistical elements needed to sustain their operations. The existing road

network North of Kyiv is precarious and did not allow the projection of parallel supply axes, with bypasses to avoid choke points if necessary. The Western Dnieper's tributaries narrowed the movement of forces, forcing them to use bridges over the watercourses. The destruction of these key points by the defending forces blocked and slowed down not only the manoeuvre forces, but also the Russian logistical support units. The logistical convoys were not adequately defended, especially against aerial threats. Thus, they were attacked by Ukrainian mobile units that managed to block them and causing heavy losses. As a consequence, those targeted logistical elements created havoc in their attempts to leave the battlefield and blocked the inflow of the reserves, being impossible to use them in battle (SCM Globe, *Russian Logistics for the Invasion of Ukraine,* 2022). Moreover, the forces engaged in battle, especially the artillery structures, were deprived of the necessary ammunition and therefore their fighting power was considerably reduced. The images of tanks abandoned on the battlefield due to lack of fuel or self-propelled artillery systems being pulled back to resupply with ammunition reveals the inefficiency of the Russian supply system (Alexander Stott, *The Weakening Logistics Chain of the Russo-Ukrainian War: An Unfolding Case Study,* 2022).

The last aspect I wish to highlight is the inability of Russian forces to neutralise and destroy the Ukrainian logistics system. Although far from being perfect, Ukrainian logistics properly support the defence operations, ensuring the forces' survival in the critical moments of the battle. The invader did not have the capabilities to identify the depots, nor could they block the ground lines of communication to interrupt the flow of supplies. Most likely, the Ukrainians prepared in advance several warehouses and caches, ensuring a swift resupply in the main areas of operations. The urban environment as well as the terrain configuration in the areas adjacent to the city allowed the Ukrainians to project a decentralised and flexible logistics system.

The New Weapon Systems Integration and Exploitation in the Battle for Kyiv

The Battle for Kyiv could be considered the stage for testing and confirming the utility of new weapon systems. The effects of Western man-portable Anti-Tank Guided Missile systems (Javelin and NLAW) have become notorious. The versatility of these weapons is given both by the ingenious capabilities to hit the targets and by their facile deployment and utilisation. The *top-attack* or *flying-top-attack*

options allowed hitting the Russian armoured vehicles on the top area where their vulnerability is increased. The *fire-and-forget* function of these modern weapon systems creates the possibility to avoid countermeasures taken by the enemy, while the *mid-flight-abort-mission* function makes it easy to correct the missile's flight or abort the mission and choose another target (https://www.lockheedmartin.com/en-us/products/javelin.html). The British NLAW system's capability to activate the missile at less than 20 meters allowed it to be successfully used in the congested urban environment (https://www.saab.com/products/nlaw).

The Russian military's response came quickly in order to counter these real threats to their own armoured capabilities. With the purpose of diminishing the destructive effects of anti-tank missiles, they improvised and mounted the so-called *"iron cages"* on top of their armoured vehicles. This innovation has proven to be ineffective against missiles equipped with *dual tandem warheads* that are able to penetrate additional protection systems, including the respective improvisations (Parker, Horton, Neff, 2022).

Another capability that is worth mentioning is the Turkish Bayraktar TB2 UAS. This system won its reputation related to its effectiveness in combat operations in the Nagorno-Karabakh conflict in 2020. The Azerbaijani Army used these capabilities and managed to destroy the Armenian air defence system, subsequently annihilating their armoured capabilities (Hecht, 2022). In the initial phase of the conflict in Ukraine, its armed forces ingeniously exploit these systems to target sensitive objectives: command posts, artillery capabilities and air defence systems, armoured formations or logistical support elements. In the area around Kyiv, these modern capabilities proved to be extremely lethal due to their infiltration's abilities, especially when the lines of communication were not secured properly. Also, the use of precision guided munitions as a striking vector increased the lethality and effectiveness of these systems.

Loitering munitions, also known as *kamikaze drones*, is another new weapon system used in Ukraine. These striking vectors are part from a separate, unique category of weapons that combines the characteristics of both drones and conventional munitions. According to their capabilities in terms of range and the type of projectile, loitering munitions could produce effects at tactical, operative or strategic level. Their ability *"to loiter"* above the battlefield for a period of time searching their target gives them their unique characteristic (Deveraux Brennan; 2022). Especially Ukrainian special operations forces have used these capabilities in

order to engage vulnerable combat disposal elements: command posts and isolated communications facilities/systems, observation and guard posts, stationary isolated vehicles, disembarked personnel, patrolling elements.

