



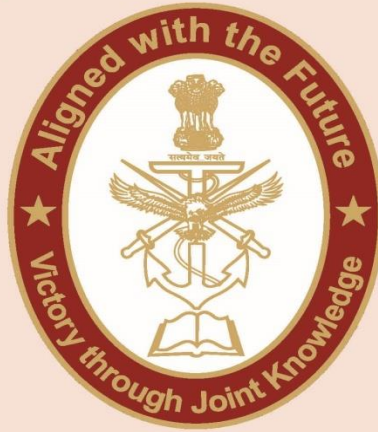
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WEB ARTICLE

DRONES ARE THEY BEING OVERHYPED?

LT GEN DUSHYANT SINGH, PVSM, AVSM (RETD)

CENTRE FOR JOINT WARFARE STUDIES



CENJOWS

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Lt Gen Dushyant Singh, PVSM, AVSM, (Retd), is the Former Corps Commander, Commandant Army War College. Currently he is Prof. Emeritus Rashtriya Raksha University, Gujarat.

Taking Warfare By Storm

Drones first burst on the scene of warfare at the turn of the 21 Century. In India people started recognising its potential when it was first seen in the movie ‘The Three Idiots.’ As it happens with any new and innovative technology sooner or later it finds its way in the domain of military warfare. Similar fate was awaiting drones. From a simple light weight short distance, low altitude unmanned, toy like quadcopter drone, it has transformed into slightly large, fixed wing flying machines and commonly referred to as Unmanned Aerial Vehicles (UAVs). They are being extensively used in delivery of items and photography in the commercial sector. In the military they are used for surveillance and as armed platforms. Being small they are extremely difficult to spot by radars and neutralised by conventional weapon systems.

They can also be used for delivering critical and light military loads to our troops deployed or operating in difficult terrain and behind enemy positions. Besides being used by regular troops, non-state actors such as Yemen’s Houthis terror groups are also using them.

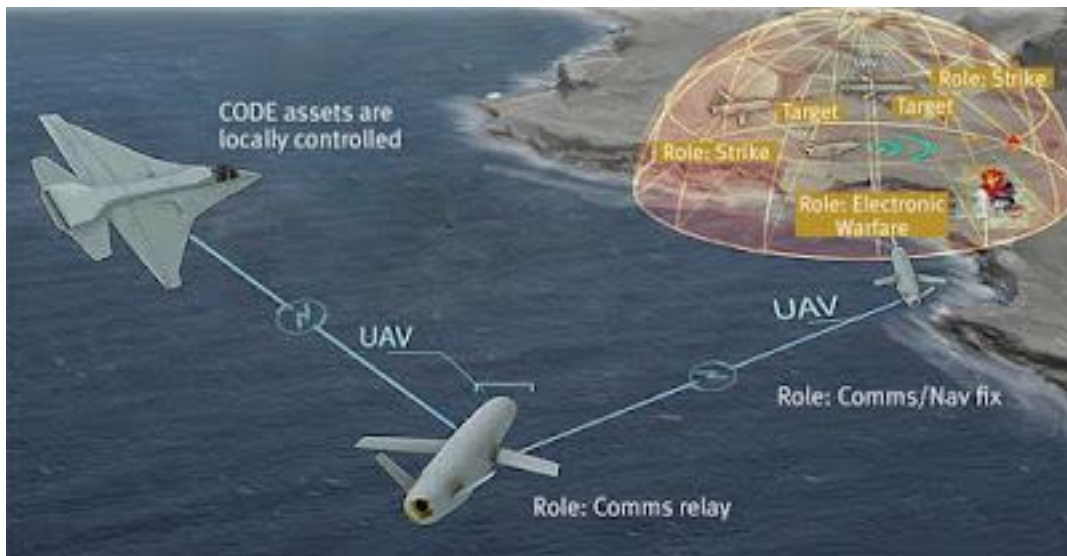


Figure 1: Drone Warfare Operating Profile

Source: Brandon, Knapp. "These Drones Survived without GPS". Nov 29, 2018. <https://www.defensenews.com/newsletters/unmanned-systems/2018/11/28/these-drone-swarms-survived-without-gps/>. (Accessed Feb 22, 2023)

