Emergence of Drone Warfare and Implications for India

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Frontal engagements of large formations of forces at the strategic and the operational level are becoming obsolete. Long distance contactless actions against the enemy are becoming the main means of achieving combat and operational goals.

- Valery Gerasimov, Russian Chief of General Staff.[1]

Abstract

In recent times Drones have emerged as the cutting edge tools of warfare. Therefore it is imperative that their usage and impact be analysed. This article traces the emergence of drone warfare from the mid nineteenth century to the present day. It highlights the advantages and uses of drones along with the moral and ethical dilemmas. It brings out that the use of drones for military strikes today is akin to use of tanks and aircrafts during WW1 with an equally transformative impact. It is therefore imperative for the Indian armed forces to be prepared for this genre of war in a faster time frame and to suitably enmesh these into the current and new doctrinal and organisational structures thereby enabling synergised application in operations.

General

On 4 February 2002, an MQ-1 Predator fired a Hellfire missile at three men, standing near a known mujahedeen base at Zhawar Kili, Afghanistan, killing them. This killing occurred without any face-to-face contact between the adversaries.[2] More than a decade later, in January 2018, Russian operators manning the extensive Air Defence (AD) network at Russia's Khmeimim airbase

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in western Syria spotted 13 incoming drones at low level. It was clear to the Russians that they were witnessing a new genre of a collaborative drone attack.[3] This failed attack on Khmeimim was disturbing to close observers of drone warfare as the first recorded instance of a mass-drone attack by "non-state actors" in a combat operation.[4] Later, in the Azerbaijan-Armenia conflict in the Nagorno-Karabakh war in 2020, the coordinated usage of armed drones and loitering munitions against tanks and air defence systems via electronic networks was very effective.[5]

In the early hours of 27 June 2021, two explosive-laden Unmanned Aerial Vehicles (UAVs) crashed into the Indian Air Force (IAF) station at Jammu in the Indian union territory of Jammu and Kashmir (J&K).This is the first time that UAVs have been used to strike a vital military installation in India.[6] The drones had finally arrived at India's doorstep.

Drones have now emerged as the tool of warfare and it is imperative that their usage and impact be analysed. This article, therefore, dwells upon the emergence of drone warfare by tracing its origins from the mid nineteenth century to the present day. It then highlights the advantages and uses of drones along with the moral and ethical dilemmas and concludes with implications and recommendations for India.

What is a 'Drone'?

The term 'drone' came into prominent use in the 1930s when it specifically referred to radio-controlled aerial targets. The De Havilland DH 82B Queen Bee aircraft was a low-cost radio-controlled drone developed for aerial target practice and is considered to have introduced the term "drone" into general use and was the first modern drone.[7] Once World War II broke out, "drone" started to represent any remotely-controlled pilotless aerial vehicle.[8]

Although popularly known as drones, however, the military refers to them as Remotely Piloted Aircrafts (RPAs) or UAVs.[9] Today the word "drone" is being interchangeably used with UAV and RPA. In this article, the word drone shall be used.

Drones: The Genesis

Considering that 20th century saw the parallel development of drones and cruise missiles, it is almost impossible to separate

their origins.[10] Nevertheless, a brief history of the use of drones is covered in the succeeding paragraphs.

The Inception. On 22 August 1849, the Austrians, who controlled much of Italy at this time, launched some 200 pilotless balloons against the city of Venice. The balloons were armed with bombs controlled by timed fuses. Some of the bombs exploded as planned but the wind changed direction and blew several balloons back over the Austrian lines. This is, by most accounts, the first recorded action of its type and the first use of aerial bombing, and its effect, though minor, contributed to the collapse of the Venetian revolt.[11]

Initial Years. During World War I (WW I) many eccentric weapons were developed on all sides of the conflict. One was the pilotless aircraft – Ruston Proctor Aerial Target – which represented the cutting edge of drone technology in 1916.[12] Unmanned technology advanced in the interwar period producing remote controlled targets for anti-aircraft gunners to use for target practice. Others, including the Nazi V1 & V2 (WW 2) were still essentially guided bombs – primitive versions of today's cruise missiles.[13]

