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# AERIAL INSURGENCY: NON-STATE ACTOR USE OF UNCREWED AERIAL VEHICLES AND PUBLIC INTERNATIONAL AIR LAW IMPLICATIONS

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## I. INTRODUCTION

On September 14, 2019, a series of projectiles rained down on two major oil facilities in the eastern Saudi Arabian regions of Abqaiq and Khurais, blasting holes in oil storage and production tanks, damaging equipment and starting extensive fires at both sites.<sup>1</sup> Early reports indicated that the strikes had involved uncrewed aerial vehicles (UAVs)—a fact that was confirmed when Yemen’s Houthi rebels admitted responsibility for the attack, claiming they had undertaken the strikes using ten UAVs.<sup>2</sup> While the Abqaiq/Khurais attacks were hardly the first time the Houthis had targeted Saudi oil interests using weaponized UAVs,<sup>3</sup> the scale and precision of the September 2019 attacks, as well as their effect on Saudi and even global oil production, demonstrated the dramatic

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<sup>1</sup> Ben Hubbard, Palko Karasz & Stanley Reed, *Two Major Saudi Oil Installations Hit by Drone Strike, and U.S. Blames Iran*, THE N.Y. TIMES (Sept. 14, 2019, updated Sept. 15, 2019), <https://www.nytimes.com/2019/09/14/world/middleeast/saudi-arabia-refineries-drone-attack.html>; BBC, *Saudi oil attacks: Images show detail of damage*, BBC.COM (Sept. 16, 2019), <https://www.bbc.com/news/world-middle-east-49718975>.

<sup>2</sup> Nada Altaher, Jennifer Hauser & Ivana Kottasová, *Yemen’s Houthi rebels claim a ‘large-scale’ drone attack on Saudi oil facilities*, CNN.COM (Sept. 14, 2019), <https://www.cnn.com/2019/09/14/middleeast/yemen-houthi-rebels-drone-attacks-saudi-aramco-intl/index.html>.

<sup>3</sup> See Vivian Yee, *Yemen’s Houthi Rebels Attack Saudi Oil Facilities, Escalating Tensions in Gulf*, THE N.Y. TIMES (May 14, 2019), <https://www.nytimes.com/2019/05/14/world/middleeast/saudi-oil-attack.html>.

effect that a non-state actor's use of UAV technology can have on the global economy.<sup>4</sup> Indeed, as the use of UAVs by non-state actors—including terrorist groups, such as Hezbollah and the Islamic State; armed rebel factions, like the Houthis and the Free Syrian Army; or criminal organizations, including Central and South American drug cartels—continues to expand, it is increasingly apparent that UAV technology represents a significant force-multiplier for non-state entities that can threaten States' monopolies of force.

In this Article, I seek to examine the issue of armed and terrorist non-state actors' use of UAVs through the lens of public international air law and the legal regime for international aviation that has its origin in the post-World War II Chicago Convention on International Civil Aviation.<sup>5</sup> While States' response to non-state actor UAV use may ultimately fall more within the realm of the law of armed conflict or, in the case of UAV use by criminal organizations (which will not be examined in this Article), within States' domestic criminal laws, public international air law provides a framework for examining UAV use within the international regulatory context. Public international air law contains important rules with respect to pilotless aircraft, and may, through the international standards and policy-making of the International Civil Aviation Organization (ICAO), provide methods of regulating UAVs that would enhance States' abilities to address the threat that such aircraft pose. I will begin, in Part II of this Article, with a brief background on UAVs, their development since the early days of aviation, the distinctions between different types of UAVs, and the advancements in UAV technology and depreciation in UAV costs that have allowed UAV use by non-state actors to proliferate. Part III will examine the facets of the existing public international air law regime that are applicable to UAVs, including distinctions between State and non-State aircraft, provisions of the Chicago Convention that

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<sup>4</sup> The two oil facilities targeted in the September 14, 2019, attack together accounted for almost half of Saudi Arabia's oil production and approximately 5% of global oil production. It was later reported that Saudi Arabia had lost \$2 billion worth of oil production as a result of the attacks. Anjali Raval, *Saudi Arabia loses \$2bn of output after attack on oil infrastructure*, FIN. TIMES (Oct. 10, 2019), <https://www.ft.com/content/514af7dc-eb59-11e9-a240-3b065ef5fc55>.

<sup>5</sup> See generally Convention on International Civil Aviation, 15 U.N.T.S. 295 (Dec. 7, 1944) [hereinafter Chicago Convention].

directly address pilotless aircraft, and rules regulating States' military responses to civilian aircraft. In Part IV, I will analyze these areas of law and their application to States' response to non-state actor use of UAVs, particular with respect to limitations Article 3*bis* of the Chicago Convention may impose on States' responses to non-state actor UAV use (and even UAV use in general) within the context of the existing public international air law framework.<sup>6</sup> Finally, Part V will serve as a brief conclusion to this Article.

## II. BACKGROUND

Prior to examining non-state actor drone use and applications of public international air law to this issue, it is important to first, define the terms that will be used throughout this Article to ensure the reader is familiar with such concepts as "non-state actors" and UAVs. It is also necessary to undertake a brief historical examination of UAV development and use, which plays a role in explaining both the current international air law provisions governing UAVs and the modern proliferation of UAV technology.

### A. Definitions

For the purposes of this Article's examination of public international air law and non-state actor UAV use, I will partially utilize the definition of "non-state actors" provided by the US Naval War College and the *Dictionary of the Social Sciences*. This definition states:

Non-state actors are entities that participate or act in international relations, with sufficient power to influence and cause change without any affiliation to established institutions of a state. These individuals or organizations have significant political, economic, or social influence without being allied to any particular country or state.<sup>7</sup>

This definition encompasses traditional non-state actors such as nongovernmental organizations, stateless terrorist groups (such

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<sup>6</sup> See *id.* at art. 3*bis*.

<sup>7</sup> U.S. NAVAL WAR COLL. LIBR., "De-escalation/ War Termination: Non-State Actors" (Oct. 3, 2019), <https://usnwc.libguides.com/c.php?g=267716&p=2081785> (citing CRAIG J. CALHOUN, *DICTIONARY OF THE SOCIAL SCIENCES* (2002)).

as al-Qaeda), and criminal organizations that have sufficient power to influence their societies. However, this definition would likely *not* include terrorist organizations that successfully seize, control, and govern territory (such as the Islamic State or Hamas) or armed groups that are aligned to a particular State to such a degree that the “political wings” of such groups form a part of that State’s government (Hezbollah would be the primary example of such an armed group). It is also unclear whether the US Naval War College/*Dictionary of Social Sciences* definition would encompass rebel groups seeking to displace a current State system (for instance, the Yemeni Houthis or any number of anti-Assad Syrian rebel groups). For the purposes of this Article, any terrorist, rebel or armed/paramilitary group not officially associated with the armed forces of a recognized State will also be considered a “non-state actor.”

