Air and Space Law in the Context of Globalization and Fragmentation

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Summary

C. Wilfred Jenks, who produced one of the earliest comprehensive treatises on space law, sketched out the phenomenon of "The Conflict of Law-Making Treaties" over a half-century ago. In 2006, the International Law Commission elaborated Jenks' sketch in a report on "Fragmentation of International Law: Difficulties Arising From the Diversification and Expansion of International Law."

Since the dawn of Humankind's activities in outer space, legal scholars have recognized the dangers of the fragmentation of international law and its potential effects on international air law and international space law. By examining the history of air and space law in tandem with the history of scholarly debates surrounding the fragmentation of international law, it is possible to contextualize conflicts between air and space law within fragmentation rhetoric.

New advancements in aerospace technology have brought issues of the fragmentation to the fore of the progressive development of air and space law. Through an analysis of Jenks' initial sketch and its elaboration in the ILC Report, it is possible to apply the scholarly writings on fragmentation to conflicts between air and space law. The results illustrate problems with the harmonization of air and space law *vis-à-vis* suborbital vehicles and cast light on States' prioritization of certain norms over other norms. Moreover, it illustrates tensions in the global administration of air and space law, thus providing insight on the best way forward for the regulation of suborbital flight.

Résumé

C. Wilfred Jenks, qui a publié l'un des tout premiers traités de droit spatial, a esquissé le phénomène de "conflit de traités normatifs" il y a plus de cinquante ans. En 2006, la Commission de droit international (CDI) a développé l'ébauche de Jenks dans un rapport intitulé "La fragmentation du droit international: difficultés découlant de la diversification et de l'expansion du droit international".

Depuis le début des activités humaines dans l'espace, les auteurs de doctrine ont reconnu les dangers de la fragmentation du droit international et ses effets potentiels sur le droit aérien international et le droit spatial international. En étudiant de concert l'histoire du droit aérien et spatial et l'histoire des débats doctrinaux sur la fragmentation du droit international, il est possible de resituer les conflits entre droit aérien et droit spatial dans le domaine de la fragmentation.

Les nouvelles avancées dans les technologies spatiales ont placé les problèmes de fragmentation à l'avant du développement progressif du droit aérien et spatial. A travers l'examen de l'ébauche de Jenks et son développement dans le rapport de la CDI, il est possible d'appliquer les analyses doctrinales du phénomène de fragmentation aux conflits entre le droit aérien et le droit spatial. Les conclusions illustrent les problèmes posés par l'harmonisation du droit aérien et spatial concernant les véhicules suborbitaux, et éclairent la priorisation par les Etats entre les normes. Elles dévoilent surtout les tensions existant dans la gestion globale du droit aérien et spatial, et fournissent ainsi un aperçu des meilleures solutions pour réguler les vols suborbitaux.

Prologue: Air and space law as specialized regimes of public international law

In 1963, John Cobb Cooper, founder of the McGill Institute of Air and Space Law, wrote:

> [I]f *Air Law* and *Space Law* are to be treated as separate branches of the law, overlapping will certainly result, even dangerous contradiction. Confusion already exists. In the mushrooming literature of official and academic statements, conferences, addresses and learned papers, it is quite impossible to determine the exact extent of *Space Law* subject matter. At times it seems limited to those rules geographically applicable in areas of usable space beyond the airspace—admittedly an uncertain boundary. At other times the term *Space Law* seems to include any regulation of those flight instrumentalities capable of outer space flight, wherever they are, even while in the airspace or on the ground. This is not a healthy situation. The rules of law should be clear and their application unquestioned.[1]

Even prior to the formulation of the UN treaties on space law, described in Chapter One of this thesis, Cooper hits upon a key difficulty with space law: by basing its applicability upon not only geographical considerations but also upon considerations of the objects being regulated, space law has rendered its application sufficiently broad so as to potentially apply to two somewhat related yet very different activities, namely, aviation and space launches. The same can be said, however, about international air law, which theoretically applies to space objects using aerodynamic lift and traveling through airspace. Thus, Cooper's criticism can be leveled at both regimes. Predicting the difficulty that has arisen with the use of aerospace vehicles, Cooper states:

> If proposals before the United Nations should mature into an international agreement, then problems will arise as to whether such new agreement, or the Chicago Convention provisions, will apply, dependent only on the type of flight instrumentalities involved. These problems would be particularly

[1] John Cobb Cooper, "Aerospace Law—Subject Matter and Terminology" in Ivan A. Vlasic, ed.,

> difficult if such flight instrumentality could be used in the airspace and also in outer space.[2]

Cooper's call for the development of an 'aerospace law' to cover all human-made flight went unheeded.

Rather than evolving into a unified regime, air and space law became further entrenched in their isolation. A 1984 study conducted by the Centre for Research of Air and Space Law at McGill University approached the applicability of space law from the perspectives of both geographic area and type of activity, concluding:

> Outer space is a unique, distinct and novel dimension for human activities. The nature and character of outer space are such that activities are primarily international. While international relations of all sorts are governed by international law, a set of special principles and rules to govern outer space…has evolved. These principles and rules are, thus, a special branch of international law.[3]

This conclusion has been supported by jurists such as Isabella Diederiks-Verschoor, who wrote, "I have no hesitation in supporting the overwhelming case for recognizing space law as a separate branch of international law."[4]

During the Fifty-Eighth Session of the UN General Assembly in 2006, the International Law Commission (ILC) issued a report entitled, "Fragmentation of International Law: Difficulties Arising From the Diversification and Expansion of International Law."[5] The ILC Report explains that, "It is a well-known paradox of globalization that while it has led to increasing uniformization of social life around the world, it has also led to its increasing fragmentation—that is, to the emergence of

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[2] *Ibid* at 50.
[3] Nicholas Mateesco Matte, ed, *Space Activities and Emerging International Law*, (Montreal: Centre for Research of Air and Space Law, McGill University, 1984) at 72 [hereinafter "Matte"].
[4] I. H. Ph. Diederiks-Verschoor & V. Kopal, *An Introduction to Space Law*, 3rd revised ed (Alphen aan den Rijn, The Netherlands: Kluwer Law International, 2008) at 5 [hereinafter "Diederiks-Verschoor & Kopal"].
[5] International Law Commission, *Fragmentation of International Law: Difficulties Arising From the Diversification and Expansion of International Law*, UNGA ILC, 58th Sess, A/CN.4/L.682 (2006) [hereinafter "ILC Report"].

specialized and relatively autonomous spheres of social action and structure."[6] In the field of law, this has translated into the emergence of specialized, autonomous rule complexes and legal institutions, such as trade law, human rights law, environmental law or the law of the sea.[7] According to the ILC Report, lawyers have identified the problem with this phenomenon as "such specialized law-making and institution-building tends to take place with relative ignorance of legislative and institutional activities in adjoining fields…. The result is conflicts between rules or rule-systems [and] deviating institutional practices…."[8] As is illustrated above and addressed further by this thesis, air and space law are two such rule systems.

