

Finabel



Drones and land forces



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This Food for Thought paper is a document that gives an initial reflection on the theme. The content is not reflecting the positions of the member states but consists of elements that can initiate and feed the discussions and analyses in the domain of the theme. All our studies are available on www.finabel.org

In recent decades, the security environment has evolved dramatically. Above all, this has an impact on how hostile wars are fought, particularly by the military methods used. Military revolutions are an inextricable feature of the history of warfare and conflicts. One of the most important drivers for change is technical advancements, with technology pushing this transformation in military affairs at an unparalleled pace today. Drone warfare capabilities, which combine sensor technology with precise strike effectors and communications, are a prime illustration of this. Artificial intelligence (AI), robots, cyber, cloud technology, nanotechnology, and laser systems are among the technical advancements that have been employed and integrated for this purpose. These advancements are complemented by miniaturisation, relatively low costs manufacturing, and stealthy technologies. The evolution of military drones, in particular, has changed both civilian and military missions. While drones have a variety of civilian applications in agriculture, monitoring, cinematography, and other fields, the paper will discuss military drones, unmanned aerial vehicles (UAVs), and remote-controlled aircraft of different sized that are used to do activities that are too dull, dirty, or dangerous for human personnel. The absence of a person on board is a military drone's major selling point as that is helpful for a variety of reasons: first, it needs fewer pilots to put their lives at risk on the battlefield; and second, the drone is lighter and possibly extremely small due to the absence of flying equipment.

In order to keep the use of force manageable, restrict the danger of escalation, and limit the political risks and harm caused by the use of force, hybrid warfare players prefer to use circumscribed warfare methods with a comparably small military impact. Drone warfare technologies, as well as unmanned and long-range accuracy weapons systems, are practically suited for enabling such methods.

A general understanding of the existing employment of drones in the context of hybrid conflict/warfare must be constructed as a first step, also because despite their increasing deployment, drones remain a contested and controversial tactic. Is it ethical to utilise drones? Is it even lawful? Due to the lack of a legal framework for the use of military drones and the numerous civilian casualties, these are still highly discussed issues. There is the need for a law on the use of drones, both at a European and International level.

This analysis intends to contribute to the academic debate around the use of armed drones in land forces operations, the risks, the challenges and the outcomes. This paper will begin with an introduction to military drones: a description of drone types, with a distinction between military and civilian ones, the military applications, purposes and tactics. Subsequently, will be analysed the legal and ethical controversies on the use of drones in military operations.

Lastly, two case studies will be explained: the first one, on the 44-day battle in the contested area of Nagorno-Karabakh (2020), which offers a sample of the massive impact that these weapons may have on a particular conflict's result; and the second one, on the US attack in Pakistan from 2004 to 2009. It describes the lack of international law regulating the use of military drones on the battlefield and the consequent unlawful killing.

This topic is relevant for Finabel MS, as it may make them aware of the necessity of reviewing their domestic legislation related to the subject as to develop a common understanding of Unmanned Aerial Vehicles. Moreover, the massive usage of combat drones in the 2020's Nagorno-Karabakh conflict may pave the way for new strategies among the Finabel MS by combining drones capacities with artillery.

In conclusion, States must not make rash decisions without carefully examining the full scope of potential consequences for all parties: friendly forces, enemy combatants, civilians, and society.



Mario Blokken

Director PSec

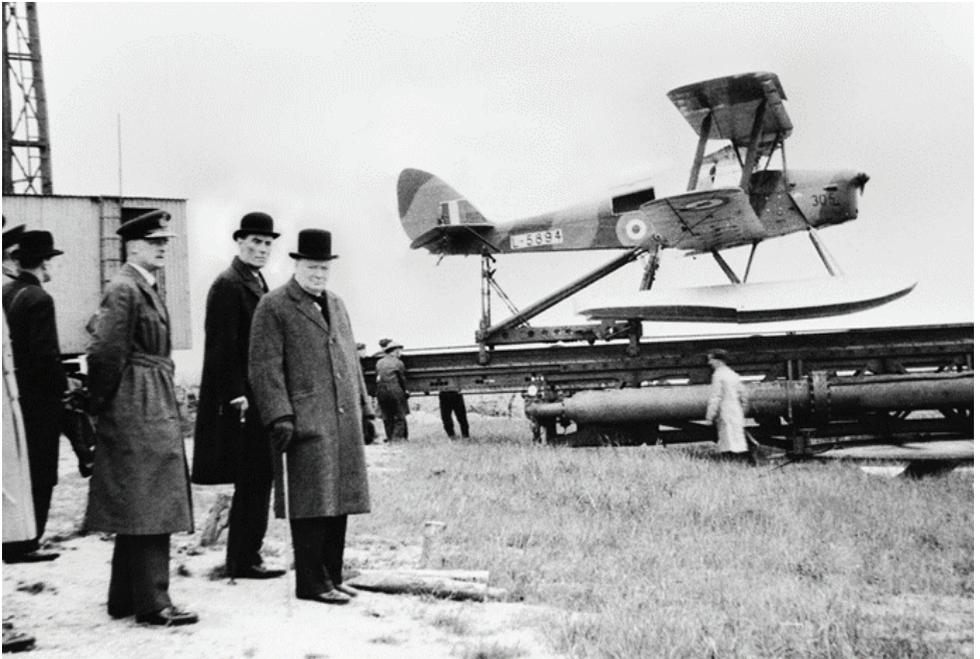
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INTRODUCTION

In the last decades, drones have become quite famous: they can be seen doing a wide variety of actions, from taking spectacular aerial photographs and high-definition videos to counter-terrorism missions. Drones' low procurement cost, according to the United Nations (UN), is facilitating their quick proliferation. Their compact size and precise skills make them more likely to be weaponised and deployed surreptitiously by state and non-

state actors in violation of transparency and accountability rules. All of these advantages favoured rapid technical advancement, resulting in the widespread commercialisation of drones and their inclusion into military transformation and modernisation processes. According to Reuters, the worldwide drone market is expected to reach \$14 billion over the next few years. The European Commission estimates that drones will have an economic



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The Prime Minister, Mr Winston Churchill, with Captain The Right Honourable David Margesson, Secretary of State for War, watching preparations being made in an unspecified UK location for the launch of a De Havilland Queen Bee sea-plane L5984 from its ramp. The Queen Bee pilotless target drone was a radio-controlled version of the Tiger Moth trainer. 1941, June 6

Picture by: War Office official photographer, Horton (Capt)

Source: <https://www.iwm.org.uk/collections/item/object/205195356>

impact of more than €10 billion per year and create over 100,000 jobs in the EU by 2035. Nonetheless, before continuing, it seems important to specify the different terms used to identify this kind of vehicle because there are a few and they differ depending on the applications and (sometimes) the geographic area. For instance, the word “drone” first debuted in English in 1935, with the connotation of radio-controlled aircraft. In fact, until that moment, the term had a slightly negative connotation, meaning “lazy, indolent” since the male bee (the drone) does not produce honey. However, apart from the reference to the flying insect, it is not crystal clear why the name of the drone was chosen to describe this type of aircraft. The link could also be found in the fact that the drone is a more expendable element of the hive than its female counterparts—just as an unmanned aircraft is compared to one with humans on board. It is also likely that the noise associated with these animals has been related to that of flying aircraft. The suggestion of an aircraft that travels without a pilot on board is quite dated back: the first known example is the Austrian attacks on Venice of 1849, carried out through hot-air balloons loaded with bombs and abandoned to air currents. Nonetheless, the technology of an aircraft that can actually fly without a pilot on board was conquered during the two World Wars. As stated previously, the word “drone” in its modern connotation first appeared in 1935 when the American Admiral William H. Standley saw a demonstration of the Royal Navy’s new remote-controlled aircraft for target practice. The aircraft was based on the de Havilland Tiger Moth, a biplane trainer produced in large numbers during the

interwar period and was later renamed the Queen Bee.

The technology has developed very broadly during the Cold War, and nowadays, there is a huge variety of drones in terms of types and applications. As far as the current terminology is concerned, “drone” is certainly the most used word by generalist media and everyday life; however, other terms are considered more appropriate. “Unmanned Aerial Vehicle” (UAV) is very common and is defined as “military aircraft that is guided autonomously, by remote control, or both, and that carries sensors, target designators, offensive ordnance, or electronic transmitters designed to interfere with or destroy enemy targets”. The phrase UAV is widely used to refer to military applications. On the other hand, “Unmanned Aerial Systems” (UAS) is the entire complex that is made up of four parts: 1) an aircraft with no pilot on board, 2) a remote pilot station, 3) a command-and-control connection, and 4) a payload relevant to the application/operation. Drones’ unmanned or autonomous capabilities have long been a source of contention, with both praise and criticism. Any autonomous system, whether airborne, ground-based, or sea-based, is defined as one that can execute specific activities on its own. The integration of three key capabilities: sensing, deciding, and acting, is at the heart of such a system. Machine autonomy and machine learning are said to have developed as a result of research in the fields of artificial intelligence, robotics, and control theory. Autonomous systems are usually categorised as: “Human in the loop” (if the system requires some degree of human input); “Human on the loop” (if a human oversees the operation

and can intervene at any point); “Human out of the loop” (if the systems operate fully on its own with no possibility of human intervention).

Other terms often used include “Remotely Piloted Aircraft” (RPA), “Unmanned Aircraft Systems” (UAS), “Unmanned Aircraft”, “Unmanned Combat Aerial Vehicles” (UCAVs), and “Unmanned Combat Air Systems” (UCAS). For the purpose of this paper, the words “drone” and “UAV” will be used interchangeably.

The physical qualities that are generally used to distinguish civil drones from military drones, although being increasingly viewed as antiquated criteria, include: operating range (from how far away they can be controlled); take-off weight; payload (the weight a drone can carry in addition to its own weight); altitude above sea level at which they oper-

ate; endurance (how long they can be in the air); command and control. More generally, drones can be divided mainly by equipment, technology and size. As equipment and technology are concerned, UAVs can be equipped with weapons (especially air-to-ground precision missiles) to conduct targeted attacks on the ground and video-audio cameras for reconnaissance, surveillance and espionage missions. In terms of size, drones range from a minimum weight of 1 kg to over 600 kg. The larger the drone, the greater the autonomy, the maximum portable load, speed and resistance. The largest are capable of speeds of over 300 km/h, an endurance of up to 48 hours and can travel several thousand kilometres. Therefore, drones can be used for various types of military operations based on the required objective. The United States, for example, has made extensive use of drones in

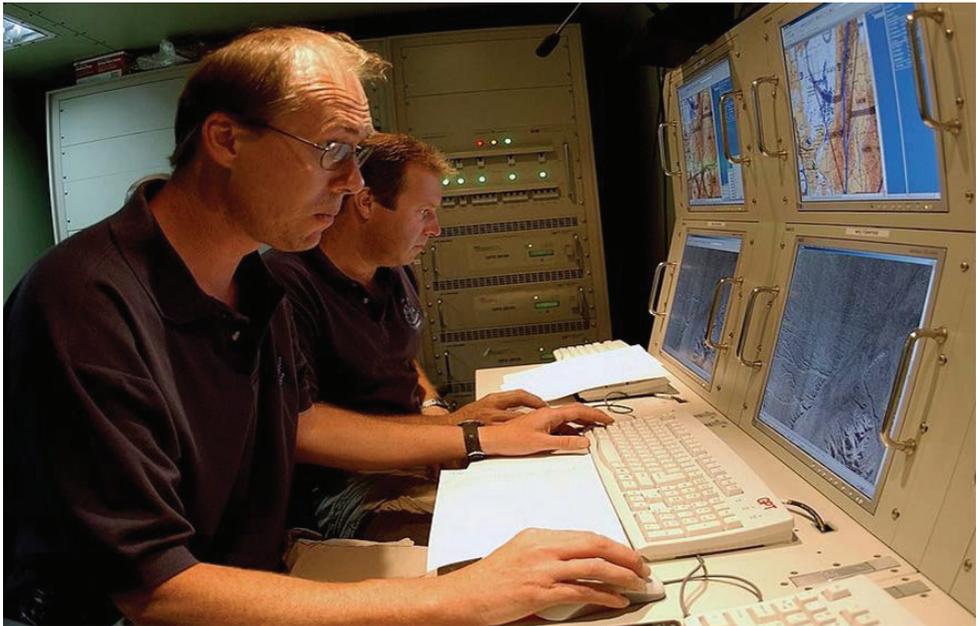


Bayraktar TB2 of Ukrainian Air Force
2020, December 21
Pictured by: Ministry of Defence of Ukraine

Source: <https://armyinform.com.ua/2020/12/21/finncelka-kompaniya-povayvch-zmomyklyme-zokrema-1-krayinai-154-hpl-hayraktar-tb2/>

the Middle East both to collect intelligence data and for air-to-ground attacks in complex strategic scenarios, in which sending soldiers would have involved considerable risks. This ensured high levels of operational efficiency, reduced losses, and media exposure. More recently, there has been an expansion of the use of drones in more intense conventional conflicts. The war in Nagorno-Karabakh (that will be addressed later in this paper) is probably the most emblematic case. Through a mas-

sive use of drones, especially Turkish-made Bayraktar, Azerbaijan has managed to track and eliminate a large number of Armenian tanks, artillery pieces and air defence systems, thus obtaining a decisive tactical and strategic advantage. This use of drones has proved particularly effective, especially because it has been included within a broader military strategy, consisting of coordinated and integrated use with other weapon systems, in particular artillery.



