GAME OF DRONES

IN THE SOUTH CAUCASUS:
HOW DID THE WINTER COME

TOP CHUBASHOV CENTER

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Game of drones in the South Caucasus:
How did the "winter" come?
Drones in Nagorno Karabakh

The Second Karabakh War came to an end on November 10, with the signing of a peace deal by Azerbaijan, Russia and Armenia, which for the latter was an "unspeakably painful agreement" as Prime Minister Nikol Pashinyan named it, yet declared a glorious victory for Azerbaijan who liberated its territories from the occupation after 28 years. Throughout the 44-day war, particularly one military equipment-drones-received huge attention both in the local and international context analysts studying their use relentlessly to track Azerbaijan's swift military. The words 'Harop', 'kamikaze', 'Bayraktar' swiftly entered the dictionary of military discussions in the region becoming widely used in daily news and conversations. Likewise, the topic was at the centre of attention of the international media which in the past few weeks has analysed the pivotal role of drones in Azerbaijan's military strategy and brought up questions about the country's drone power recurrently in the interviews with the government officials, including President Ilham Aliyev himself[1]. On the other hand, the decisive effect of drones was also acknowledged by the Armenian side after the bitter defeat when the leader of the self-proclaimed "Nagorno-Karabakh Republic" Arayik Haratunyan said "It seems that we managed to defend ourselves from drones for several days, but already in the last two days the enemy, I do not know how, through new technologies or new drones, had the opportunity to inflict great damage on our troops again" (Antonopuolos, 2020). Yet, while all these already call for

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[1]Particularly interview by TRT Haber conducted on October 2 and France 24 TV on October 15

a close analysis of the topic, one can argue that the breakout of the so-called game of drones in the South Caucasus was not an unexpected event but rather had given its clear signals after the 2016 April war. Hence, even after the July 2020 border clashes, the utilization of the drones between Azerbaijan and Armenia made the headlines, commentators at the time naming it the "worrying war in the South Caucasus" and warning that the region might face the first full-scaled drone war[2]. Not to forget, a few days before the outbreak of the war, on September 20, the downing of an Armenian tactical drone in Tovuz (located far away from the conflict zone) already spiced the discussions up about how the use of this equipment is changing the security environment in the region. Interestingly, while the debate has become a hot one, detailed analysis of the drone capacity of Azerbaijan and Armenia has not been conducted, neither the reasons behind the particular suitability of the drone technology to the Nagorno Karabakh conflict has been identified. Aiming to do so, this special report contextualizes and empirically analyzes both the trajectories of the drone programmes in both countries and the strategic rationality behind the use of drones in Nagorno Karabakh conflict.

Racing drones...

Drones in the South Caucasus is not a new debate as the region has witnessed many 'firsts' about its usage. The first so-called two-sided drone war was between Russia and Georgia in 2008 and reportedly the first usage of the Harop 'kamikaze' drone for combative reasons took place during the 2016 April War. Yet particularly in the context of Nagorno-Karabakh conflict the number of the drones deployed has been noticeable. The Crisis Group Report (n.d) which presents data between 2015 and 2020 December (although it excludes 2-11 April 2016 period) notes that a total of 45 drones were shot (with a confirmed proof) in the contact line between

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[2] See Hambling 2020

Azerbaijan and Armenia. Yet, according to the media statements, only during the 2016 Four-Day War, Azerbaijani side reported the downing of 5 Armenian drones, while Armenia claimed to shoot 10 Azerbaijani UAVs (confirming only 2 by photos and videos) (Garibov, 2016). Moreover, during the 12-16 July 2020 border clashes, Azerbaijani MOD announced the downing of two Armenian UAVs conducting reconnaissance activity (Rehimov, 2020). The Armenian side, however, claimed to intercept 14 Azerbaijani UAVs, of which 10 were allegedly combat, 1 general, and 3 were reconnaissance drones (JamNews, 2020). Although both sides have denied both the numbers and information about their drones being shot (particularly notable was Azerbaijan exposing the disinformation by proving that photo of the downed UAV released by the Armenian side was taken in 2014 Afghanistan3) still one can see how the discussion of drone wars in Nagorno-Karabakh had already gained momentum before the outbreak of the Second Karabakh War in September. Yet, with the fighting starting on 27 September the drone war in Nagorno-Karabakh turned real. Azerbaijani drones wreaked havoc on the enemy military targets ostentatiously publishing videos of it online, while Armenia tried to counterbalance and construct a narrative by frequently claiming to shoot these drones down. This did not appear to surprise many as the main pillar of the drone use in the case of Nagorno-Karabakh (even in previous clashes) has been information operations, portraying combat footage to proclaim the victory on the battlefield, to shape public perception of the prowess of the drones and to demonstrate the military capability. But this time drones did more than

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3 See for further information Defence.az (2020)