This thesis considers the effects and potential effects of fragmentation on the progressive development of air and space law. Before delving into particularities of the ILC Report, a description of air and space law regimes will be provided within the context of an historical analysis of the international community's perception of fragmentation. In a paper published subsequent to the ILC Report, Martti Koskenniemi, chairman of the ILC Study Group on fragmentation,[9] provided a succinct overview of the modern history of the debates over fragmentation.[10] With comments from Koskenniemi, Anne-Charlotte Martineau[11] elaborated the history of debates over the unity and diversity of international law, illustrating that "the development of international law through specialized mechanisms is seen sometimes as healthy pluralism ('diversification'), sometimes as perilous division ('fragmentation')."[12] In support of this, she identifies discrete time periods wherein, "in a rather recurrent and cyclic fashion, international lawyers have described the development of specialized norms and/or institutions as trustworthy or as to be feared…."[13] The nuances of jurists' perceptions of fragmentation,

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[6] *Ibid* at 11.
[7] *Ibid.*
[8] *Ibid.*
[9] *Ibid* at 8.
[10] Martti Koskenniemi, "The Fate of Public International Law: Between Technique and Politics" (2007) 70 (1) Modern LR 1, 2-3 [hereinafter, "Koskenniemi"].
[11] Anne-Charlotte Martineau is a Senior Research Fellow with the Max Planck Institute Luxembourg for International, European and Regulatory Procedural Law, online: http://www.mpi.lu/the-institute/senior-research-fellows/anne-charlotte-martineau/
[12] Anne-Charlotte Martineau, "The Rhetoric of Fragmentation: Fear and Faith in International Law" (2009) Leiden J. of Int'l L. 1, 1-2 [hereinafter "Martineau"].
[13] *Ibid* at 3.

as illustrated by Martineau, are used in Chapter One of this thesis to contextualize the history of the development of air and space law within fragmentation rhetoric.

In a paper critiquing the ILC Report, Sean Murphy, a member of the ILC, noted that the ILC Report has already been applied in studies and papers relating to conflicts between human rights and humanitarian law and between trade and environmental law, as well as to other subjects more generally, including international criminal law, international counter-terrorism law, cultural diversity, history and philosophy.[14] The thesis presented herein attempts to add air and space law to this list, for, as Murphy emphasized, the ILC Report may have practical value, particularly as "new issues arise that straddle different areas of international law, often driven by the emergence of new technologies."[15] New and emerging technologies, developing mainly through commercial endeavors for the provision of suborbital flight, are operating in both airspace and outer space and exacerbating tensions over ever-blurring boundaries between the regimes of air and space law. These new technologies, as well as their technical and economic feasibilities, are described in Chapter Two.

Scholarly debate over the issue of the fragmentation of international law has persisted for some time. The ILC Report notes that C. Wilfred Jenks, who produced one of the earlier comprehensive scholarly treatises on space law,[16] first sketched out the background of fragmentation over a half century ago.[17] Jenks did not use the term 'fragmentation', but described the phenomenon as "conflicts of law-making treaties."[18] Chapter Three explores Jenks' conception of the phenomenon, then reviews the ILC Report on the fragmentation. The ILC Report builds upon Jenks' conception of conflicts between law-making treaties and sets forth a systematic process for ascertaining and resolving conflicts.[19] Chapter Three examines the ILC Report with an eye toward apparent conflicts between air and space law and with the aim of contextualizing air and

[14] Sean D. Murphy, "Deconstructing Fragmentation: Koskenniemi's 2006 ILC Project" (2013) 27 Temp Int'l & Comp LJ 293, 297-299 [hereinafter "Murphy"].
[15] *Ibid* at 299.
[16] C. Wilfred Jenks, *Space Law* (London: Stevens and Sons, 1965) [Hereinafter, "Jenks, *Space law*"].
[17] ILC Report, *supra* note 5 at 10.
[18] C. Wilfred Jenks, "The Conflict of Law-Making Treaties" (1953) 30 Brit. Y.B. Int'l L. 401 [hereinafter, "Jenks"].
[19] ILC Report *supra* not 5 at 206.

space law regimes within the framework of the ILC Report. It concludes with an excursus on air and space law as 'self-contained' regimes.[20]

The ICL Report sets forth a process for systematic interpretation and conflict resolution. The first step is conflict ascertainment, which entails examining two different rules or rule sets to determine whether they apply to the same subject-matter and, if so, whether they suggest different ways of dealing with a problem.[21] Thus, Chapter Four examines the applicability of international air law and international space law to suborbital flights. Then, it examines scholarly treatments of apparent conflicts and attempts at harmonization—the next step in the process of conflict resolution. It illustrates that both regimes likely apply to suborbital flight, and that cross-cutting norms of both of these regimes can be harmonized, thus avoiding the necessity of conflict resolution in some instances.

Where provisions of specialized regimes cannot be brought into harmony, conflict resolution tools are applied to prioritize the conflicting norms. The norm that is off-set remains in the background, influencing the interpretation of the prioritized norm.[22] Thus, Chapter Five examines Jenks' description of conflict resolution techniques, as well as the process of conflict resolution elaborated in the ILC Report.[23] In addition, Chapter Five examines two States' attempts at the harmonization and prioritization of air and space law *vis-à-vis* suborbital flight, namely US commercial space law and UK proposed regulations for suborbital flight.[24] It illustrates that States are attempting to harmonize and prioritize norms, in keeping with the process set-forth in the ILC Report, but that they also are picking and choosing norms based upon political and economic concerns.

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[20] *Ibid* at 65-99.
[21] *Ibid* at 208.
[22] *Ibid* at 25, 207.
[23] See, Chapter 3 *infra* at subparts 5.1 & 5.2.
[24] Respectfully: Commercial Space Launch Act, Pub. L. No. 98-575, 98 Stat. 3055 (1984); Commercial Space Launch Act section 3, 98 Stat. 3055-56, Commercial Space Launch Act Amendments of 1988, Pub. L. No. 100-657, 102 Stat. 3900; Commercial Space Launch Amendments Act of 2004, Pub. L. No. 108-492, 118 Stat. 3900 (codified as Title 51 US Code Chapter 509) [hereinafter "CSLA"]; UK Civil Aviation Authority, *UK Government Review of commercial spaceplane certification and operations*, (July 2014) online: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/329758/spaceplanes-tech.pdf [hereinafter, "CAA Report"].

Chapter Six addresses the concept of institutional fragmentation.[25] Various categories of global administrative organization, as set forth in an article on the rise of global administrative law, are employed to better understand the organizations that administer to the regimes of air and space law.[26] In Chapter Six, it is illustrated that the types of organizations administering to these regimes have grown out of the unique characteristics of those substantive fields of law. Where globalization and advancements in technology cause fragments of international law to overlap and conflict, these organizations also can have overlapping competencies. At times, these overlapping competencies can lead administrative organizations to hegemonic pursuits that threaten to undermine the object and purpose of one or the other international legal regime. Thus, Chapter Six concludes with a recommendation that the best form of global administration for an international legal regime for space-related activities, such as suborbital flight, would be specifically tailored to those activities.

Finally, the Epilogue provides a brief summary and some concluding remarks critically evaluating this thesis. Humility precludes grand notions of solving conflicts between the regimes of air and space law. It is hoped, however, that by contextualizing conflicts between these regimes within fragmentation rubric, this thesis will contribute to the progressive development of air and space law in a manner that might assist with the future resolution and avoidance of conflicts.