Source: http://www.dod.mil/Assets/Display/2015/Air_Force/DESD/05-0910581.PEG

IAI Heron 1 operators

The Joint Unmanned Aerial Vehicle (UAV) Experiment Program consists of British and Israeli contractors working together controlling the UAV for experimental purposes during a Combat Search and Rescue (CSAR) training exercise at Fallon Naval Air Station (NAS), Nevada (NV), during exercise DESERT RESCUE XI. Here two British contractors view a low-resolution strip map, which covers a large area provided by the electrical optical and infrared camera, installed in the UAV during a surveillance and reconnaissance mission. The exercise is a joint service Combat Search and Rescue (CSAR) training exercise hosted by the Naval Strike and Warfare Center, designed to simulate downed aircrews, enabling CSAR related missions to experiment with new techniques in realistic scenarios.

2013, August 13

Pictured by: SSGT REYNALDO RAMON, USAF

Broadly speaking, drones can be used for either military or civilian purposes. The military applications, as previously mentioned, are various: reconnaissance, attack, targets for military training, but also demining operations. Both states and non-state actors use them (like in the case of ISIS’ “Unmanned Aircraft of the Mujahideen” unit or Hezbollah).

In the first case, despite reconnaissance being the first military mission performed by an aeroplane, few aircraft were constructed specifically for reconnaissance in the post-World War II era. Even with high-speed or high-altitude aircraft like the Lockheed SR-71 and U-2, design characteristics have been optimised for survivability. Because of the high costs and extra mission support, they were appropriate only for strategic reconnais-

sance. These national assets rarely could be spared or coordinated for tactical reconnaissance tasks. The favoured option in the realm of tactical reconnaissance was to modify existing fighter designs by adding internal or podded speciality sensors or equipment. All of these factors, the fact that frequently reconnaissance missions need to be carried out in hostile environments (with high risks), and the rapid development of UAV’s technology led to extensive use of drones for this type of mission. Intelligence nowadays distinguishes between reconnaissance and surveillance. The former is connected with a snapshot picture of the battlefield, whereas the latter is comparable to continuous monitoring of the situation on the battlefield (or on other sensitive objectives) as it unfolds. As previously stated, there are various kinds of UAVs:



MQ-1 Predator, armed with AGM-114 Hellfire missiles

An MQ-1 Predator, armed with AGM-114 Hellfire missiles, piloted by Lt. Col. Scott Miller on a combat mission over southern Afghanistan.

Date: 2008, November 29

Pictured by: : Lt. Col. Leslie Pratt

Source: <https://army.mil/form.com.us/2020/01/21/urezdzka-kompania-powrazde-zamoznydkm-zokermie-lukrawini1544-tpda-byrakrcebz7>

micro-nano-drones, short-range reconnaissance drones, medium-range reconnaissance drones, and long-range reconnaissance drones in increasing order of size. Micro or nano drones are for surveillance purposes only. They give small groups of soldiers the ability to see beyond their current position but are limited in flight duration and optical power. Short-range reconnaissance drones are similar in their capabilities to micro-drones but have slightly better optics and flight duration. Instead, long-range reconnaissance drones can even have combat weapons as a payload. Typically, larger drones run on jet fuel, while smaller drones use batteries. Some examples of drones for Intelligence, Surveillance and Reconnaissance (ISR) missions are General Atomics MQ-9 Reaper, IAI Heron (Mach-

atz-1), and Wizjer UAVs.

Reconnaissance drones can be easily armed and used for offensive purposes. An Unmanned Combat Aerial Vehicle (UCAV), otherwise called a combat drone, is a UAV utilised for intelligence, surveillance, target acquisition, and reconnaissance and conveys aeroplane arms like rockets ATGMs, and/or additionally bombs for drone strikes. These drones are, for the most part, under continuous human control, with shifting degrees of independence. UCAVs are utilised for both drone strikes and battlefield intelligence. The General Atomics Predator and Reaper were the first UCAV of the modern era to be equipped with missiles, becoming the protagonists of the “global war against the terror” unleashed by the United States. They have



Leonardo Mirach 100/5 V2

The new UAT by Leonardo, the Mirach 100/5 V2

2022, January 11

Pictured by: Leonardo



Carabinieri operating a drone

Two Italian carabinieri operating a drone for surveillance operations

2018, September 1

Pictured by: Arma dei Carabinieri.

allowed the killing of dozens of terrorists but are also held responsible for the deaths of innocent civilians, often shot in non-war zone countries such as Pakistan and Yemen. For critics, it is “an inhuman weapon”. Many generals, not only in the United States, consider it as “a humanitarian weapon” because it allows to observe objectives for a long time and minimise “collateral damage”. These moral and legal issues will be tackled later on in this paper.

Related to the use of drones for offensive purposes, there is the issue of the defence against them. Until now, the use of drones has often been characterised by situations in which the user of drones could enjoy control of the air and relative few countermeasures by the

adversary, thus making this tool particularly effective. However, the conditions could be different in the event of a conflict between nations equipped with high technologies or both capable of deploying a large number of drones. In this case, the effectiveness of the tool depends on a combination of many factors: not only the characteristics of the drones but, more generally, the electronic warfare assets. In addition, the ability to control or contest the airspace (with traditional aviation, anti-aircraft defences and other drones), the use of ground masking to protect targets, the development of new anti-drone weapons, or the ability to rapidly integrate information from the drones themselves in a high-intensity conflict. Faced with these challenges, many

countries are engaged in the study of both countermeasures and improvements in the use of these weapons. Some countermeasures, except for the traditional anti-aircraft defence, are, for example, net-shooting bazookas or high-powered lasers to intercept and shoot down UAVs. Furthermore, new developments include the “swarm of drones” and greater application of artificial intelligence to give additional operational capabilities to these weapon systems. The “drone swarm” is a “concept” that takes various forms and can be used for different types of missions. They range from launching a very high number of small kamikaze drones with the aim of overwhelming enemy air defences to obtaining intelligence, up to electronic warfare. It is a use of drones not yet tested in battle but

which is taken into serious consideration by all the major military powers due to its high potential. This is linked to the integration of artificial intelligence and the increasingly contemporary possibility of making drones and drone swarms of autonomous combat systems capable of autonomously identifying and engaging targets through image recognition systems. In this regard, a UN report of 2021 is of particular relevance: according to it, in 2020, a Turkish-made drone would have tracked and attacked a position of the forces of the Libyan general Khalifa Haftar autonomously by artificial intelligence.

Combat drones are not to be confused with loitering munitions or “kamikaze drones”, a kind of weapon system that can be categorised in the niche between cruise missiles and



NASA's *Ingenuity* helicopter on Mars

The Mars Helicopter Ingenuity on the surface of Mars.

2021, April 5

Pictured by: NASA/JPL-Caltech

UCAVs, sharing characteristics with both. To date, none of the major manufacturers of UCAVs is European. The United States and Israel were the pioneers. China and especially Turkey have also developed commercially successful drones in the last decades. Consequently, most drones supplied to the European Armed Forces are not of indigenous production. This situation could change by 2028, when the development and production of the Eurodrone (European MALE RPAS) should be completed. This unmanned fighter aircraft is the result of the collaboration of the military industries of Germany, France, Italy, and Spain and is one of the many PESCO programs of the EU, which aims to strengthen collectively the technological and operational capabilities of Europe. The Eurodrone should represent the reference-unmanned aircraft for the air forces of the four European countries and would carry out intelligence, surveillance, target acquisition, reconnaissance, and targeted ground attacks (ISTAR) tasks. In all, the production of 60 aircraft is planned, divided as follows: 21 to Germany, 15 to Italy, 12 to France and 12 to Spain. Moreover, not all European nations have opted for armed drones. Only five European countries have decided to equip them with weapons: the United Kingdom, France, Serbia, and Ukraine. More recently, Italy and Germany have also decided to arm their drones after many years of debate and controversy. The reasons are mainly ethical and legal. Consequently, to ensure their correct ethical and legal use, in Europe, there is a concrete commitment to regulate their use by adopting strict rules of engagement and ensuring greater transparency on their deployment.

Drones can also be used as targets. As previously mentioned, the word “drone” was firstly associated with the Royal Navy’s new remote-controlled aircraft for target practice in 1935, later renamed the Queen Bee. A target drone, also called Unmanned Aerial Target (UAT), has a system with a ground-to-air defence role and has mainly for training purposes. They are employed for the development and testing of military systems, training military crews on threat identification, destruction tests of both anti-aircraft systems, and piloted combat aircraft. These unmanned vehicles emulate the behaviour of real aerial threats. For that purpose, these aircraft are required to reach very high speeds and dynamics. Some examples are Leonardo Mirach 100/5 V2 and the Airbus Do-DT35. However, also retired aircraft or older versions of still serving aircraft could be converted into UATs. A very expensive alternative, but feasible. This is the example of the QF-4 Phantom II and the QF-16 Fighting Falcon, converted by the US military respectively from a McDonnell Douglas F-4 Phantom II and a General Dynamics F-16 Fighting Falcon.

UAVs can also be used as decoys. This happened, for example, in the 1973 Yom Kippur War, when Israel used unarmed US Ryan Firebee target drones to spike Egypt into firing its entire arsenal of anti-aircraft missiles without getting any Israeli pilot injured and exploiting later on the exhausted Egyptian defences.

Drone also have a variety of civil applications. To mention a few: law enforcement, scientific research, search and rescue, surveillance, inspections, cargo transport, archaeology, conservation, healthcare, filmmaking, hobby and recreational use, disaster relief, pollution



US Navy 090508-N-2821G-158 The Northrop Grumman Corporation-developed Unmanned

The Northrop Grumman Corporation-developed Unmanned Aerial Vehicle MQ-8B Fire Scout flies over the Atlantic Ocean. Fire Scout is embarked aboard the guided-missile frigate USS McInerney (FFG 8), while the ship prepares for an upcoming counter-illicit trafficking deployment to Latin America, where the ship is scheduled to use Fire Scout to assist with counter-drug operations. (U.S. Navy photo by Mass Communication Specialist 2nd Class Alan Gragg/Released)

2009, May 8

Pictured by: U.S. Navy photo by Mass Communication Specialist 2nd Class Alan Gragg

helium balloons fly for 46 hours) to fly to another planet.

Drones present a series of advantages and disadvantages. The formers have been highlighted previously and can be summed up in the possibility of use in high-risk or difficult-to-access areas; they do not require the action of pilots in the combat zone; they favour the industry since they can be used in production processes, they facilitate training and various innovative uses. The latter can be divided into technical, economic and ethical. Technical disadvantages of drones are various. The satellite link can be hacked in times of

bad weather, lightning storms, which produces changes in the ionosphere. Sometimes flight capabilities can be limited by fuel type, power source, size, range, and navigation system as well.