With respect to the definition of UAV, “ICAO has determined it to be a pilotless aircraft . . . which is flown without a pilot-in-command on-board and is either remotely and fully controlled from another place (ground, another aircraft, space) or programmed and fully autonomous.”<sup>8</sup> As ICAO makes clear, there are at least two types of UAVs encompassed within the scope of this definition: remotely-piloted aircraft (RPAs, which are also sometimes referred to as “remotely piloted aircraft systems” or RPAS, when discussing both the aircraft itself and its command-and-control system in conjunction with one another<sup>9</sup>) and truly unpiloted (in the sense of pre-programmed or “fully autonomous”) aircraft. It should be noted that, while *all* UAVs are popularly referred to as “drones,” only this second category of UAVs actually reflect the traditional understanding of a “drone” as a truly autonomous aircraft.<sup>10</sup> As non-state actors have utilized both types of systems, this Article will use the more all-encompassing term “UAV” rather than limit this examination to only RPAs or unpiloted drones.

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<sup>8</sup> ICAO, GLOB. AIR TRAFFIC MGMT. OPERATIONAL CONCEPT, DOC. 9854 AN/458 (2005) at B-6.

<sup>9</sup> See ICAO, REMOTELY PILOTED AIRCRAFT SYS. (RPAS) CONCEPT OF OPERATIONS (CONOPS) FOR INT’L IFR OPERATIONS (Oct. 19, 2017), <https://www.icao.int/safety/UA/Documents/RPAS%20CONOPS.pdf#search=RPAS>.

<sup>10</sup> See John Villasenor, *What Is a Drone, Anyway?*, SCI. AM. (Apr. 12, 2012), <https://blogs.scientificamerican.com/guest-blog/what-is-a-drone-anyway/>.

*B. UAV History and Modern Non-State Actor Exploitation*

Contrary to the public impression that UAVs represent a new, revolutionary technology and a uniquely 21<sup>st</sup> Century challenge, human beings have been using uncrewed kites, balloons and other aircraft for military purposes for hundreds, if not thousands, of years.<sup>11</sup> As Gregory K. James notes in *Unmanned Aerial Vehicles and Special Operations: Future Directions*, his thesis for the Naval Postgraduate School, “a Chinese warlord [reportedly] used large kites to carry explosives over a walled city and fortress nearly 2,000 years ago, allowing him to attack his adversaries while keeping his own troops out of range.”<sup>12</sup> Uses of uncrewed balloons for explosive bombardment and balloons and kites for photographic aerial reconnaissance were developed and used during a number of 19<sup>th</sup> Century conflicts, including the First Italian War of Independence,<sup>13</sup> the American Civil War, and the Spanish-American War.<sup>14</sup>

With the Wright Brothers’ invention of the heavier-than-air airplane in 1903 and subsequent improvements in airplane technology through the First World War, development of UAVs advanced significantly. During World War I, British engineer Archibald M. Low invented a remote-controlled aircraft known as the Ruston Proctor Aerial Target for use as a practice target in training anti-aircraft gunners,<sup>15</sup> while Americans Elmer Sperry, Peter Hewitt and Charles Kettering developed radio-controlled “flying bombs”—the precursors to modern cruise missiles.<sup>16</sup> World War II saw Nazi Germany advance UAV technology with the V-1 rocket, a

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<sup>11</sup> See Benjamyn I. Scott, *Overview*, in THE LAW OF UNMANNED AIRCRAFT SYSTEMS: AN INTRODUCTION TO THE CURRENT AND FUTURE REGULATION UNDER NATIONAL, REGIONAL AND INTERNATIONAL LAW 3-5 (Benjamyn I. Scott, ed. 2016); DAVID HODGKINSON & REBECCA JOHNSTON, AVIATION L. AND DRONES: UNMANNED AIRCRAFT AND THE FUTURE OF AVIATION 3-13 (2018).

<sup>12</sup> Gregory K. James, *Unmanned Aerial Vehicles and Special Operations: Future Directions*, 5 (Dec. 2000)(Postgraduate Thesis, Naval Postgraduate School) <https://apps.dtic.mil/dtic/tr/fulltext/u2/a386387.pdf>.

<sup>13</sup> See HODGKINSON & JOHNSTON, *supra* note 11, at 4.

<sup>14</sup> Scott, *supra* note 11, at 3.

<sup>15</sup> Jason A. Yochim, *The Vulnerabilities of Unmanned Aircraft System Common Data Links to Electronic Attack*, 2 (2010)(Master’s Thesis, U.S. Army Command and General Staff College), <https://fas.org/irp/program/collect/uas-vuln.pdf>.

<sup>16</sup> Bishane A. Whitmore, *Evolution of Unmanned Aerial Warfare: A Historical Look at Remote Airpower—A Case Study in Innovation*, 7-10 (2016)(Master’s Thesis, U.S. Army Command and General Staff College), <https://apps.dtic.mil/dtic/tr/fulltext/u2/1020384.pdf>.

missile that was “pre-programmed to crash” and explode “after a set duration,”<sup>17</sup> as well as continued British and American development of remote-controlled target aircraft.<sup>18</sup> In the post-World War II era, UAVs began to be used during the Cold War for reconnaissance purposes, with American “Lightning Bug,” D-21 and “Combat Dawn” spy UAVs flying missions over China, North Korea, Vietnam and the Soviet Union.<sup>19</sup> Eventually, in the 1990s, UAV technology grew sufficiently advanced to marry reconnaissance functions with the weaponization previously monopolized by armed combat aircraft—leading to the development of joint offense and reconnaissance UAVs, such as the MQ-1 “Predator” and MQ-9 “Reaper.”<sup>20</sup> These military advancements occurred in conjunction with civilian applications of uncrewed flight technology, from early radio-controlled model airplanes, to commercial airline “autopilot” systems, to modern personal/commercial small UAVs.