Before embarking on an odyssey through the fragmentation of international law and its relevance to conflicts between air and space law, some definitional issues should be addressed. When reference is made to 'air law' and 'space law', the reader should presume that the reference is to these fields of law generally or to public international air law and public international space law, respectively. When this thesis intends to refer the domestic or national regimes of air and/or space law, it shall do so expressly.

[25] ILC Report *supra* note 5 at 13.
[26] Benedict Kingsbury, Nico Krisch & Richard B. Stewart, "The Emergence of Global Administrative Law" (2005) 68(3&4) L & Contemporary Problems 15 [hereinafter "Kingsbury"].

Chapter One: The evolution of air and space law within the strophe and antistrophe of perceptions of fragmentation and pluralism

"Vital as it is to approach the problems of the present and the future with a respectful understanding of the history and traditions out of which they have grown and must continue to grow, we cannot by delving back into the classics and history of international law relieve ourselves of the responsibility of thinking through afresh principles and rules which meet the new needs arising from the contemporary development of the world community."—C. Wilfred Jenks[27]

In a paper entitled, "The Rhetoric of Fragmentation: Fear and Faith in International Law," Anne-Charlotte Martineau elaborated the history of debates over fragmentation, illustrating that jurists sometimes regard it as healthy pluralism ('diversification'), sometimes as perilous division ('fragmentation').[28] This chapter seeks to introduce the regimes of air and space law in a manner that contextualizes them within debates over fragmentation, thus illustrating the relevance of those debates to these regimes. The chapter follows closely Martineau's chronology of the debates over fragmentation and integrates the history of air and space law within this historical matrix.

1.1 The dawn of international air law

Prior to World War I, "the specialization of legal rules was seen as a positive and desirable phenomenon that would eventually lead to their universality."[29] Thus, the specialization of international law was not viewed as 'fragmentation' but as a wanted 'diversity' from which, "Professionals would eventually be able to extract universal principles from the plurality of specialized treaties…."[30] Martineau characterizes this time period as one of confidence in international law making, which was shattered by the breakdown of the international system during World War I.

In this period began efforts to create international laws regulating airspace and the vehicles that pass through it. Often reported as the earliest instance of air law is a directive issued on 23 April 1784—one year after the Mongolfier brothers' first

[27] Jenks *supra* note 18 at 405.
[28] Martineau *supra* note 12 at 1.
[29] *Ibid* at 10.
[30] *Ibid*.

successful balloon flight—by a Paris police lieutenant, mandating prior police permission for the use of balloons within the city.[31] The use of balloons for military purposes became commonplace in the latter half of the 19th century, spurring the inclusion of a provision in the First International Peace Conference in 1899 prohibiting the discharge of projectiles from balloons.[32] Thus, early concerns centered largely on issues of safety, but soon turned to national security.

In 1908, France called for a diplomatic conference to address concerns over the cross-border activity of German balloons. The conference took place in Paris in 1910 with 18 European States in attendance.[33] The dawn of aviation, with the first flight of the Wright Brothers in 1903 and first international flight across the English Channel in 1909, exacerbated concerns and fed debate amongst legal scholars as to whether there should be a freedom of the air as with the high seas—the latter having been vigorously and successfully advocated by Grotius.[34]

The strongest advocate for freedom of the air had been the French jurist, Paul Fauchille, who envisioned a freedom of air navigation similar to that at sea, allowing for innocent passage in the airspace over subjacent territory above a certain height and with limited prohibitions on flight based upon safety and security concerns.[35] British lawyer, John Westlake, took a countervailing view, asserting absolute sovereignty in the airspace over subjacent territory.[36] At the Paris Conference, Fauchille appears to have conceded that subjacent States reserve the rights necessary for their self-preservation and security.[37]

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[31] Michael Milde, *International Air Law and ICAO*, (Utrecht, The Netherlands: Eleven International Publishing, 2008), 9 [hereinafter, "Milde"].
[32] *Ibid.* at 7.
[33] John Cobb Cooper, "The International Air Navigation Conference, Paris 1910" in Ivan A. Vlasic, ed., *Explorations in Aerospace Law: Selected Essays by John Cobb Cooper, 1946-1966* (Montreal: McGill University Press, 1968), 106-107 [hereinafter, "Cooper, 'Paris Conference 1910'"].
[34] Milde *supra* note 31 at 7; See, also: L. Welch Pogue, "The International Civil Aviation Conference (1944) and Its Sequel, the Anglo-American Bermuda Air Transport Agreement (1946)" (1994) XIX-1 Annals Air & Space L. 1, 21 [hereinafter, "Pogue"].
[35] Cooper, "Paris Conference 1910" *supra* note 33 at 109.
[36] Malgorzata Polkowska, "From the Paris Conference of 1910 to the Chicago Convention of 1944" (2008) XXXIII Annals Air & Space L 59, 60 [hereinafter, "Polkowska"].
[37] Cooper, "Paris Conference 1910" *supra* note 33 at 109.

The Paris Conference of 1910 concluded without States having signed a convention.[38] Nevertheless, it produced a draft convention, which included clauses on aircraft nationality, registration, and aircraft certificates.[39] Cooper cites the outcome of this conference as the "first evidence of general international agreement that usable space above the lands and waters of a State is part of the territory of that State."[40] Although the sovereign status of airspace was not the primary concern of the conference,[41] it occupied a significant prominence in the debates, and elements of the draft convention prompted Cooper to conclude that States were in general agreement on their sovereign right to restrict superincumbent airspace.[42]

Events occurring between the breakdown of the 1910 Paris Conference and the beginning of World War I in 1914—a period that Cooper describes as the most important in the development of international air law—further evidenced his conclusion.[43] National laws in Great Britain, France, Germany, as well as other States, manifested the rights of States to regulate their airspace.[44] Furthermore, a 1913 agreement between France and Germany affirmed the right of each State to control all flights above their territories.[45] Thus, the issue of the sovereignty over airspace appeared to have been concluded at that time.

1.2 The constitutionalization of air law in the post-World War I period

Returning to Martineau's analysis of the history of the perception of fragmentation, a "period of confusion" from 1914 to 1925 resulted due to the outbreak of World War I.[46] Many scholars pointed at rule-specialization as responsible for the war and posited that, "…potential misuse of detailed and highly specialized treaties could be

[38] *Ibid* at 105.
[39] *Ibid*
[40] *Ibid*
[41] Polkowska *supra* note 36 at 60-63.
[42] Cooper, "Paris Conference 1910" *supra* note 32 at 120-121.
[43] John Cobb Cooper, "State Sovereignty in Space: Developments 1910 to 1914," in Ivan A. Vlasic, ed., *Explorations in Aerospace Law: Selected Essays by John Cobb Cooper, 1946-1966* (Montreal: McGill University Press, 1968), 125, 126 [hereinafter, "Cooper, 'State Sovereignty in Space'"].
[44] *Ibid* at 126-129.
[45] *Ibid* at 130; Polkowska *supra* note 36 at 62.
[46] Martineau *supra* note 12 at 10.