Economic disadvantages have to do with the high costs of the acquisition and maintenance of bigger and more equipped drones, especially for civil purposes. For instance, a Eurocopter manned helicopter, the EC120 Colibri, costs \$1.4 million, while the MQ-8B Fire Scout system, the largest of its kind for experimental use on aircraft carriers, costs approximately \$ 50 million, between the device,

the control station and the satellite link. These facts mean that in civilian missions have not been used until now. Although for military use, an unmanned aircraft is cheaper than a military manned aircraft, as stated above in this paper, and that is why sometimes military drones are used for civilian missions (like border patrol). Ethical issues are broadly discussed by the public opinion, especially since AI got increasingly involved in the process. In fact, there is the (so not remote) possibility that the artificial intelligence of the UAV could determine by itself the targets to attack. Another problem brought up is the insensitivity about the consequences of war that can arise by keeping a distance from conflicts. But also, the uncontrolled commercialisation of drones, which can be acquired by people or groups of doubtful ethics (such as terrorist organisations). Moreover, some people may be illegally recorded and photographed, both in private and public spaces, constituting a serious threat to the inviolability of personal privacy.

Finally, alongside ethical issues, there are also important “legal vacuums” at the level of international law regarding the use (and the consequences) of combat drones. This issue will be tackled later with some case studies, but it is important to underline some general aspects now.

As far as civil drones are concerned, in the international context, the Chicago Convention of 7 December 1944 on the international civil aviation and establishing the International Civil Aviation Organization (ICAO) constituted one of the first international treaties of a multilateral nature, in which it is possible to find a reference to unmanned aircraft. This

treaty introduced standard rules aimed at ensuring the safety of civil aviation and, at the same time, environmental protection in its art. 8 provided that:

“No unmanned manoeuvrable aircraft may fly unmanned over the territory of a Contracting State, except with the special authorization of that State and in accordance with its conditions. Each Contracting State undertakes to ensure that the unmanned flight of such an aircraft in regions open to civil aircraft is controlled in such a way as to avoid any danger to civil aircraft.”

The purpose of this normative provision was to promote the development of international civil air navigation, to contribute to the maintenance of friendly relations between nations and peoples, and ensure that such development was safe and orderly. At the European level, the European Commission established the “European RPAS Steering Group” (ERGS) in 2012 to bring together the most competent European institutions to intervene in this field and harmonise the various national legislations. The result was the issue of two important regulations in 2019: regulation (EU) 2019/945 and regulation (EU) 2019/947. Indeed, institutional, political and social interest at the European level in remotely piloted aircraft has only recently intensified. In addition to establishing important targets for improving the competitiveness of E.U.’s aviation sector, the 2015 Aviation Plan directs E.U. authorities to improve the legal environment for drones in the E.U.’s skies. The plan laid the groundwork for extensive EU participation in aviation pol-

icy by establishing ambitious strategic targets such as an ambitious foreign aviation policy and high safety and security requirements. The EU Global Strategy, a larger strategic document describing the EU's foreign policy, indicates EU Member States' political determination to do more to protect European interests. Protecting critical national security interests necessitates a cutting-edge industrial and technology basis open to new and emerging technologies. Drones, robots, and AI are just a few of the technologies that are increasingly being recognised as strategic assets, requiring European leadership in developing and regulating. That is why the EU is working both the internal level and on the international *fora* toward shared rules on the development and use of UAVs.

The most pressing issue regarding the use of combat drones at the international level is the so-called "targeted killing". Its use has occurred in Yemen, Afghanistan, Pakistan and Somalia, and in Iraq, Iran, Syria and Libya, mainly by US military forces. The idea behind it is that it would allow minor "collateral damage", targeting precisely a particular individual. Critics argue that civilians are often the victims of such theoretically "targeted" attacks, as supported by various reports. In particular, the criticism attributes the responsibility of these victims to the lack of "intelligence" of the UAVs and the poor accuracy of the shots. Furthermore, it is noted that the vast majority of the time, drones are used against targets whose identity is not certain, the so-called "signature strikes", i.e., targets whose identity meets only certain characteristics. The use of drones is consid-

ered legitimate if it complies with different legal regimes provided by the international law. It is relevant the right to respect the territorial sovereignty of the affected State and the right to life of the affected individual, which is protected by art. 6 of the ICCPR and in other conventions.

In the case of the country "suffering" the attack, the regulatory framework relating to the inter-state use of force must be respected; the general rule is the prohibition of the use of force. It can be exercised only for self-defence (art. 51 UN Charter) or with the authorisation of the Security Council of the United Nations (see chapter VII UN Charter). Another case that makes the use of UAVs lawful is with the consent of the sovereign state where the attack is taking place. However, many authors note that drones are often used in areas that are not considered part of a war. Others have argued that although used during an armed conflict, they violate international humanitarian law from the point of view of the principles of distinction (between civilians and military) and proportionality. In the case of the individual being killed by a drone attack during an armed conflict, both human rights norms (with the exceptions provided for by the treaties, i.e., art. 15 of ECHR) and humanitarian law apply. The result that a drone attack carried out in the context of an armed conflict will have to meet the conditions set by both disciplines. However, the International Court of Justice has stated that during armed conflicts, the right not to be arbitrarily deprived of life, as stated in the ICCPR, should be coordinated - to find its exact definition - with the rules on the conduct of hostilities, as the latter constitutes *lex specialis*.

The question of the extraterritorial applicability of human rights norms has also aroused particular debate in the doctrine; it is generally believed that when a state exercises effective control over a territory, the individuals of that territory fall under its jurisdiction and, therefore, the rules provided for by the conventions apply. As for an attack with a drone, it can be difficult to establish whether there is effective control by the state carrying out the attack. The international jurisprudence - although it does not appear to have ever ruled on the use of military drones - would seem to think that a bombing does not represent effective control; in the *Bankovic* case, relating to a NATO bombing during the Kosovo war,

the ECtHR did not consider the jurisdiction of the states sued to exist. However, except in cases where consent has been obtained from the state within which the attack is perpetrated, the use of drones is justified by the states based on self-defence. However, according to customary law, it is undisputed that the requirements of necessity and proportionality must be respected for self-defence to be legitimate. In fact, it is an exception aimed at facing imminent risks. The use of force in these cases must not have a punitive purpose; it must be limited to repelling the attack received; it must last as long as necessary and only have sufficient intensity to achieve its purpose. Nonetheless, in many cases, UAVs



Source: <http://api.time.com/wp-content/uploads/2015/08/drones-11.jpg>

A screen grab of test footage from an infrared camera provided by Controp

Drone Footage.

Date: 2015, October 23

Pictured by : Vittoria Mentasti and Daniel Tepper

are used against non-state actors - such as terrorist groups - who do not necessarily act on behalf of the state where they are located. The opinion the use of force in self-defence against non-state actors is not prohibited is getting increasingly shared in the doctrine nowadays. Indeed, it can happen that the country where the attack for self-defence takes place may be unable or unwilling to take measures against

the subject that carried out the first attack. Some experts object to this argument, arguing that the practice is not yet sufficient to ensure that this can be considered law, also because of the reluctance of many states to consider it as such. In reality, this seems to be a grey area that states are interested in maintaining in a status of ambiguity due to the strong political component.

LEGAL AND ETHICAL IMPLICATIONS ON THE USE OF DRONES

Drones have changed the way nations fight wars and defend territories. As we know, their characteristic feature is the absence of a human pilot onboard and remotely controlled through an onboard computer. The first versions were used for military exercises, as targets to hit, but the offensive, control and security potentials were slowly realised. Today, they are essential elements of wars, and they have lost the simple passive role of the past. Drones may be employed for any type of warfare mission, including surveillance, espionage, precise strikes, and targeted murders. Like any other robot, a drone may be deployed to carry out the “Three Ds”: dull, dirty, dangerous military duties. Another key aspect of military drones is that they are immune to human flaws. They are not hungry, afraid, surprised, or exhausted (although they can run low on fuel).

However, since the first drone attack outside of a military conflict, in Afghanistan in 2001, much of the employment of drones has been plagued with controversy. Armed drones have

the potential to distort legal reasons for deploying force and increase conflict costs to civilians, as when anything goes wrong, there can be no accountability until there is transparency.

Furthermore, as more countries acquire these devices, drone warfare is growing and evolving. As a result, several European states have been linked to controversies surrounding the use of armed drones, raising questions about admissibility, state responsibility, and civilian casualties. These debates endanger European democracies by focusing on democratic norms such as transparency and accountability, given there is little publicly available information concerning armed drones. This raises questions about whether European countries are doing enough to protect the rule of law. With a desire to protect democracies and a rules-based international order, European countries can play a key role in defining drone operation guidelines. This may include meeting long-standing requests for greater accountability and transparency.

To ensure transparency, regulations on the use of armed drones, norms of engagement, risk evaluation with regard to legal systems and civilian casualties, declaration of a procedure in strike decision-making, and reporting on civilian casualties with age, identity, and affiliation are all required. Instead, necessary means to improve accountability are developing regulation and supervision in national parliaments to analyse armed drone strikes, promoting a broad knowledge among parliaments around legal issues relating to security partnerships. In addition, establishing mechanisms to evaluate the legal implications of providing support to another country; considering how to balance the need for strategic goals with the need for accountability; and organising inter-presidential meetings.

The European nations should demonstrate a greater determination and emphasise the seriousness of these problems by pioneering the creation of guidelines on best practices for strengthening transparency and accountability on the use of armed drones.

So, not few are the problems of armed drones in war missions: ethical, for the killing of civilians in the bombed territories; and juridical and legal, concerning international law, transparency and information. Although technology is progressing, it is difficult to be assured of objectives.

Moreover, as mentioned in the previous chapter, different legal frameworks and rules exist for the use of civilian drones, but not for military ones. Armed drones are not particularly addressed in international humanitarian law treaties or other regulatory frameworks. However, in armed conflict scenarios, the employment of any weapon system, including armed

drones, is subject to the standards of international humanitarian law. This implies, on the one side, that while utilising drones, conflict parties must constantly differentiate between fighters and civilians, as well as between military goals and civilian objects. They must take 'all reasonable efforts to protect the citizens, and they must postpone or cancel an assault if the projected collateral loss or damage to persons or civilian objects is disproportionate to the clear and direct military gain predicted. On the other side, under international humanitarian law, any weapon that allows for more targeted assaults while avoiding or minimising unintentional civilian casualties should be preferred. Whether the use of military drones provides these benefits will depend on the particular circumstances.

Transparency and Accountability

All these problems are still being debated, due to, among other things, limited knowledge of the impacts of most drone attacks. Such complaints are backed by ongoing requests for greater transparency and accountability in the use of drones. Concerns about how choices about targeted murders are made, and documentation on civilian fatalities, which are substantially larger, motivate these protests.

For example, because governments do not make enough information on the use of drones publicly available, complaints about the lack of transparency and how this affects democratic accountability exist. This lack of transparency also raises questions about whether European countries are doing enough to protect the rule of law. This problem is especially relevant in legal frameworks

governing the use of force and state duty for providing help.

As a result, it appears that the deployment of armed drones, or rather the operational and legal framework that supports such use, undermines essential democratic norms. The argument for military transparency is inextricably linked to the concept of accountability, both in a legal sense and in terms of the legitimacy of actions.

The EU may lead the way in implementing components of transparency and accountability at the regional level; this process would be better considered, as it demands the acceptance of guiding principles and best practices rather than requiring the adoption of a formal (legal) stance. A legally binding treaty would provide a stronger framework for the deployment of armed drones; however, political factors like obtaining and preserving relevance for defence forces would likely make this more challenging to achieve. When it comes to civilian fatalities, for example, governments should make every effort to disclose information on the age, identity, and affiliation of the intended targets, albeit this may not always be available. Interaction between governments and civil society groups is necessary, particularly amongst those players who produce different data on civilian vs combatant or military target losses. A change to increased openness in operational contexts can help evaluate the efficacy of various measures in counter-terrorism or during specific military operations; it can also foster discussion and improve trust-building in international relations.