The use in military domain came into serious prominence in Afghanistan to target terrorists and their hideouts. Its use peaked during the Azerbaijan – Armenia conflict when Azerbaijan Armed Forces employed the Turkish Baykar Bayraktar TB2 Drones and achieved a decisive victory over the Armenian Armed Forces. In the case of India, Defence Research and Development Organisation (DRDO) is developing an Unarmed Combat Aerial Vehicle (UCAV) Ghatak (SWIFT). It is an autonomous Jet Powered stealth flying machine capable of launching missiles, bombs, and Precision Guided Munitions (PGMs). The first test flight took place on 01 July 2022.¹

However, as it happens in war, development of new weapon system leads to development of counter weapons and changes in warfighting to neutralise the advantage gained by introduction of such systems. Recent failures of TB2 in the Ukraine war suggesting that drone too is now meeting a similar fate. So, the question is, are drones really a game changing factor in modern war fighting. However, the use of such system by themselves do not have a game changing capability to influence the outcome of the war. They at best serve the purpose of a force multiplier and need to be integrated into the overall warfighting design to succeed. Moreover, new Counter Drone Systems, air defence systems are now being developed by various countries to neutralise the drones before they cause any damage to the defending forces. To

¹ Tyagi, Shashank. "Ghatak Combat Drone Project". July 6, 2022. <https://www.studyiq.com/articles/ghatak-combat-drone-project-free-pdf/> (accessed Feb 20, 2023)

examine this question their employment against terror groups, Nagorno Karabakh, and the ongoing Russia – Ukraine war will be analysed from the perspective of their future employment, effectiveness and utility for force development.

Use of Drones in Anti-Terrorist Operations

The US had employed drones with telling effect in Afghanistan to target the fighters and leaders of ISIS (Khorasan), Al-Qaeda and Taliban. Recently it targeted the Iranian Major General Qasem Soleimani. Other countries that have used drones are Turkey against the Kurdistan Workers' Party, Nigeria against Boko Haram, Iraq against the Islamic State in Iraq, and Syria (ISIS), and Saudi Arabia in Libya and Yemen. Swarm drone attacks with loiter capability have made drone warfare deadlier and even more lethal. Even the terrorist groups have used them effectively. Yemeni Houthi rebels conducted swarm drone attack on two Aramco installations of Saudi Oil Companies by 18 drones and three low-flying missiles. (Aljazeera, 2022) Hand of Iranian Defence Forces can also not be ruled out in the Aramco attack given the sophistication of the attack.



Figure 2: Attack by UAVs and Missiles on Aramco Oil Fields by Houthis Rebels
Source : cnbc.com. <https://www.cnbc.com/2022/03/25/reports-of-huge-fire-at-aramco-oil-facility-in-saudi-arabia.html> , Andrej Isakovic | AFP | Getty Images (Accessed Feb 20, 2023)