While contrary to public perception, UAVs have a long history, there are several aspects of the modern UAV equation that represent revolutionary changes to the previous use and regulation calculus of UAVs. The first is the dramatic technological advance of UAVs and the significant expansion of their capabilities. Advanced military UAVs, such as the US remotely-piloted MQ-9 “Reaper,” are capable of flying for fourteen hours or more “while carrying up to 3,000 pounds” of weaponry that can be launched at the touch of a button.<sup>21</sup> On the civilian side, the use of remote piloting technology to transport cargo or even passengers on commercial airliners or cargo planes modified into UAVs is becoming more and more viable.<sup>22</sup> The second major change is the radically reduced cost of UAV

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<sup>17</sup> Scott, *supra* note 11, at 4.

<sup>18</sup> See HODGKINSON & JOHNSTON, *supra* note 11, at 6-7.

<sup>19</sup> Thomas P. Ehrhard, Air Force UAVs: The Secret History, 8-13 (July 2010)(Mitchell Institute for Airpower Studies) <https://apps.dtic.mil/dtic/tr/fulltext/u2/a525674.pdf>.

<sup>20</sup> *Id.* at 49-53.

<sup>21</sup> DEP’T OF DEF., DEF. ACQUISITION MGMT. INFO. RETRIEVAL, *Selected Acquisition Report (SAR): MQ-9 Reaper Unmanned Aircraft System (MQ-9 Reaper)* 6 (Mar. 26, 2016), <https://apps.dtic.mil/sti/pdfs/AD1019505.pdf>.

<sup>22</sup> ICAO, UNMANNED AERIAL SYS. (UAS), CIR. 328 AN/190, 7 (2011), [https://www.icao.int/Meetings/UAS/Documents/Circular%20328\\_en.pdf](https://www.icao.int/Meetings/UAS/Documents/Circular%20328_en.pdf); Indeed, while recognizing that the technology for civilian passenger and cargo transport via UAVs should and will continue to “develop[] [and] mature,” ICAO’s chief concern with this practice is not technological viability but, rather, ensuring that such pilotless aircraft are “able to meet [the Organization’s] defined standards and regulations.”

technology—especially basic, “off the shelf” UAV systems. This factor is directly applicable to the proliferation of UAV use among non-state actors.

### III. RELEVANT LAW

The legal basis of modern public international air law is the Chicago Convention on International Civil Aviation (the “Chicago Convention”).<sup>23</sup> The international treaty, drafted in 1944 as the Second World War was drawing to a close, “recognized and codified certain principles of substantive international [aviation] law” and established ICAO.<sup>24</sup> While a full examination of the Chicago Convention’s provisions is beyond the scope of this Article, a number of its Articles are either directly applicable to the topic of UAVs or provide the necessary legal underpinnings for addressing UAV-related issues. At the most basic level, the Chicago Convention establishes a State’s “complete and exclusive sovereignty over the airspace above its territory,”<sup>25</sup> which is defined as “the land areas and territorial waters adjacent thereto under the sovereignty, suzerainty, protection or mandate of such State.”<sup>26</sup> A State’s right to sovereignty and control over its airspace provides the foundation from which a State may regulate its airspace, defend its airspace and territory from aerial threats, and limit types of aircraft, or aircraft from particular locations, from entering its airspace.

Article 3 of the Chicago Convention goes on to create a distinction between “state” and “civil” aircraft and specifies that the international regulatory regime established by the Chicago Convention will only apply to civil aircraft. In full, this Article states:

- 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

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<sup>23</sup> See generally Chicago Convention, *supra* note 5.

<sup>24</sup> PAUL STEPHEN DEMPSEY, PUBLIC INTERNATIONAL AIR LAW 54 (2nd ed., 2017).

<sup>25</sup> Chicago Convention, *supra* note 5, at art. 1.

<sup>26</sup> *Id.* at art. 2.

authorization 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.<sup>27</sup>

As Jiri Hornik notes, when the Chicago Convention was adopted in 1944, there were two primary reasons for this distinction. First, “[i]t was believed . . . that there was a clear border between civil and military aviation and that there was no need to regulate the latter internationally due to its being a means for the exercise of sovereign state power.”<sup>28</sup> Second, it was theorized that “state aviation [would] rarely [be] involved in international navigation”—a theory that has largely been disproven since 1944, as “international [air] navigation [now] constitutes a significant part of day-to-day state operations.”<sup>29</sup>

Although Article 3 makes clear that the provisions of the Chicago Convention will not apply to “state” aircraft, the distinction between “state” and “civil” aircraft is one that has bedeviled States, practitioners of international aviation law, and even ICAO itself. While Article 3(b) stipulates that “military, customs, and police” aircraft shall be deemed state aircraft, no definition of either “state aircraft” or “civil aircraft” is provided in the Convention. The Convention text does not make clear whether the three examples of “state aircraft” it provides constitutes an exhaustive or unexhaustive list.<sup>30</sup> Fifty years after the drafting of the Chicago Convention, in 1994, ICAO’s Legal Committee was still wrestling with the distinction, recommending that “all aircraft used in military, customs or police services, shall be considered as state aircraft” (with additional recommendation regarding how to determine whether an aircraft is used for these purposes), while “all other aircraft shall be considered to be civil aircraft.”<sup>31</sup> While state vs. civil distinctions

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<sup>27</sup> *Id.* at art. 3

<sup>28</sup> Jiri Hornik, *Article 3 of the Chicago Convention*, 26 ANNALS AIR & SPACE L. 110, 114 (2001)

<sup>29</sup> *Id.* at 115.

<sup>30</sup> Chicago Convention, *supra* note 5, at art. 3. *See also* Hornik, *supra* note 28, at 117.

<sup>31</sup> LEGAL COMM., ICAO, *Secretariat Study on “Civil/State Aircraft,”* Working Paper Presented by the Secretariat, LC/29-WP/2-1, 29th Sess., 16 (July 15, 1994). In this same document, the Legal Committee also stipulated that “in determining whether an aircraft

sometimes remain in certain rare instances—particularly, as one 2015 ICAO Legal Committee working paper stated, for “aircraft used for unusual purposes”<sup>32</sup>—this definition has largely sufficed for distinguishing types of aircraft.