'showing off' the military capacity or dominating a narrative as since the first days of the fighting they allowed Azerbaijan to gain a huge tactical and operational advantage on the battlefield. To bring just one example, due to its anti-radiation capabilities (meaning the ability to detect and autonomously concentrate on radar emissions) the precision strikes conducted by a Harop drone, destroyed Armenian S-300 surface-to-air missile (SAM) site in Shushakend, Khojavand district (Watling and Kaushal, 2020).
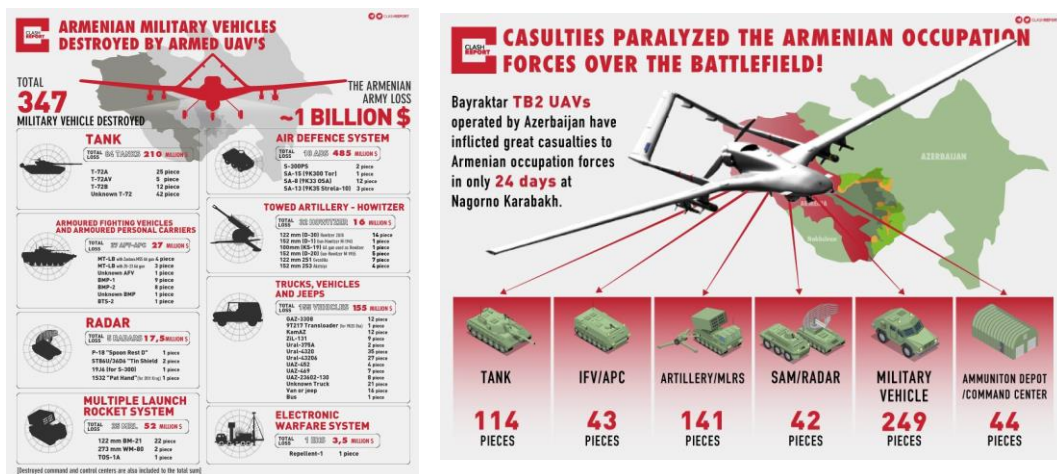

Photo 1: "Armenian Military Vehicles Destroyed by Armed UAVs", 12 October 2020[4]
Photo 2: "Casualties Paralyzed the Armenian Occupation Forces over the Battlefield", 20 October 2020[5]

Additionally, data prepared by the Clash Report estimated that 16 days from the start of the war, drones deployed by the Azerbaijani side caused $485 million damage to Armenian air defence system (Photo 1). Yet, another report from the same source informs that as of the 24th day of the conflict *only* Bayraktar TB2 drones had destroyed 114 tanks, 42 radar systems, 249 military vehicles and 44 command centres (Photo 2) once again proving the 'dronization' of the current war and hard power-oriented security strategy. Hence, while the official data on the 'achievements' of drones is still not disclosed, President Aliyev in his interview to France 24 stated that

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[4] https://twitter.com/clashreport/status/1315722930983239680

[5] https://twitter.com/clashreport/status/1318592050833596419/photo/2

by only using the drones purchased from Turkey, Azerbaijan inflicted damage worth $1 billion on the Armenian military. He also added that Azerbaijan uses "other drones from other sources" signalling to the amassed sizable and diverse fleet of unmanned aerial vehicles of the country. Yet a question emerges at this point. How and for how long had these countries prepared for drone warfare?

Azerbaijan

Starting with Azerbaijan, it is safe to say that both drone acquisition and production has received massive attention in the country's defence-industrial base in the past decade. While the exact timing of Azerbaijan's revolutionizing its drone arsenal is unknown, according to the data from the Stockholm International Peace Research Institute (SIPRI) Azerbaijan ended up being the fourth largest importer of drones in the world with 7.8% in between 2010–2014 when very few countries had even obtained it (see Photo 3).
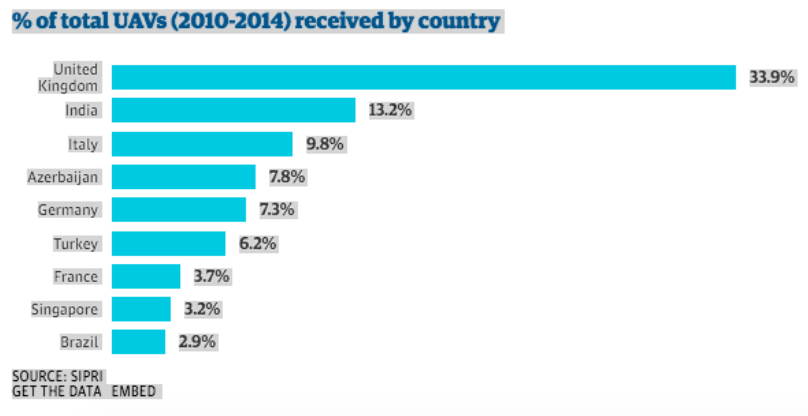

% of total UAVs (2010-2014) received by country

Country	%
United Kingdom	33.9%
India	13.2%
Italy	9.8%
Azerbaijan	7.8%
Germany	7.3%
Turkey	6.2%
France	3.7%
Singapore	3.2%
Brazil	2.9%

SOURCE: SIPRI
GET THE DATA EMBED

Photo 3: % of total UAVs (2010–2014) received by country[6]

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[6] Arnett, G. 2015"The numbers behind the worldwide trade in drones" The Guardian. March 2015 Available at: https://www.theguardian.com/news/datablog/2015/mar/16/numbers-behind-worldwide-trade-in-drones-uk-israel

Indeed, with a strong head start in drone acquisition, Azerbaijan has traded mainly with Israel importing massively from its top companies such as Elbit systems, Israeli Aerospace Industries and Aeronautics. Some reports of Azerbaijan's first purchase of drones date back to even 2008-2009 including the UAVs such as Hermes 450 (medium-sized ISTAR-Intelligence, Surveillance, Target Acquisition and Reconnaissance), Aerostar (tactical UAV for ISTAR), Orbiter M (Reconnaissance), IAI Searcher (Reconnaissance). In 2009, the country signed an agreement with Israel to build a factory manufacturing and assembling drones in Azerbaijan. As a result, the local production line of Azad Systems was established two years later in 2011 with the assistance from the Israeli unmanned aircraft systems manufacturer- Aeronautics. With the opening of Azad System the local production of Aerostar and Orbiter 2M was initiated simultaneously. According to Drone Databook, the year 2011 also noted Azerbaijan's import of IAI Harop drones (Gettinger 2019). Made by Israel Aerospace Industries (IAI), Harop is a kamikaze drone with a capability to return back if the target is not found and is known to be a munition to loiter a battlefield or attack specific targets by self-destructing into them. In 2014, the ultimately successful negotiations around local production of Orbiter 3 were initiated. Nevertheless, by 2016 one of the most advanced designed UAV, Heron TP (which can accomplish multiple missions including missile defence, target acquisition besides ISTAR) and

