

# **Some Lessons From Command And Control (C2) In The Russian-Ukrainian War**

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## **I. Introduction**

Features of the Command and Control (C2) has played one of the key roles in the Russian-Ukrainian war, giving advantages to the Ukrainian military and improving its effectiveness of reconnaissance and fire. A more effective management system of the Armed Forces of Ukraine, built on NATO standards, enabled the units to operate more autonomously and effectively against the prevailing enemy, and in the conditions of a constantly changing situation. On the other hand, the top-down approach of the Russian military management system, the lack of a unified command of the operation, the weakness of tactical intelligence and other factors led to a series of failures of Russia on the battlefield.

The purpose of this article is to analyze the peculiarities of Command and Control of the Armed Forces of Ukraine and Russia and the factors that influenced their effectiveness.

## **II. General approaches to the Command and Control**

According to «Mission Command: Command and Control of Army Forces», Combat power consists of eight elements: Leadership, Information, Command and Control (C2), Movement and Maneuver, Intelligence, Fires, Sustainment, and Protection (Figure 1).<sup>1</sup> Command

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<sup>1</sup> ADP 6-0, Mission Command: Command and Control of Army Forces,

and Control Warfighting Function is the related tasks and a system that enable commanders to synchronize and converge all mentioned elements of combat power. The primary purpose of the Command and Control Warfighting Function is to assist commanders in integrating the other elements of combat power (movement and maneuver, intelligence, fires, sustainment, protection, information and leadership) to achieve objectives and accomplish missions.

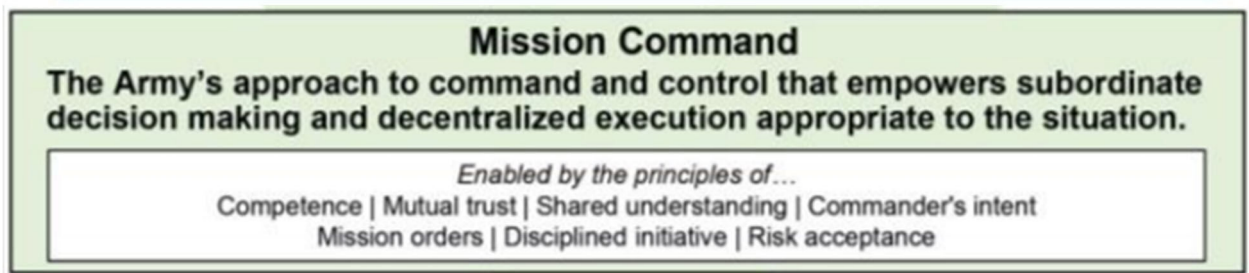
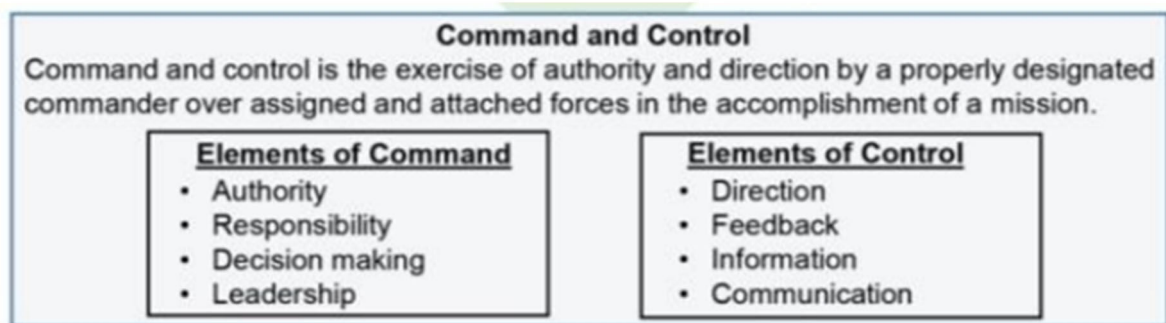
Command and Control is the exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission. Command and control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission.<sup>2</sup> The key point of Command and Control is the commander. Commanders assess situations, make decisions, and direct action. The key elements of Command and Control are: Authority; Responsibility; Decision making; and Leadership.

Through Command and Control, commanders provide purpose and direction to integrate all military activities towards a common goal - mission accomplishment. Successful execution requires Army forces to make and implement effective decisions faster than enemy forces. Therefore, the Army has adopted Mission Command as its approach to Command and Control that empowers subordinate decision making and decentralized execution appropriate to the situation.