A key (and somewhat grim) reason that distinguishing between state and civil aircraft is important lies in Article 3*bis* of the Chicago Convention.<sup>33</sup> Article 3*bis*, one of the Convention’s few actual amendments, was adopted in the wake of the Soviet Union’s shooting down of a civilian airliner, Korean Airlines Flight 007, in September 1983.<sup>34</sup> The Article prohibits States’ use of weapons against civil aircraft, stipulating that “every State must refrain from resorting to the use of weapons against civil aircraft in flight and that, in case of interception, the lives of persons on board and the safety of aircraft must not be endangered.”<sup>35</sup> This prohibition, however, does not affect rights/obligations, such as the inherent right to self-defense, a State otherwise has under international law.<sup>36</sup> Additionally, Article 3*bis* stipulates that contracting States must take measures “to prohibit the deliberate use of any civil aircraft registered in that State or operated by an operator who has his principal place of business or permanent residence in that State for any purpose inconsistent with the aims of this Convention.”<sup>37</sup>

It should be noted that the provisions of an amendment to the Chicago Convention only impose obligations on those States that have accepted and ratified the amendment—*unless* such an amendment simply codifies a legal principle already recognized as customary international law. The vast majority of signatories to the

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is used in military, customs and police services, the parties concerned should take into account all the surrounding circumstances,” to include such factors as the aircraft’s “operator,” “the nature of the cargo” carried by the aircraft, whether the aircraft is State or privately owned, the type of “passengers or personnel carried” on the aircraft and the “nature of its crew,” the “secrecy of the flight,” the aircraft’s “area of operation,” and whether the aircraft is actually carrying the documentation required of civil aircraft by the Chicago Convention. *Id.* at 14, 16.

<sup>32</sup> LEGAL COMM., ICAO, *State/Civil Aircraft Definition and Its Impact on Aviation*, Working Paper Presented by Poland, et al., 1, LC/36-WP/2-6, 36th Sess. (Dec. 3, 2015).

<sup>33</sup> Chicago Convention, *supra* note 5, at art. 3*bis*.

<sup>34</sup> Sompong Sucharitkul, *Procedure for the Protection of Civil Aircraft in Flight*, 16 LOY. L.A. INT’L & COMP. L.J. 513, 515-16 (1994).

<sup>35</sup> Chicago Convention, *supra* note 5, at art. 3*bis*(a).

<sup>36</sup> *Id.* (“This provision shall not be interpreted as modifying in any way the rights and obligations of States set forth in the Charter of the United Nations.”).

<sup>37</sup> *Id.* at art. 3*bis*(d).

Chicago Convention have ratified Article 3*bis*, including many of the States currently likely to be threatened by (and, perhaps, to sponsor) non-state actor UAV use, such as Iran, Iraq, Israel, the Russian Federation, Saudia Arabia, the Syrian Arab Republic and Yemen.<sup>38</sup> The US, however, has not. Practically, the non-ratification by the US may have little affect; as some commentators have pointed out, US “practices suggest that it nevertheless feels bound by the rules stipulated in article 3*bis* [sic].”<sup>39</sup> Further, the US may, indeed, view the prohibition on use of force against civil aircraft as a matter of customary international law. This seems to have been the position of the US delegate to the ICAO Assembly during the drafting debate for Article 3*bis*, who, commenting on US support for utilizing the word “recognize” in Article 3*bis*, paragraph (a), stated that the “purpose of [the] Assembly was to *codify existing principles of international law*” rather than create new ones.<sup>40</sup> Regardless of the US’ true position on the use of force against civil aircraft, its non-ratification of Article 3*bis* makes it one of the few Chicago Convention member States to fail to agree to this amendment.

As we will see below, analyzing whether non-state actor UAVs qualify as “state” or “civil” aircraft under ICAO’s quasi-definition and its associated factors elicits interesting, and somewhat conflicting, conclusions regarding the civil vs. state aircraft status of non-state actor UAVs. However, Article 8 of the Chicago Convention negates some of the practical effects of such an analysis by, essentially, *treating all UAVs in a manner similar to state aircraft*. Article 8 stipulates:

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 that State and in accordance with the terms of such authorization. Each contracting State

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<sup>38</sup> See ICAO North American, Central American, & Caribbean Office, Fifth North American, Central American and Caribbean Directors of Civil Aviation Meeting (NACC/DCA/5), Working Paper, NACC/DCA/5—WP/09 (Apr. 8, 2014).

<sup>39</sup> Robin Geiß, *Civil Aircraft as Weapons of Large-Scale Destruction: Countermeasures, Article 3BIS of the Chicago Convention, and the Newly Adopted German “Luftsicherheitsgesetz,”* 27 MICH. J. OF INT’L L. 227, 228 (2005).

<sup>40</sup> ICAO ASSEMBLY 25TH SESSION (EXTRAORDINARY), *Executive Committee: Report, Minutes and Documents*, 44 ICAO Doc. 9438, A25-EX/4 (1984) [https://www.icao.int/Meetings/a38/Documents/10024\\_en.pdf](https://www.icao.int/Meetings/a38/Documents/10024_en.pdf) (emphasis added).

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.<sup>41</sup>

The language of Article 8 mirrors the language of Article 3(c), addressing overflight by State aircraft, with respect to the necessity of a “special authorization” for the overflight of UAVs (which, as we have seen above, constitute “pilotless aircraft” for the purposes of Article 8).

Given its language, was Article 8 meant to classify “pilotless aircraft” as “state aircraft”? This is a matter of some debate. Some authors have pointed to Article 8’s comparative language to argue that the “drafters of the Chicago Convention recognised [sic] that ‘pilotless aircraft’ are not civil aircraft”<sup>42</sup>—i.e. if “aircraft without a pilot” must be “so controlled as to obviate danger to civil aircraft,”<sup>43</sup> does this imply a definitional distinction between “pilotless” and “civil” aircraft? Whether any such distinction was actually intended in the mid-1940s, it is clear that ICAO does not agree with such academic attempts to infer a non-civil aircraft status for UAVs. As UAV technology offers “new and improved civil/commercial applications,” while also necessitating rules “ensuring the safety of . . . other airspace user[s] as well as the safety of persons and property on the ground,”<sup>44</sup> ICAO has been clear on its position that portions of the existing Chicago Convention regulatory framework are applicable to civil UAVs and that the Organization has both the right and the duty to create standards and recommended practices (SARPs) governing their use.<sup>45</sup>

#### IV. ANALYSIS

In analyzing the application of public international air law to the issue of non-state actor UAV use, it is necessary to determine, first, that non-state actor UAVs do, in fact, constitute civil aircraft

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<sup>41</sup> Chicago Convention, *supra* note 5, at art. 8.

<sup>42</sup> Fernando Fiallos, “*The Applicability of the Public International Air Law Regime to the Operation of UAS*,” in *THE LAW OF UNMANNED AIRCRAFT SYSTEMS: AN INTRODUCTION TO THE CURRENT AND FUTURE REGULATION UNDER NATIONAL REGIONAL AND INTERNATIONAL LAW* 32 (Benjamyn I. Scott, ed. 2016).

