EFFECT OF U.S. SYSTEMS IN THE UKRAINE WAR

Date: November 21, 2025

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KEY EVENTS

On November 19, 2025, Marina Miron presented *Effect of U.S. Systems in the Ukraine War* at the 2025 West Coast Security Conference. The presentation was followed by a question-and-answer period with audience members and CASIS Vancouver executives. The session examined the evolution of drone warfare, the development and adaptation of Ukrainian and Russian drone and counter-drone systems, and the implications of these capabilities for contemporary and future conflict.

NATURE OF DISCUSSION

The discussion traced the historical evolution of unmanned aerial systems from early reconnaissance platforms to their current capabilities in the war in Ukraine. Dr. Miron emphasized that drones should be understood as force multipliers rather than singular "game changers," shaping battlefield dynamics through scale, persistence, and integration. The presentation assessed how Ukraine and Russia have adapted drone use across tactical, operational, and strategic levels, and concluded by highlighting regulatory and governance gaps related to unmanned aerial systems in both wartime and peacetime contexts.

BACKGROUND

Drone warfare was situated as the product of decades-long technological evolution. Dr. Miron noted that early drone development dates to the 1950s and 1960s, with both the United States and the Soviet Union experimenting primarily with high-altitude reconnaissance platforms. Over time, additional states advanced their respective drone capabilities, culminating in the introduction of

armed drones, such as the MQ-9 Reaper, which marked a shift from surveillance toward strike applications.

Drones were depicted as capable of shaping battlefield outcomes when integrated effectively, but insufficient on their own to determine the course of a war. Drawing on examples such as the Nagorno-Karabakh conflict, Dr. Miron examined how drones contributed to operational success by amplifying other military capabilities. This framing was carried forward into the context of the Ukraine war, where drones have altered the tempo and transparency of combat without eliminating the relevance of conventional forces.

In the early phase of Russia's full-scale invasion of Ukraine, drones played a limited role. Ukraine's initial use of Turkish Bayraktar TB2 drones proved effective against unprepared Russian forces, but Russian adaptation quickly reduced their survivability. Facing asymmetries in manpower, equipment, and industrial capacity, Ukraine increasingly relied on commercially available drones, including systems such as the DJI Mavic, to support intelligence, surveillance, reconnaissance, and artillery correction. The widespread deployment of small, inexpensive drones disrupted Russian logistics and command and control, forcing decentralization and operational adaptation.

Ukraine subsequently leveraged its scientific and engineering base to develop a domestic drone innovation and production ecosystem. Government-backed initiatives were established to connect small technology firms with defense procurement channels, accelerate research and development, and scale domestic production, while also engaging foreign partners and investors. This approach enabled rapid iteration and adaptation, allowing Ukraine to field multiple classes of drones suited to different operational needs.

The integration of drones across tactical, operational, and strategic levels altered battlefield dynamics. Ukraine employed a layered ecosystem ranging from small, low-altitude commercial drones to loitering munitions. This shortened the sensor-to-shooter cycle and contributed to near-continuous battlefield transparency. Russian forces initially struggled to counter low-flying drones that were difficult to detect with existing radar systems and costly to intercept with conventional air defense.

In response, Russia adapted by pursuing scale and saturation. Russian forces acquired and produced long-range loitering munitions, as well as decoy drones designed to overwhelm Ukrainian air defenses and enable follow-on missile strikes. Russia also invested heavily in electronic warfare systems intended to disrupt drone command links and GPS signals, driving a cycle of adaptation between countermeasures and new drone designs.

Dr. Miron highlighted that while Russia has achieved critical mass in drone production, Ukraine faces constraints in developing equivalent counter-drone capabilities, particularly in electronic warfare. As a result, Ukraine has adopted improvised and asymmetric countermeasures, including physical barriers, drone-on-drone interception, and localized defensive adaptations. These dynamics have reinforced drones' role in accelerating innovation and adaptation on both sides, as opposed to delivering decisive advantage to either.

The presentation concluded by emphasizing the regulatory gap surrounding unmanned aerial systems. In peacetime, there are limited procedures governing drone procurement and licensing, thereby creating vulnerabilities that could be exploited by state or non-state actors using inexpensive commercial platforms. Dr. Miron underscored the necessity for policymakers and law enforcement to prioritize regulatory and procedural frameworks to address these risks.

Question and Answer

How has the success of operation spiderweb and other covert operations utilizing drone systems altered state strategy for clandestine operations?

Drone-enabled clandestine strikes against strategic assets raise considerable escalation risks. Attacks on nuclear-related infrastructure, even if conducted with low-yield systems, intersect with nuclear doctrine and deterrence signaling. These developments require states to rethink the protection of critical infrastructure, including persistent monitoring, electronic countermeasures, and the challenge of detecting dispersed supply chains used to assemble drones domestically.

To what extent have unmanned drones enabled deeper strikes into previously secure areas in Russia and Ukraine? And how does maintaining air superiority play a part in drone warfare?

Russia does not enjoy full air superiority over Ukraine, which shapes how drones are employed by both sides. While loitering munitions are effective at operational levels, strategic impact requires sustained mass and continuous adaptation. Ukrainian strikes can impose costs but lack the scale to decisively degrade hardened strategic assets, while Russian attacks have strained Ukrainian air defenses without fully disabling critical infrastructure. The effectiveness of drones depends on target hardness, defensive integration, and sustained production.

KEY POINTS OF DISCUSSION

- Drone warfare has evolved over decades and functions primarily as a force multiplier, shaping battlefield transparency, tempo, and adaptation.
- The war in Ukraine demonstrates rapid co-evolution of drone and counter-drone systems. Ukraine emphasizes agility and integration across levels, while Russia pursues scale and electronic warfare.
- The proliferation of unmanned aerial systems exposes regulatory and preparedness gaps in peacetime, underscoring the need for policymakers and law enforcement to address procurement, licensing, and airspace security.

FURTHER READING

Miron, M. (Guest speaker). (n.d.) *AQ Episode 26: 5 Things to Know About the Russian Information Warfare.* Adversity Quotient Podcast. CASIS Vancouver. https://casisvancouver.ca/aq-episode-26/

Miron, M. (2022). Russian cyber operations: Coding the boundaries of conflict. *International Affairs, 98*(4), 1474-1476. https://doi.org/10.1093/ia/iiac108

Miron, M., Sattler, S., Whetham, D., Margaux Auzanneau, & Kolstoe, S. E. (2025). Integrating Human Augmentation in the Defence Sphere: an Exploratory Mixed-Methods Study on Ethical Principles. Neuroethics, 18(1). https://doi.org/10.1007/s12152-025-09595-4

Published by the Journal of Intelligence, Conflict, and Warfare and Simon Fraser University
Available from: https://jicw.org/