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Drones or uncrewed aircraft – acronyms, definitions, and gender equality

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Abstract

Unmanned aircraft/drones are increasingly present in everyday life, from flight demonstrations, event filming, mapping, and agricultural use to delivering goods or, in the future, transporting people. Uncrewed aircraft systems have also been deployed throughout the military services, from handheld micro-UA (Unmanned Aircraft) to medium-sized tactical systems and to large uncrewed aircraft. The multitude of terms used to identify a particular type of aircraft can be confusing and therefore clarification is needed on how to use them, while at the same time considering gender equality and fairness in language.

Keywords:

drone; UA; UAS; unmanned aircraft; uncrewed aircraft; gender equality.

In recent decades, the development and use of unmanned aircraft/drones have captured the world's attention. Although they appear to be a modern innovation, their history spans more than a century. Initial attempts to design unmanned aircraft took place during the First World War when the first prototypes of radio-controlled aircraft appeared. Although the initial results were promising, these early experimental aircraft were not used in military operations. However, they represented the beginning of a technological evolution that has continued to develop over the years. Unmanned aircraft have become an integral part of all military, civil, and commercial domains around the world.

First unmanned aircraft were developed in Britain and the U.S.A. during the First World War. The British Aerial Target, a small radio-controlled aircraft, was first tested in March 1917, while the American aerial torpedo known as the Kettering Bug first flew in October 1918 ([IWM 2023](#)). Although these first flight tests were promising, none of these aircraft were used in air operations or conflicts. The development and testing of unmanned aircraft continued between the World Wars period, so in the mid-1930s, the D.H. Queen Bee was modified and used as an aerial target during training missions for air defence structures and is known as the first returnable and reusable unmanned aircraft. It was the time that they used for the first time the term „drone” and is still in common use today ([IWM 2023](#)). UAVs (Unmanned Aerial Vehicles) for reconnaissance and false targeting to uncover enemy positions or deplete air defence resources were used by Israel in 1973 in the Yom Kippur War against Egypt, but caught worldwide attention in operations executed during the 1982 Lebanon War, in which drones played a substantial role in the destruction of Lebanon's integrated air defence system ([Kreis 1990, 46](#)).

The end of 2001 marked the beginning of a new era in military technology and the use of unmanned aircraft for military purposes. The development of armed drones had advanced at an accelerating pace, and they had become an increasing presence in various theatres of war and conflicts around the world. During this period, armed drones were mainly used by Israel, the United Kingdom and the United States. The USA and the Israeli governments were the first major users of armed unmanned aircraft, known asUCAVs (Unmanned Combat Aerial Vehicles). They were used mainly to carry out short-range air strikes in nearby territories. The use of armed drones in this context has aroused the interest and concern of the international community. The non-governmental organization Human Rights Watch has investigated and documented Israel's use of armed drones and raised concerns about possible human rights violations ([Human Rights Watch 2009](#)). This has been a significant moment in the evolution and technical development of armed drones and has raised questions and debates about their ethics and impact on conflict and civil rights. The British government, using US-made unmanned aircraft, has carried out strikes inside Afghanistan, Iraq and Syria ([BBC News 2014](#)). Also, the US government, with its global network of military drone bases has been able to deploy its drones in these places, too, as well as in Libya, Pakistan, Somalia and

Yemen (Fuller 2017). Over approximately fourteen years, a select group of states has maintained a monopoly on the possession and utilization of armed unmanned aircraft. This exclusive access has provided them with a significant advantage in terms of military capabilities and strategic operations. Then, in 2015, what has since been described as a „second drone era” began, characterized by the emergence of new drone manufacturers and the widespread proliferation of armed drone technology (Farooq 2019).

The accessibility of unmanned aircraft technology has become more widespread and affordable, enabling a wide range of actors to acquire them with relative ease. This ease of access, coupled with their affordability, has facilitated the proliferation of drones among non-state entities. Furthermore, the potential for modifications allows for the customization of drones to carry out dangerous missions, such as the delivery of explosive devices or conducting illicit surveillance. These entities encompass terrorist groups, criminal organizations, or individuals with malicious intentions. The utilization of drones by non-state entities poses a significant challenge to international security, as it introduces new risks and threats.

Unmanned aircraft have indeed become ubiquitous in modern conflicts and have revolutionized military operations. They provide several advantages in warfare, including reconnaissance, surveillance, and the ability to carry out precise targeting with guided missiles or bombs. They can operate in dangerous environments, gather real-time intelligence, and execute missions without risking human lives directly.