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[https://irp.fas.org/doddir/army/adp6\\_0.pdf](https://irp.fas.org/doddir/army/adp6_0.pdf)

<sup>2</sup> William C. Barker, *Information Security*, NIST Special Publication 800-59, August 2023, <https://nvlpubs.nist.gov/nistpubs/Legacy/SP/nistspecialpublication800-59.pdf>



Source: ADP 6-0, *Mission Command: Command and Control of Army Forces*, [https://irp.fas.org/doddir/army/adp6\\_0.pdf](https://irp.fas.org/doddir/army/adp6_0.pdf).

**FIGURE 1: Command and Control power model**

Mission Command supports the Army's operational concept of unified land operations and its emphasis on seizing, retaining, and exploiting the initiative.

Mission Command is based on the following rules:

- War is chaotic and uncertain;
- No plan can account for every scenario; plans must change rapidly during the mission to accommodate changing situations.
- Subordinate commanders often have a better understanding of what is happening during combat and are likely to respond more

effectively to threats if they are allowed to make decisions and act on changing situations not considered in the original plan in order to achieve their commander's intent.

- Enemy forces may behave differently than expected, the route may become impassable, or units may expend supplies at an unexpected rate.<sup>3</sup>

Therefore, Mission Command helps commanders capitalize on subordinate ingenuity, innovation, and decision making to achieve the commander's intent when conditions change or current orders are no longer relevant. It requires subordinates who seek opportunities and commanders who accept risk for subordinates trying to meet their intent. Subordinate decision making and decentralized execution appropriate to the situation help manage uncertainty and enable necessary tempo at each echelon during operations.

### **III. Features of Command and Control of the Armed Forces of Russia**

In general, the Russian-Ukrainian war demonstrated the following features of Command and Control of the Russian Armed Forces:

First, at the strategic, operational, and tactical levels, the system of planning and commanding the troops was outdated and almost entirely dependent on the Soviet principle vertically - top-down approach - from the General Staff to the units. This did not allow the unit to act proactively, without a command from above, and practically fettered the actions of tactical units. As a result, the lack of leadership of junior commanders, strict vertical management system, top-down decision making, weak coordination between different types of troops (for example, between

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<sup>3</sup> *BSS6: The Battle Staff SMART book*, 6th Ed. (Plan, Prepare, Execute, & Assess Military Operations, 2020).

marines and paratroopers)<sup>4</sup> led to decrease of effectiveness Command and Control of the Russian Armed Forces.

The second feature was the lack of a single command of the operation. At the strategic level, a joint force command for the operation was not established and no joint force command and persons responsible for the operation were appointed. For a long time it was unclear who was in charge of the military operation. According to some sources, the head of the National Defense Management Center, colonel general Mikhail Mizintsev, handled this directly from Moscow. According to others, each military district received its own area of responsibility and acted there at its own peril and risk, without coordination among themselves.<sup>5</sup> From September 2022 to January 2023, the “Special Military Operation’s” commander was army general Sergey Surovikin, who at the same time remained the commander of the Air and Space Forces. In January 2023, Chief of the General Staff Gerasimov was appointed commander of the “Special military operation”, remaining in command of the General Staff. His deputies became the Commander-in-Chief of the Air and Space Forces, army general Serhey Surovikin, the Commander-in-Chief of the Ground Forces, army general Oleg Salyukov, as well as the Deputy Chief of the General Staff of the Russian Armed Forces, colonel-general Oleksiy Kim.

As a result, the operation was carried out without a single and joint command approach; lack of the necessary coordination in different parts of the battle area; the top-commanders responsible for the military operation

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<sup>4</sup> Maxim Shipenkov, “Ukraine war: Russia’s problems on the battlefield stem from failures at the top,” *The Conversation*, September 14, 2022, <https://theconversation.com/ukraine-war-russias-problems-on-the-battlefield-stem-from-failures-at-the-top-189916>.

<sup>5</sup> Соня Савина, “Какие слабости показала российская армия в Украине,” *Важные истории*, 13 апреля, 2022, <https://stories.media/opinions/2022/04/13/kakie-slabosti-pokazala-rossiiskaya-armiya-v-ukraine/>.

continued to occupy their regular positions, which dispersed their attention, and likely reduced the effectiveness of management.

Third, at the tactical level, battalion-tactical groups were created, but they turned out to be ineffective, since they did not have a sufficient amount of artillery, air defense equipment, and logistics. This made them ineffective as they were not independent but had to use the artillery and other means of the senior commander.<sup>6</sup>

Fourthly, the failure of tactical intelligence, which led to the lack of tactical awareness of unit commanders. This became possible due to the lack of tactical means of reconnaissance - drones. This led to a lack of initiative on the ground and the readiness to act quickly in a changing environment. As a result, in the event of unforeseen circumstances, battalion tactical groups stopped and waited for instructions from the senior commander, since they did not have enough intelligence information. Only six months into the war, the situation began to change and the Russian army began to buy drones massively.

