Legal perspectives on the cross- border operations of unmanned aircraft systems

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2 THE APPLICABILITY OF THE INTERNATIONAL LEGAL REGIMES OF THE AIRSPACE AND AIRCRAFT TO THE OPERATIONS OF UNMANNED AIRCRAFT SYSTEMS

2.1 EVOLUTION OF THE INTERNATIONAL REGULATORY FRAMEWORK ON UNMANNED AIRCRAFT SYSTEMS

2.1.1 SCOPE OF THIS CHAPTER

This chapter analyses the applicability of international legal regimes of airspace and aircraft to the operations of UAS. The chapter introduces the roots of international regulatory frameworks of UA flights, dated between WWI and WWII. As this research deals with the cross-border operations of UAS, it is crucial to delve into the foundations and principles of the Chicago Convention 1944. Also, the author will dive into the legal thinking of how the Preamble of the Chicago Convention 1944 and its provisions concerning the sovereignty and territory of States, the concepts regarding and differences between civil and State aircraft, and the provision on the misuse of civil aviation may apply to the cross-border flights of UA. These issues should be interpreted in light of the principal research question, which is: is the actual international legal framework adequate to ensure the operation and development of unmanned aircraft systems while preserving high levels of safety? At the end of this chapter, the author will provide conclusions on the findings of the legal research undertaken in this section to determine whether and how such provisions may apply to the cross-border operations of UAS.

2.1.2 THE PARIS CONVENTION 1919 AND ITS PROTOCOL 1929

The birth of the legal framework for UAS took place ten years after the adoption of the *Convention Relating to the Regulation of Aerial Navigation*, signed on October 13, 1919, from now on referred to as the Paris Convention 1919. Twenty-six nations joined the Paris Convention 1919, namely, Belgium, Bolivia, Brazil, the British Empire, China, Cuba, Czechoslovakia, Ecuador, France, Greece, Guatemala, Haiti, the Hedjaz (Saudi Arabia), Honduras, Italy, Japan, Liberia, Nicaragua, Panama, Peru, Poland, Portugal, Rumania, the Serbo-Croat-Slovene State, Siam and Uruguay.

On June 1, 1922, fourteen nations ratified the Paris Convention 1919,

which came into force on July 11, 1922.[1] The reason why States adopted the Paris Convention 1919 was that aviation had become a growing technology that required specific international legal regulation *"to prevent controversy"* and "*encourage the peaceful intercourse of nations by means of aerial communications*".[2] It also helped to shape the principles of many States' domestic law, many of which by 1919 had none.

When the Paris Convention 1919 came into force, it had no particular provisions regarding UA. It only provided two types of aircraft: private and State.

It was not until 1929 when the Protocol of June 15, 1929, amending Paris Convention 1919, from now on referred to as the Protocol 1929, incorporated a legal provision regarding 'pilotless aircraft'.[3] Protocol 1929 changed the second paragraph of Article 15 as follows:

> "No aircraft of a contracting State capable of being flown without a pilot shall except by special authorisation, fly without a pilot over the territory of another contracting State."

WWI revitalised the military development of aircraft, and UA was not an exception. By the time States adopted Protocol 1929, they had increasingly deployed UA in international military operations, as shown in Chapter One of this study.[4] As a result, the subparagraph of the amended Article 15 was the first international effort to regulate the use of UA.[5]

Before adopting Protocol 1929, UA, which were extensively used in military operations,[6] fell into the category and definition of 'State aircraft'. Article 31 of the Paris Convention 1919 provided the following definition of State aircraft:

> "The following are deemed to be State aircraft:

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1 ICAO. *Postcard with Hand-stamp: Versailles / Congress De La Paix*. Icao.int. Accessed May 22, 2018. https://www.icao.int/secretariat/PostalHistory/1919_the_paris_convention.htm

2 See Preamble of the Paris Convention 1919. The text of the Convention is in *League of Nations Treaty Series* Vol. XI., p. 173, more readily in Vol. XXX, Annals of Air and Space Law 2005), 5-15.

3 The Protocol Concerning Amendments to Articles 3, 5, 7, 15, 34, 37, 41, 42 and the final provisions of the *Convention Relating to the Regulation of Aerial Navigation 13 October 1919*, cited as the Protocol of June 15th 1929 amending the Paris Convention 1919, entered into force on 17 May 1933.

4 See section 1.1. on the history, definition, uses and technological challenges of unmanned aircraft systems.

5 ICAO. *Manual on Remotely Piloted Aircraft Systems (RPAS)*. Montreal: International Civil Aviation Organization, 2015), 1-1.

6 See Section 1.1 on the history, definition, uses and technological challenges of unmanned aircraft systems.

a) Military aircraft,
b) Aircraft exclusively employed in State service, such as post, customs, police.
Every other aircraft is a private aircraft. All State aircraft other than military, customs, and police aircraft shall be treated as private aircraft and as such shall be subject to all provisions of the present Convention."

The Paris Convention 1919 and its Protocol 1929 are no longer in force.[7] However, they made a ground-breaking contribution and influenced the future development of air law. Examples of their input included the principles and concepts concerning the sovereignty of airspace, regimes for State and civil aircraft, freedom of innocent passage, cabotage, prohibited zones, nationality and registration of aircraft, the regime of pilotless aircraft, certificates of airworthiness and personnel competencies, and the establishment of an international organisation specialised in civil aviation.[8]

Close to the end of WWII (1939-1945), the United States organised a global conference in Chicago from November 1 to December 7, 1944. As a result, States adopted a new codified international instrument, the *Convention on International Civil Aviation* or simply the Chicago Convention 1944, which inherited most of the principles and concepts of the Paris Convention 1919 and its Protocol 1929.

This research places a particular emphasis on the impact of Article 15 of the Paris Convention 1919, as amended by its Protocol 1929, about pilotless aircraft during the establishment of Chicago Convention 1944. The next section will analyse whether the Preamble, provisions for sovereignty and territory of States, concepts and differences between civil and State aircraft and the Article on the misuse of civil aviation of the Chicago Convention 1944 are legally suitable for the civil uses of modern UA in a context different from WWI and WWII.

2.1.3 THE CHICAGO CONVENTION ON INTERNATIONAL CIVIL AVIATION OF 1944

It took 25 years and another World War to replace Paris Convention 1919 and its Protocol 1929. Upon invitation from the US, representatives of fifty-four nations met in Chicago, from November 1 to December 7, 1944, to "make arrangements for the immediate establishment of provisional world air routes and services" and "to set up an interim council to collect, record and study data concerning international aviation and to make recommen-

7 In Article 80 of the Convention on International Civil Aviation (Chicago Convention 1944), States undertook to denounce Paris Convention 1919 upon entry into force of the Chicago Convention 1944.

8 Michael Milde. *International Air Law and ICAO* (The Hague: Eleven International Publishing, 2016), 10.

dations for its improvement".[9] As the primary source of public international air law,[10] Professor Michael Milde has also noted that the Chicago Convention 1944 had,

> "...a dual personality, like many of today's constitutional instruments of the specialised agencies of the United Nations system. It is in the first place a comprehensive codification/unification of public international air law and, in the second, a constitutional instrument of an international intergovernmental organisation of a universal character...The Chicago Convention contains, in great detail, a self-contained corpus of public international air law."[11]

ICAO, established by the Chicago Convention 1944, is responsible, *inter alia*, for developing the principles and techniques of international air navigation and fostering the planning and development of international air transport.[12] With the ratification of 193 States,[13] the Chicago Convention 1944 is among the list of the world's most ratified international treaties.[14]

The drafters of the Chicago Convention 1944 replaced Article 15 of the Paris Convention 1919 and its Protocol 1929 by incorporating Article 8 on pilotless aircraft, further discussed in Chapter Four of this research. Article 8 states the following:

> "No aircraft capable of being flown without a pilot shall be flown without a pilot over the territory of a contracting State without special authorisation by the State and in accordance with the terms of such authorisation. Each contracting State undertakes to insure that the flight of such aircraft without a pilot in regions open to civil aircraft shall be so controlled to obviate danger to civil aircraft."

The following section will examine how the governing principles of the Chicago Convention 1944 may apply to the cross-border operations of UAS, as they shape the fundamentals of regulatory frameworks necessary for international air navigation of aircraft.

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9 See Proceedings of the International Civil Aviation Conference, Chicago, Illinois, November 1 – December 7, 1944, The Department of State, Vol. I and Vol. II.), 11-13.

10 'International Civil Aviation Conference//Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)'. Accessed September 30, 2018. https://www.icao.int/ChicagoConference/Pages/default.aspx

11 Michael Milde. 'The Chicago Convention – Are Major Amendments Necessary or Desirable 50 Years Later?" XIX ANNALS OF AIR & SPACE, 1994), 401-03.