<sup>43</sup> *Id.*

<sup>44</sup> ICAO, *supra* note 22, at iii and 4.

<sup>45</sup> *Id.* at 3-6, 11-14.

under the purview of the Chicago Convention and ICAO. This section will begin by examining this issue, before moving on to discuss the consequences of a civil aircraft classification for non-state actor UAVs under Article *3bis* of the Chicago Convention. Possible lawful methods of responding/interdicting such UAVs will be discussed, and conclusions drawn.

*A. Non-State Actor UAVs: State or Civil Aircraft?*

As Part III noted, the vast majority of public international air law as elaborated in the Chicago Convention, as well as ICAO's ability to promulgate standards and regulations, only applies to civil aircraft and civil aviation.<sup>46</sup> This includes, Article *3bis* of the Chicago Convention, prohibiting the use of weaponry against civil aircraft. For this reason, any discussion of State response to non-state actor UAV use must first address whether UAVs employed by non-state actors such as transnational terrorist groups are—or should be treated as—state or civil aircraft.

At first glance, the question seems to be a simple one. The very concept of a non-state actor entails a lack of ties or “affiliation[s] to [the] established institutions of a state.” How, then, could an aircraft of any type utilized for any purpose by a non-state actor ever be considered a state aircraft? Would this not be a definitional impossibility—akin to describing something as a round square or an angled circle?

The analysis becomes a bit harder, however, when one considers ICAO's characterization that “all aircraft used in military, customs or police services, shall be considered as state aircraft” and the Organization's factors for analyzing whether an aircraft is, in fact, used in these areas. While most non-state actors cannot satisfy even the most basic of State attributes under international law,<sup>47</sup> many—and certainly the most dangerous, such as al-Qaeda, the Islamic State, and Hezbollah—can, and have, used aircraft for military purposes. As the terrorist attacks of September 11, 2001; the 2006 war in Lebanon between Israel and Hezbollah; and the rise of the Islamic State in Iraq and Syria between 2009 and 2017

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<sup>46</sup> See Chicago Convention, *supra* note 5, at art. 3.

<sup>47</sup> See Seth G. Jones, *Rolling Back the Islamic State*, RAND CORP. (2017), [https://www.rand.org/content/dam/rand/pubs/research\\_reports/RR1900/RR1912/RAND\\_RR1912.pdf](https://www.rand.org/content/dam/rand/pubs/research_reports/RR1900/RR1912/RAND_RR1912.pdf).

demonstrate, certain non-state actors can bring as much—or more—military force to bear than even some modern militaries. This includes militarized, and innovative, use of UAVs.

In an analysis of UAV use by groups such as Hezbollah and the Islamic State, the factors associated with ICAO's quasi-definition of state aircraft show that these UAVs appear to satisfy a significant number of the factors used to determine whether an aircraft is engaged in "military services."<sup>48</sup> Although such UAVs are owned and operated by "private" actors, they are engaged in traditionally military activities: surveillance, reconnaissance, and offensive air-to-ground attack. The Islamic State, for instance, utilized low-cost commercial drones for a wide range of military activities, including surveilling enemy defenses, guiding suicide bombers to their targets, and assisting with mortar targeting,<sup>49</sup> as well as kinetic attacks through both kamikaze<sup>50</sup> and bomb-release explosive methods.<sup>51</sup> As the Islamic State example shows, ICAO's "nature of the cargo" carried by the aircraft (which could also be logically expanded to "nature/use of the flight"), "secrecy of the flight," "aircraft registration and nationality markings," aircraft "area of operation" and "required documentation" factors all cut in favor of classifying an Islamic State UAV as a state aircraft. Similar analyses would apply for military-oriented UAV use by other terrorist organizations or non-state actors like Yemen's Houthis: such UAVs are used for traditional military purposes, will typically be flown secretly (for the purpose of catching enemies off-guard), may be flying in conflict zones or other areas that would otherwise be restricted for civil aircraft and will almost assuredly *not* be carrying the documentation required of civil aircraft. Based on even ICAO's factor-oriented analysis for determining "military service," then, it seems that UAVs used by terrorist or other armed non-state actors qualify as being "used in military service"—and, thus, would qualify as state

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<sup>48</sup> See LEGAL COMM., *supra* note 31, at 14.

<sup>49</sup> Don Ressler, *The Islamic State and Drones: Supply, Scale, and Future Threat*, COMBATING TERRORISM CTR., 3 (July 11, 2018), <https://ctc.usma.edu/wp-content/uploads/2018/07/Islamic-State-and-Drones-Release-Version.pdf>.

<sup>50</sup> David Grossman, *ISIS Using Kamikaze Drones in Iraq*, POPULAR MECH. (Oct. 12, 2016), <https://www.popularmechanics.com/military/weapons/a23350/isis-using-kamikaze-drones-in-iraq/>.

<sup>51</sup> Ressler, *supra* note 49, at 3.

aircraft were it not for the fact they are not being operated by traditionally-recognized States.

The analysis in the previous paragraph notwithstanding, when the Chicago Convention was drafted in 1944, the problem of powerful non-state actors with the ability to utilize aircraft for military purposes was largely non-existent. States at that time maintained a monopoly on the use and application of aerial force for “military, customs, and police services.” Given that the Chicago Convention seems to pre-suppose an internationally-recognized State (one with all the rights and attributes of a State under international law) operating a “state aircraft,” it seems unlikely that aircraft use (whether crewed or uncrewed) by a non-state actor, regardless of the purpose of that use and no matter how militarily damaging, could be interpreted as drawing such an aircraft into the realm of a state aircraft for the purposes of the Chicago Convention.

#### *B. Article 3bis and Use of “Weapons” Against Non-State Actor UAVs*

It is tempting to dismiss the analysis of whether a non-state actor UAV is a State or civil aircraft as a purely academic exercise. As we have seen, above, however, this distinction has a number of important consequences, and none are more significant than its practical effects under Article 3bis of the Chicago Convention. Indeed, should a State find itself in a position in which it must respond to a non-state actor UAV incursion or attack, the classification of that UAV as a civil aircraft will limit that State’s ability to respond, and, potentially, to defend itself, without violating its treaty obligations. Article 3bis, as noted above, prohibits the use of weapons “against civil aircraft in flight” and requires that “in case of interception, the lives of persons on board and the safety of aircraft must not be endangered.”<sup>52</sup> Thus, by the plain language of the Article, using anti-aircraft guns, small arms, air-to-air interceptors, or any other weapons to shoot down or destroy a non-state actor UAV is prohibited *if* such a UAV is classified as a civil aircraft.