Fifth, the absence of automated systems of command of the troops, which could ensure a network-centric warfare and a high speed of transmission of intelligence information. This led to a significant delay in planning the battle and responding to the rapidly changing situation.

Seventh, the poor training of junior officers, which forced Russian senior officers to move closer to the front line, as a result of which they died.<sup>7</sup> This led to the destruction of part of the elements of Russian

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<sup>6</sup> “Семь главных выводов о войне. Леденящие душу планы Кремля, которым не суждено было сбыться — что мы узнали из большого отчета RUSI, ” NV, 7 декабря 2022, <https://nv.ua/ukraine/events/rossiysko-ukrainskaya-voyna-sem-faktov-i-proschety-putina-i-pyat-uyazvimostey-armii-rf-otchet-rusi-50289007.html>.

<sup>7</sup> Tim Ripley, “Ukraine conflict: Russian military adapts command-and-control for Ukraine operations,” *JANES*, March 7, 2022, <https://www.janes.com/defence-news/news-detail/ukraine-conflict-russian-military-adapts-command-and-control-for-ukraine-operations>.

Command and Control, indicated in FIGURE 1 - control points and people, as well as to the deterioration of networks and processes.

## **IV. Features of Command and Control of the Armed Forces of Ukraine**

Command and Control of the Armed Forces of Ukraine has a number of features and differences from the Russian approach.

The main difference is a Joint Forces approach. The management structure of the Armed Forces of Ukraine is close to NATO standards, which implies the presence of a Joint Force approach. As a result of the military reform, a structure was approved in 2019-2020, according to which the General Staff and the Command of the Joint Forces are subordinate to the Commander-in-Chief of the Armed Forces (Figure 2).

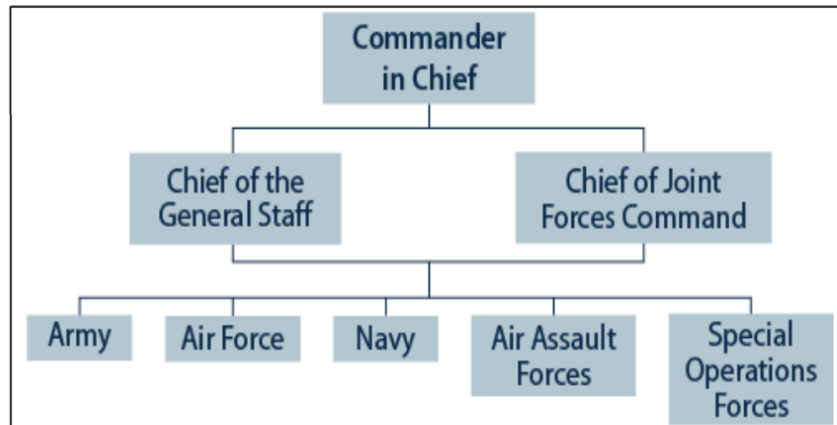
The General Staff is responsible for strategic and planning for the development, training, provision, and formation of the Armed Forces. The Joint Force Commander is responsible for operations. To carry out a specific operation, the General Staff places the troops necessary for the operation under the command of the Commander of the Joint Forces.<sup>8</sup>

This made it possible to: ensure a clear division of powers between the General Staff and the Joint Forces; increase the effectiveness of the management of the Joint Forces and their support by the General Staff.

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<sup>8</sup> “Ukrainian Armed Forces,” *Congressional Research Service (CRS)*, January 26, 2022, <https://crsreports.congress.gov/product/pdf/IF/IF11862>.





Source: “Ukrainian Armed Forces,” *Congressional Research Service (CRS)*, January 26, 2022, <https://crsreports.congress.gov/product/pdf/IF/IF11862>.

**FIGURE 2: Structure of the Ukrainian military command**

Secondly, the necessary tactical situational awareness of the commanders was ensured. This was facilitated by the presence of a large number of drones in tactical subdivisions in almost every platoon of the Ukrainian army. This, especially in the early stages of the war, provided intelligence as an important element of combat power and the conditions for effective Command and Control, and allowed well to create an effective Mission Command for decentralized execution according to the rapidly changing situation.