With a solid intention of supporting regulations in the international order and defending

democratic values, European countries could play a significant role in defining the standards about how military drones should be used in the future by putting the spotlight on issues regarding the acquisition, deployment, and the use of armed drones.

Legal Framework

According to the former United Nations Special Rapporteur, Philip Alston, there are no clear laws for drones and no special legal framework. As a result, drone activity must be framed in the usual norms, which are the rules that control the use of force both in reasons for using force (*ius ad bellum*) and the means in which force is employed (*ius in bello*), and the protection of the rights of those who are vulnerable to the use of force (the rules for the protection of human rights). The *United Nations Charter* is at the heart of the *jus ad bellum*. The Charter serves as the legal standard for judging drone use. The use of military force is largely prohibited under the Charter. To be legal, such a resort must either meet one of the Charter exemptions or obtain an invitation from the state where force is being used to join it in armed war conflicts. The Hague Conventions, the Geneva Conventions and their Additional Protocols, customary international law, and general principles (together with the *jus in bello*) all provide restrictions on how military force may be used during an armed conflict.

There is also the *International Committee of the Red Cross*, which reviews and comments on the guidelines on the use of force on a regular basis (ICRC). In 2005, the International Committee of the Red Cross published a

comprehensive review of customary international humanitarian law. It effectively serves as a handbook of international humanitarian law for the two types of armed conflicts, for which well-developed sets of rules exist: international armed conflict and non-international armed conflict. There is also a profile of international criminal law since, depending on the circumstances, some operations carried out using drones may constitute war crimes or crimes against humanity. In more, human rights treaties and treaty bodies have established responsibilities on nations to protect persons under their authority from harm by others (states and non-state actors), as stated in Article 1 of the Geneva Conventions.

It is critical to comprehend how the choice to strike with drones should be assessed. To that purpose, we go from the study of the *ius ad bellum* (legitimate defence, assent of the territorial state) to the question of whether the situation genuinely constitutes a military conflict. Because drones are commonly used against non-state entities, the threshold of armed conflict is that of non-international armed conflict. Therefore, it is essential to determine answers about the intensity of the conflict and the group's command structure to determine whether the law of armed conflicts pertains. If not, the rules for human rights protection must be implemented. On a legal level, the *Universal Declaration of Human Rights*, which emphasises the importance of human dignity, the right to life, and personal security, should be safeguarded by legislation, and the prohibition of extrajudicial murders or executions is now an obligatory norm for all nations that are called to respect, preserve, and implement these peace-promoting values.

Within human rights, an important principle is the one cited by the then UN Special Rapporteur on Extrajudicial, Summary or Arbitrary executions, Christof Heyns, in the 2013 report to the UN General Assembly, affirming: "those responsible for violations must be held to account". This confirmed that this topic poses relevant questions on "legal controversies", especially regarding the conditions of liceity on the use of force.

The Geneva Conventions contain several provisions (for example, the already cited Article 1, which deals with grave violations of the Conventions; and Additional Protocol 1124, which deals with the protection of victims of international wars) that indicate when suspected crimes must be investigated. For instance, when the entire population or specific people are accused of being the target of an assault.

Furthermore, the European Union published its *Guidelines on the Promotion of Compliance with International Humanitarian Law*, which "set out operational tools for the EU to promote compliance with international humanitarian law (IHL) through its relations with the rest of the world". It is based on the obligations outlined in *Article 3(5) of the Treaty on European Union*, which lays out the EU's values (principles of liberty, democracy, respect for human rights and fundamental freedoms, and the rule of law).

The norms established by international human rights treaties must also be followed while conducting surveillance, research, or monitoring of the activities of a population. *Armed Conflict Law* and *Human Rights Law* are not explicitly excluded; hence the relationship between them must be discussed.

A person must determine what to attack and how essential the target is during offensive decisions, always bearing in mind the principles of the *International Humanitarian Law*:

The *principle of distinction* requires that the conflicting parties exclusively engage in military operations against military objectives, whether they be objects or humans.

The *proportionality principle* dictates that, even when military targets are assaulted, the projected collateral damage is not disproportionate compared to the direct military gain anticipated from the operation.

The parties are also expected to take a variety of practical *precautionary steps* during an assault to ensure that the principles of distinction and proportionality are satisfied.

The *prohibition of indiscriminate attacks* is linked to the principles of distinction, proportionality, and precautions in attack, and encompasses two sorts of attacks: attacks that are not aimed at military objectives; and attacks that are performed with instruments or tactics of warfare that cannot be addressed at military objectives or whose consequences cannot be restrained.

Ethical Controversies

We must also recognise the importance of ethics in autonomous drone debates. Those who oppose autonomous weapons systems frequently express worry about outsourcing life-and-death choices to nonhuman beings. Allowing a machine to “decide” to murder a human being is a major source of worry since it diminishes the value of human life. According to this viewpoint, human life is so valuable that it is unthinkable for a machine to

decide to take a life. It may be challenging to establish that autonomous drones may fulfil the “just war tradition’s” *jus in bello* criteria of discriminating. Even for human troops, making moral judgements about who may legitimately be targeted is tough. It is feared that allowing autonomous drones to discern such distinctions may result in civilian fatalities and unacceptable collateral damage. In contrast, it may be claimed that utilising autonomous drones is ethically permissible even of better utility than human soldiers are. Autonomous drones would be able to analyse more sensory data than human soldiers, allowing them to make more informed judgments.

However, certain characteristics of autonomous drones may call the applicability of the *Law of Armed Conflict* into question. Unmanned drones, regardless of how they are finally defined, would be able to act autonomously in time and space. This lack of human interaction with the weapon during assaults poses the question of whether and where the law demands human participation in the decision cycle. Military leaders responsible for the planning or conduct of an operation must take all necessary precautions to assure that the assault is not oriented to a protected person and that the offensive is not likely to breach the proportionality principle. Unmanned drones are not capable of reasoning in the same way that humans are, and, consequently, they are not conscious in the same way that humans are. Autonomous drones cannot legally replace humans. The conditions outlined here appear to presuppose a “*person in the loop*” of the decision-making process. In fact, Man can carry out control and intervention functions by learning from experience, calibrating his

reactions by adapting them to the context in which he operates, and mediating the environmental and situational inputs in the light of his cognitive filters. His cultural/professional background, the experience gained in a specific environment, the presence, in the contingent framework, of elements and limits that activate mnemonic processes, are compared and weighed in situations of uncertainty, until he chooses the most “convenient” option.

Even though drone technology has been widely credited with allowing better accuracy when a specific target is aimed at, it is rarely mentioned that precision itself does not start with the precision of the weapon at the moment of attack, but with the ability to properly recognise the target in the first place.

According to research made by the Centre for Naval Analyses on drone attacks in Yemen, for every 17 individuals targeted, 273 additional people were murdered; in Pakistan, missed strikes targeting 24 persons killed 874 other people. Furthermore, an examination of confidential data on US drone strikes in Afghanistan in 2010–2011 revealed that drone operations were ten times more likely to result in civilian fatalities than traditional air operations. As we will analyse better in detail with a Case Study, drones are also used in counter-terrorist attacks. The case study will explain the events of Pakistan from 2004 - 2009 with the unlawful killing made by American combat drones, ended with the Mehsud attack.

In this regard, unmanned drones are no different from other weapons or weapon systems. Like any other “weapon of war”, autonomous drones must only be aimed against legitimate targets, and assaults must not be expected to

inflict disproportionate collateral damage. Therefore, legal justifications for drone strikes are highly debatable under international law, including their admissibility under *jus ad bellum*.

According to prof. Ronald Arkin of the Georgia Institute of Technology, the difficulties are not only to teach a robotic vehicle to distinguish, for example, in an urban scenario, a civilian from a terrorist or a soldier. There is also, and above all, the difficulty to succeed, through the software, in creating in the machine a calibrated response capacity to a possible hostile act according to the regulatory indications on the use of force established by the laws of war. Unlike what a soldier can do, then, a robotic vehicle is not able to interact with the population, to negotiate, to carry out those gestures of pacification and to convey those signals (a smile, a handshake, the caress given to a child) which contribute to connote, for example, peacekeeping missions.

As mentioned before, the use of autonomous drones may also enhance some parts of humanitarian missions, helping people and lowering hazards to soldiers. Using autonomous technologies to investigate risky locations or execute high-risk activities like bomb disposal or home clearing would remove the possibility of human soldiers being wounded or killed. Thus, unmanned drones create significant legal and ethical concerns vis-à-vis the liability for unplanned injury. The technology creates some moral responsibility gaps. When autonomous military systems are implemented, it becomes more difficult to assign blame. Such possible gaps in accountability must be handled appropriately by technology solutions and legislative laws. Robots lack moral agency

and, as a result, cannot be held accountable in any discernible way if they cause deprivation of life, which would ordinarily necessitate responsibility if people made the decisions. So, who is to be held accountable? Software programmers, individuals who manufacture or sell hardware, military commanders, subordinates who deploy these systems and political leaders are all candidates for legal culpability.

Individual and state accountability is essential for ensuring liability for violations of international human rights and humanitarian law. Deterrence and prevention are weakened in the absence of the assurance of responsibility, resulting in less protection for civilians and prospective victims of war crimes; that is why is necessary a real legal framework for the use of military drones.

2020'S NAGORNO-KARABAKH WAR: THE DRONISATION OF WARFARE

Introduction

To understand better the 2020's conflict between Azerbaijan and Armenia over the Republic of Nagorno-Karabakh, it is necessary to take a few steps back. Indeed, the origins of this war can easily be traced to the late 1980s and early 1990s, when the Soviet Union had already shown signs of disintegrations and ethnic clashes were boiling up underneath. Even before the collapse of the Soviet empire, a war broke up in 1988 between the Armenians and the Azeris, when “the ethnic Armenian enclave in Azerbaijan declared independence and was nearly crushed in the ensuing war before its fighters and the Armenian military captured areas of Azerbaijan in a series of victories leading up to a cease-fire in 1994.” The six-year war, “which claimed more than 20,000 lives and ended in a cease-fire but no final settlement,” left the region in a state of uncertainty. That is because of multiple fac-

tors. Firstly, the conflict contributed to “the formation of an autonomous region that covered 20% of the territory of Azerbaijan” allied with Armenia. Not only did the Republic of Nagorno-Karabakh align itself with Armenia, but also other “great swaths of surrounding territories” did the same. This event led automatically to two more problems. On the one hand, roughly “600,000 Azerbaijanis – who had fled Nagorno-Karabakh and seven surrounding districts captured by the Armenians — stranded away from their homes. The same applied to a smaller number of Armenians, who had been living in Azerbaijan also fled or were expelled.” On the other hand, as a result of the conflict, Nagorno-Karabakh became closely aligned with Armenia, but due to its uneasy geographic position, vulnerable to attack by Azerbaijan, which has never hidden its intentions to regain control over that territory. In a few words, it was crystal clear since 1994

that that cease-fire was only meant to be temporary. Due to this precarious situation and ethnic enmities, “the region became one of the so-called frozen conflict zones in the vast area of the former Soviet Union, with sporadic episodes of violence since the 1994 truce”, with one significant exception: “it is the only frozen conflict zone not occupied by Russian troops”.

The period 1994-2014 saw no significant episodes. Even though enmities remained between the two sides, only two clashes broke out in 2008 and 2014, although with immediate cessation of hostilities. A noteworthy one erupted in April 2016. It lasted just four days and caused 200 casualties on both sides. Thus, despite the Azerbaijanis being able to take back only a few territories, the 4-Day War had some peculiarities and one important consequence, since it raised “the awareness of Azerbaijan that they can regain the areas occupied by the Armenians by military means.”

