

Artillery in the Drone Age: The New Face of War

a comprehensive analysis of how the conflict in Ukraine is fundamentally altering traditional land warfare. Artillery, the "king of the battlefield", is undergoing a forced evolution driven by drones, real-time data, and industrial capacity.

By Dr. Claudia Urbanovsky¹



combat. Artillery, once the undisputed king of the battlefield, now finds itself in a fight for survival. The old ways, massive barrages, static gun lines, and overwhelming firepower, are being challenged by a new reality: small, cheap drones can now destroy million-dollar howitzers in seconds, **and the side that controls information, not just firepower, holds the upper hand.**

This isn't just a Ukrainian problem. It's a wake-up call for NATO and the EU. The war in Ukraine is showing us what future conflicts will look like, and it's clear that if Western militaries don't adapt, they risk being overcome by adversaries who are already mastering the art of drone-age warfare.

The New Face of War

The battlefield is no longer what it used to be. In Ukraine, we are witnessing a revolution in warfare: drones, data, and digital networks are rewriting the rules of

The Data Revolution

For decades, Western armies have relied on what's called *network-centric warfare*, a system where tanks, planes, and artillery are linked together through digital

¹ Dr. Claudia Urbanovsky is a Technical Editor and defence studies specialist currently serving as Rédacteur Technique, chargé des études and teaching at the Institut des Hautes études de la Défense Nationale (IHEDN). She has extensive experience within NATO structures, having served at the État-Major Militaire International de l'OTAN as NATO Civil Standards Coordinator (A4/OF-4) and at the État-Major International de l'OTAN as Armaments Planning Officer (A3/OF-3). In industry, she worked as Technical Advisor for Rheinmetall Waffe Munition GmbH and previously led Rheinmetall Defence's representative offices in Minsk and Moscow. Since 2018 she is Senior Advisor at AOS, Ground Systems. Earlier in her career, she held positions with GIAT Industries and the Secrétariat général de la Défense nationale, as well as academic roles in Germany and France. She holds a Doctorate in Political Science (cum laude), advanced degrees in Soviet and East European Studies and International Law, and the First German State Examination in Law. A certified legal translator in English, French, and Russian, she has authored around 40 studies for the NATO, for the EDA and other defence institutions. She serves as a Lieutenant-Colonel in the French Army Citizen Reserve.

networks, sharing information to coordinate attacks. But Ukraine has proven that simply being connected isn't enough. The real advantage now lies in *data-centric warfare*, where information isn't just shared, it's instantly analysed, fused with other sources, and turned into action.

Ukraine's homegrown systems, like DELTA and GIS Arta, show how this works in practice. DELTA pulls together data from drones, electronic warfare reports, and artillery units into a single, real-time picture of the battlefield. GIS Arta, nicknamed the "Uber for Artillery," uses algorithms to assign fire missions in minutes rather than hours. These aren't just tools; they're game-changers, allowing a smaller, outgunned force to hold its own against a much larger enemy.

But traditional artillery, slow, static, and predictable, struggles in this new environment. Early in the war, Russian artillery parks, massed together in the old Soviet style, became easy targets for Ukrainian drones. Both sides have since learned to disperse their guns, moving constantly to avoid detection. The future of artillery isn't just about bigger guns or longer ranges, it's about becoming part of a digital ecosystem, where guns, drones, and AI work together in real time.

The Battle for the Future

Drones have changed everything. Cheap, expendable, and increasingly smart, they've turned the battlefield into a transparent killing zone where traditional advantages, like armour or air superiority, can be wiped out by a swarm of \$500 drones.

The numbers are staggering. Drones now account for up to 70% of Russian equipment losses in Ukraine. The Lancet, a Russian loitering munition, has destroyed hundreds of howitzers, HIMARS launchers, and other high-value



targets. But drones have their limits: they struggle in bad weather, carry small warheads, and can be jammed by electronic warfare.