Thirdly, the application of systems of automated control of troops and communication. The following systems were implemented in Ukraine: “Dzvin” (C2 strategic level); “Delta” and “Kropyva” (C2 level battalion-company-platoon-separate piece of equipment), Hermes-C2 system.<sup>9</sup> For example, the tactical-level combat system “Kropyva” was introduced back in 2017-2018. It is designed to automate control systems at the level of battalion-company-platoon-separate piece of equipment. “Kropyva” helps to combine the means of reconnaissance, control and fire of different units

<sup>9</sup> Huw Williams and James Rands, “Ukraine conflict: Forces face recognition and tracking challenges,” *JANES*, February 28, 2022, <https://www.janes.com/defence-news/news-detail/ukraine-conflict-forces-face-recognition-and-tracking-challenges>.



of the Armed Forces of Ukraine and the National Guard into a single information field.<sup>10</sup>

The use of this Ukrainian combat system made it possible to reduce the deployment time of an artillery battery by five times, the time to hit an unplanned target is reduced by almost three times, and the time to open counter-battery fire - by ten times. To work with the combat system, you need to know the coordinates of the target and the location of your artillery battery and weather conditions.

Thus, the application of automatic control systems improved such elements of Command and Control as processes, decision-making, information and communication, and contributed to the improvement of the effectiveness of such an element of combat power as fire (Figure 1).

Fourth, Armed Forces of Ukraine has better training of junior commanders and sergeants, their readiness for greater initiative and conducting leadership courses with them. This was organized through civilian sector training programs - "Management and leadership in the military units" for junior officers. In 2019, classes were held for 20 brigades, including 700 people - junior and senior commanders. The questions included the organization of effective management, task setting, delegation of authority, exercises and theoretical blocks about team building, negotiation, etc. Practice took 60-70% of the entire leadership and management program, and sessions were held every month with results of changes in behavior and commander approaches checked.<sup>11</sup> In the same

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<sup>10</sup> "Бойова система управління тактичної ланки "Кропива" на службі ЗСУ та НГУ," Defense Express, July 6, 2020, [https://defence-ua.com/news/bojova\\_sistema\\_upravlinnja\\_taktichnoji\\_lanki\\_kropiva\\_na\\_sluzhbi\\_zsu\\_ta\\_ngu\\_foto-1129.html](https://defence-ua.com/news/bojova_sistema_upravlinnja_taktichnoji_lanki_kropiva_na_sluzhbi_zsu_ta_ngu_foto-1129.html).

<sup>11</sup> "Менеджмент для молодих командирів: як цивільні навчають військових бути лідерами," LB.ua, December 3, 2021, [https://lb.ua/society/2021/12/03/500056\\_menedzhment\\_molodih\\_komandiriv.html](https://lb.ua/society/2021/12/03/500056_menedzhment_molodih_komandiriv.html).

way, work was carried out with sergeants, - they were given more authority and responsibility, and a program was organized for their training in leadership issues. On the basis of the 197 Training Center for the training of sergeants of the Ukrainian Army, training for a period of up to two months on management activities was organized. Classes were conducted by instructors with experience in combat operations and who underwent multi-level training, including under the guidance of foreign instructors. After the outbreak of full-scale war, Ukraine's NATO partners also organized a series of training courses for sergeants in leadership, which significantly improved the quality of C2 on the ground, and provide an advantage over the enemy.<sup>12</sup> This allowed the Armed Forces of Ukraine to achieve a better level of Mission Command, which was created at the level up to and including the brigade.<sup>13</sup>

However, the Western approach also suffered some setbacks. During the preparation for the Ukrainian counteroffensive, while the Russians have a rigidly centralized command structure, the US trained the Ukrainians to empower senior enlisted men to make quick decisions on the battlefield and to use combined-arms tactics - simultaneous attacks by infantry, armored vehicles, and artillery.<sup>14</sup> At the same time, in the course of the Ukrainian counteroffensive in the summer of 2023, it was discovered that the Ukrainian military, which had undergone NATO training, suffered losses on minefields while trying to break through the defenses of the Russian troops, and eventually changed their tactics. They returned to their

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<sup>12</sup> “У Британії розпочалася підготовка молодших командирів ЗСУ,” Укрінформ, October 5, 2022, <https://www.ukrinform.ua/rubric-ato/3586250-u-britanii-rozpocalasa-pidgotovka-molodsih-komandiriv-zsu.html>.

<sup>13</sup> Source: expert discussion with an expert from the Army War College.