Thunder B (small-size tactical UAV for ISTAR made by BlueBird Aero Systems) had been purchased by Baku. In the same year, reportedly 15 Hermes 900 UAVs (tactical UAV for ISTAR manufactured by Elbit Systems) were delivered to the country

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In 2017, Azerbaijani Armed Forces presented the Orbiter 3 Small Tactical UAS (UAV for ISTAR and to support higher tactical echelon) which was produced locally by the Azad Systems Ltd (Report.az, 2014). The latter also began manufacturing Orbiter 1K loitering munition named Zarba and demonstrated it in ADEX-2016 defence exhibition (Egozi, 2017). In 2018, Azerbaijan announced the beginning of the production of a new UAV named Pegasus 120 at Azad Systems. Notably, the Pegasus 120 is designed to carry 75 kg of cargo for mainly military purposes for up to 40 km and can stay in the air for 45 minutes (Ali, 2018). Azad Systems also began to make a prototype of 3 kinds of loitering munitions: Mini, with a flying radius of 5-7 km, Grand, with a 20-km radius of destroying the target, and a middle-sized drone resembling Harop IAI (AzeriDefence, 2018). Simultaneously, another kamikaze drone named "Yarasa" (bat in Azerbaijani) with a cargo capacity of 5 kg was manufactured locally in 2018 (Azernews, 2018). In January 2019, Azerbaijan closed a deal with Israel purchasing its SkyStriker kamikaze drones from the Elbit Systems which is known as "silent, invisible and surprise attacker in the battlefield" (Kerimkhanov, 2019). In February of the same year, Baku signed a $13-million contract for Orbiter 1K kamikaze drones with a rival Israeli firm, Aeronautics, just two weeks after its export license was restored. Next year, Azeltech Company announced it was in the final stage of creating a swarm of new kamikaze drones (Trend.az, 2020). Yet, in January 2020, Azerbaijan took an important step and announced its plan to diversify purchases and import drones from Turkey. On 31 May, the Azerbaijani parliament ratified a military-financial agreement and a Protocol to the Agreement "on Security Cooperation between the Government of the Republic of Azerbaijan and the Government of the Republic of Turkey" (Apa.az, 2020). Although it was never specified at the time which drones Azerbaijan intended to acquire, the notorious Bayraktar TB2 drone, which had gained Turkey remarkable

success in the Syria and Libya air fights, was the main choice. Operating at an altitude of 8,000 metres, Bayraktar TB2 is hard to detect by radar systems and has air endurance of 27 hours with a payload of four missiles. Bayraktar has notably expanded the means by which the Azerbaijani army could deliver devastating and decisive attacks and obliterate enemy's military targets and command posts. Even President Aliyev in his interview to TRT Haber proudly stated that "Thanks to the advanced Turkish drones owned by the Azerbaijan military, our casualties on the front have shrunk" (Soylu, 2020) and in another interview with a French journalist in response to the question of how many Bayraktar Azerbaijan owns, he famously answered with a smile "We have enough in order to achieve our targets" (Azertag, 2020).

Another interesting case about Azerbaijani drones was the country's allegedly innovative use of Soviet-era AN-2 biplanes repurposed as kamikaze drones or, as some claim, as 'dummy targets' (Southfront.org, 2020) which state officials have denied. In all, the Second Karabakh War gave ground for Azerbaijan to demonstrate the substantial military and technological edge of its drones not only to Armenia but to the whole world.

Nevertheless, in a drone war it is not enough to own better or numerically more drones; a victory takes the quality training for their operators. Indeed, Azerbaijan opened a UAV specialist training centre in 2018 to enhance combat readiness of the military personnel and train them to effectively use UAV systems in various tactical and meteorological conditions (Azvision.az, 2018). A year later, a joint venture between Israel and Azerbaijan (Azad Systems JV) opened a new training academy to upskill the military on the theory and operation of locally developed unmanned aerial vehicles (Horizon Weekly, 2019). Thus, through local production and diversified imports, as well as

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Yet, along with the drone capacity, there is a need to mention a few words about Azerbaijan's air defence system from drone attacks. To briefly summarize, Azerbaijan has acquired the Groza-S electronic warfare complex from Belarus designed to intercept the control of any UAV. Moreover, its IHTAR anti-drone systems purchased from Turkish ASELSAN company protects critical military and commercial areas from Micro/Mini UAV threats. Also, in 2017 Azerbaijan bought the Drone Killer electromagnetic anti-drone system from Turkish company named Harp Arge. With this system, it can neutralize drones up to 1 km through jammer frequency spreading (DefenceTurkey, nd).

Armenia

Although in contrast to Azerbaijan Armenia has considerably smaller drone capacity, it has both produced and acquired various drones throughout the last decade. Armenia manufactured its first drone named Krunk (Crane in Armenian) in 2011 and showcased it in the same year at a military parade in Yerevan (Garibov, 2016). The Krunk is a medium-sized drone with close reconnaissance capability, mostly used for artillery targeting. It is produced in two series: Krunk 25-1 and Krunk 25-2, whose designs are very similar with only minor differences such as the placement of the engine, maximum flight altitude and flight radius. Azniv and X-55 (also known as Kh-55) are other larger drones manufactured locally in Armenia. Particularly, the X-55 is specially designed for aerial survey and is reportedly a model of Russian "Ptero-5E" produced by AFM Servers (Malyasov, 2018). In 2018, at ArmHITec exhibition the country also presented a new 'suicide' drone called HREESH (Monster in Armenian) produced by the Armenian ProMAQ group (Dombe, 2018). This kamikaze drone has the capability to strike targets in a range of up to 20 km.