About the characteristics of the war, it is notable to mention the technology deployed in that conflict, which would be crucial four years later. On the one hand, Azerbaijan successfully handled numerous types of Israeli unmanned combat vehicles (UCAVs), such as “IAI Harop”, “ThunderB”, “Orbiter 2M”, “Aerostar”, “Hermes 450”, and “Heron-1”, while, “on the other hand, the Crane combat drone, used by Armenian forces had more modest capabilities than the aircraft used by the opposing side.” Nonetheless, its relatively short length, the 4-Day war had a crucial impact on further developments since it set the stage for what would happen four years later.

It is also noteworthy to mention that, during the 2010s, Azerbaijan and Armenia took a

completely different path. The former established close ties with Israel and Turkey, diversifying its military arsenal, while the latter entirely relied on its deep cooperation with Russia. These relations would play a crucial role when the conflict started in September 2020. Hostilities had already begun in July 2020, when:

“Azerbaijani drones of Israeli production Orbiter 3, Orbiter 2, SkyStriker, Hermes 900, and Harop were shot down or captured with the use of electronic warfare. In four days of clashes in the Tavush region, in total, 13 enemy drones were neutralized. Another Hermes 180 and Orbiter 3 were captured in 2012 and 2017, respectively. All UAVs were hit by the Armenian air defence systems which range from the anti-aircraft artillery to the use of modern air defence systems.” However, the most serious conflict erupted on September 27, 2020, “with the attack of Azerbaijani units on Armenian positions



Map of Nagorno-Karabakh

2021, January 29

Pictured by: The New York Times

Source: <https://www.nytimes.com/article/armenians-azerbaijan-conflict.html?actions=click&module=RelatedLinks&page=Article>

under the pretext that it was a response to the bombing of villages from the territory of Karabakh by the Armenian side”.

It lasted for 44 days and ended on November 10, 2020, with the acceptance of the peace agreement. Roughly 4,000 people were killed, “including civilians from both sides. [However] Armenia saw greater losses as shelling and drone attacks from Azerbaijan, backed by Turkey, bombarded its soldiers in trenches.”

It started as other previous clashes, but this time the conflict was different, “because Turkey had offered more direct support to Azerbaijan, and because of the scale of the fighting. [Furthermore] Azerbaijan used sophisticated attack drones, and both sides used powerful, long-range rocket artillery.”

The cease-fire agreement, signed on November 10 by the Russian President V. Putin, the Azeri President I. Aliyev, and the Armenian Prime Minister N. Pashinyan, gave Azerbaijan “the control of the areas it [had] regained control of during the conflict, as well as seven neighbouring territories occupied by Armenia during the conflict that ended in 1994.”

Superior Tactics and Political Choices: Why Drones Played a Central Role

Military drones and their impact on the Nagorno-Karabakh caught the attention of multiple military circles. Yet, what fascinated them the most was not their usage *per se*, since they have been used for 20 years now, but how Azerbaijan successfully integrated them with land-based operations: “investing in drones without proper tactics of use does not mean much, and the Azerbaijani side possessed both the technique and the appropriate strategy.”

Starting from the first days of the conflict, Baku employed its drones in different ways, not only for ISTAR missions but also as bait. Indeed, Azerbaijan decided to turn “11 slow Soviet-era An-2 aircraft into drones and sent them buzzing over Nagorno-Karabakh as bait to Armenian air defence systems — tempting them to fire and reveal their positions, after which drones could hit them.

[Consequently] Azerbaijan used surveillance drones to spot targets and sent armed drones or kamikaze drones to destroy them.”

It goes without saying that they played a more important role when they had “to execute intelligence, surveillance, target acquisition, and reconnaissance (ISTAR) missions in order to obtain the necessary information for the precise operation of various artillery weapons.”

Moreover, the widespread use of Unmanned Combat Aerial Vehicles (UCAVs) allowed Azerbaijanis forces to carry out “surgically precise attacks far from the front lines and to detect, monitor, and destroy all those targets that pose a danger to the development of the situation on the battlefield.”

They were primarily integrated with the air force, artillery units, but they are also regularly used independently to attack specific targets: “according to available data, the combat drones contributed to the destruction of numerous combat systems at the disposal of the Armenian forces. Their penetration into the background of Nagorno-Karabakh weakened Armenian supply lines and logistics.”

The high degree of integration between drones and land-based fire-support can also be noticed in many night clashes, when “the Azerbaijani artillery and rocket systems fought in

close coordination with drone warfare assets”.

Furthermore, the Azerbaijanis integrated the usage of drones with land-based operations, but they also adjusted it to the specific geographical features of Nagorno-Karabakh. In a few words, Nagorno-Karabakh is a piece of land between Armenia and Azerbaijan, surrounded by two mountain ranges with only small portions of flat areas. In the Northern part of the region, there is the Murovdag range, approximately 70 km long, and the highest peak is the Gamish Mountain, 3,724 meters. In the Southern-Eastern part, there is the Artsakh range, and here the highest peak is Mount Kirs, 2,725 meters. Between these two mountain chains is located the Karabakh Plateau. The geographical complexity of Nagorno-Karabakh requires peculiar military strategies. For instance, in such conditions, tanks prove to be useless if they are facing UCAV's and combat drones flying over them:

“Drones are able to fly over the massive hills and mountains and control entire valleys. For ground forces, such terrain is almost unsurmountable, especially for those forces which are attacking. The mountains are perfect terrain for guerrilla warfare and long-lasting defence, but the domination of drones in the air significantly undermines such important advantages for those who use the mountains as a natural defence line. UAVs are assisting howitzers and other types of artillery and Multiple rocket launchers (MRLs). They are the perfect instrument to allow the artillery and unguided missiles, mortars, in its indirect fire of targets of the enemy. While previously calling and adjusting indirect artillery fire on a target was a big challenge to any army or in recent decades only advanced armies

could allow the use of satellites, the drones are making a true revolution in modern warfare.”

The 2020's Nagorno-Karabakh conflict showed the increasing “vulnerability of traditional land units – armoured, mechanized, and motorized formations – in the face of advanced drone warfare weaponry and concepts. [...] The clashes showed that while the era of tanks is still not over, main battle tanks, along with other traditional land warfare platforms, would make easy targets for unmanned aerial systems (UAS) unless they are accompanied by an organic composition of mobile short-range air defences, electronic warfare assets, and counter-UAS systems.”

However, Azerbaijan's military success is primarily rooted in wise political decisions made a few years before. After the first cease-fire in 1994, Azerbaijan started looking for new opportunities to reduce its dependence on Russia. This happened in 1996 when Azerbaijan began to build new pipelines towards Georgia, enabling the country to export its natural resources outside Russia. The new pipelines, which ended in 2006, led to economic empowerment due to the abundant amount of oil reserves.

Consequently, Azerbaijan's military spending was deeply affected by this economic upgrade since “it increased from \$ 75 million in 2004 to \$ 3.1 billion in 2011.”

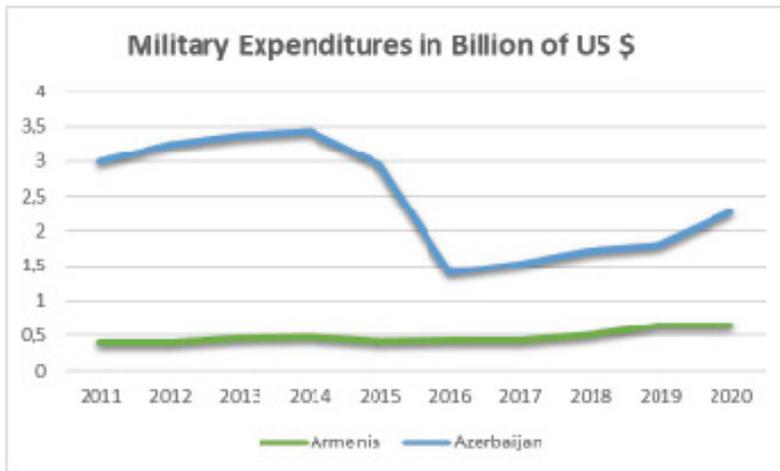
Indeed, over the 2010s, the oil revenue's element played a crucial role in assuring the military superiority of Baku over Yerevan, given that the latter could not rely on natural resources at all:

“Azerbaijan's military spending depends heavi-

ly on its oil revenues. When oil revenues peaked between 2010 to 2015, most of the money that the State Oil Fund of Azerbaijan Republic (SOFAZ) transferred to the budget was used to fund social and military projects. Azerbaijan's increase in military spending forced Armenia to follow suit. But while the oil-rich Azerbaijani economy did not suffer unduly, this became a significant financial burden for Armenia."

However, Baku's estrangement from Moscow did not include the economic dimension only but also the geopolitical one. Indeed, the will of Azerbaijan to move away from Russia induced Azerbaijan itself to develop closer ties with Turkey and Israel. This geopolitical shift would have a

serious impact on the 2020's conflict outcome. On the one hand, the Azeri-Turkish cooperation started already in 2010, when the two countries signed two important agreements, the Strategic Partnership and Mutual Assistance Agreements and the agreement on the establishment of the Turkish-Azerbaijani Strategic Cooperation Council, which enabled "the strengthening of military-technical cooperation between the two countries, as well as the possibility of providing military assistance if any of the signatory states are attacked by a third party".¹ This orientation found evidence in the first nine months of 2020, when "Azerbaijan bought \$123 million in defence and avi-



Graph of Military Expenditures in Billion of US \$

Armenia's data is based on published state budgetary figures. Azerbaijan's numbers are from the Stockholm International Peace Research Institute (SIPRI; the World Bank also relies on this data) and press releases

1. Tracey, G. "The Nagorno-Karabakh Conflict between Azerbaijan and Armenia: Security Issues in the Caucasus". *Journal of Muslim Minority Affairs*, 32(2), 216–229. (2012, June). [online] Available at: https://www.researchgate.net/publication/263719022_The_Nagorno-Karabakh_Conflict_between_Azerbaijan_and_Armenia_Security_Issues_in_the_Caucasus

ation equipment from Turkey in the first nine months of 2020. Most of the purchases [were] drones, rocket launchers, ammunition and other weapons.”² On the other hand, the Israeli-Azeri relationship began a few years before. According to the Stockholm International Peace Research Institute (SIPRI), between 2006 and 2019, “Azerbaijan spent about \$825 million on weapons, including drones, ammunition, anti-tank missiles and a surface-to-air missile system.”³ However, a serious turning point in the Israeli-Azeri cooperation happened in 2012, “when Baku purchased at least \$1.6 billion worth of UAVs, radars and air defence missiles from state-owned Israel Aerospace Industries (IAI) and was talking about buying or leasing IAI-produced spy satellites.”⁴ Developing close military ties with various international actors had positive repercussions on Azerbaijan’s military arsenal. It enabled Baku to diversify its foreign arms purchases and decrease its reliance on single states. Unlike Azerbaijan, Armenia did not undertake this path, yet it “placed its hopes in ties with Russia, an obsolete weapon and a strategy to deter a potential attack”⁵ – which proved to be fruitless. However, to be fair, it is also important to state that economic barriers forced Armenia to make certain decisions over others. Briefly, Yerevan did not possess the same amount of natural resources as Baku did. Consequently, the military burden stressed and strained the Armenian economy

more deeply.

Data shows that Armenia’s efforts to keep up with the superior economy of Azerbaijan since the former spent proportionally more on the military than the latter. Yet, this is just a consequence of the GDP’s gap between the two countries, with Azerbaijan’s exceeding four times that of Armenia: “[In 2019] Armenia’s military expenditure amounted to 673 million dollars while Azerbaijan’s was 1,850 million. This meant that per capita military expenditures in Azerbaijan last year amounted to 184 dollars, compared to 322 dollars in Armenia.”⁶

The different economic weights could not help but influence the military power of the two countries. As stated in the *Global Firepower 2020*, which ranked the 138 strongest armies in the world, Azerbaijan ranked 64th, while Armenia was only 111th.