12 See Art. 44 of the Chicago Convention 1944 *Objectives.* The aims and objectives of the Organisation are to develop the principles and techniques of international air navigation and to foster the planning and development of international air transport (…)

13 See *Status of the Convention on International Civil Aviation Signed at Chicago on 7 December 1944.* ICAO. Accessed August 7, 2018. https://www.icao.int/secretariat/legal/List%20of%20Parties/Chicago_EN.pdf

14 'Convention on International Civil Aviation Signed at Chicago on 7 December 1944', Status (ICAO), accessed May 20, 2019, https://www.icao.int/secretariat/legal/List of Parties/Chicago_EN.pdf

2.2 THE APPLICABILITY OF THE PRINCIPLES OF AIR LAW TO THE OPERATIONS OF UNMANNED AIRCRAFT SYSTEMS

2.2.1 PRINCIPLES OF INTERNATIONAL AIR LAW

The recognition and codification of principles and arrangements governing international air law are among the main achievements of the Chicago Convention 1944. Its Preamble describes the Convention as an agreement on "certain principles and arrangements in order that international civil aviation may be developed in a safe and orderly manner." However, what are those principles and arrangements referred to in the treaty, and what are the differences or similarities between them? The answer is not simple. To resolve this question, guidance on the concepts of customary international law, general principles of law and arrangements that have been laid down in the theoretical framework section of this study is necessary, as the Chicago Convention 1944 is a treaty subject to compliance with international law.

2.2.2 FORMULATION OF PRINCIPLES OF AIR LAW AND INTERNATIONAL CUSTOMARY LAW

Between April and November 1908, at least ten German balloons crossed the border and landed in France carrying over twenty-five aviators, of which the majority were German military officers. Among the motivations of the French government to convene the Conference on International Air Navigation held in Paris between May 8 to June 28, 1910, named the Paris Conference 1910, was to avoid international confrontation and propose rules for the operational aspects of flights over foreign territories. Consequently, the Paris Conference 1910 was the first effort to formulate the principles of international law relating to air navigation. However, the conference did not succeed in the effort to draft an international convention, but did manage to identify and address several aspects of the future regulation of international air navigation.[15]

Before the outbreak of WWI in 1914, the practice or custom of States concerning the protection of their airspace was indisputable. They, *de facto*, protected their airspace, protested against its violations and used force for the assertion of their rights. Years after, when the Paris Convention 1919 was adopted, the Paris Convention 1919 did not create the principle of air sovereignty but did recognise it. Moreover, the Paris Convention 1919 recognised that it is generally applicable to all States. Professor Michael Milde concluded the following:

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15 Michael Milde. *International Air Law and ICAO.* The Hague: Eleven International Publishing, 2016. 7

> "...in the light of the practice of States protecting their airspace and in the light of the wartime experience as belligerents or as neutrals, the Paris Conference considered the principle of State sovereignty to be a firm part of the customary law that was to be formally recognised by a codified instrument."

States granted themselves the freedom of innocent passage in times of peace on a non-discriminatory basis. Other provisions influencing the future development of international air law included prohibited zones, provisions on nationality and registration of aircraft, certificates of airworthiness and competency, the establishment of international airways, cabotage and regimes for civil aircraft.[16]

Professor Bin Cheng considers that the main principles accepted by the contracting States of the Chicago Convention 1944 are airspace sovereignty, the nationality of aircraft, conditions to be fulfilled concerning aircraft or by their operator and international cooperation and facilitation,[17] while Professor John Cobb Cooper identified four basic principles governing public international air law, namely, territorial sovereignty, national airspace, freedom of the seas and nationality of aircraft.[18]

Under Cooper's point of view, such principles comprise the following concepts:

- Every State has, to the exclusion of all other States, the unilateral and absolute right to permit or deny entry into the area recognised as its territory and similar right to control all movements within such territory;
- The territory of a sovereign State is three dimensional, including within such territory the airspace above its national lands and its internal and territorial waters;
- Navigation on the surface of the high seas and flight above such seas are free for the use of all; and,
- Aircraft have the characteristic of nationality similar to that developed in the maritime law applicable to ships. Thus, aircraft have usually a special relationship to a particular State, which can make effective the privileges to which such aircraft may have, and such State is also reciprocally responsible for the international good conduct of such aircraft.

The principle of sovereignty embodied in Article 1 of the Chicago Convention 1944 declares that "every State has complete and exclusive sovereignty over the airspace above its territory." However, it is unclear

16 Michael Milde. *International Air Law and ICAO.* The Hague: Eleven International Publishing, 2016. 10-11

17 Bin Cheng. *The Law of International Air Transport* (London: Stevens & Sons, 1984), 119-165.

18 John Cobb Cooper. *Backgrounds of International Public Air Law* (First Yearbook of Air and Space Law, 1967), 3.

whether under this principle, States have the right or not to shoot down any aircraft that enters its airspace, including UA engaged in civil functions, which under Article 8 would require special authorisation.

After a Soviet military aircraft shot down Korean Airlines Flight 007, which had deviated over Soviet territory, the contracting States to the Chicago Convention 1944 incorporated Article 3*bis* into the treaty.[19] This provision bolstered the customary international law principle that "every State must refrain from resorting to the use of weapons against civil aircraft in flight". However, States may require civil aircraft flying above its territory without permission to land at a designated airport: "In the case of interception, the lives of persons on board and the safety of aircraft must not be endangered". This provision also applies to UA because they fall under the category of aircraft.

Consistently, under Article 2(4) of the UN Charter:

> "...all Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any State, or in any other manner inconsistent with the Purposes of the United Nations."

The prohibition on the use of force is at the heart of the UN Charter, given that the most fundamental aim of the UN, which was created by the Charter, is to "save succeeding generations from the scourge of war".[20] Nevertheless, Article 51 of the UN Charter is the exception to the general prohibition on the use of force found in Article 2(4).

Under Article 51, a State may act in 'unilateral or collective self-defence' only if an armed attack occurs.

> Article 51
> "Nothing in the present Charter shall impair the inherent right of individual or collective self-defence if an armed attack occurs against a Member of the United Nations until the Security Council has taken measures necessary to maintain international peace and security. Measures taken by Members in the exercise of

19 The 25th (Extraordinary) Session of the Assembly on May 10, 1984, amended the Chicago Convention 1944 by adopting the Protocol introducing Article 3 *bis*. This amendment came into force on October 1, 1998 and 155 States have ratified the Protocol.

20 See the Preamble of the UN Charter: WE THE PEOPLES OF THE UNITED NATIONS DETERMINED to save succeeding generations from the scourge of war, which twice in our lifetime has brought untold sorrow to mankind, and to reaffirm faith in fundamental human rights, in the dignity and worth of the human person, in the equal rights of men and women and of nations large and small, and to establish conditions under which justice and respect for the obligations arising from treaties and other sources of international law can be maintained, and to promote social progress and better standards of life in larger freedom,

> this right of self-defence shall be immediately reported to the Security Council and shall not in any way affect the authority and responsibility of the Security Council under the present Charter to take at any time such action as it deems necessary in order to maintain or restore international peace and security."

Under Article 51 of the UN Charter, which embraces the customary international law principle of self-defence, States may claim the authority to impose requirements on aircraft that enter their airspace or the airspace adjacent to its territory for security reasons. For instance, the US has five Air Defence Identification Zones (ADIZs) that extend beyond its territorial sea, covering more than 200 miles of its coasts. The US demands that every aircraft with the intention of entering its airspace must provide identification and location reports an hour before entering the US. Aircraft flying along the coast with no intention of entering US airspace need not so report, but foreign aircraft entering US airspace are exposed to US action for failing to comply. After the attacks of September 11, 2011 (9/11), the United States began to require aircraft destined to US territory reveal their passenger manifests before departure.[21]

It is necessary to understand the context in which UN Charter was drafted. The UN Charter was written at the end of WWII when confidence in military force was low, and commitment to ending the use of force was high.[22] Seventy-three years later, perhaps frustrated by the lack of success through other means, States have participated in several UN panels and commissions and have urged relaxing the rules against force to respond to new threats such as terrorism, weapons programmes and computer network attacks. These arguments relate to whether the use of force can be justified under the principles of necessity and proportionality, rules that are beyond the UN Charter but equally important in the long history of normative thinking about killing in self-defence.[23]

In 1986, the ICJ, in the case of *Nicaragua vs United States of America*, pronounced that the UN Charter's rules on self-defence had entered into customary international law. The ICJ pointed to references by the US characterising the prohibition of the use of force as a peremptory norm of international law (*jus cogens*). The ICJ emphasised the limits on self-defence,

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21 Williams, Andrew S. *The Interception of Civil Aircraft over the High Seas in the Global War on Terror.* (Ottawa: Library and Archives Canada = Bibliothèque Et Archives Canada, 2008), 73.

22 *Self-Defense – International Law – Oxford Bibliographies – Obo.* Igbo – African Studies – Oxford Bibliographies. September 19, 2018. Accessed October 03, 2018. http://www.oxfordbibliographies.com/view/document/obo-9780199796953/obo-9780199796953-0028.xml.