Cold War Era. By the late 1950s, the USA and others found they could use unmanned RPAs as spy planes. Radio-controlled and fitted with film cameras, small drones flew over China and North Vietnam gathering imagery intelligence. On 15 November 1964 a Firebee Spy Drone was shot down over China which is said to be the first known use of reconnaissance drones.[14]

Technological Leaps. During the cold war, drones were unreliable, small yet expensive, and pilots had to be within range of their analogue radio signals. The genesis of the drones orbiting today's battlefields came in three key technological leaps:

- Increasing Endurance. In the 1970s, former chief designer of the Israeli Air Force Abraham Karem developed an aircraft with glider-like properties.[15] To hold the plane aloft, the gliders were designed to be incredibly long and thin, and could remain at altitude for hours on end. Incredibly long, thin wings could hold the plane aloft for hours on end, more than 24 hours flight.[16] This long flight time is the fundamental reason that today's armed

unmanned systems, such as the MQ-9 Reaper, have gained such traction.[17]

- Relay of Signals. The second crucial advance was the use of transmitters to send the footage straight back to battlefield commanders. The signal to control them, and the returning video footage, are now transmitted through satellite networks, not radio waves.[18]
- Arming the Drones. In 2001 USA took the final leap forward when the US Air Force and Central Investigating Agency (CIA) became the first to successfully fit drones with missiles – Predator drones with Hellfire missiles – as part of a failed CIA attempt to kill Osama bin Laden.[19]

Use of Drones: A World View

Over three-dozen countries in the world have armed drones, but not all of them produced their drones at home. Many countries seeking armed drone capability without the capacity to develop drones domestically have turned to other countries. USA's drones have been hoovering up information, feeding the military's insatiable demand for battlefield intelligence, and finding and killing terrorists and insurgents.[20] USA has conducted thousands of drone strikes, ranging from attacks on non-state actors such as al Qaeda to the operation that killed Iranian Major General Qasem Soleimani.[21] Today, the US armed services own nearly 8,000 drones.[22]

Chinese-made drones have been used extensively to combat extremism outside of China, but the Chinese military has avoided conducting lethal strikes themselves.[23] Turkey has employed armed drones domestically against the Kurdistan Workers' Party, Nigeria against Boko Haram, and Iraq against the Islamic State. Saudi Arabia and the UAE have carried out deadly attacks in Libya and Yemen using drones. Azerbaijan has used armed drones, arguably to great effect, in the war with Armenia, especially against tanks and artillery.[24]

On the other edge of the spectrum, during India's Army Day parade in New Delhi in January 2021, the Indian Army (IA) showed off a mature offensive capability with a swarm of 75 autonomous drones with distributed intelligence and edge computing, destroying a variety of simulated targets with kamikaze attacks.[25]

Use of Drones: Strategic, Operational and Tactical Domains

There are numerous ways in which the drones can be used at various levels – strategic, operational and tactical. Some of the uses are outlined below:

- Intelligence, Surveillance and Reconnaissance (ISR) Missions. Drones are able to digitally and instantly provide the most desired and precious operational information about the battlefield with their ability to loiter, often at a high altitude over a target, watching it ceaselessly for many hours.[26] They possess the advantage of enormous intelligence collection and data analysis capabilities as warfare turns to disrupting command and control, computer centres, and communication networks.[27]

- Strategic Bombing. Drones can be used for striking the enemy or its infrastructure in the deep rear and interrupting some operations that have strategic importance. The Turkish and Russian experiences have demonstrated that drones are optimal in cooperation with heavy artillery and air forces that provide high accuracy of bombardment.[28]

- Sniper in the Sky: Precision Targeting. The sniper role is a unique element offered by drones, allowing operators to detect, track, and liquidate a particular person or a group of people whose deaths have a political or military significance.[29] The extremely accurate lethal use of force is a great indicator of the capabilities of drones in warfare.[30] Drone strikes can be divided into two targeting categories:[31]

  - Targeted Strikes. In these strikes, the targeted individual is known to be at a particular location at a specific time.