neutralized by the setting up of a universal institution, namely the League of Nations."[47] Unity was suggested as "the antidote to the pre-war Hague system" and diversity in international law was cast as fragmentation.[48]

Thus, with the League of Nations, the period witnessed efforts at the constitutionalization of international law.[49] These efforts manifested in attempts to create comprehensive conventions on the regulation of international air carriage. In the wake of World War I, and with particular regard to the dangers posed to territorial integrity by military aviation, the Paris Conference of 1919 produced the first international convention regulating aerial navigation.[50]

The Paris Conference of 1910 had laid the foundation for the Paris Convention of 1919,[51] which was ratified by 26 States.[52] The Paris Convention recognized the sovereignty over national airspace in Article I, which stated, "The High Contracting Parties recognize that every Power has complete and exclusive sovereignty over the air space above its territory." Milde draws attention to the fact that Article I specifies this rule for 'every Power', thereby recognizing a rule generally applicable to all States.[53] Furthermore, he points out that, by recognizing the sovereign powers of all States, the Paris Convention casts the provision as part of customary international law. He notes the necessity of *usus longaevus*—long practice—in addition to *opinion juris*, in the formulation of a custom, which in this case was a mere two decades.[54]

Further, the Paris Convention included a rather broad definition of aircraft,[55] and created an administrative body, the International Commission for Air Navigation (ICAN).[56] ICAN was a permanent commission placed under the League of Nations and

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[47] *Ibid* at 11-12.
[48] *Ibid*
[49] *Ibid*
[50] Paul Stephen Dempsey, *Public International Air Law* (Montreal: McGill University, 2008) 15 [hereinafter "Dempsey"].
[51] *Convention Relating to the Regulation of Aerial Navigation*, 13 October 1919, 11 LNTS 173 [hereinafter "Paris Convention"].
[52] Milde *supra* note 31 at 10.
[53] *Ibid* at 11.
[54] *Ibid*
[55] Chapter 2 *infra* at subpart 2.1.
[56] Milde *supra* note 31 at 11.

responsible for amending technical annexes to the Convention, which had the same force of law as a treaty.[57] By embedding the administrative organ of this highly specialized regime within what was hoped to be a universal institution, the drafters of the Convention exemplify the post-war reaction to a perceived hyper-specialization.

The Convention, however, suffered the same fate as the League of Nations—a failure to achieve universal acceptance. It was not the only attempt at the constitutionalization of air law during this period.[58] Charles Lindbergh's first trans-Atlantic flight had yet to take place, rendering the relevance of such a convention suspect to nations an ocean away. Thus, the Paris Convention remained largely a regional, multilateral instrument.[59] A separate attempt at the codification of air law took shape in the Havana Convention of 1928, ratified by 16 western hemisphere countries, including the United States.[60] Unlike the Paris Convention, the Havana Convention did not provide for the establishment of a permanent body and did not contain technical annexes.[61] Its precepts in regard to air traffic rights would play a significant role in subsequent attempts at the codification and constitutionalization of air law.[62]

Martineau writes that post World War I efforts led to a "period of consolidation" wherein, "International law became a coherent and unified system that entrenched sovereign equality between (politically unequal) states."[63] Viewed as such, the predominance of specialized norms became less of a threat, and general international law came to be viewed as "always 'there' behind special law."[64] Thus, specialization and

[57] *Ibid.*
[58] In addition to the Paris Convention was the Ibero-American Aviation (Madrid) Convention of 1926, which was, with the exception of several modifications, a mirror reflection of the Paris Convention. The Madrid Convention did not come into force and, following a Paris Convention Protocol that incorporated the Madrid Convention modifications, the anchor parties of the Madrid Convention (Spain and Argentina) joined the Paris Convention. See: Polkowska *supra* note 36 at 71.
[59] Milde describes the Madrid Convention as no more than political posturing of Spain, which had been dissatisfied with its role in the League of Nations, and thus attempted to assert its leadership over Latin America. See: Milde *supra* note 31 at 12.
[60] *Ibid* at 13.
[61] *Ibid.*
[62] *Ibid.*
[63] Martineau *supra* note 12 at 13-14.
[64] *Ibid* at 14.

diversity were incorporated into a larger framework of general international law, which was considered as authorizing fragmentation.[65]

In regard to air law, P.C.C. Haanappel takes a somewhat different view. He identifies the period following World War I as the commencement of a period of the 'autonomy of air law'.[66] He describes it as one in which, "The international legal community would, by and large, consider air law as an independent branch of law, an independent field of teaching, research and writing."[67] Diederiks-Verschoor supports the notion of the autonomy of air law, which she described as "…an area [of law] which is determined by the special characteristics and demands of aviation."[68] Milde, on the other hand, does not accept the independence or autonomy of air law, but he does not appear to elaborate on its position within the international legal system.[69]

Haanappel attributes to autonomy, and to a high level of academic intensity, the fostering of the foregoing international legal instruments, as well as the creation of what is arguably the most important unifying convention of the period, the Warsaw Convention of 1929.[70] He cautions, however, that "air lawyers began to live in somewhat of an ivory tower, where the indispensable links with basic public and private law…were sometimes too easily forgotten for the sake of 'autonomy' or 'independence'."[71] It is postulated herein that, based upon the dearth of literature on fragmentation and/or legal pluralism in the air and space law communities, this phenomenon continues today.

The Warsaw Convention of 1929 governs passenger liability arising out of international carriage. The purpose of the convention was to create uniformity amongst divergent national treatments of air carrier liability in the case of passenger injury, death and baggage loss. Thus, inherent diversity in domestic liability regimes applicable to

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[65] *Ibid*.
[66] P.P.C. Haanappel, *The Law and Policy of Air Space and Outer Space: A Comparative Approach* (The Hague: Kluwer Law International, 2003) xiv [hereinafter, "Haanappel"].
[67] *Ibid*.
[68] I. H. Ph. Diederiks-Verschoor, *An Introduction to Air Law,* 9th revised ed by Pablo Mendes de Leon (Alphen aan den Rijn, The Netherlands: Kluwer Law International, 2012) 5-6 [hereinafter, "Diederiks-Verschoor"].
[69] Milde *supra* note 31 at 2.
[70] *Convention for the Unification of Certain Rules Relating to International Transportation by Air*, 12 October 1929, 137 LNTS 11, ICAO Doc. 7838 [hereinafter, "Warsaw Convention"].
[71] Haanappel *supra* note 66 at xiv.

international activity was rectified through the development of a highly specialized international regime, generally referred to as private international air law. A similar unification of domestic liability regimes was attempted for damage caused to third parties on the ground through the 1933 Rome Convention,[72] and a supplementary protocol thereto, the 1938 Brussels Protocol.[73]

1.3 The effect of World War II on the development of air and space law

World War II ushered in a second period of confusion wherein fragmentation was viewed as a more realistic depiction of a divided world.[74] Under this 'realistic critique', rather than being conceived as a utopian institution capable of constitutionalizing international law, "The establishment of the United Nations took place as a pragmatic necessity."[75] The frustration of the international legal order was blamed largely on Cold War politics: Americans questioned the universal validity of international law as a debatable presumption; Soviets posited three co-existent international legal systems based upon capitalism, socialism and the relationship between these.[76] As law gave way to the politics of international relations, the codification of international law and multi-lateral treaty making gave way to the elaboration of broad principles based upon majority consensus.[77] "The administrative branch received more attention though the development of UN specialized agencies."[78] Under this paradigm, international law was seen as "merely an instrument available to decision-makers (and not some sort of autonomous system binding upon them)."[79]

