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THE DECISIVE ROLE OF DRONES IN THE KARABAKH WAR

On the morning of September 27, 2020, the first shots were fired along the unrecognized border between the self-proclaimed Republic of Nagorno-Karabakh—ethnically Armenian and economically supported by Armenia—and the Republic of Azerbaijan.

Following the war that ended in 1994, both nations entered a period of rearmament, preparing for an inevitable renewed conflict in the region. Both countries, with a tradition of Russian weaponry, acquired tanks, missiles, and aircraft of Russian origin[1].

After that war, Armenia recognized the importance of maintaining an adequate air defense system, continuing to receive acclaimed Russian-made systems such as the S-300, 9K33, and 9K35[2]. In this way, it built its "*air defense umbrella*"—a formidable network of radar stations and fixed missile launch batteries to counter any Azerbaijani aerial incursion.

Azerbaijan, seeing this, understood that any future war with Armenia would require a revolutionary shift in strategy through new military technologies. Thanks to its military and commercial alliance with neighboring Turkey, Azerbaijan acquired modern unmanned aerial vehicles (UAVs or drones), not only from Turkey but also from Israel.

The advantage of these systems lies in their size: drones are too small to be easily detected by Armenian radar. Thus, Armenia lost from the outset the strategic edge that its anti-aircraft network had once provided.

Armenia's Air Defense System

After the 1994 war, Armenia began rearming with military equipment from Russia, Ukraine, and Montenegro, among others[3].

Armenia's air defense system was designed to destroy planes and helicopters, which are easily detectable by radar. Once an aircraft is spotted by radar, a signal is sent to the missile network, which then fires at the target. It is a fixed system, with limited mobility—comprising stationary missile platforms and radar installations. Its advantage lies in its broad coverage against traditional aircraft, low maintenance, and above all, its deterrent function. In modern warfare, air superiority often confers a major advantage. However, the

[1] ЗАХАРОВ А.П. (2018). ''*Военная Техника''*. Эксмо.
[2] Idem.
[3] Available at: https://www.rfi.fr/es/europa/20201014-guerra-en-el-alto-karabaj-un-conflicto-moderno-con-drones

system's weakness is that it becomes obsolete quickly, as it depends on the enemy using aircraft large enough to be picked up by radar[4].

Terrain also played against Armenian radar systems. While mountainous geography is useful for halting tank and infantry advances, it severely hinders the detection of aerial systems—especially small-reflection targets like drones. Armenian radars weren't necessarily blind to drones, but they only detected them when it was too late, when the drones were already within striking range[5]. As a result, Armenia's air defense network lost its deterrent value.

The Azerbaijani Strategy

This was the flaw that Azerbaijan capitalized on. Its air fleet is primarily composed of drones, not traditional aircraft. One reason is economic: a Turkish Bayraktar TB2 drone costs around $5 million, and an Israeli IAI Harop (Harpy 2) around $10 million, compared to $29 million for a MiG-29 fighter jet—not to mention the cost of pilot training and maintenance (prices at 2020).

Another reason drones played a fundamental role in Azerbaijan's victory was their sensor payload, allowing for superior battlefield awareness and 24-hour situational intelligence. Armenian units had nowhere to hide, and battles became fast-paced, avoiding long reconnaissance phases. The conflict became dynamic and decisive, contrasting sharply with the trench warfare of the 1994 war.

A further Azerbaijani motivation was propaganda. Surveillance drones—used for battlefield observation and intelligence—recorded footage of successful attacks. Even kamikaze drones like the Israeli IAI Harop generated real-time combat footage, widely available online. This served both commercial purposes and military morale: demonstrating battlefield gains with proof, especially useful when both sides reported vastly different casualty numbers.

Another propaganda advantage was drones' precision. They drastically reduce collateral damage—something crucial in maintaining public and media support for modern warfare.

From the outset, under a S.E.A.D. (Suppression of Enemy Air Defenses) doctrine, Azerbaijan's strategy involved luring Armenian radar signals using remote-controlled Antonov An-2 planes with large radar signatures. Armenian radar would detect the decoy, prompting loitering drones (IAI Harop) to triangulate and kamikaze-attack the radar

[4] BOTTA, P. (2018). *'' El uso de drones en el conflicto entre Armenia y Azerbaiyán''*

[5] Available at https://www.revistaejercitos.com/2020/10/06/novedades-tacticas-de-la-guerra-entre-azerbaiyan-y-armenia/

source.

Azerbaijan's use of traditional aircraft was minimal—its fleet is small and outdated, and vulnerable to Armenia's missile systems.