23 'Self-Defense – International Law – Oxford Bibliographies – Obo. *Igbo* – African Studies – Oxford Bibliographies. September 19, 2018. Accessed October 03, 2018. http://www.oxfordbibliographies.com/view/document/obo-9780199796953/obo-9780199796953-0028.xml.

found in Article 51 and general international law beyond the Charter, especially in the form of the principles of necessity and proportionality. However, academic and political discussions continue on this matter. Powerful nations, such as the US and European countries, continue to revisit the terms of Article 51 to search for alternatives to the use of force.[24]

On 9/11, civil aircraft were unlawfully seized in the US and then intentionally crashed against the two towers of the World Trade Centre in New York City and the Pentagon in Washington, D.C., causing the deaths of thousands of civilians. What should be the actions of the authorities if they suspect that aircraft will be misused? Do they have the right to shoot the aircraft down? The UN Charter was challenged again in the aftermath of the 9/11 terrorist attacks when the US declared a global war in self-defence against terrorism. The US announced, in its National Security Strategy of 2002, a right of 'pre-emptive self-defence' against terrorist threats, threats posed by nuclear weapons programmes and the like.[25]

Despite these efforts, *Nicaragua vs United States* has generally maintained its authority. In 2005, the UN completed a two-year review of the Charter and UN operations. The final document, *World Summit Outcome 2005*, recommitted the members to strict adherence to the UN Charter terms. The document adds no additional support for a right to attack in self-defence in situations other than an armed attack.[26]

Article 3*bis* of the Chicago Convention 1944 was never intended to prevail over Article 51 of the UN Charter, which establishes the right to self-defence for States. It would be naïve to think that a State will remain inert under the circumstance of a terrorist attack or of any nature that compromises its self-preservation or the lives of its citizens. However, international law does not rule out the use of force, which shall observe the proportionality and justification requirements, as it could imply the sacrifice of many innocent lives to prevent a major disaster. This is one of the most challenging decisions to make that carries much responsibility if proven to be incorrect.[27]

Based on the facts and the analysis mentioned above, it can be concluded that the principles and arrangements in the Chicago Convention 1944 are basic rules whose contents are both conceptual and general. They form the

24 Military and Paramilitary Activities in and against Nicaragua *(Nicaragua v. United States of America)*: Judgment of the Court. The Hague: Court, 1986. Para 34, 17.

25 *The National Security Strategy of the United States of America.* Washington: President of the U.S., 2002), 15.

26 2005 World Summit Outcome: Resolution. New York: UN, 2005.

27 Michael Milde. *International Air Law and ICAO* (The Hague: Eleven International Publishing, 2016), 59.

general code of practice for the function of the entire international civil aviation system.

General principles of law are also among the sources of air law, as air law has neither independence nor autonomy in the system of law. Air law is a grouping of rules from different branches of law, including public and private international law, relevant to aviation.[28] International law may not contain, and generally does not contain, expressed rules that are decisive in particular cases, but the function of jurisprudence is to resolve conflict between opposing rights and interests by applying in default of any specific provision of law and the corollaries of general principles to find the solution to the problem.

2.2.3 THE PREAMBLE OF THE CHICAGO CONVENTION 1944

Article 31(2) of the VCLT states that the context for interpreting a treaty includes the Preamble.[29] The Preamble is, therefore, an initial declaration that not only explains the considerations, motivations, aims, purpose and objectives as having played a part in drawing up the treaty [30] but also sets forth the context in which the contracting Parties negotiated and concluded it. It provides the circumstances that form the settings that explain the agreements reached by the signatories.[31]

The Preamble of the Chicago Convention 1944 encompasses the following statements:

> Preamble
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> "WHEREAS the future development of international civil aviation can greatly help to create and preserve friendship and understanding among the nations and peoples of the world, yet its abuse can become a threat to the general security; and

28 Michael Milde. *International Air Law and ICAO* (The Hague: Eleven International Publishing, 2016), 2.

29 Article 31 2) *General rule of interpretation* of the Vienna Convention on The Law of Treaties signed at Vienna in 23 May 1969: The context for the purpose of the interpretation of a treaty shall comprise, in addition to the text, including its Preamble and Annexes: (a) any agreement relating to the treaty which was made between all the parties in connection with the conclusion of the treaty; (b) any instrument which was made by one or more parties in connection with the conclusion of the treaty and accepted by the other parties as an instrument related to the treaty.

30 Richard K. Gardiner. *Treaty Interpretation*. New York, NY: Oxford University Press, 2008. 186.

31 In his book *Treaty Interpretation,* Richard Gardiner states that the ICJ nowadays presents the application of the Vienna rules of interpretation as virtually axiomatic. He cites the case of *Avena and other Mexican Nationals (Mexico vs the United States of America)* [2004]. ICJ Reports 37-38, para 83.

> WHEREAS it is desirable to avoid friction and to promote that cooperation between nations and peoples upon which the peace of the world depends;
> THEREFORE, the undersigned governments having agreed on certain principles and arrangements in order that international civil aviation may be developed in a safe and orderly manner and that international air transport services may be established on the basis of equality of opportunity and operated soundly and economically; and,
> Have accordingly concluded this Convention to that end."

To properly understand the Preamble of the Chicago Convention 1944, the context for the adoption of such a Convention deserves consideration. The Preamble may provide not only an explanation of terms in relation to other provisions of the Convention but also how the overall structure of the treaty can support an interpretation, particularly if the intent is to determine the applicability of the Chicago Convention 1944 to the cross-border operations of UAS.

Military conflagration speeds the development of technology. States signed the Chicago Convention 1944 almost one year before the end of WWII. Throughout this unfortunate episode of world history, aviation technology improved rapidly. It was crucial for every nation involved in the war to have aircraft with tactical capabilities and strategic weapons with destructive accuracy and effectiveness.[32] Fighting States used considerably large numbers of UA during WWII. For instance, in the period between June 1944 and March 1945, Germany launched 10,500 V-1s UA against England from coastal ramps or bombers, with just over 2400 reaching their targets, predominantly over London.[33]

The rise of military aircraft during the two World Wars—dropping bombs while flying in what had become foreign national airspace—caused the need for strict regulatory control. The military importance of aviation during the two wars had also shown the enormous potential for civil aviation, for both economic and political purposes. Aviation became the most efficient and primary available means of transport in the world of destroyed rail lines and road networks. Therefore, there was an urgent need to regulate post-war air transport.[34]

The drafters of the Chicago Convention 1944 recognised that States could use aviation as a means for development and progress, and also as a lethal resource for war. In this context, the *Proceedings of the International Civil Aviation Conference* are a trustworthy source of record of the treaty's negotiating

32 Pablo Mendes de Leon. *Cabotage in Air Transport Regulation* (Martinus Nijhoff, 1992), 18.
33 Laurence R. Newcome. *Unmanned Aviation: A Brief History of Unmanned Aerial Vehicles* (Reston, Va.: American Institute of Aeronautics and Astronautics, 2004), 51.
34 Pablo Mendes de Leon. *Cabotage in Air Transport Regulation.* Martinus Nijhoff, 1992), 14.

history. Its preparatory work reveals that there was thorough attention to the Preamble which States negotiated carefully.[35]

As the Preamble is a part of the context of a treaty, according to the VCLT rules, it has teleological and textual importance. The Preamble contributes to choosing and changing the ordinary meaning of a word or words, and also helps in identifying the purpose, aims and objectives of a treaty. If the meaning or implications of a term of a substantive provision are ambiguous, the Preamble may support a broader or more restrictive interpretation, or a rejection. [36]

While the Preamble of the Chicago Convention 1944 unveils its primary goal, the development of international civil aviation, the substantive provisions of this treaty give greater clarity and precision on how to achieve such a goal. The Preamble, therefore, renders interpretative commitments, not obligations, whereas the operative Articles and Annexes to the Convention do so accurately.

Even though UA were employed in military uses when the Chicago Convention 1944 was adopted, one of the legal challenges that UAS now face is how they can accommodate and be an element of international civil aviation while being governed by a legal framework that mainly regulates manned civil aviation, while also contributing to achieve the aims and purposes of the Chicago Convention 1944:

1. To preserve friendship and understanding among the nations and peoples of the world;
2. To avoid friction and promote cooperation between nations and peoples; and,
3. That civil aviation may be developed in a safe and orderly manner, and that international air transport services may be established on the basis of equality of opportunity and operated soundly and economically.

Examining the Preamble to the Chicago Convention 1944 becomes relevant because its content contributes to answering the overall research question of this study, which is: is the actual international legal framework adequate to ensure the operation and development of unmanned aircraft systems while preserving high levels of safety? Moreover, how might UAS be an element or be capable of international civil aviation operations?

35 See the Proceedings of the International Civil Aviation Conference, Chicago, IL, United States of America, November 1 – December 7, 1944, Preamble of the Convention at 147, 619, 652, 660; of U.S. draft at 555, 679; of joint draft of air transport at 375, 391, 405, 418; of joint subcommittee minutes at 467.

36 Richard K. Gardiner. *Treaty Interpretation.* (New York: Oxford University Press).

The full integration of UAS into the regulatory regime of international civil aviation, which will allow them to fly into foreign skies, fits perfectly within the aims and purpose of the Chicago Convention 1944. UAS have been proven to be a positive element for developing international civil aviation, as ongoing technological innovations offer new opportunities for international air transport like for example: transportation of goods, specialised delivery solutions to transport emergency supplies in remote areas or as a first response to a humanitarian crisis and natural disasters, among others.

In the following sections, the author will analyse the provisions that are part of Chapter I of the Chicago Convention 1944, which cover the general principles and applications of the Convention since they apply transversally in all aspects of air law; their analysis is fundamental to the context of the legal principle *ubi non est principalis not potest esse accessorious*.[37] The conclusions of the analysis of the referred provisions may provide elements to answer the research question of how the Chicago Convention 1944 and its SARPs apply to UAS.