Moreover, in the same exhibition other UAVs, including BEEB 1800, BEEB 3000, BEEB 3200 multifunctional combat drones and T1 artillery guiding UAV were displayed (Armenpress, 2018). Armenia also manufactured smaller UAVs called Baze, Photobot, Supercam 300M and Supercam S-350 (Ordu.az, 2019). Moreover, in 2014 a local company, Instigate Robotics, launched drone production in Armenia to supply Armenian Defence Army (Trend.az ,2014). Other Armenian companies making drones include ArmCopters, Davaro and ArmRobotics. Interestingly enough, Armenia's Acting Defense Minister Davit Tonoyan announced in 2018 that the ministry bought military drones from the separatist Nagorno-Karabakh regime without specifying details but sending the message that drones are produced in the separatist regime-controlled areas (Asbarez.com, 2018). Additionally, the Defence Ministry of the self-proclaimed regime published in 2020 a video showing the newly produced kamikaze drone striking a target and noted that it would be mass produced in upcoming months (Ghazanchyan, 2020). Besides, while it is

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commonly assumed that Russia is the major supplier of drones for Armenia, there is relatively little if any open source data on their quantity or technical details. Yet, with the border skirmishes in July 2020, Armenia once again realized the game-changing capacity of drones in the military as such, and the Military-Industrial Committee urgently gathered local drone companies to discuss the possibilities for development of Armenia's military industry (News.am, 2020). In August 2020, Yerevan announced testing new combat drones signalling ambitions to upgrade its drone capacity. It is worth noting that Armenia also started using Russian made Orlan-10 drones during the Second Karabakh war, calling it a game-changer, yet considering the fact that these drones were mainly used for reconnaissance purposes, their role was limited.

There is also a need to mention Armenia`s air defence capacities. This is particularly important for the discussion because while Armenia's air defence system is not known to be strong, it made claims of having shot Israeli- and Turkish-made drones sent by the Azerbaijani side. Thus to what extent the Armenia`s air defence system has the capability to actually destroy such drones becomes an interesting point to be revealed. Indeed, Armenia owns the OSA-AK (9K-33OSA) anti-aircraft missile system, through which it allegedly destroyed Azerbaijan`s Elbit Hermes 900 drone (Nikolov, 2020). Within a worth of $200-million export loan agreement between Armenia and Russia, the former also received Avtobaza-M ELINT system which is an electronic intelligence system with an air-to-ground fire control and low-altitude flight radar, and Igla S defence missile designed to engage with all aircrafts including UAVs (Armenpress, 2016). Moreover, Armenia also owns Russian Repellent 1 anti-UAV system.

So what does this description of the drone arsenal of both countries tell us about the Karabakh war? First of all, now more than ever, war is politics by *many* other means. The structure and posture of force, the size of armed forces and military equipment are politically consequential. Thus, political calculations regarding national defence do not only consider the classic tradeoff between "guns and butter" but also they are also about "guns and guns". Visible preparations for the war, like the process of fighting itself, shows the extent of how much the countries are willing to get what they want. Azerbaijan did realize the need to transform the air warfare in Nagorno-Karabakh, and its drone capacity built throughout these years gave it a technological advantage which yielded into a tactical and operational one on the battlefield, bringing a notable victory. Having said this, however, the right question to proceed with is "Why have drones become an equipment in high demand, particularly in the Nagorno Karabakh case, and what advantages or disadvantages do they offer?"

Pros and Cons of Drones

The increased use of drones depends on their particular suitability to the character of a conflict, and calculation of their tactical, operational and strategic advantages versus any disadvantages that they might cause. In the military, drones are used for various purposes depending on their classification. To put it roughly, the large variety of the UAVs can be grouped according to their several characteristics, such as range, maximum altitude, engine type, weight and so on. Thus, in their military role, this is translated into their usage areas like ISTAR, UCAV (Unmanned Combat Air Vehicles), multi-purpose radar, communication relay, aerial delivery and resupply, research and development and so on (Udeanu et al., 2016). Although the advantages and disadvantages of each UAV obviously vary depending on the group that they belong to, a general analysis of pros and cons debate applied to the case of Nagorno-Karabakh will be helpful to understand why drones have become preferred equipment.

Pros

The *technological and technical advantages* of drones have undoubtedly been reflected in their increased military value. Firstly, the versatility of drones which includes their stealth, low radar, visual and thermal signature and in some cases ability to transport highly complex lethal munitions makes them functional in a wide range of assignments. Secondly, unlike the manned jet fighters, drones can stay in the air for much longer, particularly the combat drones making over 12 hours. Such ability brings an important operational advantage over manned aircraft, as longer flight time means that a sustained coverage of an area might be obtained. This is further cherished by the fact that the operators can easily hand off the control of the UAVs without any downtime. Thirdly, the accuracy of the drones, meaning their ability to offer a long-range precision strike helps them to prevent collateral damages and reduce any

human casualty. This is also interpreted by some commentators as the ability to distinguish between militants and civilians. Yet, one shall note that as much as the drones can try to distinguish targets during the operation, preventing accidental loss of civilian life, injury and damage to the civilian objects is neither evitable nor obtained. Fourthly, drones are reportedly easier to deploy than other military equipment. The 'always ready' to be deployed characteristics specifically might turn to be advantageous in terms of saving time and acting immediately in tense situations. Their other technical advantages include carrying enough ammunition (especially cargo drones), ability to abort missions if necessary and wide-area surveillance which can be a resource-efficient way to monitor very large spaces and can enhance the situational awareness of the military personnel.