Nagorno Karabakh or the Azerbaijan – Armenian Conflict

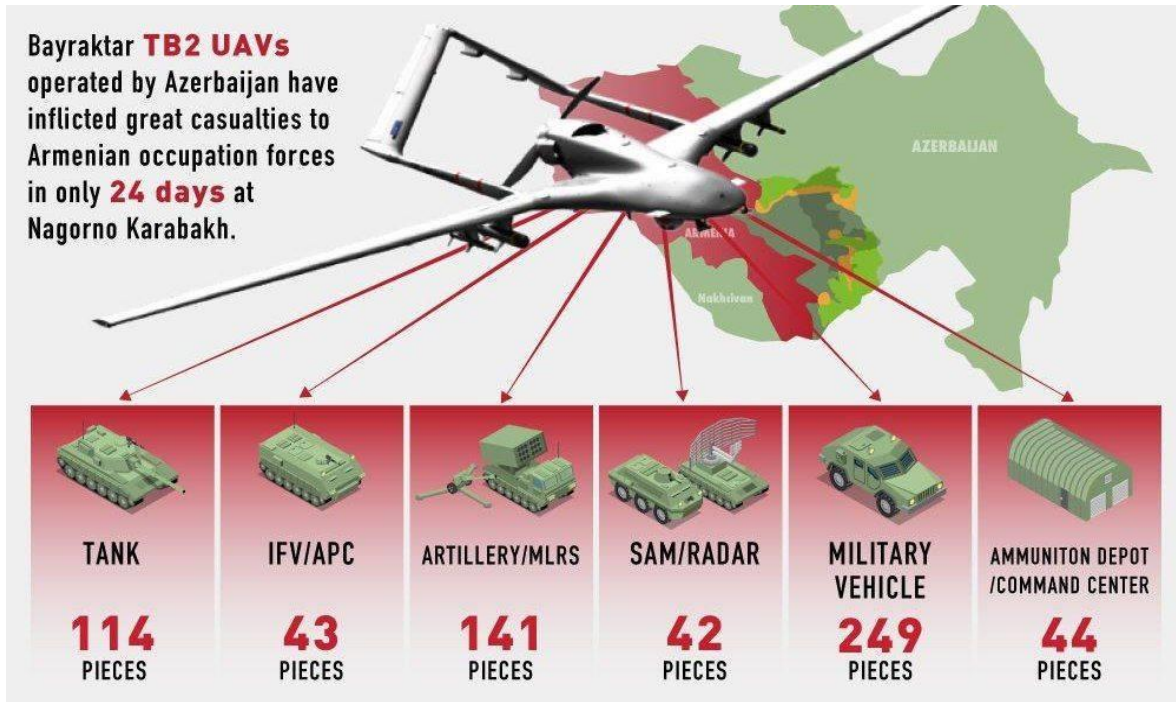
However, drone warfare shot into limelight during September 2020 in the Nagorno Karabakh conflict also at times referred to the first drone war. During the conflict

drones were used by Azeri defence forces against the Armenian land forces with telling effect. Videos released from the war zones showed drones destroying scores of Armenian artillery, Armour, bunkers, and air defence systems. But was the victory entirely due to the use of drones? There were more crucial factors behind the decisive victory of Azeris. Azeris between the first Azerbaijan – Armenia war and the September 2020 conflict through a strong political direction pursued modernization of its armed forces. Azeris used all element of national power in developing their armed forces to seek victory over Armenia. Azerbaijan invested heavily in creating a modern military, diversifying its arms suppliers, and procuring advanced weapons systems and equipment including UAVs, precision-guided weapons, long-range rockets, mine-protected vehicles, surveillance systems and armoured vehicles. On the other hand, Armenia was resting on its past laurel and were content in a false sense of superiority due to the victory achieved by them in the first war in 1994. Armenia had fewer resources and failed to modernize its military. It purchased SU-30SM fighters to modernize its air force but could only afford four, and did not receive weapon package upgrades. Likewise, instead of upgrading its 9K 33 OSA systems, it purchased an additional 35 old systems from Jordan of 1980 vintage. These systems had no ability to counter UAVs effectively. Further Armenia failed to adapt to the emerging technology of loitering ammunition and UAVs despite the Azeris using them against the Armenians in the 2016 face off. Other factor that contributed to the defeat of Armenia was the lack of support as a result of the then Prime Minister Mr. Nikol Pashinyan not being in the good books of Putin, since the revolution started by him had led to the fall of the pro-Russian government. Whereas for Azeris Turkey declared unconditional support and providing the Baykar Bayraktors TB32. In addition, Turkey allegedly also supplied up to 1,300 Syrian and 150 Libyan fighters, airlifted weapons, supplies and personnel, and symbolic but nonetheless important deterrent gesture by stationing six F-16s at the Gabal airbase in Azerbaijan. (Borchert, Schutz, & Verbovaskzky, 2021).

Both sides used the UAV but what ensured their success in the Azeri – Armenian war was creative use by the Azeris against the Armenian AD Systems, outdated AD weapons of Armenia of the 80s provided by Russia, and lack of modern air force. Armenia had only 4 x Tsu35 modern aircrafts supplied by the Russians and that too remained grounded due to Russian pressure as they felt that the Armenians Pilots were not trained enough to operate these aircrafts and the fear that sensitive technology would go in the hands of the Americans should they be shot down.

(Borchert, Schutz, & Verbovaskzky, 2021) In brief, the UAVs of Turkey succeeded due to lack of integrated war fighting and adaptability of the Armenian forces to the changing ways of warfare.