What, then, can a State that has ratified Article 3bis do to defend itself against the threat of non-state actor UAV use? If destruction of a non-state UAV is prohibited, are other methods of

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<sup>52</sup> Chicago Convention, *supra* note 5, at art. 3bis(a).

countering a UAV threat permissible? The answer may lie in Article 3*bis* (a)'s second clause, regarding aircraft interception. If a crewed aircraft can be lawfully intercepted so long as the lives of its crew and passengers are protected and the safety of the aircraft itself is not endangered, it follows that a non-state actor UAV (which, will have neither crew nor passengers) may also be lawfully intercepted so long as the UAV itself is not damaged.

While a crewed aircraft can be directed by civilian or military air traffic controllers, or shepherded to an airport by military fighters, a UAV will not, itself, respond to such stimuli. Further, contacting or communicating with its operator (if the UAV is remotely piloted rather than autonomous) may be difficult or impossible. As one author notes, "a rogue [UAV] can be intercepted only . . . by blocking signals, hacking to assume control, or physically disabling it."<sup>53</sup> Excluding destructive methods of physically disabling a UAV, a number of creative solutions have been developed to counter or interdict UAVs. These solutions typically involve either some form of electronic interference with a hostile or unlawful UAV, or the application of physical restraint, such as the capture of such a UAV in a net.

Among the first category of counter-UAV methods is geo-fencing, or, as some organizations characterize it, "geo-limitation." The European Aviation Safety Agency (EASA) defines "geo-limitation" as "any limitation applied to a UAS [i.e. uncrewed aerial system] to constrain the uncrewed aircraft access to or exit from a defined zone or airspace volume."<sup>54</sup> These limitations are programmed into a UAV's operating software and use Global Positioning System (GPS) data to establish the defined zones (such as the airspace over military bases or certain prescribed radii around commercial airports) described by the EASA.<sup>55</sup> Should a UAV approach the perimeter of

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<sup>53</sup> Deepika Jeyakodi, *Cyber Security, in THE LAW OF UNMANNED AIRCRAFT SYSTEMS: AN INTRODUCTION TO THE CURRENT AND FUTURE REGULATION UNDER NATIONAL, REGIONAL AND INTERNATIONAL LAW* 75 (Benjamyn I. Scott, ed. 2016).

<sup>54</sup> EUR. AVIATION SAFETY AGENCY, EASA/NATIONAL AVIATION AGENCY TASK FORCE, REPORT: STUDY AND RECOMMENDATIONS REGARDING UNMANNED AIRCRAFT SYSTEMS GEO-LIMITATIONS (Sept. 2, 2016), at 55, [https://www.easa.europa.eu/sites/default/files/dfu/GTF%20-%20Report\\_Issue2.pdf](https://www.easa.europa.eu/sites/default/files/dfu/GTF%20-%20Report_Issue2.pdf).

<sup>55</sup> See Drew Dixon, *Geofencing Stops Drones in Their Tracks*, GOV'TTECH.COM (Aug. 1, 2017), <https://www.govtech.com/public-safety/Geofencing-Stops-Drones-in-Their-Tracks.html>.

such a restricted area, signals can be sent to the UAV's piloting system to take evasive action and, should the UAV fail to change course, some geo-fencing or geo-limitation systems can send a "flight termination" signal to the UAV, "cutting off [its] mechanical operations" and forcing it to land.<sup>56</sup> Geo-fencing has been proposed both as a counter-UAV safety measure and, more generally, as a possible method of creating an over-arching "traffic management system" for commercial/civil UAVs.<sup>57</sup>

One significant problem with geo-fencing, however, is that it requires geographic limitation to be pre-programmed into the software of a given UAV.<sup>58</sup> Thus, UAVs that lack this programming or that have had their programming altered or overridden will not necessarily recognize or respond to geo-fencing limitation.<sup>59</sup> Several other forms of electronic interference can address this problem. First, assuming that a rogue or unlawful UAV could be detected prior to causing damage or completing its mission, a computer-savvy defender could exploit cyber vulnerabilities in the UAV's software. This could be done in a variety of ways, including by "jamming" the UAV, causing it to crash;<sup>60</sup> "spoofing" the GPS signal the

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<sup>56</sup> *Id.*

<sup>57</sup> See Parimal Kopardekar, NASA, *Safely Enabling Low-Altitude Airspace Operations: Unmanned Aerial System Traffic Management (UTM)*, ICAO Remotely Piloted Aircraft Systems Symposium Presentation (Mar. 24, 2015), <https://www.icao.int/Meetings/RPAS/RPASSymposiumPresentation/Day%202%20Workshop%203%20ATM%20Integration%20Parimal%20Kopardekar.pdf>.

<sup>58</sup> See Stefan A. Kaiser, *Small and Micro Unmanned Aircraft*, in *THE LAW OF UNMANNED AIRCRAFT SYSTEMS: AN INTRODUCTION TO THE CURRENT AND FUTURE REGULATION UNDER NATIONAL, REGIONAL AND INTERNATIONAL LAW* 23 (BENJAMYN I. SCOTT, ED. 2016); Dixon, *supra* note 55.

<sup>59</sup> Alexander Solodov, et al., *Analyzing the threat of unmanned aerial vehicles (UAV) to nuclear facilities*, U.S. DEP'T OF ENERGY, (Apr. 18, 2017), 9, <https://www.osti.gov/pages/servlets/purl/1356834>; In research sponsored by the United States Department of Energy's National Nuclear Security Administration, one of the authors' conclusions was that "geofencing technologies will more than likely only deter accidental intrusions and potential attacks by unsophisticated operators. Sophisticated operators capable of hardware assembly and firmware modifications will, more than likely, be able to overcome geofencing limitations."

<sup>60</sup> "Jamming" is "a type of intentional interference, involves overloading targeted radio frequencies with so much electronic noise communications cannot get through to their intended destination." Sarah M. Mountin, *The Legality and Implications of Intentional Interference with Commercial Communication Satellite Signals*, 90 INT'L L. STUD. 101, 104 (2014). Overloading a UAV's radio frequencies in this way can prevent it from maintaining connectivity with its operator, causing it to cease operation or enter a state of uncontrolled flight until it crash-lands. See Solodov, et al, *supra* note 59, at 9.