Considering all these elements, namely a superior strategy, a better economy, a stronger military power, and “in the absence of a diplomatic or negotiated settlement, Baku always had the military advantage.”⁷

Obsolete Weapons and a False Guarantee: The Reasons Behind Armenia’s Military Defeat

Outstanding economic differences played a crucial role in the warfare strategies of the two states. On the one hand, it eased the military decisions of Azerbaijan because the oil revenues allowed Baku to diversify its ar-

2. Toksabay, E. “Turkish arms sales to Azerbaijan surged before Nagorno-Karabakh fighting”. Reuters. 2020, October 14. [online] Available at: <https://www.reuters.com/article/armenia-azerbaijan-turkey-arms-intel/USKBN26Z23I>

3. Perez, C. “Israel’s game in Azerbaijan: arms sales and reports on Iran”. Atalayar. 2020, October 2. [online] Available at: <https://atalayar.com/en/content/israels-game-azerbaijan-arms-sales-and-reports-iran>

4. Urcosta. “Drones in the Nagorno-Karabakh”.

5. *ibidem*.

6. Ibadoglu. “Why Azerbaijan Won”.

7. *ibidem*.

senal and foster alliances with local powers, such as Turkey and Israel. The same did not apply to Yerevan, which “placed its hopes in ties with Russia, an obsolete weapon and a strategy to deter a potential attack, while on the other hand, the Azerbaijani side has been investing in modern weapons, primarily drones, for years.”⁸ The relation with Moscow was the only tool at Yerevan disposal, and it benefitted from “the military cooperation with Russia, from which it has received superior systems in certain segments from its rival. At the same time, Armenia has secured the presence of some 3,000 Russian soldiers at the Gyumri military base on its territory, as well as the missile command centre as a result of cooperation between the Armenian Armed Forces and the Russian 102nd military base in that country.”⁹ Although the cooperation between Armenia and Russia was a strong international guarantee during the 90s and the 00s, the same cannot be said for the last decades, because “Armenia remained dependent on Russia as its main weapons supplier, with its agreement applying only to internationally recognised Armenian territory and not Karabakh”.¹⁰ Due to the limited resources and the technological progress of the rivalry, Yerevan focused its military power “on strengthening air defence and procuring ballistic missiles as a means of deterring a potential attempt by the opponent to conquer the disputed area militarily. The idea of procuring ballistic missiles was to target power plants and other infrastructure in the event of a renewed conflict,

which would thwart the long-term trend of Azerbaijan’s economic development.”¹¹ In a few words, Armenia was betting on the assumption that Azerbaijan had lots to lose if it decided to launch military operations against the breakaway region. However, the strategy, as well as the collaboration between Armenia and Russia, proved to be both unsuccessful, given the old-fashioned and obsolete weapons the former received from the latter country:

*“Armenia’s air-defence systems, consisting mostly of Russian-made S-300, OSA and TOR surface-to-air missile (SAM) systems have repeatedly proved to be glaringly vulnerable and ineffective against Azerbaijan’s Israeli and Turkish UAVs. The most significant weakness in the Russian-produced defence systems appears to be their radars’ inability to track these advanced, high-accuracy drones. However, tactical innovations on the part of Azerbaijan have additionally undermined the Armenian air-defence units’ performance.”*¹²

The most modern air defence systems at Armenia’s disposal were simply unable to detect, identify and track slow-moving targets such as combat drones. On the other hand, this weakness was sharply exploited by the Azeri drones, since “laser-guided smart munition system played the main role in the suppression of enemy air defences (SEAD) campaign. In the first two weeks of the ongoing clashes, the Azerbaijani Armed Forces destroyed some 60 pieces of Armenian air defences.”¹³

8. Ilić & Tomasevic. “The impact of the Nagorno-Karabakh conflict in 2020 on the perception of combat drones”. 14.

9. Ivi, p. 10.

10. Ibadoglu. “Why Azerbaijan Won”.

11. Ilić & Tomasevic. “The impact of the Nagorno-Karabakh conflict in 2020 on the perception of combat drones”. 11.

12. Shahbazov, F (2020). “Tactical Reasons Behind Military Breakthrough in Karabakh Conflict”. Eurasia Daily Monitor, 17(155). [online] Available at: <https://jamestown.org/program/critical-reasons-behind-military-breakthrough-in-karabakh-conflict/>

13. Ilić & Tomasevic. “The impact of the Nagorno-Karabakh conflict in 2020 on the perception of combat drones”. 13.

The inability of Armenian air defence systems to identify and shoot down UAVs signalled the turning point of the conflict. Still, it also reinforced the assumptions concerning the role of the UAVs in attacking roles, that “drones are only effective [...] when operating against targets with no air defence capabilities”¹⁴, and still, “success largely depends on the organisation of the enemy, and in this aspect, the Armenian side has shown itself rather weak.”¹⁵

Indeed, alongside the increasing usage of drones, new tools have been developed to match the drones’ progress and effectiveness, namely up-to-date air defence and electronic jamming systems, which are capable of striking UAVs of different sizes and nature. This automatically means that “truly successful use of drone is only possible, [if] the country is able to impose: effective counter electronic jamming; independent satellites systems or to have on own side the great power which has such satellite systems and in the near future the AI would play an additional important role in the determination of the character of the battlefield.”¹⁶ Still, Armenia possessed none of this. It had neither a modern air defence system nor adequate electronic jammers able to interfere with the connection between the drones and their guidance stations. Only at the end of the conflict, when the Azeri drones had already overcome the Armenian air defence systems, the Russians used “the Krasukha electronic warfare system from its

military base on the territory of Armenia, Gumri, in order to prevent Azerbaijani reconnaissance in the depths of Armenian territory.”¹⁷

In conclusion, it is noteworthy to state that the outcome of the conflict was crystal clear since the beginning, taking into consideration that “drones are vulnerable to technologies deteriorating GPS signals, specifically GPS spoofing and GPS jamming”¹⁸ and the lack of electronic warfare systems on the Armenian side:

“in the absence of a robust network-centric air defense architecture, and in relatively permissive airspaces, drones proved to be effective SEAD assets. Without a doubt, most UAS are still easy to shoot down compared to manned aircraft. Thus, one cannot claim that against a robust adversary, fielding a complex A2/AD (anti-access / area-denial) capacity backed by electronic warfare and counter-drone echelons, solely relying on unmanned systems could offer adequate solutions. Drone-based SEAD operations are ideal against adversaries lacking network-centric air defences and a complete air-picture.”¹⁹

Key Actors: Bayraktar TB2 and IAI Harop Bayraktar

Although Israel and Turkey provided Azerbaijan with many types of military drones, two of them particularly caught the scene, namely the Turkish Bayraktar TB2 and the Israeli IAI

14. Mahadevan, P. “The Military Utility of Drones”. Center for Security Studies. 78. (2010). [online] Available at: https://css.ethz.ch/en/publications/css-analyses-in-security-policy/details.html?id=%2Fen%2Fo%2F%2F%2F8%2Fno_78_the_military_utility_of_drones%2F

15. Yermakov, A. “Unmanned Aerial Vehicles over Nagorno-Karabakh: Revolution or Another Day of Battle”. Valdai Club. (2020). [online] Available at: <https://valdaiclub.com/a/highlights/unmanned-aerial-vehicles-over-nagorno-karabakh/>

16. Urcosta. “Drones in the Nagorno-Karabakh”.

17. Ilić & Tomasevic. “The impact of the Nagorno-Karabakh conflict in 2020 on the perception of combat drones”. 13-14.

18. Guiton, M. J. “Fighting the Locusts: Implementing Military Countermeasures Against Drones and Drone Swarms”. Scandinavian Journal of Military Studies, 4(1), pp. 26–36. (2021).

DOI: <https://doi.org/10.31374/sjms.53>

19. Kasapoglu. “Five key military takeaways from Azerbaijani-Armenian war”.

Harop. The key advantages of UCAVs over manned aircraft have already been largely discussed and can be found in lower costs, both financially and humanly. Indeed, especially the low costs prompted Azerbaijan to massively rely on them to launch its attack against Armenia.

Although the Bayraktar TB2 was one of the central actors during the Nagorno-Karabakh conflict, it mainly caught the attention due to others' weaknesses rather than its strength. That said, Turkish engineers made a good UAV from what was available from the market: "the electronic board is mainly American and English, the engine is Austrian, the optoelectronic system is Canadian."²⁰ The aircraft is characterised by a good flight duration, approximately 27 hours, and the "ability to

carry munitions in the form of MAM-L and MAM-C guided mini-bombs, an anti-tank missile and a 70-mm rocket without engines."²¹ The small mass determined "its well-known ease of use, but it also [imposed] serious restrictions: for example, the maximum payload [was] limited to 150 kg at four hard-points, and this weight significantly [limited] the patrol time, which is critical, especially considering that it [was] slower than helicopters (cruising at about 130 km/h)."²²

Notwithstanding the flight duration and the striking power, however, a serious limitation is the lack of a satellite communication channel: "due to this, it can only be used within a limited radius of the ground control complex, given stable communication, which is influenced by the flight altitude and the absence of



Graph of Azerbaijan's Military Trading Partner 2015-2019

Date: 2020, November 17

Pictured by: Ibadoglu G.

20. Yermakov. "Unmanned Aerial Vehicles over Nagorno-Karabakh: Revolution or Another Day of Battle".

21. Ilić & Tomasevic. "The impact of the Nagorno-Karabakh conflict in 2020 on the perception of combat drones". 10.

22. Yermakov. "Unmanned Aerial Vehicles over Nagorno-Karabakh: Revolution or Another Day of Battle".

obstacles (especially important in mountainous areas). A radius of 150 km was named, as well as plans to increase it.”²³

Despite the several constraints, TB2s were used not only to target identification, tracking, and guidance, but “they were also armed combat systems capable of independently destroying targets.”²⁴ Indeed, their versatility had a crucial role both in penetrating the background of Nagorno-Karabakh and in weakening Armenian supply lines and logistics.

The other UAV that played a crucial role during the Nagorno-Karabakh conflict was the Israeli-produced IAI Harop, also known as “kamikaze drone” or “loitering munitions”. This peculiar drone is:

*“a type of unmanned aerial vehicle designed to engage beyond-line-of-sight ground targets with an explosive warhead. Loitering munitions are often portable, and many are meant to provide ground units such as infantry with a guided precision munition. They are equipped with high resolution electro-optical and infrared cameras that enable the targeter to locate, surveil, and guide the vehicle to the target. A defining characteristic of loitering munitions is the ability to “loiter” in the air for an extended period of time before striking, giving the targeter time to decide when and what to strike.”*²⁵

In addition, they are usually cheaper “than some guided missiles that provide a similar

level of precision”,²⁶ and many of them present “a “wave off” feature that allows operators to cancel an attack in mid-flight and ditch the aircraft harmlessly.”²⁷

Traditionally, rockets, mortars, and missiles do not match these features. However, it is noteworthy to mention two more relevant characteristics of the kamikaze drone: “first, it enjoys great autonomy, enabling human on the loop and even human out of the loop operations. Second, it has anti-radiation capabilities which means the drone can detect and autonomously home onto radar emissions.”²⁸

In other words, they can “loiter” in the air up to six hours, with or without human interaction, carrying out “patrolling and reconnaissance of the area like an ordinary drone, and when an enemy target is detected, at the command of the operator, they hit it with a warhead installed onboard. Moreover, if they do not detect a worthy target, then they can be reused.”²⁹ However, IAI Harop has also certain weaknesses. Its relatively low flight speed does not allow them to serve as a replacement for missiles.

Alongside the opportunities they provide, of course, they also have weaknesses “that do not allow them to serve as a replacement for missiles, primarily because of their often extremely low flight speed.”³⁰

Military Takeaways from the Nagorno-Karabakh conflict

23. Ibidem.

24. Shaikh, S., & Rumbaugh, W. “The Air and Missile War in Nagorno-Karabakh: Lessons for the Future of Strike and Defense”. CSIS. (2020). [online] Available at: <https://www.csis.org/analysis/air-and-missile-war-nagorno-karabakh-lessons-future-strike-and-defense>.