Notwithstanding this realistic critique of international law, Knut Hammarskjöld, father of the second Secretary-General of the UN, Dag Hammarskjöld, in an article describing the toll of fragmentation on the unity of air law, reported that at the time of the

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[72] *International Convention for the Unification of Certain Rules Relating to Damage Caused by Aircraft to Third Parties on the Surface*, 29 May 1933, ICAO Doc 106-CD.
[73] *Protocol Supplementary to the Convention for the Unification of Certain Rules Relating to Damage Caused by Foreign Aircraft to Third Parties on the Surface*, 29 September 1938, ICAO Doc 107-CD
[74] Martineau *supra* note 12 at 17.
[75] *Ibid*.
[76] *Ibid* at 18.
[77] *Ibid* at 19.
[78] *Ibid*.
[79] *Ibid* at 20.

Chicago Conference of 1944, "One world" was the catchword of a generation tired of war and chaos.[80] Indeed, L. Welch Pogue recounts that, at a particularly tense moment in the negotiations when the Chicago Conference appeared to be reaching its breaking point, Fiorello Laguardia gave an impassioned speech to an empty balcony, asking the hundreds of thousands of soldiers who had sacrificed their lives for a better world to inspire the attendees to overcome their selfish attitudes, so that they might resolve their little problems.[81] Thus, it may be posited that the Chicago Conference came during a shining moment of world unity or perhaps as a hang-over from the previous era of constitutionalization.

The Chicago Conference was attended by representatives of 54 States, which then represented all of the world's nations, save the 'enemy States' (Germany, Italy and Japan), Saudi Arabia and the USSR.[82] The latter two States were invited but did not attend. Emissaries of the Soviet Union were sent and made it all the way to Quebec City before being called back.[83] The official reason given for non-participation was the attendance of Switzerland, Spain and Portugal, which had purportedly carried on hostile policies toward the Soviet Union.[84] Milde speculated that the true reason was the beginning of Cold War politics, which comports with Martineau's depiction of this period, described above.

The result was the Chicago Convention of 1944, which can be thought of as the constitutive instrument for international air law.[85] It has gained universal acceptance and has 191 State Parties as of 2015.[86] The Convention represents an exhaustive codification and unification of public international air law and replaces the Paris Convention of 1919

[80] Hammarskjöld employed the term 'fragmentation' in a narrow sense, meaning entropy of a unified system of air law arising out of unilateral actions of States. See: Knut Hammarskjöld, "One World or Fragmentation: the Toll of Evolution in International Air Transport" (1984) IX Annals Air & Space L. 79.
[81] Pogue *supra* note 34 at 32.
[82] *Ibid* at 4-5.
[83] Haanappel *supra* note 66 at 18.
[84] Milde *supra* note 31 at 14 (citing, The Times, London, 30 October 1944).
[85] *Convention on International Civil Aviation*, 7 December 1944, 15 UNTS 295, ICAO Doc. 7300 [hereinafter, "Chicago Convention"].
[86] See, "Current list of parties to multilateral air law treaties" International Civil Aviation Organization, online: http://www.icao.int/secretariat/legal/Lists/Current%20lists%20of%20parties/AllItems.aspx

and Havana Convention of 1928.[87] It also sets forth the charter of the International Civil Aviation Organization (ICAO)—an administrative body that is now a specialized agency of the UN and bears similarity to ICAN.

Article 1 of the Convention reaffirms Article 1 of the Paris Convention, stating: "The contracting States recognize that every State has complete and exclusive sovereignty above its territory." As with the Paris Conference of 1910, the Chicago Convention addresses the nationality of aircraft, registration and aircraft certification. Article 37 empowers ICAO to adopt and amend international Standards and Recommended Practices (SARPs) and procedures for specified aviation matters, including, "such other matters concerned with the safety, regularity, and efficiency of air navigation as may from time to time appear appropriate." These SARPS are annexed to the Chicago Convention in similar fashion to the provisions developed by ICAN and annexed to the Paris Convention. Unlike the Paris Convention, however, ICAO Annexes are only quasi-binding—under certain circumstance, States can notify ICAO of differences in practices and procedures.[88]

The earliest space-related activities also commenced during the post-World War II period. As early as 1956, the ICAO General Assembly recognized that mechanical contrivances that pass through air space on their way to outer space might involve some interest of ICAO.[89] One year later, the Soviet Union launched the first man-made satellite, Sputnik I. For Bin Cheng, international law followed Sputnik into orbit, giving rise to an 'instant' customary norm through States' abstention from objection to the use of outer space over their subjacent territory and through their expressions of *opinio juris* through votes in the UN General Assembly.[90] As implausible as the theory appears at first blush, it is not drastically dissimilar to the Paris Convention's 'recognition' of sovereign airspace a mere two decades after the dawn of aviation. Regardless of whether a customary norm can arise in such a manner, the incident made it more or less apparent that international law was the means for regulating activities in outer space.

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[87] Milde *supra* note 31 at 18.
[88] Chicago Convention *supra* note 85 at Article 38.
[89] Working Paper, ICAO General Assembly, Tenth Sess. (1956) A10-WP/30 at para. 157.
[90] Bin Cheng, "United Nations Resolutions on Outer Space: "Instant" International Customary Law?" (1965) 5 Indian J. Int'l L. 23, 36 [hereinafter, "Cheng"].

The following year, the UN Committee on the Peaceful Uses of Outer Space (COPUOS) was established as an *ad hoc* committee by UN General Assembly Resolution 1348 (XIII), which required it to report to the General Assembly the activities of UN specialized agencies and other international bodies relating to the peaceful uses of outer space.[91] In 1959, it was established as a permanent body by General Assembly Resolution 1472 (XIV), with the mandate to review international cooperation, to study space-related activities that could be undertaken under UN auspices, to encourage and assist with national research programs and to study legal problems that may arise from the exploration of outer space.[92]

The work of COPUOS is supported by its two subcommittees, the Legal Subcommittee (LSC) and the Scientific and Technical Subcommittee (STSC), which consider specific proposals concerning scientific, technical and legal questions made by COPUOS members.[93] In addition, COPUOS is administered by the UN Office of Outer Space Affairs (UNOOSA).[94] The forerunner to the UNOOSA was a small expert unit within the UN Department of Political and Security Council Affairs, set up to render assistance to the Ad Hoc COPUOS.[95] It was through the work of COPUOS that international space law was recognized and created, as is detailed below.

