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As of December 2024, the Russo-Ukrainian war has been ongoing for eleven years. The phase of full-scale aggression has now reached two years and ten months. In the air, just as it was 100 years ago, a close Peace drifts on the cold winter wind — brought both by losses and by the deliberate efforts of our enemies. Strangely, not long ago, the same wind carried slogans of a swift Victory. Unfortunately, that Victory has yet to come. Of course, with the first rays of sun and warmth, we will understand that there will be no peace. Because in war, despite the wind, there is either defeat or Victory. To realise this earlier, before the warm winds arrive, we must understand the essence, meaning, and nature of war. Specifically, this war, which, through ignorance of its very nature, could become the cruellest act of violence of the 21st century.

How easy it was for Clausewitz*, without TikTok, Facebook, or the internet, to lock himself away in dusty library walls by candlelight, and between battles, to formulate the

* Carl von Clausewitz (1780–1831) was a Prussian military leader and reformer, best known for his military-theoretical work *On War*.

theory of war. And how difficult it is for us, having all these tools, to grasp the simple philosophical system of war. After all, he warned everyone: the theory of war itself cannot be a literal manual for action. One must seek principles that remain unchanged in all wars.

So, war — for us today — is not only an act of the utmost social violence but a struggle for survival and the future. On this basis, war can only end in either victory or defeat. This is perhaps the first and foremost principle of all wars, and it applies to us as well. Considering the current state of the war, especially since in 2024 Ukraine's confrontation with russia* has taken on the characteristics of a broader standoff involving China, North Korea, and Iran, we have no choice but to win. According to Clausewitz's philosophy, what does Victory mean in our war? I will take the liberty of outlining its components.

Victory in our war is possible under the following conditions:

- the Ukrainian people's capacity to resist and fight to preserve their own lives, the lives of their loved ones, and the survival of the nation itself;
- guaranteed and reliable international support;
- the military leadership's understanding of the nature of modern war, taking into account the principles that influence its development to form a unified and correct strategy;

* Here and below, the spelling of certain proper names used by the author of the foreword, V. Zaluzhnyi, has been retained.

- effective leadership of the nation in extremely difficult times.

Without considering all these components of Victory, having the absolute right as a former Commander-in-Chief of the Armed Forces of Ukraine, I will focus on the nature of modern war, leaving the formulation of strategy to those who hold that right today.

At a fundamental level, the modern battle is in a situation similar to that of World War I. In 2023, technology became the key factor that locked the Russo-Ukrainian war into a positional stalemate. This stalemate means an inability to solve operational tasks of advancing deep into the enemy's defence within a certain period. In both cases, the attacking side suffers losses incomparable to the potential gains and strategically loses because the defence capabilities far exceed the technical potential of the offence.

The shift from this deadlock on the battlefield caused by asymmetry favouring defence occurred at the end of 1917 with another technological breakthrough — the mass appearance of armoured vehicles and combat aircraft, along with corresponding changes in tactics and operational art. The coordinated use of tank units and aircraft made it possible again to break through the enemy's fortifications and make deep, operationally significant penetrations into their defence. I want to emphasise this to those who seek a swift victory. First, armaments and military technology develop. Then forms of use change, new types and branches of troops appear, and only after this do operationally and strategically significant victories occur. Unfortunately,

it does not happen the other way around. The emergence of a new branch of the military without fundamentally studying weapons, establishing forms and methods of use, and quality planning will not bring the desired peace.

...From 1917 up until the early 1970s, there was parity between offensive and defensive technology. This parity meant that successful offensive actions depended on the concentration of efforts or the effective organisation of their application. The only way to ensure that offensive operations were effective during this period was by seeking out better tactical and operational approaches (such as the Blitzkrieg doctrine during World War II) or by physically concentrating a very large number of strike assets and personnel on a very narrow section of the front line.