2.2.4 SOVEREIGNTY

The following Roman maxim is the root of recognising sovereignty over airspace: "*Cujus est solum, ejus est usque ad coelum et ad inferos.*" The sovereignty of States is an accepted principle of international law among nations or, similarly, a pre-existing rule of customary international law. Even though this concept has varied across history, its core meaning remains intact. Sovereignty, in simple words, is the supreme authority of a State within its territory.[38] Sovereignty facilitates establishing relations and cooperation among States. The latter statement holds consistency with the spirit of the Preamble of the Chicago Convention 1944, especially in the desire of the contracting States to create and preserve their friendships and promote cooperation with them.

Even though sovereignty plays a central role in aviation, neither the Paris Convention 1919 nor the Chicago Convention 1944 created a definition of the principle of sovereignty over airspace.[39] Instead, they acknowledged its existence and the right of the States to exercise the principle. Further, the grievous outcomes of WWII reinforced the need for the prevalence of the sovereignty principle when concluding the Chicago Convention 1944.

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37 Where there is no principle, there cannot be an accessory.

38 Daniel Philpott. 'Sovereignty'. The Stanford Encyclopedia of Philosophy (Summer 2016 Edition), Edward N. Zalta (ed.), forthcoming. URL = http://plato.stanford.edu/archives/sum2016/entries/sovereignty (accessed on May 25, 2016).

39 Pablo Mendes de Leon. Introduction to Air Law. 10th ed. (Alphen Aan Den Rijn: Kluwer Law International, 2017), 9.

Article 1 of the Chicago Convention 1944 prescribes the following about sovereignty:

> Article 1: Sovereignty
> "The contracting States recognise that every State has complete and exclusive sovereignty over the airspace above its territory."

The legal and diplomatic frameworks within which international air transport has since developed relies on three simple, yet fundamental, cornerstones:[40]

a. Each State has sovereignty and jurisdiction over the airspace directly above its territory, including internal waters and territorial waters;[41]
b. Each State has complete discretion as to the admission or non-admission of any aircraft to the airspace under its sovereignty;[42] and,
c. Airspace over the high seas and other parts of the earth's surface not subject to any State's jurisdiction is free to the aircraft of all States. However, in the Exclusive Economic Zone (EEZ), States continue to have the rights of overflight and navigation as they would on the high seas.[43]

Although of relatively recent origin, these foundations are now among the least disputed in international law. The principle of air sovereignty insured that national governments would play a dominant role in the development of international civil aviation.[44]

The words "complete and exclusive sovereignty over the airspace" refers to the situation where a State may adopt and implement norms relative to the affairs of the space available in the atmosphere above its territory, where it has exclusive control and jurisdiction.[45] However, this does not mean that States can act with unlimited freedom of aviation. For instance, jurisdiction is only exclusive insofar that a contracting State has not chosen, on the exercise of its sovereignty, to apply ICAO rules, as Articles 37 of the

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40 Oliver James Lissitzyn. *International Air Transport and National Policy* (New York: Garland Publishing, 1983), 365.

41 See Article 2 of the United Nations Convention on the Law of the Sea, also called UNCLOS, on the 'legal status of the territorial sea, of the air space over the territorial sea and of its bed and subsoil.'

42 See Article 3 on 'Civil and State aircraft', 5 on the 'Right of Non-Scheduled Flight', 6 on 'Scheduled Air Services', 7 on 'Cabotage' and 8 on 'Pilotless Aircraft' of the Chicago Convention 1944.

43 See Article 12 on 'Rules of the Air' of the Chicago Convention 1944, 58 on 'Rights and Duties of other States in the Exclusive Economic Zone' and 87 on 'Freedom of the High Seas' of UNCLOS.

44 Oliver James Lissitzyn. *International Air Transport and National Policy.* New York: Garland Publishing, 1983), 365.

45 Michael Milde. *International Air Law and ICAO.* 2nd ed. (The Hague: Eleven International Publishing, 2012), 34.

Chicago Convention 1944 gives ICAO the authority to promulgate Annexes to the referred Convention, and contracting States must comply with those Annexes and procedures unless they promptly object under Article 38.[46]

Under the principle of 'sovereignty', no aircraft may fly into or through a State's national airspace without its permission, acquiesce or tolerance, no matter what altitude.[47] The same applies to a foreign UA, which shall not fly into the airspace above the territory of another State otherwise than in conformity with its laws, policies and regulations of the State in whose territory it operates.

Article 8 of the Chicago Convention 1944, which defines the special legal regime on pilotless aircraft, confirms the overflown States' sovereignty prerogative and also requires States to add an obligation to control the flight of pilotless aircraft, of whatever nationality, within their territories.[48] Should cross-border civil flights using UA take place, the operation shall not rely solely on the respect and compliance with the laws and regulations of the State or States of overflight and destination but also the willingness to permit such flights into its airspace and landing in the territory of another State, if that is the case.

The author will discuss the term 'special authorisation' in the pilotless clause of Article 8 of the Chicago Convention 1944, examined in the next chapter.

2.2.5 TERRITORY

The Chicago Convention 1944 embeds the recognition of the sovereignty of airspace in a delimited concept of territory. Article 2 states the following:

> Article 2 Territory
> "For the purposes of this Convention, the territory of a State shall be deemed to be the land areas and territorial waters adjacent thereto under the sovereignty, suzerainty, protection or mandate of such State."

The definition of the part of the area of the territory of a State in which it exercises its sovereignty, suzerainty, protection or mandate in Article 2 is not arbitrary. Rather, it states with precision that such land areas and territorial waters are constituent elements of the territory where States may exercise sovereignty in the airspace above them. The delimitation of the word 'territory' contributes not only to the understanding of the term but is also

46 See Articles 37 and 38 of the Chicago Convention 1944.
47 Bin Cheng. *International Law and High-Altitude Flights: Balloons, Rockets and Man-made Satellites* (London: Stevens & Sons Limited), 487-494.
48 See Article 8 on pilotless aircraft of the Chicago Convention 1944.

necessary for the correct application of the Chicago Convention 1944, as the word 'territory' is repeated fifty times in its subsequent Articles.

The Chicago Convention 1944 includes three forms of jurisdiction that States may exercise, namely:

- Territorial jurisdiction over all aircraft within the territory of the contracting States;
- Personal jurisdiction over their aircraft flying on or over foreign territories;[49] and,
- Quasi-territorial jurisdiction over their own aircraft flying above the high seas and *terra nullis*.[50]

Therefore, because the contracting States exercise control and jurisdiction over all that takes place within their territories and the airspace above them, including air transport and air navigation, the legal connotations are vast in the applicability of UA because UA are always aircraft.[51]

Chapter Four of this research addresses the legal implications for UA access to foreign airspace, while Chapter Five covers the safe cross-border operations of UAS, including the high seas. In these two chapters, the author will analyse how the referred jurisdictions apply to the operations of UAS. Chapter Six summarises the fundamental aspects of this research and how the findings respond to the research questions.

The following section will look at the similarities and differences between civil and State aircraft from a legal perspective. A comparative analysis between civil and State aircraft is relevant since it facilitates determining the aspects that make UA fall into one category or the other. The examination becomes even more necessary because this research intends to establish whether the Chicago Convention 1944 and its Annexes apply to the international civil operations of UAS.

2.2.6 CIVIL AND STATE AIRCRAFT

The term *aircraft*, being the core device of aviation and governed by extensive international norms, is not defined in any primary source of international law. The term encompasses so many types of complex machines that an ordinary lexicon cannot define easily. Nevertheless, Annex 7 on Aircraft

49 Bin Cheng. *The Law of International Air Transport* (London: Stevens & Sons Limited – 1962), 110.

50 *Terra nullius* is a Latin term that means land belonging to no one or no man's land. In international law, a territory which has never been subject to the sovereignty of any State, or over which any prior sovereign has expressly, or implicitly relinquished sovereignty is *terra nullius*. Sovereignty over territory which is *terra nullius* can be acquired through occupation. International seas and celestial bodies would come under the term *terra nullius*.

51 See section 1.4.2.

Nationality and Registration Marks to the Chicago Convention 1944 incorporates a definition of aircraft that is essential for the correct understanding and application of the referred treaty and its SARPs.[52] Accordingly, aircraft means the following:

> "...any machine that derives support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface."

Annex 7 classifies *aircraft* in twenty-three types of machines, from non-power-driven machines that include free balloons and glider kites to power-driven machines like airships, aeroplanes, rotorcraft and ornithopters.

In March 2012, ICAO adopted the Sixth Amendment to Annex 7 and incorporated the acronym RPA, defined as a UA piloted from a remote pilot station.[53] UA are aircraft because they rely on their wings for lift. However, the SpaceX launch system development programme[54], which is also reusable like aeroplanes, does not simply fall into the definition of *aircraft* because even though missiles and rockets also travel through the airspace, they do not derive support from the reactions of the air. However, what about the VSS Unity vehicle from Virgin Galactic, currently used for suborbital flights? As the VSS Unity is a vehicle that functions as aircraft while crossing the atmosphere and flying through the airways and also as spacecraft while in space, both air and space law regimes apply to this kind of machine. The criteria also apply to the X-37B, sometimes called the Orbital Test Vehicle (OTV), which is a small unmanned and reusable spacecraft built by Boeing that looks like a small space shuttle.