Meanwhile, there are also *cost-efficiency advantages* bestowed by the use of drones. Some experts argue that drones are less costly to produce or purchase, and they are relatively easier to maintain than other aircrafts. Thus, such cost efficiency in essence plays a decisive role in military strategy as the economic outputs are effectively translated into hard military power. Nevertheless, one needs to note that both in the academic and military debate there is a big argument whether in reality drones are less expensive than manned aircrafts, some bringing examples of very expensive drones (particularly kamikaze ones which self-destruct into the target). Yet, one might bring a counter-argument that the actual cost of drones shall be interpreted by not only calculating its acquisition cost, but also how much loss of life it prevents. Indeed, as drones are unmanned, their human cost is a way lower than that of regular manned aircraft. Moreover, 'replacing the soldiers' reduces the political costs associated with the use of military personnel, premising a relatively risk-free solution to political problems for the states. Another *operational advantage* (although sometimes it can become a disadvantage depending on the context) is the deniability of the drone strikes by the countries and difficulty of identifying the sender. As in the example of Libya, where great powers

have refused to take responsibility and in contrast groups which were not responsible claimed ownership of the drone incident, the option to disown the strike brings along disinformation, media conspiracies and information battle over narratives. Moreover, drones could be also useful for deterrence by denial and become a stabilizing factor in border disputes, since their ability to give real-time information and surveillance mostly decreases the favourability of surprise attacks by the enemy combatants.

Yet to what extent do these advantages apply to the case of Nagorno-Karabakh and make drones well-suited equipment in this terrain particularly for Azerbaijan? The answer is to a great extent. Nagorno-Karabakh comprises the Lesser Caucasus plateau which is a mountainous and densely forested area and the front of the Line of Contact is full of natural obstacles, besides man-made ones. As a result, the mountainous terrain of Nagorno-Karabakh necessitates wide-area surveillance and from a military point of view requires strategies and tactics capable of integrating the geographical specificities into the choice of weapons and used technologies. As has been already seen from the earlier battles, tanks are almost useless in the mountains, thus airpower plays a key role in changing the status quo. In this regard, the drones' ability to carry ammunition, to conduct wide aerial surveillance that can be transmitted instantly and perform thermal signature which can detect a change in the border comes in handy due to the geographical peculiarities of these lands. Moreover, drones also allowed Azerbaijan to challenge the traditional understanding of strategic superiority in the case of Nagorno-Karabakh. While a geographical advantage had been with the Armenian side due to its control over many strategic heights and the

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extensive presence of trenches, bunkers and minefields which were supposed to deflect their numerical inferiority, with the use of drones this advantage proved to slip away changing the balance of forces. To elaborate, Azerbaijan possesses a clear advantage in localized military strength and preponderance in lowland areas, but the mountainous landscape of the Nagorno-Karabakh has restricted its capacity to conduct an offensive without giving significant human losses. Yet, unmanned aerial vehicles significantly reduced the human cost of the fighting (which is particularly important for the political regime as in a conflict ongoing for over 30 years reducing human cost definitely resonates well with the local population) and expanded the means by which improvised weapons can deliver devastating attacks. Moreover, the drones' ability to operate in the night time and adapt to different weather conditions played

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another critical role in their deployment in the Karabakh war. Yet, the 'be ready to react' attitude of drones to unforeseen developments increased its suitability for a protracted conflict like Nagorno-Karabakh where no one knows when and how the next big fighting might begin. Additionally, the cost-effectiveness of drones (relatively to an aircraft) which allowed them to become a 'cheap' (although sometimes not) strike assets that can easily overwhelm the defence system of the enemy side when deployed en masse constituted another reason for their importance for Azerbaijan. Indeed, Azerbaijan owning a big army of drones could and essentially did easily afford to exhaust and overwhelm the enemy systems with 'drone blitz' particularly in the first 3 days of the war causing great confusion and perplexity in the enemy army.

Cons

Yet, while the advantages of the drones justify their increased use, there are many disadvantages that need consideration as well. First of all, from a technical viewpoint drones are not indestructible. Like any other technology, their operation can be and probably will be disrupted as the air defence systems develop in parallel. Nevertheless, as it can be seen from the Second Karabakh war, this point was not a strong concern for Azerbaijan as Armenia was in no way near to having a strong air defence system capable of downing sophisticated drones like Harop or Bayraktar.

Moreover, strategically there are several aspects why drones might be limited in service. Firstly, and most importantly, they cannot attain long-term peace. Indeed, while it is noted that drone wars would cost fewer lives, viewed in the long-term increased drone proliferation and its

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undesirable usage might be counterproductive and even destructive. Thus, their easy use creates a belief that the wars are becoming automated but then the reality of war machinery proves that the conflicts becoming automated do not continue in the same way. Thus, drones in no way reduce the conflicts but rather make it less costly to go and stay at war. Hence, in the case of Nagorno-Karabakh, one might see the manifestation of this point as drones indeed made it easier to stay and continue the war and cause fear in the counterpart.