1.4 Cold War politics and the evolution of air and space law

According to Martineau, reactions to the realist critique ushered in a second period of confidence from 1960 to 1989, wherein international law was seen as evolving toward what Jenks termed the 'common law of mankind', capable of bridging a gap between sovereign autonomy and the international community.[96] "[T]he mainstream

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[91] *Question of the peaceful use of outer space*, United Nations General Assembly, 13th Sess. (13 December 1958) UNGA Res 1348 (XIII) [hereinafter "UNGA Res 1348 (XIII)"] .
[92] *International co-operation in the peaceful uses of outer space*, United Nations General Assembly, 14th Sess. (12 December 1959) UNGA Res 1472 (XIV) [hereinafter "UNGA Res 1472 (XIV)"].
[93] Nandasiri Jasentuliyana, *International Space Law and the United Nations* (The Hague: Kluwer Law International, 1999) 23-29 [hereinafter, "Jasentuliyana"].
[94] UN Office of Outer Space Affairs "About Us" online: http://www.unoosa.org/oosa/en/aboutus/roles-responsibilities.html
[95] *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space*, UN General Assembly Doc. A/CONF.184/6 (1999) at 90, endnote 16 [hereinafter "UNISPACEIII Report"].
[96] Martineau *supra* note 12 at 20-21.

worked to develop an international legal order…and build a global community that would address issues of development, decolonization, and human rights."[97] Fragmentation became 'diversification' and was seen merely as law's dependence on social facts and its sensitivity to political disputes, which nevertheless could contribute toward a cosmopolitan unity of international law.[98] As with the period of confidence preceding World War I, the treaty again became vogue.[99] Third World discourse led to the extension of international law into economic and social areas and included the regulation of non-state actors.[100] Nevertheless, criticism of fragmentation emerged again from prominent voices, including Prosper Weil and Ian Brownlie, the latter denouncing it as threatening the quality and coherence of international law.[101]

It was during this period that advances in space-related technologies compelled the recognition, codification and formulation of norms for activities in outer space. As quoted in the Prelude to this thesis, it is in this period, as early as 1963, when Cooper recognized the danger of fragmentation.[102] As described above, Cooper's call for the development of an 'aerospace law' went unheeded.

One theory as to why the two branches of law developed independently is that the Soviet Union did not become a party to the Chicago Convention until 1970.[103] During the space-race of the 1960s, the common forum where the world's only two spacefaring nations could meet and decide upon norms of international law for space-related activities was the UN General Assembly. Thus, the progressive development of space law fell to COPUOS. Nevertheless, throughout this period and through a series of resolutions, the ICAO General Assembly continued to recognize its responsibility for stating the position of international civil aviation on all related outer space matters and for monitoring and

[97] *Ibid* at 21.
[98] *Ibid*
[99] *Ibid*
[100] *Ibid* at 23.
[101] *Ibid* at 24.
[102] Cooper "Aerospace Law" *supra* note 1 at 46.
[103] Milde *supra* note 31 at 14, fn. 23.

coordinating the work performed by States on regional and global planning on these matters.[104]

It appears that COPUOS was the first entity within the UN to adopt the use of consensus decision-making.[105] Eilene Galloway attributes the use of consensus decision-making to the successful formulation of the multilateral agreements on peaceful exploration and use of outer space.[106] COPUOS' strongest contribution to the progressive development of international space law was the formulation of these five treaties. The first and undoubtedly most important is the Outer Space Treaty,[107] which codified elements of a series of UN General Assembly Resolutions on the peaceful uses of outer space,[108] as well as established new principles of international space law. These included provisions extending international space law into economic and social areas and provisions regulating non-State actors. For instance, Article 1 of the Outer Space Treaty acknowledges that "…exploration and use of outer space shall be carried out for the benefit and interest of all countries, irrespective of their degree of economic or scientific development…." Article VI of the Outer Space Treaty mandates that States Parties bear international responsibility for national activities in outer space, including those of non-governmental actors. Thus, the Third World discourse described by Martineau may have played an important role in the formulation of general principles for outer space activities.[109]

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[104] ICAO General Assembly Resolution, Fifteenth Sess., ICAO Doc 8528, A15-P/6, at A15-1 (1965); ICAO General Assembly Resolution, Sixteenth Sess., ICAO Doc 8779, A16-RES, at A16-11; ICAO General Assembly Resolution, Twenty-second Sess., ICAO Doc 9215, A22-RES, at A22-20.
[105] Eilene Galloway, "Consensus as a Basis for International Space Cooperation, (1978) 20 Proc. Colloq. Outer Space 105.
[106] *Ibid*.
[107] *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies*, 27 January 1967, 610 UNTS 205 [hereinafter "Outer Space Treaty].
[108] UNGA Res 1348 (XIII) *supra* note 91; UNGA Res 1472 (XIV) *supra* note 92; *International co-operation in the peaceful uses of outer space*, UN General Assembly, 16th Sess. (20 December 1961) UNGA Res 1721 (XVI) [hereinafter, "UNGA Res 1721 (XVI)"]; *International co-operation in the peaceful uses of outer space*, UN General Assembly, 17th Sess. (14 December 1962) UNGA Res 1802 (XVII); *Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space*, UN General Assembly, 18th Sess. (13 December 1963) UNGA Res 1962 (XVIII).
[109] Martineau *supra* note 12 at 23.

Like the Chicago Convention, the Outer Space Treaty can be thought of as a constitutive instrument for international space law. The Treaty has near universal acceptance and, as of 2015, has been ratified by 103 States.[110] Subsequent treaties built upon the general principles enshrined in the Outer Space Treaty. The second treaty to be developed was the Rescue and Return Agreement, which elaborated Article V of the Outer Space Treaty.[111] The Liability Convention built upon Article VII and created a system of fault-based and absolute liability for launching States.[112] The Registration Agreement mandated the establishment of national registries for objects launched into Earth orbit or beyond, in keeping with Article VIII of the Outer Space Treaty, and created an international register to compliment one previously established by UN General Assembly Resolution 1721 (XVI).[113] The final treaty, the Moon Agreement, elaborates provisions of the Outer Space Treaty on the exploration and use of celestial bodies, including the Moon, and established a legal means for exploitation of outer space resources.[114] In addition, the formulation of principles relative to outer space activities, including direct broadcasting and remote sensing, began during this period.[115]

In regards to the autonomy of space law, Lyall and Larsen wrote that, "Public international space law is part of ordinary public international law, and share its sources."[116] This is borne out by Article III of the Outer Space Treaty, which recognizes that State Parties shall carry on activities in the exploration and use of outer space in accordance with international law, including the Charter of the United Nations. Thus, formally, space law has evaded the 'ivory tower' stigma that Haanappel associates with

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[110] Status of International Agreements relating to activates in outer space as at 1 January 2015, Committee on the Peaceful Uses of Outer Space, Legal Subcommittee, Fifty-fourth sess., A/AC.105/C.1/2015/CRP.8* (8 April 2015), online: http://www.unoosa.org/pdf/limited/c2/AC105_C2_2015_CRP08E.pdf

[111] *Agreement on the Rescue of Astronauts and the Return of Objects Launched in Outer Space*, 22 April 1968, 672 UNTS 119 [hereinafter, "Rescue and Return Agreement"].

[112] *Convention on International Liability for Damage Caused by Space Objects*, 29 March 1972, 961 UNTS 187 [hereinafter, "Liability Convention"].

[113] *Convention on Registration of Objects Launched into Outer Space*, 14 January 1975, 1023 UNTS 15 [hereinafter, "Registration Convention"].