The term for UA that does not allow the intervention of a pilot in the management of the flight is *autonomous aircraft*.[55] For those UA piloted from a remote pilot station, the name used is RPA.[56] Moreover, when the RPA, its associated remote pilot station(s), the required command and control links and any other components as specified in the type design are integrated, they are called RPAS.[57] The data link between the RPA and the remote pilot

52 Michael Milde. *International Air Law and ICAO.* 2nd ed. (The Hague: Eleven International Pub., 2012), 61.

53 Annex 7 to the Convention on International Civil Aviation, *Aircraft Nationality and Registration Marks,* ICAO Sixth Edition. July 2012. 1.

54 SpaceX designs, manufactures and launches advanced rockets and spacecraft. The company was founded in 2002 to revolutionize space technology, with the ultimate goal of enabling people to live on other planets.

55 ICAO Doc 10019 AN/507, *Manual on Remote Piloted Aircraft System (RPAS),* first edition 2015, April 2015), xiv.

56 ICAO Doc 10019 AN/507 *Manual on Remote Piloted Aircraft System (RPAS),* first edition 2015, April 2015), xviii.

57 ICAO Doc 10019 AN/507, *Manual on Remote Piloted Aircraft System (RPAS),* first edition 2015, April 2015, xviii.

station for managing the flight is called the C2 link. The C2 link connects the remote pilot station and RPA to manage the flight. The link may be simplex or duplex and may be in RLOS or BRLOS. [58]

The Chicago Convention 1944 only governs civil aircraft but does not define such a category of aircraft. It only formulates a conceptual differentiation between civil and State aircraft, the latter being out of the purpose of the Chicago Convention 1944. This situation is paradoxical because both categories of aircraft share the same airspace, interact during the air navigation and, therefore, both shall seek and perform the same safety standards.[59]

Article 3 of the Chicago Convention stipulates the following:

> Article 3 Civil and State aircraft
> a) "This Convention shall be applicable only to civil aircraft, and shall not be applicable to State aircraft.
> b) Aircraft used in military, customs and police services shall be deemed to be State aircraft.
> c) No State aircraft of a contracting State shall fly over the territory of another State or land thereon without authorisation by special agreement or otherwise, and in accordance with the terms thereof.
> d) The contracting States undertake when issuing regulations for their State aircraft that they will have due regard for the safety of navigation of civil aircraft."

The incomplete phrasing of Article 3 could lead to the interpretation of different intentions of the Chicago Convention 1944 when using the term *civil aircraft*.

Article 3(b) renders a mere indication of what uses shall be deemed to be State aircraft, restricting State aircraft to those employed in the military, customs and police services.[60]

Even though it is an established principle that the right of giving an authoritative interpretation of a legal rule belongs solely to the person or body who has the power to change or suppress it, courts and tribunals are not the only ones undertaking treaty interpretations. Government departments, legislatures, legal advisers, lawyers and academia frequently review treaty interpretation as part of their work.[61] Therefore, the author ventures to provide elements and perspectives that may contribute to the methods of treaty interpretation under VCLT rules for Article 3 of the Chicago Convention 1944.

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58 ICAO Doc 10019 AN/507, *Manual on Remote Piloted Aircraft System (RPAS),* first edition 2015, April 2015, xv.

59 Michael Milde. *International Air Law and ICAO*. 2nd ed. (The Hague: Eleven International Publishing), 62.

60 Michael Milde. *International Air Law and ICAO.* (The Hague: Eleven International Publishing, 2012), 71-72.

61 Richard K. Gardiner.. *Treaty Interpretation.* (Oxford: Oxford University Press, 2017), 11.

What is a civil aircraft? Under VCLT rules, treaty interpretation aims to provide meaning to the words and terms of a treaty. The challenge of this endeavour is that words may have more than one meaning. A more complex matter is when a Convention allows one thing, as in the case of *the operation of civil aircraft* but gives neither instruction nor guidance on whether the interpreter should deduce the meaning of the term *civil aircraft* because it is absent. Can the Parties to the treaty interpret as they wish? The following analysis will elaborate on two possibilities for what civil aircraft could be under the Chicago Convention 1944.

The first approach to understanding the provision leads to the logical deduction that all aircraft, other than those used in military, customs and police services, shall be treated as civil aircraft. According to Professor Bin Cheng,

> "...the Convention, through the use of an extremely narrow definition of State aircraft, interprets the term civil aviation very extensively. It embraces all matters relating to aviation not exclusively connected with aircraft used in military, customs and police services."[62]

This method of analysis is consistent with the Roman maxim *semper in dubiis benigniora præferenda*, which means that the more liberal construction should always be preferred in doubtful matters.[63]

Moreover, Article 3 of the Chicago Convention 1944 resembles Article 30 of the Paris Convention 1919.

Article 30 of Paris Convention 1919 was even more explicit when making a distinction between private aircraft, which became civil aircraft under the Chicago Convention 1944, and State aircraft. The referred provision stated the following:

> Article 30:
> "The following shall be deemed to be State aircraft:
> (a) Military aircraft;
> (b) Aircraft exclusively employed in State service, such as posts, customs and police.
>
> Every other aircraft shall be deemed to be a private aircraft. All State aircraft other than military, customs and police aircraft shall be treated as private aircraft and as such shall be subject to all provisions of the present Convention."

The content of Article 30 of the Paris Convention 1919 may contribute to

62 Bin Cheng. *The Law of International Air Transport.* (London: Stevens & Sons, 1984), 112.
63 E. Hilton Jackson. *Latin for Lawyers.* (Clark, New Jersey: Exchange, 2015), 242.

finding a pragmatic differentiation of what should be deemed to be civil and State aircraft, because the concepts and principles formulated in that Convention conserve its relevance nowadays. Accordingly, the Roman maxim *ex præcedentibus et consequentibus es optima interpretatio* suggests that the best interpretation is derived from that which goes before and that which follows.

The second approach falls into functional analysis. In the absence of any other guidance, the status of the aircraft is delimited by the function it performs at a given time, whatever the design, technical features, registration or ownership. For example, UA may be employed by both State and private entities for many different purposes apart from military, customs and police services, such as coast guard, search and rescue, emergency assistance, surveillance, humanitarian flights and geological services, among others.[64]

Moreover, Article 35 of the Chicago Convention 1944 defines cargo restrictions for aircraft engaged in international navigation:

> Article 35 Cargo restrictions
>
> (a) "No munitions of war or implements of war may be carried in or above the territory of a State in aircraft engaged in international navigation, except by permission of such State. Each State shall determine by regulations what constitutes munitions of war or implement, of war for the purposes of this Article, giving due consideration, for the purposes of uniformity, to such recommendations as the International Civil Aviation Organization may from time to time make.
>
> (b)Each contracting State reserves the right, for reasons of public order and safety, to regulate or prohibit the carriage in or above its territory of Articles other than those enumerated in paragraph (a): provided that no distinction is made in this respect between its national aircraft engaged in international navigation and the aircraft of the other States so engaged; and provided further that no restriction shall be imposed which may interfere with the carriage and use on aircraft of apparatus necessary for the operation or navigation of the aircraft or the safety of the personnel or passengers."

Article 35(a) does not make a distinction on whether the aircraft transporting the munitions and implements of war is a State of civil aircraft. The provision applies to all types of aircraft. However, how can we determine with certainty if a UA transporting munitions and implements of war is a civil or State aircraft? According to Professor Michael Milde, the following elements could be considered—not in isolation but their mutual combination—and may assist in the determination of the military nature of the aircraft:

64 Michael Milde. *International Air Law and ICAO.* (The Hague: Eleven International Publishing, 2012), 73.

- "*Design of the aircraft and its technical characteristics:* some aircraft by their design and characteristics, including their weaponry, are constructed exclusively for military combat, while other types may be readily converted for other purposes. It does not appear reliable to define the nature of the aircraft solely on the basis of its technical characteristics;
- *Registration marks:* the nationality and registration marks of an aircraft may designate the aircraft as 'military', but that fact by itself is not a proof that aircraft is 'used in military services' in a particular situation;
- *Ownership:* the fact that the aircraft is owned by a State or specifically by a military arm of the State is a valid indication of its status but in itself does not prove that it is 'used in military services' in a particular situation; and,
- *Type of operation:* the nature of the flight documents carried on board, flight plan, communications procedures, the composition of the crew, whether military or civilian, secrecy or open nature of the flight, etc, could assist in the qualification of an aircraft as military."[65]

In other words, the determination of the nature of an aircraft relies on the use and service it performs.

Public international law distinguishes the acts of States into two categories, namely *acta iure imperii* and *acta iure gestionis*. The first category encompasses acts that the State conducts as a sovereign power, while the second category includes acts performed by the State as if it were a private operator. Under this approach, State aircraft could be used by the State acting in its public functions, whereas civil aircraft would be employed by the State when being a participant of the economic sector, in which case the provisions of the Chicago Convention 1944 and its SARPs will apply.[66] This approach is perhaps the most accepted and referred by scholars.

These are just rebuttable presumptions as any other *praesumptio iuris*.[67] Any effort of interpretation of Article 3 of the Chicago Convention 1944 to ascertain a differentiation between civil and State aircraft shall address all aspects of treaty interpretation rules under the VCLT, plus the determination of all conditions surrounding the flight, including but not limited to as the nature of personal or passengers, and cargo carried on board, technical features of the aircraft, ownership of the aircraft and its nationality marks.

Although the Chicago Convention 1944 determined that it does not cover State aircraft, in contradiction, several of its provisions also refer to State aircraft.

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65 Michael Milde. *International Air Law and ICAO.* (The Hague: Eleven International Publishing, 2012), 72.