UAV is using to navigate;<sup>61</sup> or hacking the UAV's software in mid-flight to obtain control over the UAV. Of these methods, spoofing and hacking may allow a counter-UAV operator to cause a rogue UAV to land at a particular location for recovery and inspection, similar to the interception and interdiction of a crewed aircraft.

With respect to the Article 3*bis* analysis, would these methods—geo-fencing, jamming, spoofing, or hacking—against a UAV (used by a non-state actor or otherwise) constitute the use of “weapons” against civil aircraft? As we saw above, given the language regarding “the safety of [the] aircraft [] not be[ing] endangered,” it seems the answer will depend on whether these methods harm or damage the UAV. Of the electronic methods addressed above, spoofing and hacking are the least likely to constitute the use of “weapons,” as these methods allow a counter-UAV operator a measure of control over the landing and recovery of the UAV. Indeed, the very point of these methods will likely be twofold: to both counter the threat a UAV may pose by interdicting it mid-flight and, subsequently, to land and examine the UAV in order to determine the reason it was approaching a restricted or other unlawful area. A similar analysis would likely apply to geo-fencing, at least assuming a “flight termination” signal sent to an offending UAV causes a controlled, rather than crash, landing. Jamming and similar methods of electronic interference with UAVs that cause them to fly erratically until crashing very well might constitute “weapons,” as these methods could cause damage to, or the complete destruction of, the aircraft.

### C. Article 3*bis* and the Right to Self-Defense

In the context of Article 3*bis*, one possible rejoinder to the civil/state aircraft debate with respect to non-state actor UAVs is that, regardless of their status, a State may be able to take action against such UAVs pursuant to its inherent right of self-defense

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<sup>61</sup> “Spoofing” involves the emission of “a usable but false signal . . . that mimics the characteristics of a true signal so the user receives a fake (or spoofed) signal.” Mountin, *supra* note 60, at 129-130. Spoofing, particularly of GPS signals, can affect even the most sophisticated operators; for instance, “Iran’s capture of a U.S. military drone in 2011 is widely believed to have resulted from a spoofing attack where the drone pilot accidentally landed the plane in Iran, believing it was landing at its base in Afghanistan.” Frank Oliveri, *The Pentagon’s GPS Problem*, CONG. Q. (Feb. 9, 2013), <http://public.cq.com/docs/weeklyreport/weeklyreport-000004218242.html>.

under Article 51 of the United Nations Charter.<sup>62</sup> As the text of Article 3*bis* makes clear, “the rights and obligations of States set forth in the Charter of the United Nations” are not abrogated by Article 3*bis*.<sup>63</sup> It is certainly true that, if provided with sufficient time and opportunity, a State is likely to respond militarily to a threatening UAV incursion. Regardless of what State practice is likely to be, would a non-state actor’s malicious use of a UAV constitute an “armed attack” triggering a State’s right of self-defense?

Particularly in the aftermath of the September 11, 2001, terrorist attacks, the majority of legal commentators would likely support the idea that non-state actor behavior can trigger a State’s right of self-defense. As the International Law Association notes, “Self-defence is a right triggered by an act, rather than the actor. The source of attack does not change the fact that the State must be able to stop it from causing harm.”<sup>64</sup> State practice, more so than codified international law, offers extensive support for this proposition. The famous 1837 *Caroline* incident, in which the British attacked and destroyed a private vessel (which had been providing aid to Canadian separatists) in US territorial waters is a textbook example of State use of force against a non-state actor justified by self-defense.<sup>65</sup> The *Caroline* case’s justification has served, and continues to serve, as a model for the self-defense-based use of force against non-state actors. Myriad examples provide evidence of the legality of forceful self-defense against non-state actors on the basis of State practice; however, international law, too, appears to support the proposition. Analyses of Article 51’s application to self-defense against non-state actors range from the simplistic (for

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<sup>62</sup> U.N Charter art. 51. Pursuant to Article 51, “[n]othing 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 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.” *Id.*

<sup>63</sup> Chicago Convention, *supra* note 5, art. 3*bis*

<sup>64</sup> INT’L L. ASS’N, *Final Report on Aggression and the Use of Force*, Sydney Conference (2018) at 14, [http://www.ila-hq.org/images/ILA/DraftReports/DraftReport\\_UseOfForce.pdf](http://www.ila-hq.org/images/ILA/DraftReports/DraftReport_UseOfForce.pdf).

<sup>65</sup> See Jordan J. Paust, *Self-Defense Targetings of Non-State Actors and Permissibility of U.S. Use of Drones in Pakistan*, 19 J. TRANSNAT’L L. & POL’Y 237, 241-44 (Spring 2010).

instance, that “nothing in the language of Article 51 restricts the right to engage in self-defense actions to circumstances of armed attacks by a ‘state’”<sup>66</sup>) to the cerebral (arguments that an interpretation of Article 51 excluding self-defense against non-state actors would be “unduly narrow in both a pragmatic and normative sense”<sup>67</sup>). Innumerable articles and books have been written on the topic of self-defense against non-state actors, and a full analysis of the issue would well exceed the scope of this Article. Suffice to say, that, in the words of the International Law Association, “there is growing recognition . . . that there are certain circumstances in which a State may have a right of self-defence against non-state actors operating extraterritorially and whose attacks cannot be attributed to the host State.”<sup>68</sup>

That the actions of a non-state actor can trigger a State’s right to self-defense is not, however, completely unquestioned. Such mass-casualty events as September 11th notwithstanding, a number of international judicial rulings indicate that there is no inherent right to self-defense against non-state actors under international law. The International Court of Justice has examined the issue in a number of cases, including the *Case Concerning Military and Paramilitary Activities In and Against Nicaragua* (1986) and the *Case Concerning Armed Activities on the Territory of the Congo* (2005). In the *Military and Paramilitary Activities* case, the Court elaborated its famous “effective control” test, in which it found that an attack by “armed bands, groups, irregular[] [forces], or mercenaries” will constitute an “armed attack” triggering Article 51 rights of self-defense only if (1) these irregular forces were “[sent] by or on behalf of a State” (i.e. were effectively controlled by a State party), and (2) the attack was of such magnitude or “gravity” that it would amount to an armed attack were it conducted by regular military forces.<sup>69</sup> In the *Armed Activities* case, the Court reiterated

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<sup>66</sup> *Id.* at 241.