  - Signature Strikes. In these strikes, a pattern of activity is observed over a long period of time at a particular location before deciding to strike.

- Exert Power Enmeshed with Diplomacy. Large drones like the Predator and Reaper help USA exert power

across the globe.[32] Equipped with high-tech surveillance gear, these drones can provide support for soldiers on the ground as well as launch their own strikes.

- Replacing Manned Fighter Aircrafts. Drones are the most effective instrument in fulfilling military and political goals without the use of fighter aircraft or upping the ante. In Idlib in March 2020, Turkish drones were able to reach targets that F-16s could not, obtaining the same effects as warplanes without incurring the same military or political consequences that the more traditional penetration into hostile areas might accrue.[33]

- Enhancing Network Centric Warfare (NCW) Capabilities. Drones serve as an integral part of NCW as such systems genuinely enabled an enhanced situational awareness, rapid target assessment, and distributed weapon assignment.[34]

- Psychological Effect. The psychological effect when the enemy is unaware of the direction of the next attack is pivotal. The Idlib episode showed perfectly that soldiers' mind-sets are ruined because from now on, they cannot feel secure in their supposed safe zone with drones sneaking into the rear, striking soldiers, weapons systems, and infrastructure.[35]

- Impetus to Covert War. Drones can be deployed quickly, for long periods of time, and to lethal effect at lower financial cost and risk to life for those using them. Compared to piloted aircraft or ground forces they can be projected over great distances. Since the CIA lacks fighters and bombers, the drone is their primary weapon of choice for a counter-terror target.[36] Since 2004, CIA drones conducted approximately 400 strikes between Pakistan and Yemen.[37] This makes it more likely that we will see more (covert) drone warfare, but less (declared) war.[38]

- Future of Drones: Enmeshed with Artificial Intelligence (AI). In the future, we will not need as many analysts, as AI and machine learning will allow the operatives to be

presented with the intelligence rather than sifting through terabytes of data to find the key data point they need.[39]

- Fuelling Violence and Abetting Future Wars. Thousands of civilians have been killed in American drone strikes alone. And there is evidence to suggest drone strikes alienate and radicalise locals, sowing the seeds for further violence.[40]

Use of Drones: Moral and Ethical Dilemmas

While the military personnel have been using drones within the military framework, there have been various moral and ethical dilemmas which are being debated throughout the world. Some of these are enunciated below:

- Making the World Safer or More Dangerous? As drone technology advances, and proliferates, ever further, national and international security interests will increasingly come to be seen being served better by drones than by expeditionary campaigns. That said, the temptation for more state (and non-state) actors to use drones and to do so more often, will not necessarily make the world a safer or a less violent place.[41]
- Civilian Casualties and Collateral Damage. The killing of civilians remains through collateral damage is a moral dilemma. As also is the infrastructural destruction for homes and means of subsistence even when (claiming to) directly target only individual bodies.[42]
- Signature Strikes: No Jus ad Bellum. Drones are now used to monitor for days on end the movement of individuals in regions and villages in countries known for the presence of extremist groups. By identifying any atypical behaviour on the part of a resident, this person becomes immediately eligible to be targeted without even having his or her identity established.[43] Thus, there is limited or no jus ad bellum in such signature strikes.