66 Pablo Mendes de Leon. *Introduction to Air Law.* 10th ed. (Alphen Aan Den Rijn: Kluwer Law International, 2017), 22.

67 Bryan A. Garner and Henry Campbell Black *Black's Law Dictionary.* 7th ed. *Praesumptio iuris:* A presumption of law; that is, one in which the law assumes the existence of something until it is disapproved.

Article 3(c) circumscribes transit rights by providing that State aircraft may not fly over or land on the territory of another State:

> "...without authorisation by special agreement or otherwise, and in accordance with the terms thereof."

UA of Article 8 receives the same treatment as State aircraft in Article 3(c), regardless of the function in which the pilotless aircraft is engaged, whether civil or State. The first section of Article 8 states the following:

> Article 8: Pilotless aircraft
>
> "No aircraft capable of being flown without a pilot shall be flown without a pilot over the territory of a contracting State without special authorisation by that State and in accordance with the terms of such authorisation."

The wording of Article 3(c) seems to be redundant when applying to UA because, under Article 8, special authorisation is always necessary regardless of whether the UA is civil or State.[68] This circumstance implies that a UA, even if involved in civil operations, requires approval and shall comply with the conditions of such approval before it can fly into foreign airspace.

Also, for instance, Article 3(d) provides that when issuing regulations for State aircraft, the contracting State "will have due regard for the safety of navigation of civil aircraft." The provision mandates the following:

> "...to undertake, when issuing regulations for their State aircraft that they will have due regard for the safety of navigation of civil aircraft."

The reason of existence of this provision is that State aircraft are not principally governed by the Chicago Convention 1944 and are, therefore, not ruled by ICAO's SARPs and PANS.[69] However, each regular session, ICAO Assembly adopts an extensive resolution called the *Consolidated Statement of ICAO Continuing Policies and Associated Practices Related Specifically to Air Navigation.* Appendix P, (*Coordination of Civil and Military Air Traffic)* provides the following:

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68 Article 8, Pilotless Aircraft, of the Chicago Convention 1944: 'No aircraft capable of being flown without a pilot shall be flown without a pilot over the territory of a contracting State without special authorization by the State and in accordance with the terms of such authorization. Each contracting State undertakes to insure that the flight of such aircraft without a pilot in regions open to civil aircraft shall be so controlled to obviate danger to civil aircraft'.

69 Mark Ells. '*Unmanned State Aircraft and the Exercise of Due Regard.*' By Mark Ells: SSRN. March 21, 2015. Accessed November 07, 2018. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2580875.

> "The regulation and procedures established by contracting States to govern the operation of their State aircraft over the high seas shall ensure that these operations do not compromise the safety, regularity and efficiency of international civil air traffic and that, to the extent practicable, these operations comply with the rules of the air in Annex 2."[70]

This clause asserts the need for State aircraft to comply with the rules of the air over the high seas, as per Annex 2 to the Chicago Convention 1944. Appendix O of ICAO Assembly Resolution A37-15 confirms the content of the clause mentioned above and calls for compliance with the rules of the air of Annex 2 over the high seas by military aircraft.[71]

As the most accepted approach to analysis, what determines the status of civil or State aircraft, regardless of its manned or unmanned condition, is the function in which the aircraft engages. Therefore, Article 3(d) must be understood in a broader sense. In the traditional view, this Article is applicable in the context of manned civil aviation. However, another potential scenario under Article 3(d), using UAS technology, is that the regulations of a contracting State for State UA must have due regard for the safety of navigation of manned and unmanned civil aircraft.

The wording of Article 3(d) of the Chicago Convention 1944 also resembles the language used in Article 8 on pilotless aircraft of the Chicago Convention 1944, stating the same obligation to ensure safety regarding civil aircraft through precise control. Article 8 provides the following in relation to civil aircraft:

> Article 8: Pilotless aircraft:
>
> "...each contracting State undertakes to insure that the flight of such aircraft without a pilot in regions open to civil aircraft shall be so controlled as to obviate danger to civil aircraft."
>
> Although the Chicago Convention 1944 excludes State aircraft from its scope, it also provides that this aircraft requires *ad hoc* safety measures, such as the obligation to keep 'due regard' and obtain 'special authorisation.'[72] Moreover, precautions must be taken to prevent and minimise the potential risk of State aircraft, "as their intentions may be unknown to ATC, and it may not be possible for the prescribed separation minima to be preserved in these circumstances".[73]

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70 Michael Milde. *International Air Law and ICAO* (The Hague: Eleven International Publishing, 2016), 105.

71 ICAO. *Resolutions Adopted by the Assembly.* ASSEMBLY – 37th SESSION. ICAO, October 8, 2010. https://www.icao.int/Meetings/AMC/Assembly37/Documents/ProvisionalEdition/a37_res_prov_en.pdf

72 Article 3 on civil and State aircraft of the Chicago Convention 1944.

73 *SKYbrary Wiki.* Due Regard – SKYbrary Aviation Safety. Accessed November 07, 2018. https://www.skybrary.aero/index.php/Due_Regard.

While UA are aircraft *per se*, they are also subject to specific measures for flying. These specific measures are analogous to those applicable to State aircraft, since UA also require 'special authorisation' and an obligation 'to obviate danger to civil aircraft'.[74] The obligation to ensure due regard suggests that avoiding other traffic is neither a matter of the type of aircraft nor the type of airspace. Instead, it is a high matter of safety, and no aircraft, including UA in any circumstances, should deny or be relieved from this obligation.

Under Article 35(a), UA engaged in international navigation shall not carry munitions and implements of war unless so permitted by the overflown State. UA engaged in this type of operation falls under the category of State aircraft.

Due to their versatility, UA may be employed in a variety of situations, both as State or civil aircraft. Accordingly, Article 3*bis* of the Chicago Convention 1944 is also applicable to the operations of UA, particularly when used in in civil services:

> c) The contracting States recognise that every State, in the exercise of its sovereignty, is entitled to require the landing at some designated airport of a civil aircraft flying above its territory without authority…It may also give such aircraft any other instructions to put an end to such violations…
> d) Every civil aircraft shall comply with an order given in conformity with paragraph b) of this Article.

According to this provision, a UA pilot shall follow the instructions of the State overflown, even when using electronic or visual means, and can divert the aircraft to the assigned airport at the State's request. To comply with this demand, which, in manned aviation, is typically performed through visual means, UA may face significant needs in the certification of DAA for international operations.[75]

Subject to the remarks made above, the Chicago Convention 1944 applies only to civil aircraft. Therefore, to determine whether this treaty may govern the international operations of UAS, it was first necessary to explore the meaning and scope of the term *civil aircraft*, as the Chicago Convention 1944 does not provide a definition to resolve whether UA can fall within the category of civil aircraft.

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74 The same language can be found in both Articles 3 and 8 of the Chicago Convention 1944, but not in Article 5, which refers to prior permission or 'special permission.'

75 See ICAO doc 10019 AN/507, Definitions: Manual on Remotely Piloted Aircraft Systems (RPAS). *Detect and avoid*: the capability to see, sense or detect conflicting traffic or other hazards and take the appropriate action.

Based on the previous analysis and interpretation, the author considers that UA can indeed fall into the category of civil aircraft when it engages in civil aircraft functions, which differ from those that Article 3 provides only for State aircraft. This conclusion does not lead to assurance that the entire Chicago Convention 1944 can rule the international civil operations of UAS, as the complex operational nature of UAS requires addressing and tackling other aspects that remain unsolved, such as safety and security and the legal regime of international air transport.

2.2.7 MISUSE OF CIVIL AVIATION

The International Civil Aviation Conference addressed the concept of' 'misuse of civil aviation'. Canada proposed the first draft of Article 4, which produced the following text:

> "...to avert the possibility of the misuse of civil aviation creating a threat to the security of nations, and to make the most effective contribution to the establishment and maintenance of a permanent system of general security."

A tripartite proposal from the US, UK and Canada changed after the language in the first draft to read:

> "Each Member State rejects the use of civil air transport as an instrument of national policy in international relations."

The language of this provision was based on the content of the Kellogg-Briand pact outlawing war.[76] Kellogg-Briand, often called the *General Treaty for Renunciation of War as an Instrument of National Policy*, is a 1928 international agreement signed in Paris, France, in which contracting States agreed not to use war to settle conflicts, whatever nature or origin they may have. The benefits afforded by the treaty shall be refused to Parties failing to abide by this obligation.[77]

The tripartite proposal was then referred to the drafting committee of the ICAO to find more suitable language for the desire of all to prevent the use

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76 *Part II, Work of the Committees*. Proceedings of International Civil Aviation Conference, United States of America, Chicago. Vol. II. Washington: Department of State, 1949. 1381. Accessed March 26, 2018. https://www.icao.int/ChicagoConference/Pages/proceed.aspx

77 Kellogg-Brand was signed by Germany, France, and the United States on 27 August 1928, and by most other nations soon after. Sponsored by France and the US, the Pact renounces the use of war and calls for the peaceful settlement of disputes. Eleven years later after the Paris signing, World War II began. Similar provisions were also incorporated into the Charter of the United Nations. The pact was concluded outside the League of Nations and remains in effect.

of civil air transport for aggression.[78] The contracting States finally agreed on the following language for Article 4 of the Chicago Convention 1944:

> "Each contracting State agrees not to use civil aviation for any purpose inconsistent with the aims of this Convention."