There is no doubt that these innovative systems already have an impact on military operations. They will have in the future too, and this impact depends on the current situation and the system's quantity available to accomplish a specific task. My opinion is that this type of ammunition can become an extremely useful capability in the future, especially in restricted environments such as urban or mountainous terrain. Therefore, the manner in which these capabilities were used during the Russian-Ukrainian conflict must be carefully studied, and the Western armies must take into account both the opportunity to be equipped with such systems and finding ways to counter them.

The utility of these weapon systems on the modern battlefield is highlighted by the fact that both combatants have sought to ingeniously use them, in order to gain advantage. The forces engaged in the offensive used the Russian versions with almost the same technology. The frequency of their use increased as the conflict extended over time, demonstrating both the need for their integration into operations and the Russian forces' ability to adapt.

Soldiers' Morale and Their Will to Fight

Many times, military scientists and experts try to make predictions about the outcome of a specific battle. They usually consider aspects involving the quantity and quality of the military capabilities, the implications of the existent technologies, the capacity to sustain a military effort in time and the quality of the army's doctrine. The physical and conceptual components of the combat power are relatively easy to assess and definitely have a significant contribution to obtaining success on the battlefield. Nevertheless, the combat power's morale component has the same importance. The soldiers' motivation and determination as well as the high quality of the leadership could be decisive factors, regardless of the existing differences at the physical and conceptual components.

In an attempt to keep the secrecy, during the operation planning process, the Russian commanders did not disseminate sufficient information regarding their objectives, concept of operation and the possibility that it might take more time and take place on a bigger area. They failed to understand that mission command is really a force multiplier on the modern battlefield and facing an adaptable and highly motivated enemy requires initiative and freedom of action.

Taking in consideration the facts, I consider that a framework based only on *line of departure-attack direction-final objective* is no longer adequate.

Moreover, the dysfunctional communications system, the lack of high-performance radio stations and GPS systems generated confusion among the Russian units and soldiers. This reality contributed to a gradual degradation of the morale. At the same time, an inefficient chain of supply put pressure on ground operations, and the evident shortages had a negative impact on the motivation and confidence of Russian soldiers. The Russian planners did not take into account the possibility that the battle would last longer and therefore the Russian BTGs had minimal resources at the start of the operation. By replacing the casualties with poorly motivated conscripts (this fact is not admitted by the Russian Federation), the Russian commanders further deepened the existing morale problems.

The situation of the Ukrainian forces was quite different from that of the Russians. A study by the RAND Corporation emphasises that the soldiers' will to fight is the most important factor on the battlefield (RAND Co., 2018, p. 1). This is highlighted once again by the battle's analysis. The Ukrainian military forces, both the regular and the territorial defence troops formed by mobilised civilians, showed courage and spirit of sacrifice on the battlefield. They successfully resisted the offensive operations of one of the largest military powers in the world (Jenkins, 2022). As a conclusion, the role of the soldiers' morale in prevailing on the battlefield should be outlined once again. The higher morale of the soldiers is, the bigger the chances to obtain the needed will to fight are.

CONCLUSIONS

In conclusion, the idea that the initial failure of the Russian forces is not an accidental event looks to be a pertinent one. There is no doubt that the foreign aids given to the Ukrainians in terms of intelligence support and modern weapon systems had a significant impact on the course of the war. The transformation of Ukrainian Armed Forces started in 2014, the high training standard as well as determination and motivation of the soldiers made the difference between opponents.

Another essential aspect that becomes a determining factor of the Russian military failure seizing Kyiv is represented by its *how to fight* philosophy. The Russian military doctrine, otherwise built on the same foundations as most doctrines of modern armies including Western ones, has not proven its effectiveness in the Battle for Kyiv. And this is not the first time. The Great Red Army failed lamentably in a confrontation with the smaller but more determined Finnish Army. That conflict

remains known throughout history as the Winter War (30 November 1939 – 13 March 1940), when the Soviet armoured formations were blocked and systematically destroyed in front of the Manerheim Line or in the frozen forests north of Lake Ladoga. The German offensive planned within the Barbarossa Operation was stopped with heavy losses and costs just in front of Moscow in the winter of 1941. Only one year later were the Soviets able to defeat their enemy at Stalingrad, a turning point that indeed changed the course of war on the Eastern Front. The 40th Soviet Army, in a unique configuration and with a unique combat power at that time, was slowly torn down by mujahedeen guerrillas during the Russo-Afghan's ten years conflict began in 1979. The Battle of Grozny in late 1994 highlighted the serious dysfunctions of the post Cold War Russian armed forces, especially regarding the command and control system, poor training, the difficulty to effectively execute integrated air-land operations, and the vulnerabilities of armoured capabilities. Within hours, the 131st Motorised Rifle Brigade also known as the *Maikop Brigade* was destroyed by the Chechen resistance, resulting approximately 800 dead soldiers and 150 armoured vehicles damaged, many of them totally destroyed (Galeotti, 2015, p. 37). The success in Georgia was largely due to the inability of the Georgians to meet the decisive conditions for the achievement of their operational objectives. Numerical and technological superiority was also an asset for the Russian Army in that conflict and was exploited in a climate where owns losses and collateral damages were not considered important (Modern War Institute, 2018).