Second, strategic limitation of drones is their lack of effectiveness for coercive diplomacy in contrast to a general misperception. To elaborate more, in theory, drones shall be beneficial coercion, as they can inflict pain

with greater ease and impose its will at a lower cost. Yet, generally looking drones are not very well-equipped to operate in hostile airspaces and become a valuable tool for punishment because they are vulnerable to air defence systems and unless their coercive capabilities evolve, they are not well-fitted for diplomacy through coercion. This point actually proved itself with the outbreak of the war in Nagorno-Karabakh as the demonstrative preparation for war and build-up of drone arsenal, its show-off in military parades and EXPOs that both sides held, military-trainings that Armenia-Russia and Azerbaijan-Turkey held did not coerce the sides to search for a solution other than war. Moreover, even with Azerbaijan's heavy deployment of drones in the first days of the war, it could not coerce the Armenian side to withdraw its troops from the occupied territories in alignment with the Basic Principles.

On the other hand, another big criticism dominating academia about drones is their usage from a moral-ethical perspective. The argument follows as there is a distance between the drone operator and the target, ethical disconnection between the actual attack and its results occurs, and the operator gets disconnected from the actual reality of the warfare. While this argument is particularly true when it comes to drone operations from overseas, one shall intervene by noting that in the case of Nagorno-Karabakh it does not hold for mainly two explanations. Firstly and simply, because there is no 'big distance', and secondly, in the last 3 decades both sides have deployed a wide range of weapons which cause destruction in their opponent and even with using long-range missiles the military personnel do not see exactly who they strike. Nevertheless, another point about
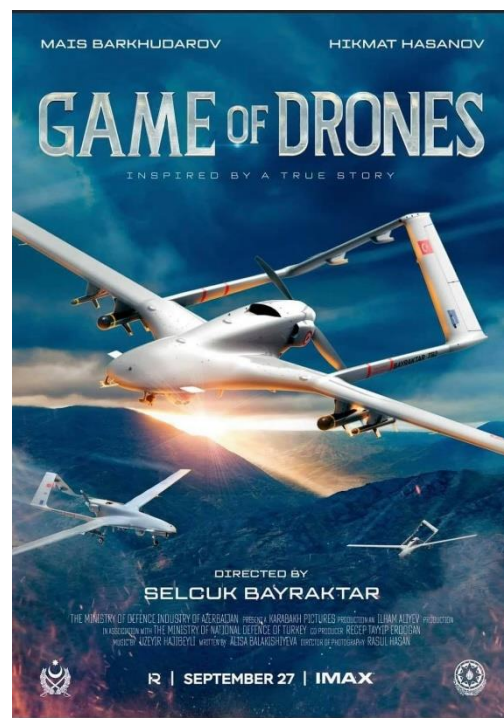
moral concern needs attention. Indeed, drone deployment turns the war into something that can be watched on TVs and not weigh it with gravity which might become very frightening in terms of reducing the actual human grievances from the photo. In a protracted conflict where both sides want a definite victory, this might certainly be alarming. Indeed, the value of drones in the Nagorno-

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Karabakh war has not been limited to their destructive potential, but has also included their ability to document their strikes. Such footages paint a stylized picture of the battlefield and become a primary source of creating a dominant narrative about military capabilities for the sides, yet also making it a watchable 'game of drones' for the public (see Photo 4).

On the other hand, another mainly raised concern is the international legal framework in which the drones are deployed as the regulation of their use is based on 3 different areas of international law being the law on the force, international humanitarian law (IHL) and international human rights law (IHRL). As such, the legality of drone strikes has become a concerning matter in the case of their deployment without legal justification from a state. Nevertheless, this point does not necessarily apply to the Nagorno-Karabakh conflict because of the vagueness in international law on the issue of protracted conflicts (particularly in the case of Nagorno-Karabakh, the war ended in 1994 but it did not stipulate the withdrawal of military forces from the area). This is all to say that the disadvantages about drone usage concerning political, legal and ethical viewpoints are very much context-dependent and while they can be alarming in most other cases in the particular context of Nagorno-Karabakh, one can see how advantages for its use in the offensive clearly outweigh the disadvantages.

Lessons for all… What's next?

As in the day of Clausewitz, wars remain as a 'paradoxical trinity' of popular passion, unpredictable events and *raison d'état*. Nevertheless, the chaotic

interactions during the war now operate in a more complicated trajectory of coercion and warfighting and depend on the context of economic and technological globalization. On all aggregate levels, Azerbaijan's material sources including size, military capability and economic endowment and power capability are greater than Armenia. Yet, the strategic deterrent posture of Armenia, as well as its balancing with Russia for years, had created what Broers (2019) called a "truncated asymmetry". While for all these years Armenia took the advantage of such asymmetry which alleviated the cost of maintaining the rivalry, drones played an important role in changing the traditional military strategic advantage from Armenia's favour due to the geographical terrain of Nagorno-Karabakh and balanced it for Azerbaijan. Yet, one shall note that drones proved to be very effective not only because of Azerbaijan's fielding of complex capacity backed with trained operators and electronic warfare systems. It was also because of the lack of a strong network-centric air defence system of Armenia which has been nothing but desperate facing Azerbaijani deployed drones. Baku's complex approach including manufacturing local drones, training operators and building air defence systems had strengthened coordination within the military. Yet, objectively speaking, Armenia in its turn failed to acknowledge the destructive role of drones and build their air defence accordingly. Their drones are limited to middle- or small-sized ones with not much threatening capacity, while the OSA-AKA or Strela -10 anti-aircraft missiles are not really optimised against fighting UAVs. As Robert Lee, an expert from King's College London on Russian weapons systems commented "*Their [Armenian] missile systems were probably trying their best to detect Bayraktar on their radars. However, they were designed to*

fight helicopters and attack aircrafts, not small unmanned aerial vehicles" (Mlada, 2020*).* Therefore, it was primitive methods like camouflage, fake targets and anti-aircraft guns that they used to shoot down the drones. Against this backdrop, Hikmat Hajiyev, the Foreign Policy Advisor to Azerbaijan`s President tweeted that desperation from the drone attacks triggered the Armenian side to use phosphorus munitions to cause fire in Shusha forests "to create white smoke and hinder the vision of drones used by the Azerbaijani side"[7]. Considering the fact that even Russian air-defence systems turned