<sup>14</sup> Eric Schmitt and Helene Cooper, “Ukrainian Troops Trained by the West Stumble in Battle,” *The New York Times*, August 2, 2023, <https://www.nytimes.com/2023/08/02/us/politics/ukraine-troops-counteroffensive-training.html>.

traditional approach - long-term exhaustion of the enemy with artillery, drones, long-range strikes on command posts, logistics, infrastructure, degradation of Russian artillery (shaping operations), after which - the use of infantry to storm the enemy's trenches (decisive operation).<sup>15</sup>

The above raised doubts about the effectiveness of “US fighting methods”, at the same time, the reasons for the slowdown of Ukrainian offensive and significant losses probably are:

- The Russians equipped robust defense fortifications, dense mining of the area, which slowed down and restricted Ukrainian military units, with heavy military equipment in service;
- Lack of sufficient number of demining machines in Ukraine;
- A large number of anti-tank systems and artillery in the Russian armed forces, the dominance of Russian aviation near the frontline, which led to the destruction of Ukrainian tanks and armored vehicles.
- Lack of air support, due to which Ukraine was unable to significantly weaken Russian defenses and disrupt Russian command and control.
- Insufficient coordination between Ukrainian units, which may be a consequence of the fact that their training lasted only 4-6 weeks, in connection with which the establishment of unit cohesion was not sufficient<sup>16</sup>.

As a result, Russia’s superiority in artillery and aviation, dense mining of the terrain and equipping with anti-tank missiles and fortifications reduced the advantages of Western weapons and control systems, the use of which should have brought success to the Ukrainian military. This must be taken into account when conducting hostilities against an enemy that

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<sup>15</sup> Mike Martin, “How Ukraine changed its tactics to save its faltering counter-offensive,” *The Telegraph*, August 10, 2023, <https://www.telegraph.co.uk/world-news/2023/08/10/ukraine-changed-tactics-save-faltering-counter-offensive/>

<sup>16</sup> Eric Schmitt and Helene Cooper, “Ukrainian Troops Trained by the West Stumble in Battle,” *The New York Times*, August 2, 2023, <https://www.nytimes.com/2023/08/02/us/politics/ukraine-troops-counteroffensive-training.html>.

has a numerical advantage and a well-equipped defense.

## **V. Conclusions and Recommendations**

The advantages of Command and Control, demonstrated by the Russian-Ukrainian war, were the Joint Force approach, the provision of situational awareness and intelligence at the tactical level, the usage of Automated fire command and control system, the implication of the Mission Command approach (which gives much greater freedom to subordinate units). On the other hand, the lack of a clear management structure, lack of leadership of junior commanders, strict vertical management system, top-down decision making, weak coordination between different types of troops, a small number of intelligence tools, weak training of troops led to the weakening of Command and Control.

Secondly, Mission Command is a critical Command and Control enabler. Mission Command entails centralized planning but decentralized execution. Junior leaders understand the intent of their superiors and operate according to that intent, without asking for permission. It is sometimes called “disciplined disobedience”. The rigid, vertical Command and Control arrangements practiced in the Russian military are a significant handicap.

Thirdly, it is absolutely necessary to ensure the protection of command posts and their high maneuverability. Command posts need to be as small and as mobile as possible due to the threat from artillery, ballistic missiles, and drones. They also need to keep their electromagnetic signature as small as possible. According to some information Ukrainian battalion CPs are as few as seven people and they move twice per day.

At the same time, the advantages of the Western approach of

command and control can be significantly reduced in the case of complex offensive actions against well-equipped enemy defenses, which must be taken into account during planning and conducting operations.

To sum up, Taiwan should study what factors contributed to the improvement of Command and Control, and, if necessary, make adjustments to the system of commanding troops, provide the necessary intelligence and automated control systems, and make changes to the training of officers and noncommissioned officers.

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# **Some Lessons From Command And Control (C2) In The Russian-Ukrainian War**

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## **Abstract**

The Russian-Ukrainian war demonstrated that a number of factors significantly strengthened the Command and Control of the Ukrainian armed forces, in particular the creation of a Joint Force approach, high-level situational awareness and intelligence at the tactical level through the use of drones, the use of automated fire command and control systems, and the implication of the Mission Command approach (which gives much greater freedom to subordinate units). Also, deficiencies in Command and Control on the Russian side weakened its ability to effectively manage the battlefield, in particular, rigid vertical management system, top-down decision making, poor coordination between different types of combat units, a limited number of intelligence tools, lack of leadership of junior commanders, insufficient training of troops, etc. Also, important factors for Command and Control have become the survivability of control points, and their mobility and protection against high-precision weapons, artillery and attack drones.

**Keywords:** Russian-Ukrainian War, Command and Control, Mission Command, Situational Awareness