Although, many times the Russia's involvement in military conflicts rather revealed its forces *"Potemkin Army"* condition, their ability to quickly adapt should not be underestimated. Stalin replaced the incompetent commanders on the Finnish front and massed more tanks, artillery and aviation on the battlefield and finally the victory was obtained. The encirclement and destruction of the 6th German Army at Stalingrad, as a result of an extensive enveloping manoeuvre, pointed the moment when the transition to a counteroffensive was feasible. The soldiers of the 40th Army gradually adapted their tactics to the requirements of guerrilla warfare and they significantly improved their ability to survive on the battlefield. The transformation of the Russian Army after the Russian-Chechen wars generated the premises for the integration of new capabilities at the tactical and the operational level like EW, PSYOPS, UAS, long-range fires. Therefore, the hybrid operations conducted in 2014 were a success.

A reliable evidence regarding the Russian Army's flexibility is the way in which the combat operations in Eastern and Southern Ukraine were conducted after failing to seize Kyiv. The initial ineffective Blietzkrieg was replaced by a methodical approach in Donbas, including the area of the cities of Izium, Severodonetsk and Lisichansk. This type of approach is remembering JFC Fuller's words that comprising the essence First World War's doctrine: *"artillery conquers, infantry occupies"*. In the opening speech at RUSI Land Warfare Conference on 28 June 2022, the British Army's Chief of Staff, General Patrick Sanders, drew attention about the Russian Army's capabilities to adapt. Therefore, underestimating the Russian Army is a premature action according to General Sanders' point of view (https://www.army.mod.uk/news-and-events/news/2022/06/rusi-land-warfare-conference-cgs-speech/).

In the end, I would like to highlight several points of interest that are relevant for the Western armies' transformation and adaptation process to the changing character of the war and its operational requirements, as they result from this conflict. The Russian-Ukrainian conflict exemplified that the numerical superiority needed to obtain mass in the battle's decisive points is not sufficient to prevail. The force ratio was 10 to 1 in favour of the Russian forces. However, their inability to achieve superior combat power, as well as to sustain prolonged operations, ultimately generated the failure of the offensive.

Contemporary, ground large-scale combat operations do not necessarily involve linear and contiguous areas of operations. However, it is almost impossible to organise this kind of AO, given the forces' insufficiency and the weapon systems' lethality. The Battle for Kiev involved multiple clashes and skirmishes in the key terrain areas, creating non-linear and non-contiguous areas of operations. The operations' approach for this situation requires the use of mobile forces, but also of long-range and high-precision weapon systems. The accurate and timely information are essential as well as the operational flexibility. But the more important thing to the success in modern combat operations is the mental flexibility of commanders.

The poor experience of Western armies in terms of conventional combat operations generates an acute need to make a transition in terms of conceptual thinking and also the mental attitude to these kinds of operations. The tactical commanders must be aware of the differences between counterinsurgency and combat operations, particularly the increased risk of mass casualties in the latter. In this context, the commander's contribution to preserve unit's morale

is paramount. The higher echelon's frustrations in exercising a close control of the operation as well as its limited support capabilities must be known and understand by the field commanders. Therefore, the subordinates' initiative facilitated through a mission command based philosophy is essential in a climate characterised by friction, uncertainty and ambiguity specific to the armed conflicts.

The Ukrainians' mobilisation process in order to build their force required for the capital's defence could be another lesson. The insufficiency of the regular forces determinated a requirement to create a hybrid force where the reservists and volunteers were quickly integrated within the conventional forces and the Special Forces' elements were involved at the tactical level supporting their actions during the critical moments. In conclusion, the Western armies must have in mind to create a *tool* that allows the mobilisation of the necessary human resources to complement the regular forces. Maintaining a minimum reserve that could be adjusted according to the context is also an imperative.

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The deficiencies in the planning of the offensive operation and the Russians' ill execution of the plan should not undermine the intensity of the fighting or the sacrifice and professionalism of the Ukrainian forces. No matter what the outcome of the war will be the Battle for Kyiv will remain a landmark of this conflict and even for contemporary conventional warfare. The battle was decisive, due to the strategic importance of Kyiv for both opponents. The capture of the capital was essential for the Russian Federation in order to gain control over the entire country. The ability to resist and repel the aggressor from the capital area was crucial for the Ukrainians and it was a proof of their political and military determination not to give up without fighting. The Russians' superiority deceived them to gamble on a swift operation, planned and executed *"by the book"*. But, the Ukrainians read that book too.

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