Figure 3: Casualties Attributed to TB2 Bayraktars in Nagorno - Karabakh War



Source: Slobodan Čurčija, Lojze Pavič. "The War of Armenia and Azerbaijan 2020 – Lessons Learned". 2022. <https://hrcak.srce.hr/file/411971> . P.66. (Accessed Feb 20, 2023)

Ongoing Russia – Ukraine War

Initially the drones were used by the Russians in the in the Ukrainian conflict soon after the takeover of Crimea by them. They were used in support of the pro-Russian separatists in Donbas region in recce and surveillance and directing artillery fire. The Ukrainians also followed suit and started training their Armed Forces in the use of drones for surveillance and reconnaissance and directing and loitering ammunitions to attack the Russian Weapon Platforms. After the initial setback, the Ukrainian Armed Forces on the back of strong support in terms of military aid from the west and employing TB2 Bayraktar UAVs of Turkey started blunting and pushing back the Russian offensive. The Bayraktor TB2 drones had been effective against Russian armoured and logistics columns. However, the Russians have managed to get their act together and rapidly shot down the seemingly invincible Bayraktors. This has forced the Ukrainians to reduce their employment to 20 to 30 sorties a day. (Satam, 2022) As

a result of the repeated failure of the Bayraktars differences have also emerged between frontline troops, airmen and the senior Ukrainian General Staff as the senior officers continue to push for the use of TB2 Bayraktar drones. The troops on ground fear that the Russian layered and massive air defence comprising the s-300, Buk, Tor – M2 and Pantsir Air defence systems coupled with EW systems of the Russians will get the better off the Bayraktars. While the Russians have suffered considerable damage due to the use of UAVs, they have achieved their strategic objectives to a large extent of getting control of most of the Donbas, Kherson and capture of Mariupol. President Volodymyr Zelenskyy said June 2022, that Ukraine is now losing 60 to 100 soldiers each day in combat. By way of comparison, just short of 50 American soldiers died per day on average in 1968 during the Vietnam War's deadliest year for U.S. forces. (Leicester & Arhirova, 2022) It may also be worth noting that due to the now high failure rate of the Bayraktars against the Russian counter UAV measures the US is probably reluctant to sell the MQ -1c Grey Eagle drones to Ukraine, fearing Russia might access the sensitive technologies if they are shot down by Russia. See figure 4 of a TB2 Bayraktar shot down by the Russian anti – UAV system in the ongoing Ukraine War.



Figure 4: Bayraktar Drone Shot Down – Via Twitter: Satam, Parth. “Bayraktars are falling!”. June 7, 2022. <https://eurasianimes.com/bayraktars-are-falling-turkeys-much-hyped-tb2-drones-are-losing-stream/> (accessed on Feb 22, 2023)

The situation today is that both sides employing hundreds of drones that range from mini bug sized drones (Mavic a Chinese drone - interestingly both sides use them / Matrice-300) to Orlan – 10 Russia’s premier UAV with recce and EW capability and TB2 Bayraktars the Ukrainian work horse. With the import of hundreds of Shahed – 136, the Ukrainian war zone has become overheated with drone warfare. But has it

produced the results commensurate to the efforts. Both sides claim to have shot down each other's UAVs. Ukrainians claim to have shot down 85 % of the Russian UAVs including the Shahed – 136 the latest Iranian UAVs. (Bacon & Ortiz, 2022) Similarly, Russian claim that since the beginning of the special military operations they have shot down 821 UAVs of Ukraine. (Teslova, 2022) What does all this indicate? Overuse will not yield decisive results and end up as a war of attrition; a wasteful way of using an UAV.

Can they be made more lethal? Yes.



Figure 4: Asymmetric Attack – Swarm Drones: Source: Keller, John. “DARPA moves forward on plan to develop swarms of cooperating drones”. May 18, 2016.