> **Nevertheless, it is still necessary to acknowledge that overemphasizing the role of drones is not useful and while the technological advancements can alter geographical constraints, it is difficult to eliminate them altogether. The role of drones in the Second Karabakh war had its clear limits and proved useful when combined with strong land power to liberate territories in Nagorno Karabakh.**

out to be inefficient in Libya and Syria against the Turkish Bayraktar drones, one can see how Azerbaijan's acquisition of these drones flaunted its aerial superiority. Nevertheless, it is still necessary to acknowledge that overemphasizing the role of drones is not useful and while the technological advancements can alter geographical constraints, it is difficult to eliminate them altogether. The role of drones in the Second Karabakh war had its clear limits and proved useful when combined with strong land power to liberate territories in Nagorno Karabakh. Still, although the war in Karabakh is now over, the drones are likely to stay in the center of attention for the upcoming years. In global context, they showed the world how sophisticated weapons systems and land forces can be vulnerable without adequately installed drone defense systems. But in the local context, Azerbaijan still needs to focus on strengthening its drone arsenal and anti-drone systems, particularly considering the fact that the

[7]https://twitter.com/HikmetHajiyev/status/1322478716438618112

Russian Defense Ministry announced that the deployed Russian peacekeeping forces would bring in several UAV systems. Also, UAVs will parallelly operate in the planned Turkish-Russian monitoring center to ensure control over the ceasefire (Goksedef, 2020). In all, with the new realities emerging it is hard to say whether the game of drones in the South Caucasus is over or not, but as the renowned quote states, "When you play the game of thrones (read: drones), you win or you die. There is no middle ground", thus it is better to be prepared well.

Bibliography

1. Ali, S. (2018, September 27) *Azerbaijan, Israel start manufacturing new UAV.* Trend.az Available at:
    https://en.trend.az/azerbaijan/politics/2957233.html

2. Antonopoulos, P. (2020, November 11) *The bitter truth from the president of Artsakh.* GreekCityTimes. Available at:
    https://greekcitytimes.com/2020/11/10/bitter-truth-artsakh/

3. Apa.az (2020, May 3). *Azerbaijani Parliament adopts military finance and security cooperation agreement Baku and Ankara.* Available at:
    https://apa.az/en/domestic-news/Cooperation-agreements-on-military-finance-and-security-between-Azerbaijan-and-Turkey-adopted-322120

4. Armenpress (2016, February 24) *Azerbaijanis frightened by Armenia-Russia arms deal.* Available at:
    https://armenpress.am/eng/news/837153

5. Armenpress (2018, March 31) *Armenian manufacturer boasts cutting-edge multifunctional combat UAVs and loitering munitions.* Available at: https://armenpress.am/eng/news/928341.html

6. Asbarez.com (2018, November 12) *Armenia Acquires Artsakh-Made Drones.* Available at: http://asbarez.com/176135/armenia-acquires-artsakh-made-drones/

7. Azatutyun (2020, July 24) *Armenian, Russian Troops Train For Drone Warfare.* Available at: https://www.azatutyun.am/a/30745322.html

8. Azeri Defence (2018, March 15) *Azerbaijani company has made a prototype of three kinds of loitering munitions.* Available at:
    https://web.archive.org/web/20180528041925/http:/en.azeridefence.com/azerbaijani-company-has-made-prototype-of-three-kinds-of-loitering-munitions/

9. Azertag (2020, October 15) *President Ilham Aliyev was interviewed by France 24 TV channel.* Available at:
    https://azertag.az/en/xeber/President_Ilham_Aliyev_was_interviewed_by_France_24_TV_channel_VIDEO-1613207

10. Azernews (2018, September 26). A*zerbaijan Academy of Sciences produces kamikaze drone*. Available at: https://www.azernews.az/nation/138175.html

11. Azvision.az (2018, December 28) *Azerbaijani defense minister attends opening of UAV Specialists Training Center.* Available at: https://en.azvision.az/news/98557/-azerbaijani-defense-minister-attends-opening-of-uav-specialists-train-ing-center-.html

12. BBC (2020, August 28) *UAE implicated in lethal drone strike in Libya*. Available at: https://www.bbc.com/news/world-africa-53917791

13. Broers, L. (2019) *Armenia and Azerbaijan: Anatomy of Rivalry*. Edinburgh: Edinburgh University Press

14. Crisis Group (nd). *The Nagorno Conflict in Visual Explainer*. Available at: https://www.crisisgroup.org/content/nagorno-karabakh-conflict-visual-explainer

15. Defence Turkey (nd) *Harp ArGe Electromagnetic Anti-Drone System Exported to Azerbaijan*. Available at: https://www.defenceturkey.com/en/content/harp-arge-electromagnetic-anti-drone-system-exported-to-azerbaijan-2625

16. Defence World (2020, July 21). *Did Russia Help Armenia Bring Down Azerbaijani Hermes 900 Drone?* Available at: https://www.defenseworld.net/news/27472/Did_Russia_Help_Armenia_Bring_Down_Azerbaijani_Hermes_900_Drone_#.X0DHE5MzagQ

17. Defence.az (2020, July 16) *Armenian lies on shooting down Azerbaijan's UAV exposed* Available at: http://defence.az/en/news/144069/armenian-lies-on-shooting-down-azerbaijans-uav-exposed-%C2%A0photo