25. Gettinger, D., & Michel, A. H.. “Loitering Munitions”, Center for the Study of the Drone. (2017) [online] Available at: <https://dronecenter.bard.edu/files/2017/02/CSD-Loitering-Munitions.pdf>.

26. Ibidem.

27. Ibidem.

28. Kasapoglu. “Five key military takeaways from Azerbaijani-Armenian war”.

29. Yermakov. “Unmanned Aerial Vehicles over Nagorno-Karabakh: Revolution or Another Day of Battle”.

30. Ibidem.

The 2020's Nagorno-Karabakh war signalled a significant turning point in the dronisation of warfare. Of course, drones had already been used in several other conflicts, but not in the way they were used in the Caucasus's clashes. In particular, what caught the attention was the dominance of combat drones and the lack of certain combat systems, which ultimately determined the conflict's outcome. The massive use of drones "with the appropriate strategy can largely compensate the lack of combat aviation or make a state that does not represent military force a potentially respectable adversary."³¹ However, it must be said that if the defender possesses neither robust air defence systems nor electronic warfare capabilities, things are way easier for the attacker. And this was the case of Azerbaijan and Armenia. In such context, small drones, such as the IAI Harop, easily countered enemy air defences, due to their small size. In contrast, combat drones, such as the Bayraktar TB2,

profoundly revolutionised warfare "because one of the most important conclusions that drones are winning is the war against tanks in the areas where the traditional air forces have not been engaged."³²

The war in Syria was a good testing ground for the Turkish-made UAVs because it contributed to their perfection. In addition, it is reasonable to expect that the role of the human pilot will continue to decrease in the upcoming years and "the issue of integration of AI into drone operational warfare will be determined by the factor of time, who and which power will be able faster integrate such technologies and techniques into the military doctrines of their own countries."³³

In conclusion, if, on the one hand, the 2020's conflict indicated a breakthrough in the use of UAVs, on the other hand, its outcome would deeply impact "the perception of combat drones as a combat system in years to come."³⁴

THE UNLAWFUL KILLING BY COMBAT DRONES A CASE STUDY OF THE US ATTACK IN PAKISTAN, 2004-2009

Drone strikes have become a regular feature of military operations. An increasing number of states and armed non-state actors are using armed drones to carry out attacks, within and outside zones of armed conflict, with devastating humanitarian consequences for the civilian population. While armed drones are

not explicitly regulated by international law, their use is governed by general principles of international law, including international humanitarian law. Their use poses significant challenges for compliance with international law, including international humanitarian law, when armed drones are being used during

31. Ilić & Tomasevic. "The impact of the Nagorno-Karabakh conflict in 2020 on the perception of combat drones", 9.

32. Urcosta. "Drones in the Nagorno-Karabakh".

33. *ibidem*.

34. *ibidem*.

the conduct of hostilities.³⁵ The United States (US) attack in Pakistan, in the period 2004-2009, serves as an illustrative case of unlawful killing by combat drones.

There are several advantages of the use of drones on a battlefield. First, “pilots” can operate them easily with a joystick away from the attack zone and the target without risking their life. Second, drones are relatively cheap, easily manufactured and less costly than manned military aircraft or fighter jets. Third, drones can operate within a broad spectrum from surveillance, reconnaissance, and precision attacks to targeted killings. Fourth, drones can carry out dull, dirty, or dangerous battlefield operations. Fifth, drones do not suffer from human weaknesses such as hunger, fatigue, and fear.³⁶ Drones can unlimitedly operate, whereas pilots or conventional aircrafts can fly within a specific schedule of flights. Sixth, drones can reach inaccessible places, while ground troops cannot.

The use of drones is also related to important deficits. The first crucial issue emanating from drones’ use is the dramatic killing of unintended targets which entails, similar to the unlawful killing case in Pakistan.³⁷ This mostly happens due to the remote ‘pilot’ system of drones. A drone’s ‘pilot’ relies on cameras and sensors to gather information to decide on an attack without being certain about targets. Furthermore, ‘pilots’ tend to trust the computer in distinction to their own judgment due to the multiple decisions that they must

make every day in split seconds.³⁸

In the case of Western Pakistan, the US had little reliable on-the-ground information to confirm or discredit computer data. A media report drawing attention to problems with target identification explained:

*The first two C.I.A. air strikes of the Obama Administration took place on the morning of January 23rd—the President’s third day in office. Within hours, it was clear that the morning’s bombings, in Pakistan, had killed an estimated twenty people. In one strike, four Arabs, all likely affiliated with Al Qaeda, died. But in the second strike a drone targeted the wrong house, hitting the residence of a pro-government tribal leader six miles outside the town of Wana, in South Waziristan. The blast killed the tribal leader’s entire family, including three children, one of them five years old.*³⁹

Drones are related to additional deficits. Drones’ strikes are carried out by joint operations. In the case of Pakistan, the involvement of the CIA in the decisions to strike may alone account for the high-unintended death rate since CIA operatives are not trained in the law of armed conflict. Hence, under the law of armed conflict, only lawful combatants are allowed to use force during an armed conflict. Lawful combatants are only members of national regular armed forces.⁴⁰ The CIA is not part of the US armed forces and is not subject to the military chain of command. It is not trained in the law of war or the fundamental principles of distinction, necessity,

35. Rae, J.D. “Targeted Killing and the Legality of Drone Warfare. In: Analyzing the Drone Debates: Targeted Killing, Remote Warfare, and Military Technology.” (pp. 51-78). Palgrave Pivot, New York. (2014). DOI: https://doi.org/10.1057/9781137281576_3

36. O’Connell, M. E. “Unlawful Killing with Combat Drones: A Case Study of Pakistan, 2004–2009”. In S. Bronitt, M. Gani & S. Hufnagel (Eds.), *Shooting to Kill: Socio-Legal Perspectives on the Use of Lethal Force*. Portland (pp. 263–291). (2012). O.R.: Hart Publishing.

37. Finkelstein, C., Ohlin, J. D., Altman, A. “Targeted Killings: Law and Morality in an Asymmetrical World.” Oxford Scholarship Online. (2012). DOI:10.1093/acprof:oso/9780199646470.001.0001

38. Vogel, R. “Drone Warfare and the Law of Armed Conflict”. *Denver Journal of International Law and Policy*, 39(1), 101–138. (2011).

39. Mayer, J. “The predator war: What are the risks of the C.I.A.’s covert drone program?”. *The Political Scene*. 2009, October 19. [online]. Available at <https://www.newyorker.com/magazine/2009/10/26/the-predator-war>

40. Schmitt, M. “Drone Attacks under the Jus ad Bellum And Jus in Bello: Clearing the ‘Fog of Law’”. *Yearbook of International Humanitarian Law*. (2010). DOI:10.1007/978-90-6704-811-8_9

proportionality, and humanity.⁴¹ Instead, the CIA is only driven by a list of intended targets to be killed.⁴²

In particular, at that period under discussion, the US military was not trained in the law of war. A former drone commander admitted that he had never been trained in the law of armed conflict.⁴³ A serving Army lawyer reported he had had only three days of international law training during his specialised course at the Army School in 2005. Thus, inadequate training may also account for the high rate of unintended deaths even where Air Force personnel were involved in the decision to strike.⁴⁴

Additional deficits from the use of drones are linked to more ethical issues. Drones cause the feeling of terror in people.⁴⁵ Even without killing, drones terrify people. They can fly for hours, surveilling and gathering information to strike at any time. Therefore, residents are constantly under terror and oppression, waiting for the strike.

The most important issue of the use of drones is the killing of civilians.⁴⁶ The intended targets of scheduled drone attacks are often in places surrounded by many persons who are not involved in hostilities, they are not suspected militants or intended targets.⁴⁷ This was the case in Pakistan in August 2009,

when the US attacked the home where the infamous Taliban leader, Baitullah Mehsud, was staying with one of his wives and her parents.⁴⁸ Although only Mehsud was the intended target, the strike killed twelve people in total for one intended target.

The case in Pakistan should be particularly seen through international law lenses that reveal the absence of a legal basis for that killing.⁴⁹ Thus, although international law provides an alternative to force in human affairs, it allows the right to resort to force in only two situations: to emergency self-defence and to those authorised to use force for the good of the international order. Therefore, states can use force in any self-defence situation or under the authorisation provided by the United Nations Security Council.⁵⁰ Furthermore, international humanitarian law allows the use of military force complemented by human rights principles. Hence, certain human rights principles may apply during an armed conflict.⁵¹ These principles are subject to litigation and review, fully providing up-to-date rules for responding to terrorism and other challenges.

In the case of Pakistan, the drone attacks involved significant military-type firepower. In law enforcement, lethal force is permitted only in situations of absolute necessity (not so on

41. Rae, J. D. "Targeted Killing and the Legality of Drone Warfare". In Rae, J. D. (Ed.), *Analyzing the Drone Debates: Targeted Killing, Remote Warfare, and Military Technology*. Palgrave Pivot. (2014). DOI: https://doi.org/10.1057/9781137381576_3

42. O'Connell, M. E. "Unlawful Killing with Combat Drones: A Case Study of Pakistan, 2004–2009". In S. Bronitt, M. Gani & S. Hufnagel (Eds.), *Shooting to Kill: Socio-Legal Perspectives on the Use of Lethal Force*. Portland (pp. 263–291). O.R.: Hart Publishing. (2012).

43. Nebhay, S. U.N. expert deems US drone strike on Iran's Soleimani an 'unlawful' killing. Reuters. 2020, July 6 [online]. Available at <https://www.reuters.com/article/us-iran-un-rights-ii/USKB3N24721W>

44. Maslen, S. C. (2012). "Pandora's Box? Drone Strikes under Jus ad Bellum, Jus in Bello, and International Human Rights Law". *International Review of the Red Cross*, 94(886), 614.

45. Amnesty International. "Will I be next? US drone strikes in Pakistan. (2013, October). [online]. Available at <https://www.amnestyusa.org/files/ass350132013en.pdf>

46. Maxwell, C. M. "Rebutting the Civilian Presumption: Playing Whack-a-Mole without a Mallet?". In C. Finkelstein, A. Altman, & J. D. Ohlin, (Eds.), *Targeted Killings: Law and Morality in an Asymmetrical World*. Oxford, U.K.: Oxford University Press. (2012).

47. O'Connell, M. E. "Unlawful Killing with Combat Drones: A Case Study of Pakistan, 2004–2009". In S. Bronitt, M. Gani & S. Hufnagel (Eds.), *Shooting to Kill: Socio-Legal Perspectives on the Use of Lethal Force*. Portland (pp. 263–291). O.R.: Hart Publishing. (2012).

48. Coll, S. "The Unblinking Stare: The drone war in Pakistan. A reporter at large". *New Yorker*. 2014, November 17. [online]. Available at <https://www.newyorker.com/magazine/2014/11/24/unblinking-stare>

49. Vaidyanathan, R. "US drone strike killings in Pakistan and Yemen 'unlawful'". *BBC*. 2013, October 22. [online]. Available at <https://www.bbc.com/news/av/world-ue-canada-24619675>

50. Rae, J.D. "Targeted Killing and the Legality of Drone Warfare". In: *Analyzing the Drone Debates: Targeted Killing, Remote Warfare, and Military Technology* (pp. 51–78). Palgrave Pivot, New York. (2014). DOI: https://doi.org/10.1057/9781137381576_3

51. O'Connell, M. E. (2012). "Unlawful Killing with Combat Drones: A Case Study of Pakistan, 2004–2009". In S. Bronitt, M. Gani & S. Hufnagel (Eds.), *Shooting to Kill: Socio-Legal Perspectives on the Use of Lethal Force*. Portland (pp. 263–291). O.R.: Hart Publishing.

the battlefield), making the use of significant firepower such as bombs and missiles lawful.⁵² The drones used in Pakistan were lawful for use only on the battlefield. The right to resort to them should be found in the *jus ad bellum* principle; the way they were used should be based on the *jus in bello* principle and human rights.⁵³ The US provided no public statement about the legality of its drone use in Pakistan between 2004 and 2009. In March 2010, the State Department Legal Adviser spoke briefly to the question.