<https://www.militaryaerospace.com/unmanned/article/16709066/darpa-moves-forward-on-plan-to-develop-swarms-of-cooperating-drones> (Accessed on Feb 22, 2023)

Having highlighted the weaknesses of the drones, it would be wrong to say that they cannot be gainfully employed. The pay-offs of drones for ISR role (the primary one globally) come at negligible costs. This is globally acknowledged and its usage is a definite advantage to the side that uses it effectively and innovatively. As regards the drones, they continue to remain a lethal weapon system but need to be used innovatively as was demonstrated by the Azeris. One of the methods to enhance their effectiveness is to employ them in swarms. The concept of swarm drone operation envisages integrating and flying a large number of UAVs carrying sensors, weapons/munitions and communication equipment on board and obtaining inputs, building a comprehensive battle picture and communicating to multiple users in a simple manner and in real-time. Such a concept increases the probability of success of

a mission as there are built in redundancies in the concept. For example, if an UAV is shot down or jammed its functions get taken over by another UAV. Swarm drones are multiple unmanned aerial flying platforms integrated as a single networked system self-contained for communication, reconnaissance and weapons / munitions to strike an enemy ground based target. See figure 4 above.

Development of a Counter UAV System

As it happens with any path breaking technology, in the initial stages it pays rich dividends but soon counter measures are also invented to neutralise or minimise the impact of such technologies. Research is on to counter drone including swarm drone threats. An area which looks most promising to counter such threat may lie in the electronic and communication domain – it is just a matter of time when an effective counter UAV system would be developed. Even in the physical destruction domain efforts are on to find suitable weapon systems. The number of flaws that were noticed in the Chinese demonstration of the world's largest swarm display on 01 May 2018 justifies this conclusion. 496 drones in the May 1, 2018 demonstration deviated from their path and few of them just returned back after taking off. This was attributed to GPS jamming. The other limitation of the Chinese drones is their limited scope in terms of radius of operations. The invincibility of TB2 Bayraktars was also created by **overhyping through direct streaming of UAV attacks (Information War) to the drawing rooms of the common public during the Nagorno- Karabakh conflict.** The reality was that their success had other more important reasons such as lack of effective AD with the adversary, lack of modern EW platforms to jam these UAVs, lack of adaptability to fight against the threat of UAV and loiter ammunition by the opposing armed forces. When pitched against an effective AD, EW, and integrated warfighting design as it happened in the later part of the Ukraine war the UAVs have suddenly started looking beatable.

Conclusion

Above discussions by no means diminishes their role in warfighting. If used innovatively in an integrated way with the adversaries AD, EW and Airforce being taken care of before mounting UAV based attacks the results will be spectacular. Azeris did exactly this and were able to annihilate the Armenian armoured vehicles, artillery guns

and field fortifications. Tactics adopted by their troops were modified to avoid getting attacked by enemy UAV by laying more stress on mass fire assaults before employing infantry and mechanised troops. UAVs are an excellent force multiplier and should be used in a comparable manner to the employment of the EW, AD, Cyber, robotics, Artificial Intelligence (AI) and information operation systems. The aim being to synergise the various warfighting elements on the battlefield to produce out of proportion results. It is also a fact that India has very little experience of employing Armed Drones in combat. Therefore, it has to draw lessons based on wargaming, exercises, experiments in our own context / combat scenarios and environment. However, India should also take cue from the experiences of the Nagorno Karabakh and the Ukraine wars and must ensure that the “Swarm Drone Attack System” is based on the principles of size of the swarm, survivability of the drones and the mix of the various types of drones in operations both for conventional and unconventional threats. Likewise, based on this emerging frontier of warfare India should review its warfighting doctrine, concepts, and capabilities. It is a highly competitive and devastating battlefield of the future and we need to match up to the changing dynamics of warfare and technologies associated with it.

Another important conclusion that can be drawn from the preceding discussions is that the UAV system may not survive against a contested battlefield environment with robust AD systems and offensive EW and cyber-attack capabilities. Further, being pre-programmed they are relatively less flexible than manned aircrafts and cause lesser damage at the target end compared to fixed wing air crafts. Also sooner or later the anti-UAV measures are going to catch up and then their relevance will be more or less at par with other force multipliers such as the EW and Cyber Attack systems. **However, their innovative and creative employment will produce results out of proportion to the effort employed at a relatively lesser cost and human casualties. Till then jury is still out whether the UAV are an overhyped system or one of the many weapon platforms that militaries over the world employ to secure victory over their state or non-state adversary.**

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