18. Dombe, R, A. (2018, April 2) *Armenia Displays New Loitering Munitions; One Resembling UVision's Hero-30.* Available at: https://www.israeldefense.co.il/en/node/33702

19. Egozi, A. (2017, January 10) *Azerbaijan starts producing Zarba armed UAV.* Flight Global Available at: https://www.flightglobal.com/military-uavs/azerbaijan-starts-producing-zarba-armed-uav/122744.article

20. Garibov, A. (2016, May 11) *Karabakh: A New theater for Drone Warfare.* Jamestown foundation. Available at: https://jamestown.org/program/karabakh-a-new-theater-for-drone-warfare/#.VzTgpSMrIlJ

21. Gettinger, D. (2019) "The Drone Datebook".*The Centre for the Study of the Drone at Bard College*. Available at: https://dronecenter.bard.edu/files/2019/10/CSD-Drone-Databook-Web.pdf

22. Ghazanchyan, S. (2020, May 20) *Artsakh to mass produce combat drones, trials successfully completed.* Public Radio of Armenia*.* Available at: https://en.armradio.am/2020/05/20/artsakh-to-mass-produce-combat-drones-trials-successfully-completed/

23. Goksedef, E. (2020, December 4) Dağlık Karabağ için kurulacak Türk-Rus Ortak Merkezi'nin detayları neler? (What are the details of Turkish-Russian joint center to be built in Nagorno Karabakh). *BBC News* Available at: https://www.bbc.com/turkce/haberler-turkiye-55162157

24. Hambling, D (2020, June 22) *Weird and Worrying Drone War in the Caucasus.* Forbes*.* Available at: https://www.forbes.com/sites/davidhambling/2020/06/22/the-weird-and-worrying-drone-war-in-the-caucasus/

25. Hasanov, S. (n.d) *Azerbaijan acquires new weapons from Israel*. Azeri Daily*.* Available at: http://azeridaily.com/news/31509

26. Horizon Weekly (2019, January 18) *Azerbaijan and Israel launch training academy for drones.* Available at: https://horizonweekly.ca/en/azerbaijan-and-israel-launch-training-academy-for-drones/

27. JamNews (2020, July 22) *Azerbaijani downed drones on display in Yerevan*. Available at: https://jam-news.net/shot-down-azerbaijani-unmanned-aerial-vehicles/

28. Kerimkhanov, A. (2019, January 14) *Azerbaijan purchases kamikaze drones from Israel*. Azernews. Available at: https://www.azernews.az/business/143969.html

29. Malyasov,D. (2018, March 5) *Azerbaijan claims its air defences shot down Armenia's tactical UAV.* Available at: https://defence-blog.com/news/azerbaijan-claims-air-defences-shot-armenias-tactical-uav.html

30. Mlada. D. (2020, October 15) *Future is now: Nagorno-Karabakh conflict and new warfare technologies.* Available at: https://112.international/society/future-is-now-nagorno-karabakh-conflict-and-new-warfare-technologies-55615.html

31. News. am. (2020, August 4) *Discussion held with heads of Armenia-made drone companies* Available at: https://news.am/eng/news/595095.html

32. Nikolov, B. (2020, July 17) *First time in History: Armenian army shot down an Israeli-made Hermes 900 UAV.* Bulgarian military Available at: https://bulgarianmilitary.com/2020/07/17/first-time-in-history-armenian-army-shot-down-an-israeli-made-hermes-900-uav-video/

33. Ordu.az. (2019, April 26) *Ermənistan "feyk" PUA istehsalı ilə dünya bazarına çıxa bilərmi?* [Can Armenia make it to the world market with "fake" UAV production] Available at: https://ordu.az/az/news/149170/ermenistan--feyk-pua-istehsali-ile-dunya-bazarina-cixa-bilermi-analiz-herbi-ekspert

34. Rehimov, R. (2020, July 21) *Azerbaijani military downs 2 Armenian drones. Anadolu Agency.* Available at: https://www.aa.com.tr/en/europe/azerbaijani-military-downs-2-armeniandrones/1917146#:~:text=Armenian%20drones%20shot%20down%20while,Azerbaijani%20p

35. Report.az (2014, September 23). *Azerbaijan intends to produce UAV Orbiter 3.* Available at: https://report.az/en/military/azerbaijan-intends-to-produce-uav-orbiter-3/

36. Southfront.org (2020, October 24) *Azerbaijan's Innovative use of Soviet Era An-2 Aircraft as Part of its Drone Strategy.* Available at: https://southfront.org/azerbaijans-innovative-use-of-soviet-era-an-2-aircraft-as-part-of-its-drone-strategy/

37. Soylu, R. (2020, October 5) *The Consequences of Drone Proliferation: Separating Fact from Fiction.*Middle East Eye. Available at: https://www.middleeasteye.net/news/armenia-azerbaijan-conflict-turkey-drones

38. Trend.az (2014, January 30) *Drones to be produced at Yerevan's free economic zone*. Available at: https://en.trend.az/scaucasus/armenia/2236259.html

39. Trend.az (2020, March 9) *Azerbaijan's Azeltech company plans to test several new products*. Available at: https://en.trend.az/business/it/3203320.html

40. Udeanu, G., Dobrescu, A. and Oltean, M., (2016) "Unmanned aerial vehicle in military operations". *Scientific Research and Education in the Air Force*, *1*, pp.199-205. Available at: http://www.afahc.ro/ro/afases/2016/RP/UDEANU_DOBRESCU_OLTEAN.pdf

41. Watling, J. and Kaushal, S. (2020, October 22) *The Democratisation of Precision Strikes in the Nagorno Karabakh Conflict.* Rusi College. Available at: https://rusi.org/commentary/democratisation-precision-strike-nagorno-karabakh-conflict

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