That's where artillery still holds its ground. Despite the drone threat, Ukraine continues to fire thousands of 155mm shells every day. Why? Because while precision is valuable, volume is decisive. When Russia unleashes 45,000 shells in a single day, no stockpile of smart munitions can match that kind of firepower. Even controversial weapons like cluster munitions, banned by many Western nations, have proven their worth, delivering 5 to 15 times the lethality of standard shells in suppressing enemy forces

The Hybrid Future

Ukraine has become a real-world laboratory for the future of artillery, and three key lessons have emerged:

First, mobility is survival. Systems like the French CAESAR and Swedish Archer-mounted on wheels, able to fire and

relocate in minutes, have become the new standard. The American HIMARS, with its 92km-range rockets, has forced Russia to scatter its forces, weakening its logistics and making it harder to mass fires.

Second, unguided munitions are making a comeback. Despite all the talk of precision warfare, the sheer volume of fire still matters. Russia's ability to fire tens of thousands of shells a day has kept Ukraine on the defensive, proving that sometimes, **more is more**.

Third, drones and artillery are better together. The most effective Ukrainian units don't just use drones for reconnaissance; they integrate them directly into their artillery operations. FPV drones adjust fire in real time, while some units have even mounted 105mm howitzers on Humvees, creating fast-moving, drone-supported fire teams that can strike and disappear before the enemy can react.

The future of artillery isn't about choosing between precision and mass; it's about combining both. Networked artillery, embedded in a digital battlefield where AI predicts enemy movements and drones deny the enemy any safe haven, is the way forward.

Europe's Industrial Challenge

The war has exposed a harsh truth: Europe's defence industry wasn't ready for this. After decades of underinvestment, the continent's ability to produce artillery shells, especially the NATO-standard 155mm rounds, has fallen dangerously behind. As of 2024, Europe could only make about 600,000 of these shells a year, far short of the 2 million needed to sustain a major conflict.

The EU has responded with the Act in Support of Ammunition Production (ASAP), a €500 million plan to quadruple output by 2025. Companies like Rheinmetall in Germany and Nammo in

Norway are expanding production, while a new joint venture in Ukraine is already churning out 80,000–100,000 shells a year. But challenges remain: shortages of raw materials, a lack of skilled workers, and bureaucratic delays are all slowing progress.

The U.S. is still the largest producer, but even its output of 40,000 shells a month in 2024, rising to 100,000 by 2026, isn't enough. Europe is on track to double or triple its production by 2026, but full mobilization will require more than just money; it will take political will, cross-border cooperation, and a long-term commitment to rebuilding Europe's defence industry.

Two Different Worlds

The contrast between Russian and Western artillery couldn't be starker.

Russia's approach is all about mass and attrition. Artillery is the backbone of its military, used to blast the enemy into submission. Even with outdated equipment, Russia's ability to flood the battlefield with shells, up to 4.5 million a year, remains a major threat. Russian forces use drones, radars, and electronic warfare to detect and suppress enemy guns within minutes, and they've learned to conserve ammunition by focusing on high-value targets.

The West, by contrast, emphasizes precision and mobility. Artillery is meant to support rapid, decisive actions, not just blast the enemy into oblivion. But this approach has a flaw: without enough ammunition, precision doesn't matter. Western forces are dispersed, use drones for real-time targeting, and rely on mobile systems like CAESAR and HIMARS to survive. But if the shells run out, even the best technology is useless.

The lesson is clear: NATO needs to combine Russian-scale production with Western innovation. Cheap, mass-

produced shells for suppression; smart munitions for decisive strikes; and AI-driven networks to tie it all together.

Adapt or Fall Behind

The war in Ukraine is more than a conflict; it's a preview of the future. For NATO and the EU, the message is simple: adapt or risk irrelevance.

That means modernizing artillery, replacing old howitzers with mobile, networked systems. It means securing the

data advantage, using AI and digital networks to outthink the enemy. And it means fixing the ammunition crisis, ensuring that Western forces have the shells they need to fight and win.

The future of artillery is hybrid: a mix of mass, mobility, and digital integration. The side that masters this combination will dominate the battles of tomorrow. For NATO and the EU, the time to act is now, before the next war begins.