[114] *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*, 11 July 1984, 1363 UNTS 3 [hereinafter, "Moon Agreement"].

[115] *Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting*, UN General Assembly Res. 37/92 (10 December 1982); *Principles Relating to Remote Sensing of the Earth from Outer Space*, UN General Assembly Res. 41/65 (3 December 1986).

[116] Francis Lyall and Paul B. Larsen, "Space Law: A Treatise" (Furnham, England: Ashgate Publishing Ltd., 2009) at 39 [hereinafter, "Lyall and Larsen"].

air law. Notwithstanding such formal recognition of space law's place within public international law, at least one author rather convincingly argues that "space law has been sliding away from international law…and has enclosed itself within a new set of values and norms."[117] This will be addressed in more detail in Chapter 6.

It was during this period that the COPUOS received a dedicated secretariat. In 1962, the small expert group set up to administer to the Ad Hoc COPUOS became a permanent body under UN Department of Political and Security Council Affairs.[118] In 1968, it became the Outer Space Affairs Division of that Department.[119] In addition, great strides were made in cooperation for the peaceful exploration and use of outer space through a series of conferences arranged by COPUOS, pursuant to its mandate to continue with the scientific cooperative program established as the International Geophysical Year.[120] Pursuant to this mandate, COPUOS arranged a series of UN Conferences on the Peaceful Uses of Outer Space (UNISPACE). All have been held in Vienna: the first in 1968;[121] the second UNISPACE82 fourteen years later.[122]

In regards to international air law, this period witnessed further attempts at the unification and codification of private international air law, as well as the creation of international criminal air law. The 1933 convention on damage caused to third parties on the ground was updated by the 1952 Rome Convention,[123] and the 1978 protocol thereto.[124] The Warsaw System was updated and modified through a series of instruments, including the Hague Protocol of 1955,[125] the Guadalajara Convention of

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[117] S.G. Sreejith, "Wither International Law, Thither Space Law: A Discipline in Transition" (2007-8) 38 Cal. W. Int'l L.J. 331, 334 [hereinafter, Sreejith].
[118] UNISPACEIII Report *supra* note 95 at 90, endnote 16.
[119] *Ibid*.
[120] UNGA Res 1472 (XIV) *supra* note 92.
[121] *Report of the Committee on the Peaceful Uses of Outer Space*, UN General Assembly Resolution A/7285 (1968).
[122] *Report of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space*, UN General Assembly Doc. A.CONF.101/10 (1982).
[123] *Convention on Damage Caused by Foreign Aircraft to Third Parties on the Surface*, 7 October 1952, ICAO Doc. 7364.
[124] *Protocol to Amend the Convention on Damage Caused by Foreign Aircraft to Third Parties on the Surface signed at Rome on 7 October 1952*, 23 September 1978, ICAO Doc. 9257.
[125] *Protocol to Amend the Convention for the Unification of Certain Rules Relating to International Carriage by Air signed at Warsaw on 12 October 1929*, 28 September 1955, ICAO Doc.7632 [hereinafter "Hague Protocol"].

1961,[126] the Montreal Protocols of 1975,[127] as well as agreements brokered between air carriers and States. The first international criminal air law treaty was the Tokyo Convention of 1963.[128] Following a spate of hijackings and other unlawful acts in the late 1960s and 1970s,[129] international criminal air law was augmented by the Hague Convention of 1970,[130] the Montreal Convention of 1971,[131] and a protocol thereto.[132] Thus, as with space law, treaty making in air law was catalyzed by the reaction to the realistic critique and enjoyed a rapid expansion during this period.

1.5 Air and space law in the post-Cold War era

Finally, there came a post-Cold War era where east-west political tensions no longer could be blamed for failures of the UN system to bring about unification and a new period of confusion emerged.[133] Martineau states, "[T]he universalist solution framed in terms of coherence and unity—the establishment of a normative and/or institutional hierarchy—seems outdated, if not anachronistic."[134] Likewise, the pluralist position that diverse regimes can function in harmony seemed untenable, as "differentiation works through struggles 'in which every purpose is hegemonic in the sense of seeking to describe the social world through its own vocabulary so that its own

[126] *Convention Supplementary to the Warsaw Convention for the Unification of Certain Rules Relating to International Carriage by Air Performed by a Person Other than the Contracting Carrier*, 18 September 1961, ICAO Doc. 8181.
[127] *Additional Protocol No. 1 to Amend the Convention for the Unification of Certain Rules Relating to International Carriage by Air signed at Warsaw on 12 October 1929*, 25 September 1975, ICAO Doc. 9145; *Additional Protocol No. 2 to Amend the Convention for the Unification of Certain Rules Relating to International Carriage by Air signed at Warsaw on 12 October 1929 as Amended by the Protocol done at The Hague on 28 September 1955*, 25 September 1975, ICAO Doc. 9146; and *Montreal Protocol No. 4. to Amend the Convention for the Unification of Certain Rules Relating to International Carriage by Air signed at Warsaw on 12 October 1929 as Amended by the Protocol done at The Hague on 28 September 1955*, 25 September 1975, ICAO Doc. 9148.
[128] *Convention on Offenses and Certain Other Acts Committed on Board Aircraft*, 14 September 1963, ICAO Doc. 8364.
[129] Haanappel *supra* note 66 at 51.
[130] *Convention for the Suppression of Unlawful Seizure of Aircraft*, 16 December 1970, ICAO Doc. 8920.
[131] *Convention for the Suppression of Unlawful Acts against the Safety of Civil Aviation*, 23 September 1971, ICAO Doc. 8966.
[132] *Protocol for the Suppression of Unlawful Acts at Airports Serving International Civil Aviation, Supplementary to the Convention for the Suppression of Unlawful Acts against the Safety of Civil Aviation done at Montreal on 23 September 1971*, 24 February 1988, ICAO Doc. 9518.
[133] Martineau *supra* note 12 at 25.
[134] *Ibid.*

expertise would apply and its structural bias would become the rule.'"[135] Dissatisfied with both the universal and pluralist positions, "[international lawyers] interpret the world as already constituted, so that unity and diversity are held together in constitutional terms."[136]

In this last period of confusion, treaty making in the realms of air and space law has somewhat plateaued. Air law scholars may point to the Montreal Convention of 1999 as an exception.[137] This convention has successfully unified private international air law and enjoys wide acceptance, with 112 parties as of 2015.[138] It was, however, largely a reaction to fragmentation resulting from the disparate treatment of private international air law by domestic judicial decisions and from divergences arising from a lack of universal acceptance of the prior *ad hoc* adjustments to the Warsaw System.[139] Although innovative in some regards, little in the way of new law-making occurred through this instrument, which served mainly to cure entropy in the Warsaw System.

Likewise, subsequent amendments to private international air law instruments for damages to third parties,[140] as well as amendments to the international criminal air law instruments,[141] have not entered into force. That conferences were called and conventions formulated, however, appear to indicate that trends in air law are running counter to current skepticism. Moreover, these conventions are very recent and may yet enter into force and gain universal acceptance.