Implications and Recommendations for India

As drone warfare becomes ever menacing and omnipresent, it is imperative for India to focus on critical facets to enable a robust

and morally and militarily correct usage of drones. Some of these facets are accentuated below:

- Acceptance of Political Risk. The Indian polity has to accept the political fallout while authorising use of drones for politico-military purposes in pursuance of the overall national strategy, especially so in case of an adverse ground situation.
- Refining Military Strategy in Consonance with Political Aims. Once the use of drones is authorised by the political authorities, then the execution of the same has to be dovetailed into the overall framework of military strategy. This needs careful consideration as the use of drones is likely to spill into the grey zone wherein there are no clear cut demarcated lines between war and peace or military targets or non-state actors, et al. Therefore, precision strikes based on confirmed identities of the target are recommended instead of the morally ambiguous signature strikes.
- Evolving Joint Doctrine, Organisational Setup, Training and Tactics. Once the overarching strategic framework is erected, a joint doctrinal framework must be developed to cover the employment of drones in operations for all the three services. Once the joint doctrine is enshrined, thereafter tactics can be evolved and appropriate training can be imparted.
- Synergy of Land, Air and Sea Operations. The use of drones will become integral to any future military operation, by all three Services – IA, Indian Navy (IN) and the IAF. Hence, synergised application of the drones within the overall joint doctrinal framework and military strategy is required.
- Command and Control (C2). C2 is the basic ingredient of any operational plan and hence there is a requirement to establish C2 hub(s) for the drone operations. These should be suitably sited, duly protected and with redundant communications network to ensure flow of information from the decision makers to the operators, thereby enabling a short(er) Observe-Orient-Decide-Act (OODA) loop.

- New Joint Organisational Structures. Instead of equipping and raising "more of the same" organisations that exist today – like infantry/artillery/armoured brigades or divisions, etc. – it is recommended that new joint organisational structures like drone flights or batteries, drone units, etc. at various hierarchical levels be raised and suitably equipped, in sync with the new joint doctrinal precepts.

- Legal Protection for Armed Forces. As drones are likely to be employed during peace time also in covert missions as well, there is a requirement to back these actions by a legal framework to preclude unwarranted legal heckling and prosecution of armed forces personnel by Human Rights (HR) organisations. This will insulate armed forces personnel from adverse psychological setbacks while performing bone fide military duties.

- Regulatory Laws for Civilian Use. There is a need to erect a legal framework for use of drones by the civilians. The same is under process and the Government of India (GoI) has released guidelines under the Unmanned Aircraft System Rules, 2021, issued by the Ministry of Civil Aviation in March 2021. After the drone attack at Jammu Air Force Station on 27 June 2021, the Ministry of Civil Aviation has repealed the Unmanned Aircraft Systems (UAS) Rules, 2021 and replaced the same with the liberalised Drone Rules, 2021. The new drone laws and regulations apply to anyone looking to operate an unmanned aircraft system (UAS) in India.[44]

- Research and Development (R&D): Anti Drone Technology. India should focus on indigenous R&D in this field and fast track the complete cycle. The Home Minister Mr Amit Shah stated: "Drones have become a serious issue of security concern. Defence Research and Development Organisation (DRDO) is working on developing anti-drone 'Swadeshi' technology to get over this danger. All R&D projects have been sanctioned by the government to develop anti-drone technology".[45]

- 'Sovereignty' and 'War'. Courtesy the likely use of drones during peace time and against non-state actors, the definitions of 'war' and 'act of war' need to be re-defined. Also, if the adversary undertakes a mirror action by drones, then again the concept of violation of 'sovereignty' needs to be refined to avoid any blowback and/or a forced military hand.

- Public Opinion. As many drone operations may be covert, any leakage of such actions may lead to adverse public opinion which the political authority must eschew in favour of preservation of national interest at large. Alternatively, a set of self-regulating guidelines for the press and media can be formulated to ensure coverage of news as well as preclusion of media hype.

Conclusion

Drones are no longer the weapons of tomorrow – they are now the weapons of today. The use of drones for military strikes today is akin to use of tanks and aircrafts during WW1. The development of aircraft and tank strategies during the inter war years by select nations led to emergence of *Blitzkrieg* and *Deep Operations* theories of manoeuvre warfare, leading to victory on the battlefields. It is therefore imperative for Indian armed forces to transit from old to new platforms in a faster time frame and to suitably enmesh these into the current and new doctrinal and organisational structures thereby enabling synergised application in operations. Only then can India secure victory on the present and future battlefields of 21st century.

Endnotes

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