Article 4 mandates that contracting States be allowed to use civil aviation only for the purposes established and permitted by the treaty.

Article 3*bis* b) uses language similar to the language adopted in Article 4:

> b) "The contracting States recognise that every State, in the exercise of its sovereignty, is entitled to require the landing at some designated airport of a civil aircraft flying above its territory without authority or if there are reasonable grounds to conclude that it is being used for any purpose inconsistent with the aims of the Convention;" …

What are the aims of Articles 3 and 4? By analysing the Preamble of the Chicago Convention 1944, a list of purposes may be picked out, *inter alia*, the promotion of cooperation, the creation and preservation of friendship and the understanding between the nations and peoples of the world. The Preamble also highlights that the abuse of international civil aviation can become a threat to general security. States have agreed on certain principles and arrangements to develop the international civil aviation in a safe and orderly manner. The Preamble embraces the intent that international air transport may be established by equality of opportunity and be operated soundly and economically.[79]

Also, Article 44 of the Chicago Convention 1944 establishes the objectives of ICAO. Sections a), d) and h) of the cited provision are set forth as objectives to insure the safe and orderly growth of international civil aviation throughout the world to meet the needs of the peoples of the world for safe, regular, efficient and economical air transport and to promote safety of flight in international air navigation.

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78 R. I. R. Abeyratne. *Convention on International Civil Aviation: A Commentary.* (Springer International Publishing, 2014), 91.

79 *Convention on International Civil Aviation* Doc 7300- Doc 7300. Accessed March 26, 2018. https://icao.int/publications/pages/doc7300.aspx.Preamble: 'WHEREAS the future development of international civil aviation can greatly help to create and preserve friendship and understanding among the nations and peoples of the world, yet its abuse can become a threat to the general security; and WHEREAS it is desirable to avoid friction and to promote that cooperation between nations and peoples upon which the peace of the world depends; THEREFORE, the undersigned governments having agreed on certain principles and arrangements in order that international civil aviation may be developed in a safe and orderly manner and that international air transport services may be established on the basis of equality of opportunity and operated soundly and economically; Have accordingly concluded this Convention to that end.'

Article 44: Objectives

"The aims and objectives of the Organisation are to develop the principles and techniques of international air navigation and to foster the planning and development of international air transport so as to: a) insure the safe and orderly growth of international civil aviation throughout the world; d) Meet the needs of the peoples of the world for safe, regular efficient and economical air transport; h) promote safety of flight in international air navigation."

During the 33rd Session, ICAO Assembly adopted Resolution 33/1, *inter alia*, to condemn the acts that occurred in the United States on 9/11 that led to the loss of many innocent lives, human suffering and destruction. The title of the resolution was *Declaration on the Misuse of Civil Aircraft as Weapons of Destruction and other Terrorist Acts involving Civil Aviation*.

The resolution mentioned above acknowledged that using civil aircraft as weapons of destruction is incompatible with the letter and spirit of the Chicago Convention 1944. In particular, the resolution declared that these acts are contrary to its Preamble and Articles 4 and 44, of which such acts and other terrorist attacks involving civil aviation or civil aviation facilities represent grave offences in breach of international law.[80] Also, ICAO urged all contracting States to hold accountable and severely punish those who misuse civil aircraft as weapons of destruction, including those responsible for planning and organising such acts or for aiding, supporting or harbouring the perpetrators. It also encouraged the intensification of efforts to achieve full implementation and enforcement of the multilateral conventions on aviation security and the SARPs relating to aviation security, and to take additional security measures to prevent and eradicate terrorist acts involving civil aviation.[81]

Even though the law is proactive and guides conduct, its substance is almost always reactive, a reaction to recognised social problems. The law lags. The acceleration of all aspects of life, as one of the defining characteristics of globalisation, has led to a situation in which deliberative responses by lawmakers almost always come, if not too late, then at least with considerable delay.[82] This vision also applies to aviation, since flying is a dynamic pro-

80 ICAO Resolution A33-1: Declaration on Misuse of Civil Aircraft as Weapons of Destruction and Other Terrorist Acts Involving Civil Aviation. (Montreal: 25 September – 5 October 2001). Accessed March 27, 2018. https://www.icao.int/Meetings/AMC/MA/Assembly%2033rd%20Session/plugin-resolutions_a33.pdf

81 ICAO Resolution A33-1: Declaration on Misuse of Civil Aircraft as Weapons of Destruction and Other Terrorist Acts Involving Civil Aviation. (Montreal 25 September – 5 October 2001). Accessed March 27, 2018. https://www.icao.int/Meetings/AMC/MA/Assembly%2033rd%20Session/plugin-resolutions_a33.pdf

82 *The Law of the Future and the Future of Law.* HiiL. Accessed October 21, 2018. http://www.hiil.org/publication/the-law-of-the-future-and-the-future-of-law

cess in a permanent state of change. Therefore, the drafters of the Chicago Convention 1944 could not foresee every specific misuse of civil aviation. However, in the evolving texts of Article 4, the drafters intended to prevent the employment of civil aviation as a threat to the security of nations. This security concern is also present in ICAO Resolution A33-1.

As UA are analogous in purpose and design to a cockpit of a manned aircraft,[83] they may also be subject to sabotage or unlawful interference and can be used as weapons of destruction. UA may jeopardise the safety of airborne aircraft, its passengers and crew, ground personnel or the general public in different ways. For instance, UA may be employed to carry small payload bombs or chemical weapons as lethal as the military's. These acts would be inconsistent with the international legal regime of aviation security[84] as well as with Article 35 of the Chicago Convention 1944 on cargo restrictions, unless so permitted by the overflown State.[85] UA can carry out specific actions, with or without direct pilot intervention, while reducing human exposure. They can also be hacked or spoofed. UA are less expensive to acquire, fuel and maintain than manned aircraft. UA can have more pinpoint accuracy. As UA have proven to increase surveillance, reconnaissance and general intelligence potential, they could be used for unlawful purposes, such as espionage. UA are faster to deploy, and by making UA manoeuvring very similar to video games, engagement in unlawful activities is more comfortable by diminishing ethical decisions.

Due to the potential threat that UAS may impose to civil aviation security, as in the scenarios provided above, ICAO recommends that systems for controlling access to UAS should be at least of equal standard to those already

83 ICAO Doc 10019 AN/507, *Manual on Remotely Piloted Aircraft Systems (RPAS)* (Montreal: International Civil Aviation Organization, 2015), 13.

84 The international legal regime on aviation security addresses aspects of vulnerability of civil aviation to different types of unlawful acts, in particular: unlawful seizure of an aircraft in flight ('hijacking'), sabotage of an aircraft in flight or of the air navigation facilities and service attacks against the aircraft on the ground or against persons at an airport; unruly passengers on board. See Michael Milde, *International Air Law and ICAO* (The Hague: Eleven International Publishing, 2016), 219. The following treaties address such unlawful acts:

- The Tokyo Convention on Offences and Certain Other Acts Committed On Board Aircraft, signed on September 14, 1963;
- The Hague Convention for the Suppression of Unlawful Seizure of Aircraft, signed on December 16, 1970;
- The Montreal Convention for the Suppression of Unlawful Acts Against the Safety of Civil Aviation, signed on September 23, 1971;
- The Protocol for the Suppression of Unlawful Acts of Violence at Airports Serving International Civil Aviation, Supplementary to the Convention for the Suppression of Unlawful Acts Against the Safety of Civil Aviation, signed on February 24, 1988; and,
- The Convention of the Marking of Plastic Explosives for the Purpose of Detection, signed on March 1, 1991.

85 See Article 35 on Cargo restrictions of the Chicago Convention 1944.

in place in manned civil aviation. In that regard, ICAO issues information on procedures to be followed and systems to be implemented to ensure the security of the flight crew compartment, and this may be used as general reference material when addressing the unique nature of UAS. Identification technologies, such as the use of biometrics for access control systems, may offer a high degree of security. Furthermore, distinction in access control level may be considered between the UA and the premises where they reside. The same background check rules for persons granted unescorted access to restricted security areas of aerodromes shall apply to UA remote pilots. Because the C2 link provides vital functions for the operation of UAS, it may utilise hardware and software provided and managed by third parties. Consequently, the C2 link should have the capacity to mitigate hacking, spoofing and other forms of interference.[86]

Aviation has proven to be a dynamic activity, and so is the potential to misuse it. UAS technology and its applications evolve together with the risk of abuse. For example, smugglers were using UA to bring smartphones from Hong Kong into China. The smugglers operated after midnight and only needed seconds to transport small bags holding over ten smartphones by using the UA. They could smuggle 15,000 smartphones across the border in one night.[87] Further, UA have become one of the latest tools for drug cartels to avoid more traditional routes using cars through ports of entry or underground tunnels.[88]

The potential misuse of UA rises at the moment they become household items. In this context, could the violation of the privacy of persons be a misuse of civil aviation, considering that privacy is within neither the scope nor the aims of the Chicago Convention 1944? States regulate the protection and enforcement of privacy under their national laws. However, attention is necessary when a payload with the ability to process data, such as photographic apparatus, is attached to the UA because Article 36 of the treaty allows States to prohibit or regulate the use of photographic devices in aircraft that fly over their territory:

> Article 36: Photographic apparatus
>
> "Each contracting State may prohibit or regulate the use of photographic apparatus in aircraft over its territory."