The situation shifted again in the 1970s when high-precision weapons and guided munitions entered the battlefield. Precision air defence systems, anti-tank guided missiles, and air-to-air, surface-to-air and surface-to-surface cruise missiles completely transformed the paradigm of war once again. With the advent of powerful electronic reconnaissance systems, aircraft gained the ability to keep the enemy at bay from over 100 km away, and air superiority began to depend on radar power and aircraft profile. A prime example of this is Operation Desert Storm in the Gulf in 1991.

The strategically significant effectiveness of precision weapons was made possible by a revolution in satellite technology — the emergence of remote Earth sensing technologies, the global GPS satellite navigation system, and satellite communications. It was the integration of satellite

communications into military command-and-control that enabled the development of situational awareness systems and the C4ISR* doctrine.

This technological breakthrough pushed combat operations beyond the boundaries of classic 20th-century warfare doctrine. A new principle emerged: inflicting maximum military and matériel damage on the enemy at minimal cost, both in defence and in offence. Meanwhile, precision weapon technology did not tip the scales in favour of either offensive or defensive operations, since technically it could be used with equal effectiveness in both. Precision weapons revealed a new dependency. The effectiveness of warfare became directly tied first and foremost to scientific and technological potential. Yet, just as during World War II, superiority was also determined by the quality of the troops' training and the level of operational artistry in their deployment.

The Russo-Ukrainian war that began in 2022 started within this historical technological cycle as a war involving the use of precision weaponry. Today, I can confidently state that overall, Ukraine has succeeded in being more effective — primarily due to a higher level of organisation, tactical application, and technological support from partner countries. Anti-tank guided missiles such as the FGM-148 Javelin, NLAW, and Stuhna-P became means of destroying armoured vehicles. Man-portable air defence systems like the FIM-92 Stinger and Igla prevented enemy aircraft from entering our airspace. R-360 Neptune

* Higher-level automated command and control system.

anti-ship missiles helped destroy the flagship of Russia's Black Sea Fleet, and the M142 HIMARS multiple-launch rocket system (MLRS) disrupted enemy logistics and contributed to the success of operations from April to November 2022, despite the enemy's numerical superiority. By the end of 2022, this historical technological cycle had come to an end, and from 2023 onwards, the war entered a stage resembling the stalemate of World War I.

This time, the deadlock has been due to at least two technological factors:

1. The rapid development of electronic warfare systems which has blocked the effective use of most guided munitions.
2. The battlefield has become saturated with tactical-level reconnaissance and strike drones. This has made movement across the battlefield impossible, thereby making it impossible to achieve operational and even tactical objectives.

Accordingly, based on the logic of technological development on the battlefield and current trends in the defence tech industry, an attempt may be made to forecast how the technology of war will evolve.

According to the logic previously outlined, the first thing we can expect in the next two years is the undeniable restoration of the parity between offence and defence, which will once again enable effective offensive operations to be conducted on the battlefield.

This will likely become possible thanks to the following trends that our experts have identified.

1. The impact of electronic warfare (EW) on intelligence assets and high-precision weapons is expected to be mitigated by a shift to alternative communication and data transmission channels that operate outside the radio-electronic spectrum of electromagnetic waves. These may include optical navigation channels, odometry based on digital maps of magnetic or radar fields of the Earth's surface, autonomous guidance using neural networks, laser communication technologies and so on. The development of equipment to destroy EW systems will also play a role. This will not eliminate EW from the battlefield, but it will significantly narrow its range of effective applications.
2. The emergence of capabilities for the physical destruction of the enemy's visual reconnaissance assets, particularly unmanned aerial systems at the operational and tactical levels, as well as stationary optical surveillance systems. This will be enabled by interceptor drones of all types, as well as laser technologies capable of blinding optical sensors.
3. Most importantly, once precision strike systems — primarily attack drones of all types — are scaled up and made more cheaply, with an extended range and increased autonomy, it will become possible to remotely wipe out enemy personnel and destroy weapons and military equipment at strongholds along the front line, and to disrupt supply chains and ensure effective logistical blockades. This will enable forces not only to drive the enemy out of defensive areas, but also to subsequently take control of positions that are, in effect, already abandoned.