Turkey's role was essential. It was the first country to use a laser weapon in combat (the ALKA system) against a Chinese drone in Libya on August 4, 2019. Turkey's growing drone industry stems from its goal to reduce arms dependency on the West. While Turkey's ambitions to develop its own fighter jets are questioned by experts, Turkish military officials are confident about drones. *"Turkey is not surpassing the U.S., Israel, or China, but it is becoming a serious competitor,"* said Dan Gettinger, analyst at the Mitchell Institute for Aerospace Studies (USA)[6].

Turkey now leads alongside Israel in developing autonomous weapons, such as the IAI Harpy, IAI Harop, and Orbiter 1K. These loitering munitions represent a new paradigm in drone warfare. They roam autonomously, seeking targets that match preloaded profiles. While drone explosives aren't new (e.g., Nazi Goliaths or WWI remote-controlled aircraft), this is the first time airborne systems autonomously identify and strike radar-emitting targets.

These drones often use electric engines, allowing for long flights with minimal sound—only audible moments before impact, giving victims little time to react.

Before Karabakh, these drones proved effective in Syria, Yemen, and Libya[7]. Turkish defense analyst Arda Mevlutoglu writes: *"Turkey has accumulated great experience in drone design and manufacturing. They may not be as advanced as American systems, but they can definitely compete with Chinese ones. Turkish drones are evolving rapidly."*[8]

A Military Revolution

To fully grasp the significance of this conflict, it's important to introduce the concept of the Revolution in Military Affairs (RMA)—a military theory suggesting that, at certain points in history, changes in doctrine, strategy, tactics, and technology radically altered the nature of warfare. The term was first used by Soviet Marshal Nikolai Ogarkov in the 1960s as "Military Technological Revolution." These changes force rapid adaptation of doctrines and strategies.

Seen through this lens, Azerbaijan carried out its own RMA: modernizing warfare

[6] Available at https://nuevoperiodico.com/guerra-de-drones-los-vehiculos-aereos-no-tripulados-estan-esparciendo-la-muerte-en-nagorno-karabaj/

[7] Available at https://www.rfi.fr/es/europa/20201014-guerra-en-el-alto-karabaj-un-conflicto-moderno-con-drones

[8] Available at https://www.perspektif.online/author/arda-mevlutoglu/

management with better tactics, improved procedures, and key acquisitions—like drones. This was facilitated by Baku's growing wealth relative to Yerevan and enabled both technically and strategically by its allies (Turkey, Israel, Russia) and access to tested systems. Armenia failed to respond in kind, giving Azerbaijan a clear advantage in military doctrine and technology.[9]

However, Azerbaijan did not fully capitalize on its technological edge. Traditional ground forces—infantry and tanks—were still needed to secure territory. Armenian trench systems, particularly in rugged terrain, significantly delayed Azerbaijani advances[10].

Moreover, Armenia had better-trained troops. Most Armenian forces were professionals with 50–100% more training than their Azerbaijani counterparts. This training gap limited Azerbaijan's use of advanced equipment like the T-90S tanks, which feature infrared vision for night operations—an advantage unused due to insufficient training. Armenia, by contrast, still relied on old T-72 tanks[11].

Conclusion

Beyond the inherent tragedy of war, its technological analysis—like its political dimensions—deserves separate attention.

One striking feature of the Karabakh war is the possible emergence of a new warfare paradigm, where traditional forces (tanks, infantry, and aircraft) are increasingly replaced by autonomous, destructive, and propagandistic systems.

This new form of warfare may be more precise, cheaper, and more mechanical than human. Yet it also risks disconnecting decision-makers from battlefield consequences—turning war into a distant projection, detaching victims from aggressors. It may even normalize conflict, echoing the words of Confederate General Robert E. Lee: *"It is well that war is so terrible, otherwise we should grow too fond of it."*

Still, we are far from fully robotic wars. Neither side in this conflict possessed air superiority drones—UAVs capable of dogfighting other drones—so drones played a secondary role in air dominance.

Yet, we are undeniably approaching a future where autonomous systems will play an increasingly central role on the battlefield, while manned aircraft, due to their cost and complexity, may become a luxury—outclassed by their cheaper, expendable robotic counterparts.

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[9] GONZÁLES, P. (2020). *''Los drones campearon en los cielos de Karabakh''.*

[10] Available at https://www.revistaejercitos.com/2020/10/06/novedades-tacticas-de-la-guerra-entre-azerbaiyan-y-armenia/

[11] Available at https://www.revistaejercitos.com/2020/10/06/novedades-tacticas-de-la-guerra-entre-azerbaiyan-y-armenia/