<sup>67</sup> Norman G. Printer, Jr., *The Use of Force Against Non-State Actors Under International Law: An Analysis of the U.S. Predator Strike in Yemen*, 8 UCLA J. INT’L L. & FOR. AFF. 331, 351 (Fall/Winter 2003). For a discussion of the of Printer’s analysis that Article 51 does, and should, apply to non-state actor terrorist groups, see *id.* at 344-352.

<sup>68</sup> INT’L L. ASS’N, *supra* note 64, at 15.

<sup>69</sup> *Case Concerning Military and Paramilitary Activities Against Nicaragua* (Nicar. v. U.S.), 1986 I.C.J. 14, 211 (June 27) at 103, <https://www.icj-cij.org/files/case-related/70/070-19860627-JUD-01-00-EN.pdf>.

the “effective control” test, finding that military action taken by Uganda against non-state armed groups in the territory of the Democratic Republic of the Congo (DRC) was *not* legitimate self-defense because these armed groups had not been “sent by the DRC,” nor were “[acting] on behalf of the DRC.”<sup>70</sup> The *Armed Activities* case is particularly significant for the current discussion of non-state actor UAV use, because—much like some of the UAV-using terrorist and rebel non-state actors discussed above—the non-state armed groups that were the subject of Uganda’s military incursion effectively controlled much of the ostensibly DRC territory in which they operated.<sup>71</sup>

Summarizing the legal concept of an “armed attack” as an inherently State action, and the application of this result to Article 3bis, academic Michal Klenka writes:

While the concept in customary law may undergo dynamic changes, it may be concluded that according to *lex lata*, an ‘armed attack’ within the meaning of Article 51 of the UN Charter does not cover non-State actors. Unless it could be established that the attacks were acts of or on behalf of a State, they could not be considered as armed attacks, which give rise to the right of self-defence. The sole exception provided by Article 3 bis is not applicable. Based on the conclusion that an armed attack must be an act of a State, one may further argue that when a civil aircraft is misused by non-State actors as a weapon of destruction, such an act is not the act of a State and does not turn the aircraft into a state aircraft.<sup>72</sup>

The implication of this analysis is that a State would be prohibited from the use of weaponry to destroy a civil aircraft—including a threatening non-state actor UAV—under any and all circumstances. While this position may be internally consistent with the interpretation of Article 51 as applicable only in the context of State-on-State relations, it has the unsatisfying, and practically

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<sup>70</sup> *Armed Activities on the Territory of the Congo (Dem. Rep. Congo v. Uganda)*, 2005 I.C.J. 168 (Dec. 19) at 223, <https://www.icj-cij.org/files/case-related/116/116-20051219-JUD-01-00-EN.pdf>.

<sup>71</sup> See Stephanie A. Barbour & Zoe A. Salzman, “*The Tangled Web*”: *The Right of Self-Defense Against Non-State Actors in the Armed Activities Case*, 40 N.Y.U. J. INT’L L. & POL. 53, 55-57 (Special Issue 2008).

<sup>72</sup> Michal Klenka, *Aviation Safety: Legal Obligations of States and Practice*, 10 J. TRANSP. SEC. 3, 127, 136 (Dec. 2017).

self-defeating, effect of emasculating State responses to aerial terrorism (or otherwise “military” aerial attack) by a non-state group. Does public international air law and the law of armed conflict really require a State to passively absorb an attack from a non-state actor’s UAV and then, post-attack, seek a sufficient link between the non-state actor and the State from which the non-state actor’s attack originated to justify self-defense-based retaliation against that State? How would the attacked State be legally allowed to respond to such an attack if sufficient links between the non-state actor and the State of the attack’s origin did not exist, as in many failed or partially failed States? These problems illustrate the difficulties in navigating a response to non-state actor UAV use, and, indeed, *all* non-state actor military activity, if Article 51’s concept of self-defense is not applicable against non-state actors. Such difficulties demonstrate the wisdom of accepting the majority viewpoint that non-state actors can, under certain circumstances, be the proper subject of State military action justified on the basis of self-defense.

## V. CONCLUSION

The foregoing legal analysis of public international air law and its applicability to non-state actor UAVs (and UAVs in a more general sense) has resulted in a number of conclusions. Specifically, as non-state actors likely cannot be classified as state aircraft, they must be classified as civil aircraft, which are protected under Article 3*bis*’s prohibition of weapon-use against civil aircraft. This conclusion, in turn, may legally limit States’ responses to threatening non-state actor UAVs—particularly depending on interpretations of justifiable self-defense under international law.

That Article 3*bis* applies to non-state actor UAVs, and, more generally, to all UAVs utilized by non-states (corporations, private individuals, etc.) for civil purposes, seems legally justifiable based its text and associated provisions of the Chicago Convention. But this legal result leads to a policy question: *should* Article 3*bis*’s protections of civil aircraft apply to UAVs at all? At its most basic level, Article 3*bis* was drafted and approved in order to protect human lives—the lives of civilian passengers and aircraft crew members flying on a civil aircraft that could possibly be targeted by

weapons.<sup>73</sup> At this time, the vast majority of UAVs, and certainly those UAVs utilized by non-state actors, are completely uncrewed, carrying neither crew nor passengers. Should the destruction of such a UAV really carry the same legal weight as the shooting down of a passenger-filled civilian airliner like Korean Airlines Flight 007?

Given the significant threat posed by non-state actor use of UAVs, such as the dramatic reduction in Saudi Arabian oil production cited at the beginning of this Article, it would be wise for ICAO and the signatory States of the Chicago Convention to consider ways in which public international air law may be able to address such threats. This could involve the establishment of a clearer way in which to classify different types of UAVs as civil vs. state aircraft, or, perhaps, building upon the provisions of Article 8 of the Chicago Convention (which treat UAVs in a manner similar to state aircraft) to re-classify UAVs as an effectively new category of aircraft, expanding the binary state/civil aircraft classification system. For the moment, however, Article 3*bis* seems to present the most significant legal hurdle toward a standard method of responding to threatening UAVs. While States have developed, and are continuing to develop, methods of counter-UAV technology that may satisfy the requirement of safe interdiction of UAVs under Article 3*bis*, the development of UAV-specific provisions within the international aviation law regime is necessary to provide clarity to States' responses to threatening UAVs.

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<sup>73</sup> While it can certainly be argued that Article 3*bis*'s reference to the "safety of aircraft" implies a secondary purpose of protecting private property, the linkage between the "lives of persons on board" and the "safety of the aircraft" demonstrates, again, that the primary purpose is the protection of human life.