86 ICAO Doc 10019 AN/507, *Manual on Remotely Piloted Aircraft Systems (RPAS)*, Montreal: International Civil Aviation Organization, 2015), 13.

87 CNBC. *'Smugglers Used UA to Bring $79.8 Million worth of iPhones into China. They Just Got Busted'*. CNBC. March 30, 2018. Accessed April 02, 2018. https://www.cnbc.com/2018/03/30/china-busts-smugglers-using-UA-to-transport-smartphones.html

88 Stephen Dinan. *'UA Become Latest Tool Drug Cartels Use to Smuggle Drugs into U.S."* The Washington Times. August 20, 2017. Accessed April 02, 2018. https://www.washingtontimes.com/news/2017/aug/20/mexican-drug-cartels-using-UA-to-smuggle-heroi/.

The concept of intertemporal law could provide answers under international law to whether violating privacy could fall into misuse of civil aviation. The intertemporal law addresses two questions, namely:

1. Whether the time of the negotiation, conclusion or ratification of a treaty is the leading element for interpreting a provision; or,
2. Whether the meaning of a provision of a treaty can evolve following the developments in international law.[89]

The author considers that any attempt to interpret whether the violation of privacy falls within the concept of misuse of civil aviation under the method of evolutionary interpretation must be consistent with what courts and tribunals have ruled. For instance, the European Court, in the case of *Feldbrugge vs The Netherlands* resolved that,

> "...an evolutive interpretation allows variable and changing concepts already contained in the Convention to be construed in the light of the modern-day conditions...but it does not allow to include entirely new concepts or spheres of application to the Convention: that is a legislative function that belongs to the member States of the Council of Europe...."[90]

When a treaty provision has different interpretations, evolutionary interpretation and practice of the Parties may combine to produce a shared path for a transparent interpretation. A meaning adopted from a concept already present at the moment of adoption of a treaty limits the evolutionary interpretation whereas the development of the subsequent practice of the Parties to the treaty provides an additional resource that supplements the evolution of the content of a treaty.

The author considers that several elements could lead to conclude that violating privacy through the use of UAS falls within Article 4 of the Chicago Convention 1944, namely:

- UAS have evolved from spying on States to spying on people;
- UAS is an actual component of civil aviation and subject to the application of the Chicago Convention 1944;
- States commonly regulate and sanction the violation of privacy;
- The violation of privacy is not within the aims and purposes of the Chicago Convention 1944; and,

89 Richard K. Gardiner. *Treaty Interpretation* (Oxford: Oxford University Press, 2017), 251-252.

90 Richard K. Gardiner. *Treaty Interpretation.* (Oxford: Oxford University Press, 2017), 243. See also Feldbrugge vs Netherlands, ECHR case No 8/1984/20/127 (judgment of 23 April 1986).

- If the violation of privacy using photographic equipment or cameras in UA is a consequence of the infringement of Article 36 of the Chicago Convention 1944 which allows the contracting States to prohibit or regulate the use of photographic equipment in aircraft that operate within the airspace of their territory.

The author acknowledges that Article 4 of the Chicago Convention 1944 applies to the international operations of UAS, insofar States maintain their commitment to ensuring the functional character of the treaty so that international civil aviation may be developed in a safe and orderly manner, and that international air transport services may be established on the basis of equality of opportunity and operated soundly and economically. The level of technological advancement achieved by UAS makes it impossible to anticipate the uses and misuses these types of aircraft may have in the entire civil aviation system.[91]

Concordantly, ICAO shall continue encouraging, as part of its aims and objectives, the arts of aircraft design and operation for peaceful purposes.[92] Therefore, without prejudice of security concerns, States shall apply Article 4 in a broader sense because UAS have myriad possibilities for misuse.

2.3 CONCLUDING REMARKS

The Paris Convention 1919, amended by its Protocol 1929, made the first international effort to regulate the cross-border operations of UAS, used in military operations since WWI.

Due to the potential that UA has for uses other than military, contracting States to the Paris Convention 1919 gave UA a status independent of the use of civil or military aircraft. Under Article 15 of Protocol 1929, pilotless aircraft required, at all times, special authorisation to fly over the airspace of another contracting State, regardless of its civil or military status under international air law.

The Chicago Convention 1944, the current *magna carta* of international civil aviation, replaced the Paris Convention 1919 and its Protocol 1929. The new treaty incorporated several concepts and principles of air law existing in the former treaty, including those about the operations of UA. In this context, the Chicago Convention 1944 maintained the legal essence of Article 15 of

91 See the Preamble of the Chicago Convention 1944.

92 Article 44 Objectives of the Chicago Convention 1944: The aims and objectives of the Organization are to develop the principles and techniques of international air navigation and to foster the planning and development of international air transport so as to: *b)* Encourage the arts of aircraft design and operation for peaceful purposes; …

the Paris Convention 1929, which is a special authorisation for pilotless aircraft at all times.

The new Article 8 regarding pilotless aircraft in the Chicago Convention 1944 added, however, the obligation of all States to ensure that flights of an aircraft without a pilot, in regions open to the navigation of civil aircraft, shall be controlled in a manner to obviate danger to civil aircraft. This portion of the provision makes it clear that pilotless aircraft differ from civil aircraft without considering that under current technological development, pilotless aircraft can engage in civil functions. However, this scenario neither affects nor prohibits UA engaging in civil functions because Article 8 relates to a type of aircraft that, when flying in the same airspace open to other aircraft engaged in civil functions, UA shall take measures to prevent danger.

The principles of air law in the Chicago Convention 1944 apply to the cross-border operations of UAS. The principle of territorial sovereignty gives any State the absolute right to permit or deny the flight of any UA in its territory. UA shall exercise the rights and obligations granted by the State of registry under international law, and such State is responsible for the good behaviour of that UA. Also, the complete integration of UAS into international civil aviation is consistent with the purpose of the Chicago Convention 1944. Its Preamble states that the purpose of that treaty is to develop, in a safe and orderly manner, international civil aviation and that international air transport service are established on an equal opportunity basis and carried out soundly and economically. There is no reason, therefore, to exclude UA, since UA are aircraft that can carry out international civil operations, defined in the accord reached by the contracting States of the Chicago Convention 1944.

Under Annex 7 on Aircraft Nationality and Registration Marks to the Chicago Convention 1944, UA belong to the twenty-three classes of aircraft identified in the referred Annex. UA are also aircraft because they rely on their wings, whether fixed or rotating, for the lift. According to Annex 7, an RPAS is a UA whose pilot controls the aircraft from a remote station. Even though an RPA is a UA, the question is whether an RPA is a pilotless aircraft, considering that such an aircraft requires pilot intervention. This question will be discussed in Chapter Three.

The Chicago Convention 1944 distinguishes between civil and State aircraft, the latter being excluded from the referred Convention. For such differentiation, there are two approaches for legal analysis. The first is that all aircraft, other than those used in military, customs and police services, are civil aircraft. The second pertains to the function performed, regardless of its characteristics. State and private entities could use UA for different purposes other than military, customs and police services, such as coast guards,

search and rescue, emergency relief, surveillance, humanitarian flights and geological services, among others, because what determines the status of civil or State aircraft, regardless of its manned or unmanned condition, is the function in which the UA engages.

Opportunities for civil aviation interference are growing as the process of globalisation expands, and new technological developments arise, such as UA. Further, the law is a product of social reality, and this reality is subject to a permanent change.[93] International aviation security concerns have shifted since the adoption of Articles 3*bis* and 4 towards increasing unpredictable threats posed by non-State actors, such as militias, terrorists, insurgents, criminal gangs and the like, as well as new technological developments. The potential for misuse of UA has proven to be high. UA has been used for smuggling operations and has even been used in attempts to assassinate heads of States.[94] On this matter, the Chicago Convention 1944 prohibits the use of civil aviation for purposes incompatible with those of the referred Convention. This prohibition is relevant for the operations of UAS because an aircraft that may be used for civil purposes must, therefore, comply with the Chicago Convention 1944.

The international legal regimes of airspace and aircraft embraced in Articles 1, 2, 3, 3*bis* and 4 of the Chicago Convention 1944 apply to the cross-border civil operations of UAS. Therefore, UA shall comply not only with those provisions but also with the subsequent provisions of the Chicago Convention 1944, some of which are further addressed in the following chapters while responding to the ever-increasing desire to overcome space and time as natural barriers to global interrelations.

Finally, it is still uncertain whether the current legal and regulatory framework for the international air transport of passengers, baggage, cargo and mail, built for manned aviation, may also apply to the cross-border operations of UAS. For this reason, in the following chapter, the author will examine the interpretation of Article 8 of the Chicago Convention 1944 to determine whether the legal regimes of international air navigation and international air transport apply to UA. In this endeavour, the author will analyse the interactions and legal implications for UA seeking to engage in the operation of non-scheduled flights and scheduled international air services.

93 Philip Allott. *The Concept of International Law.* http://www.ejil.org/pdfs/10/1/577.pdf

94 Juan Forero and Kejal Vyas, *'Venezuela Says Drone Attack Targeted President Maduro,'*. The Wall Street Journal, August 05, 2018, accessed August 26, 2018, https://www.wsj.com/articles/venezuela-says-drone-attack-targeted-president-maduro-1533427311.