Beyond military applications, unmanned aircraft have found extensive use in the civilian sector as well. In areas affected by natural disasters, drones can assist in search and rescue operations by providing aerial views and locating survivors. They are also valuable tools for monitoring and assessing the impact of climate change, as they can collect data from remote or hazardous locations more efficiently and at a lower cost compared to traditional methods. Unmanned aircraft have also revolutionized industries such as mapping and aerial photography. They can capture high-resolution images and videos from unique perspectives, aiding in land surveys, urban planning, and artistic endeavours. Additionally, companies like Amazon (Amazon 2022) and other logistics providers are exploring the use of drones/unmanned aircraft for goods delivery, potentially enabling faster and more efficient transportation of packages.

Terms and definitions

To be able to properly investigate the impact and importance of unmanned aircraft on civil or NATO operations, it is important to identify and clarify the main terms that define these technologies. The terms „unmanned aircraft” and „drone”, as well as various other variants such as „unmanned aerial vehicle” (UAV), „unmanned combat

aerial vehicle" (UCAV), „remotely piloted aircraft" (RPA) or „unmanned aircraft system" (UAS) are often used randomly but are, in fact, terms defined differently to reflect certain classes, capabilities or certifications of unmanned aircraft.

The term „Unmanned Aerial Vehicle" (UAV), as it has been used over time, has undergone many changes in form, content and meaning because of technological developments and mode of operation, and the need for standardization and regulation in this area has become increasingly apparent. While the term is no longer used by NATO ([NATOterm, #4414](#)), is still often used in the civil and public domain.

Thus, the term „Unmanned Aircraft System" (UAS) was developed by the International Civil Aviation Organization ([ICAO 2011](#)) to better describe and encompass all the elements that constitute the system, including the aircraft itself, with the name „unmanned aircraft" (UA). The term „unmanned aircraft" is also used in all European Union documents referring to rules and operating procedures ([European Commission 2019](#)). UA encompasses all categories of aircraft (aeroplanes, helicopters, balloons, gliders, etc.) that are operated without a human pilot on board, and this designation makes the transition from the notion of vehicle to that of aircraft. The term UA/UAS has been taken up and further used in documents produced by JAPCC (Joint Air Power Competence Centre), NATO ([NATOterm, #6475](#)), the DoD (Department of Defence–USA) and others.

NATO currently defines UA as an aircraft that does not carry a human operator and is operated remotely using varying levels of automated functions. Unmanned aircraft can be expendable or recoverable and may carry lethal or non-lethal payloads ([NATOterm, #7915](#)). Cruise missiles are excluded from this NATO definition. Since this definition is very broad, it is necessary to describe the term aircraft for better understanding. ICAO defines an aircraft as any vehicle that can sustain itself in the atmosphere by reactions of the air other than reactions of the air to the earth's surface ([ICAO Store 2018](#)). By this description alone, all projectiles that have only initial propulsion and then follow only a ballistic trajectory (e.g., bullets, artillery shells, ordinary bombs or ballistic missiles) can be excluded from the category of aircraft. Ammunition using aerodynamic lift or other interaction with the atmosphere solely to extend the ballistic flight path will also be excluded from the UA category. So, threats such as hover bombs or hypersonic glide vehicles are excluded from the UA category, although they could be operated remotely and certainly have automation features.

NATO classifies these systems into 3 classes according to the weight of the airborne platform at take-off and the operational flight altitude: Class I, referring to small, portable, self-contained systems that are easy for UAS operators to carry and operate within LOS (line-of-sight); Class II UAS which are complex systems weighing between 150 kg and 600 kg and can operate on a LOS or BLOS (beyond line of sight) link via communications relays, additional ground control stations or satellite data links; and Class III UAS which include systems that consist of high endurance

aircraft flying at medium and high altitude and which may have strike capabilities. These are large systems and the missions can be executed via satellite data links and use higher-performance sensors ([NATO 2019](#)).

If we refer to the NATO classification, we will henceforth use the term “unmanned aircraft” when referring to military systems that fall into NATO Class II and III categories. These UA are usually part of a complex system that may include dedicated ground control stations, mission control elements, multiple crews, military-grade communications systems, GPS, and dedicated logistics and maintenance infrastructure. UAs are usually operated by well-trained personnel, often qualified as pilots, to operate safely alongside other airspace users. When referring not only to the aircraft, but other elements of the system or the system as a whole, we will use the term „unmanned aircraft system” or „UAS”.

More recently the term „RPA/RPAS” (Remotely Piloted Aircraft/ Remotely Piloted Aircraft System) has been used to emphasize that a UA is controlled by an operator who has been trained and certified to the same standards as the pilot of a manned aircraft (NATOterm, #25557). Usually, this term is used for UA from Class III, specifically to differentiate between the level of training of their operators. The concept of „drone” is generally used and widely accepted in the civil domain for all varieties of unmanned systems. In general, the term “drone” will be used to describe all classes of commercial systems, which are typically smaller and less sophisticated compared to their military counterparts.