Moreover, the most important rule of international law regarding the resort to force is Article 2(4) of the United Nations Charter that prohibits the use of force. Article 2(4) is interpreted as prohibiting all uses of force above a certain minimal level. However, the Charter contains two exceptions to this general prohibition. In Chapter VII, the Security Council is given authority to act in cases of threats to the peace, breaches of the peace and acts of aggression. It may order measures to maintain or restore international peace and security, including mandating or authorising the use of force by member states. Chapter VII also provides in Article 51 that states may respond in self-defence if an armed attack occurs until the Security Council acts. Therefore, the victim state may use significant offensive military force against a state legally responsible for the attack.

In addition, the International Court of Justice has made clear that the armed attack that gives the right of self-defence must be an attack that

involves significant force. States using force must show that it is necessary to achieve their defensive purpose and that it will not result in a disproportionate loss of life and destruction compared to the value of the objective. Necessity and proportionality are not expressly mentioned in the Charter, but they arose by the International Court of Justice in the Nuclear Weapons case. The two principles apply equally to Article 51 of the Charter, whatever the means of force employed.⁵⁴

In the case of Pakistan, the drone strike was aimed at the leader of a terrorist group.⁵⁵ However, armed response to a terrorist attack never meets these criteria for the lawful exercise of self-defence. Terrorist attacks are considered criminal acts because they involve the characteristics of crimes and not armed attacks giving the right of self-defence. This is because terrorist attacks are usually sporadic and are rarely the responsibility of the state where the perpetrators are located.

International law does not regulate the resort to force within states between government forces and non-state actors or between non-state actor militant groups. While international law does not foresee a direct prohibition on the use of significant military force to take power within or to break away from a state, it does contain principles that make such conduct generally unlawful.⁵⁶ According to international law, a government may only resort to military force if the use of force by an opposing armed group is significant.⁵⁷ In other cases, international human rights law

52. *ibidem*.

53. Vaidyanathan, R. US drone strike killings in Pakistan and Yemen 'unlawful'. BBC. 2013, October 22. [online]. Available at <https://www.bbc.com/news/av/world-us-canada-24619675>
54. O'Connell, M. E. "Unlawful Killing with Combat Drones: A Case Study of Pakistan, 2004–2009". In S. Bronitt, M. Gani & S. Hufnagel (Eds.), *Shooting to Kill: Socio-Legal Perspectives on the Use of Lethal Force*. Portland (pp. 263–291). O.R.: Hart Publishing. (2012).

55. Vaidyanathan, R. US drone strike killings in Pakistan and Yemen 'unlawful'. BBC. 2013, October 22. [online]. Available at <https://www.bbc.com/news/av/world-us-canada-24619675>

56. Maxwell, C. M. (2012). "Rebutting the Civilian Presumption: Playing Whack-a-Mole without a Mallet?". In C. Finkelstein, A. Altman, & J. D. Ohlin, (Eds.), *Targeted Killings: Law and Morality in an Asymmetrical World*. Oxford, U.K.: Oxford University Press.

57. *ibidem*.

restricts governments to the use of force in responding to violent crime. Furthermore, when a government seeks assistance from another state or international organisation, the party providing the assistance may only use that level of force that the government itself has the right to use.⁵⁸ In the case of the United States that used drones in Pakistan, this important set of legal principles governing internal armed conflict was overlooked since there had been no armed conflict in Pakistan. Even express consent by Pakistan would not justify the American use of drones.⁵⁹

Consequently, from the *ius ad bellum* perspective, the US had no legal right to resort to drone attacks in Pakistan. Drone attacks suggest the use of significant military force. Based on the prementioned principle of state responsibility, Pakistan was not responsible for an armed attack on the United States, and so there was no right to resort to military force under the law of self-defence. Moreover, Pakistan did not expressly invite the United States to assist it in using force. Even with express consent, the attacks should be part of Pakistani military operations. Even then, drone attacks were counter-productive to the military objective of Pakistani militants, and they led to the killing of unintended victims. Therefore, the US drones attacks might be considered an unnecessary measure under the principle of proportionality.

Therefore, the US use of combat drones in Pakistan between 2004 and 2009 appears not

to meet the international law rules governing the resort to armed force and the conduct of armed force. Although there was no armed conflict in Pakistan, the US used drones in Pakistan to launch unlawful military attacks and kill unintended people. Pakistan has neither requested US assistance in the form of drone attacks nor expressly consented to them. Furthermore, the absence of Security Council authorisation for drone attacks did not provide a basis in the law of self-defence for attacking inside Pakistan.⁶⁰

Even if the US had a right to resort to combat drones in Pakistan, their use to date has conflicted with the principles governing the conduct of armed conflict. The CIA operations involved did not suggest lawful combatants during an armed conflict. CIA operatives were not trained in the international humanitarian law rules regarding the use of force. There was evidence that the rules were violated in Western Pakistan since the drones killed many unintended victims for each intended one.⁶¹ A case that also raised concerns about the lack of proportionality and the necessity of drone strikes to end terrorist groups. Moreover, the US did not take the necessary precautions to protect civilian lives or minimise suffering, notably by protecting and assisting all the victims to the greatest extent possible. Instead, law enforcement methods would suggest an important alternative measure to employ in countering terrorism.

58. O'Connell, M. E. "Unlawful Killing with Combat Drones: A Case Study of Pakistan, 2004–2009". In S. Bronitt, M. Gani & S. Hufnagel (Eds.), *Shooting to Kill: Socio-Legal Perspectives on the Use of Lethal Force*. Portland (pp. 263–291). O.R.: Hart Publishing. (2012).

59. Schmitt, M. (2010). Drone Attacks under the *Jus ad Bellum* And *Jus in Bello*: Clearing the 'Fog of Law'. *Yearbook of International Humanitarian Law*. DOI:10.1007/978-90-6704-811-8_9

60. Rae, J. D. "Targeted Killing and the Legality of Drone Warfare". In Rae, J. D. (Ed.), *Analyzing the Drone Debates: Targeted Killing, Remote Warfare, and Military Technology*. Palgrave Pivot. (2014). DOI: https://doi.org/10.1057/9781137381576_3

61. Mayer, J. "The predator war: What are the risks of the C.I.A.'s covert drone program?". *The Political Scene*. (2009, October 19). [online]. Available at <https://www.newyorker.com/magazine/2009/10/26/the-predator-war>

CONCLUSIONS

UASs have revolutionised the approach to warfare, and the present and future developments, like the introduction of AI, are making this technology increasingly prominent. The word “drone” first appeared in 1935 in relation to a Royal Navy’s remote-controlled aircraft for target practice, later renamed the Queen Bee. The juxtaposition between the male bee (the drone) and Unmanned Aerial Vehicles (UAVs) is still nowadays unknown and debated, with various hypotheses on the table. Drones (in particular military ones) are usually classified depending on: operating range (from how far away they can be controlled); take-off weight; payload (the weight a drone can carry in addition to its own weight); altitude above sea level at which they operate; endurance (how long they can be in the air); command and control. More generally, drones can be divided mainly by equipment, technology and size. UAVs have various applications both in the civilian and military fields. In the first case, their applications vary from law enforcement, scientific research, search and rescue, cargo transport and hobby. In the second case, the main applications are ISTAR missions, attack (combat drones), targets for military training, but also demining operations. In addition, the use of drones recently has also been increasing in the aerospace field, i.e., the drone helicopter operating on Mars as part of the NASA Mars 2020 mission.

UAVs have a series of advantages that make them preferable to manned vehicles. Certainly, drones’ low procurement cost is facilitat-

ing their quick proliferation. Moreover, their compact size and precise skills make them more likely to be weaponised and deployed surreptitiously by state and non-state actors in violation of transparency and accountability rules. Other factors in favour of the use of UAVs are the possibility of use in high-risk or difficult-to-access areas, the fact that they do not require pilots’ action in the combat zone, and that they facilitate training and various innovative uses.

However, drones also have a series of disadvantages that can be divided into three main categories: technical, economic, ethical. The communications between the UAV and the command centre can be intercepted, or the entire UAS can be hacked remotely, giving two examples of something that happened in 2009 and 2011 to US drones in Iraq and Afghanistan. However, economic disadvantages are principally related to the use and maintenance of medium/big size drones for civilian missions (it is established that unmanned vehicles are usually cheaper than manned ones for military missions). Ethical problems are highly discussed and have to do mainly with the absence of the human in the cockpit and/or in the entire process (in the case of UASs with AI).

Much of the use of drones has been marred by controversy since the first drone attack outside of a military conflict in Afghanistan in 2001. Armed drones have the potential to distort legal justifications for using force and raise conflict costs for civilians, as there can be no accountability until there is transparen-

cy. Drone warfare is not only rising but also evolving as more governments obtain them. As a result, a number of European countries have been tied to debates over the use of armed drones, raising concerns about legality, state accountability, and civilian fatalities. These debates endanger European democracies by focusing on democratic norms such as transparency and accountability, given there is little publicly available information concerning armed drones. This raises the question of whether European nations are doing enough to safeguard the rule of law. European nations may play a crucial role in developing drone operation parameters by demonstrating a determination to preserve democracy and a rules-based international order.

At the national and international level, different legal frameworks and rules exist for civilian drones (since the founding of ICAO), but not for the military ones. Armed drones are not particularly addressed in international humanitarian law treaties or other regulatory frameworks. The use of combat drones can be ruled by the norms governing reasons for using force (*ius ad bellum*) and the means by which force is employed (*ius in bello*), and the protection of the rights of those who are vulnerable to the use of force (the rules for the protection of human rights). The heart of the (prohibition) of the use of force is Chapter VII of the UN Charter, but the legal framework on this matter is quite large and comprehends the Hague Conventions, the Geneva Conventions and their Additional Protocols, customary international law and the general principles (alongside the *jus in bello*).

The most controversial matter is the use of armed UAVs outside of armed conflicts or

against non-state actors for self-defence reasons. In the case of non-international armed conflict (that is why it is important to determine the level of intensity of the conflict and the command structure of the group to determine whether the law of armed conflicts pertains), the rules for human rights protection apply. Despite not being an international treaty, the main concepts of the Universal Declaration of Human Rights have deeply influenced the international discourse on human rights and made their way into other important legal instruments. Therefore, the importance of human dignity, the right to life, and personal security, should be safeguarded by legislation, and the prohibition of extrajudicial murders or executions is now an obligatory norm for all nations that are called to respect, preserve, and implement these peace-promoting values. The EU has set out important Guidelines on the promotion of compliance with international humanitarian law, thus advancing the values on which the EU is founded (art. 3 TEU). The EU is committed to the effective implementation of IHL through the means of action at its disposal: political dialogue, public statements, control of arms sales, restrictive measures and sanctions etc. The use of combat drones in Pakistan between 2004-2009 by the USA is an important case study that shows the unlawful use of drones in many aspects. Despite the legal aspect of the matter that has been deeply analysed in the paper, it is important to notice the crucial element that the CIA operatives were not trained in the international humanitarian law rules regarding the use of force, leading to many unintended victims for each target. Gavin Hood's film *The Eye*

in Sky explores the ethical challenges of drone warfare. It represents an interesting and realistic view of how and why decisions are taken during drone operations. Finally, combat drones have been part of warfare for decades now. Since the beginning of the 2000s, their usage has grown significantly. Yet, the most important turning point toward the dronisation of warfare occurred in 2020, during the last Nagorno-Karabakh conflict. This case is emblematic because of the strategy adopted by Azerbaijan, based on the massive use of combat drones, such as the IAI Harop or the Bayraktar TB2. They played a crucial role be-

cause they engaged tanks in particular areas where the traditional air forces have never been unable to do the same. The 2020 Nagorno-Karabakh conflict also emphasises that a proper strategy based on drones and artillery can cancel out the absence of combat aviation and make a weak state a respectable one from a military point of view. In addition, it is essential to note that the Azeri success was largely due to the fact that Armenia did not possess a robust air defence system or electronic warfare capabilities. These conditions influenced the outcome of the war as much as the Azerbaijan strategy.

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