The term „drone” implies that the system is usually operated by a single person, not necessarily qualified, from a hand-held remote control, in direct line-of-sight (LOS) conditions. Thus, we will also use the term „drone” for most military systems that fall into the NATO Class I category, as their size and complexity are quite comparable to commercially available consumer models and therefore require a similar approach when it comes to countermeasures.

Gender equality

Gender equality and equity in language have been widely discussed for many years and have already been implemented in many areas and the use of everyday language. As a result, some civil and military aviation terminology has changed/adapted to the new requirements, often at a discrete level. Gender inclusive language involves the practice of communication in a manner that neither excludes, nor discriminates based on gender, nor reinforces or encourages gender stereotypes. The consistent and proactive application of such language is crucial in advancing gender equality within the workplace, fostering a working environment that is inclusive and welcoming to all staff members ([NATO 2020](#), 6).

It is important to differentiate „grammatical gender” from the concept of gender as a

societal construct. The latter pertains to the roles, expectations, and social attributes tied to identifying as male or female. These gender roles outline what is considered acceptable or expected in different situations and can change depending on the cultural context or era. It is vital to understand that “gender” is not synonymous with „women”, and it is distinct from the concept of biological sex ([NATO 2020](#), 7).

What is the connection with unmanned aircraft? The problem arises with the use of the English term „unmanned” and more specifically, the generic masculine form „man” when referring to a task that can be performed by both men and women. The use of the masculine was often seen as the general form, while the feminine was perceived as referring exclusively to women and therefore the new norm becomes the inclusive (neutral) gender which no longer differentiates between people. That is why many states and larger companies have changed the terminology from „unmanned” to „uncrewed”. The best example appears in the DoD budget document for the US Air Force for fiscal year 2023, where they began using the term „uncrewed” to describe remotely piloted or unmanned aircraft systems ([Defense.gov 2022](#)). The Washington Times writes that the Pentagon is dropping the use of the term „unmanned” as a gesture of political correctness and will henceforth refer to „uncrewed” drones ([Gertz 2022](#)).

Another example is the Global Trade Association for the Autonomy, Robotics and Automated Air, Land and Sea Vehicle Industries AUVSI (Association for Uncrewed Vehicle Systems International) which has announced a name change to reflect ongoing efforts to promote gender inclusivity. In addition to dropping the word „unmanned” and other gender-specific terms from its name, operating documents and association language, it announced the launch of the Diversity, Equity and Inclusion Advisory Group ([AUVSI 2022](#)).

Also, Canada’s Joint Terminology Panel (JTP) has proposed to the Department of National Defence and the Canadian Armed Forces (DND/CAF) to drop gender-based terminology and therefore the word „unmanned” has been replaced by „uncrewed” in relation to autonomous and remotely operated vehicles ([Government of Canada 2021](#)).

UK publication Unmanned Systems Technology has changed its name to Uncrewed Systems Technology from issue 44 in June/July 2022 to promote gender inclusion as essential for continued development ([Moss 2022](#), 4).

Also, to be noted is the press release of the Ministry of National Defence on the prior request to the Romanian Parliament to initiate the procedure for awarding contracts for the procurement of Bayraktar TB2 uncrewed aircraft systems (UAS) ([MAPN.ro 2022](#)). NATO agreed terminology can only be changed at the request of the NATO Standardisation Office and is subject to approval by all member states. Changing NATO agreed terminology can influence the meaning of some terms and therefore the optimal replacement solution must be found. For example, replacing UA with RPA would seem the closest option to consider, but even though RPA may seem a

gender-neutral synonym for UA and does not contain the word „man”, it does not refer to the same concept.

Conclusions

Unmanned aircraft are at the forefront of all current conflicts and are certainly the future of how military operations will be conducted. In the civilian domain, drones are starting to be used in a wide range of areas, from agriculture and construction to filming and security. The continued development of this technology, together with improvements in sensors, batteries and navigation systems, will open new possibilities for use and improved performance. Continuous development and technological evolution go hand in hand with the constant change of terminology.

With increasing social acceptance and awareness, new terms have emerged to better reflect social and cultural reality. For example, terms that were accepted and used in the past may now be considered insensitive, offensive or inappropriate. Thus, new terms are emerging to describe experiences or identities that were previously unrecognized and need to adapt and take account of gender identity inclusivity to help create a safer and more appropriate environment for all people.

Constantly changing terminology is a natural phenomenon in a constantly evolving world. In every field, new words appear, and others become obsolete or are replaced by terms that are more precise or more appropriate to the current context.

These changes in terminology are being adopted at the NATO level in all areas and proposals to change the name from „unmanned aircraft” to „uncrewed aircraft” are already underway and will most likely be reflected in future regulations. So, the term „unmanned aircraft” will become „uncrewed aircraft”.

In conclusion, the permanent change of terminology is an important aspect of cultural and social evolution. It can help to create a more accurate and appropriate language to describe the reality in which we live and to better reflect the diversity and complexity of human experiences.

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