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[135] *Ibid.* (quoting: Martti Koskenniemi, "International Law: Constitutionalism, Managerialism and the Ethos of Legal Education" (2007) 1 European J L Studies 1 at 2).
[136] Martineau *supra* note 12 at 25-26.
[137] *Convention for the Unification of Certain Rules for International Carriage by Air*, 28 May 1999, ICAO Doc. 9740.
[138] See, "Current list of parties to multilateral air law treaties" International Civil Aviation Organization, online: http://www.icao.int/secretariat/legal/Lists/Current%20lists%20of%20parties/AllItems.aspx
[139] Haanappel *supra* note 65 at 68; For more detail on the practical ramifications of this fragmentation, see, Bin Cheng, "Analogies and Fictions in Air and Space Law" (1969) 6 Annals Chinese Soc'y Int'l L. 20, 28.
[140] *Convention on Compensation for Damage to Third Parties Resulting from Acts of Unlawful Interference Involving Aircraft*, 2 May 2009, ICAO Doc. 9920; *Convention on Compensation for Damage Caused by Aircraft to Third Parties*, 2 May 2009, ICAO Doc. 9919.
[141] *Convention on the Suppression of Unlawful Acts Relating to International Civil Aviation*, 10 September 2010, ICAO Doc. 9960; *Protocol Supplementary to the Convention for the Suppression of Unlawful Seizure of Aircraft*, 10 September 2010, ICAO Doc. 9959; *Protocol to Amend the Convention on Offences and Certain Other Acts Committed on Board Aircraft*, 4 April 2014.

ICAO has continued to assert its competence for stating the position of international civil aviation on all related outer space matters and for monitoring and coordinating the work performed by States on regional and global planning on these matters.[142] In 2014, it released a letter containing a questionnaire seeking information from States on commercial space transportation.[143] The letter stated ICAO's intention to study the growth of commercial space and has become the foundation on which an ICAO Space learning group was established. The learning group led to an ICAO/UNOOSA Aerospace Symposium held in March 2015.[144] UNOOSA and ICAO will lead the learning group and have arranged for follow-up symposia to be held in the United Arab Emirates in 2016 and Vienna in 2017.[145]

In the post-Cold War period, international space law proceeded into its 'soft law' phase, creating additional principles[146] and formulating guidelines[147] for activities in outer space. The secretariat to COPUOS became the Office of Outer Space Affairs in 1992 and was moved from New York to Vienna in 1993, at which time it took over administration of the Legal Subcommittee, which had been previously serviced by the UN Office of Legal Affairs.[148] In 1999, the third UN Conference on the Peaceful Uses of Outer Space (UNISPACEIII) produced the "The Space Millennium: the Vienna Declaration on Space and Human Development," which contained a set of recommendations for a strategy to address global challenges in the future.[149] The implementation of the recommendations of UNISPACEIII led to a strengthening of the UN Programme on Space Applications through the establishment of the UN Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER) and the establishment of the International Committee on Global Navigation

[142] ICAO General Assembly Resolution, Twenty-ninth Sess., ICAO Doc 9600, A29-RES, at A29-11.
[143] *Survey on Commercial Space Transportation and Airspace Integration*, ICAO State Letter (6 June 2014) AN1/64-1441, online: http://www4.icao.int/space/Documents/041e.pdf
[144] ICAO/UNOOSA AeroSPACE Symposium (Online: http://www.icao.int/meetings/space2015/Pages/default.aspx).
[145] *Report of the Legal Subcommittee on its fifty-forth session, held in Vienna from 13 to 24 April 2015*, Committee on the Peaceful Uses of Outer Space, Fifty-eighth Sess. (2015) at para. 80.
[146] *Principles Relevant to the Use of Nuclear Power Sources in Outer Space*, UN General Assembly Res. 47/68 (14 December 1992).
[147] "UN Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space" UN Office of Outer Space Affairs, online: http://www.unoosa.org/pdf/publications/st_space_49E.pdf
[148] UNISPACEIII Report, *supra* note 95 at 90, endnote 16.
[149] *Ibid* at 1-4.

Satellite Systems (ICG). [150] UNOOSA administers to the UN Programme on Space Applications, as well as serves as the secretariat to UN Space, an inter-agency mechanism for coordination of the activities of UN entities in the use of space-based technologies.[151] Thus, although new binding instruments have not been developed, COPUOS and its Secretariat have made extraordinary strides toward UN inter-agency cooperation in the application and progressive development of space law.

Lastly, of particular relevance to space-related activities is a proliferation of post-Cold War arms control arrangements. The Missile Technology Control Regime (MTCR) was established in 1987 and has grown to 37 partners since the end of the Cold War.[152] It is "an informal, voluntary arrangement in which participants agree to adhere to common export policy guidelines applied to an 'annex' that lists controlled items."[153] The annex is divided into two categories, the first of which contains items that have a strong presumption against export.[154] The first category includes space launch vehicles and sounding rockets, which means that they are treated like armaments for the purposes of export controls.[155] This agreement has been supplemented by the 1996 Wassenaar Arrangement, pertaining to munitions and dual-use technologies,[156] and the Hague Code of Conduct (HCOC), addressing ballistic missile proliferation.[157] HCOC currently has 137 adherents.[158]

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[150] *Review of the implementation of the recommendations of the third United Nations Conference on the Exploration and Peaceful Uses of Outer Space*, Note by the Secretary-General, United Nations Doc. A/59/174 (2004).
[151] "UN-Space" UN Office of Outer Space Affairs, online: http://www.unoosa.org/oosa/en/ourwork/un-space/index.html
[152] Missile Technology Control Regime, online: http://www.mtcr.info/english/; Amy F. Woolf, Paul K. Kerr and Mary Beth D. Nikitin, "Arms Control and Nonproliferation: A Catalog of Treaties and Agreements" Congressional Research Service, (11 May 2015) Report RL33865, online: http://fas.org/sgp/crs/nuke/RL33865.pdf [hereinafter, "CRS Report"].
[153] *Ibid* at 45.
[154] *Ibid* at 46.
[155] *Ibid* at 47.
[156] *Ibid*; Wassenaar Arrangement, online: http://www.wassenaar.org/
[157] CRS Report *supra* note 152 at 47; Hague Code of Conduct, online: http://www.hcoc.at/
[158] "List of HCoC Subscribing States" Austrian Federal Ministry for European and International Affairs (2 June 2012) online: http://www.hcoc.at/?tab=subscribing_states&page=subscribing_states

1.6 Conclusions

This chapter serves to introduce the international regimes of air and space law. Its purpose, however, is neither a comprehensive discussion of the subjects nor a simple overview of them. With the assistance of Martineau's analysis, air and space law can be contextualized within the history of the rhetoric surrounding fragmentation. Unsurprisingly, many developments within these specialized regimes appear to follow the strophe and antistrophe of scholarly perceptions of fragmentation. Dwelling on the synergies between the development of these specialized regimes and the history of fragmentation runs the risk of committing *post hoc ergo propter hoc* fallacies. Nevertheless, a basic understanding of these histories may provide useful context for a discussion of potential conflicts between these two regimes. Having contextualized the regimes of air and space law within the history of debates over fragmentation, we will now explore how new and advancing technologies are driving these regimes together.

Chapter Two: Aerospace technological advancements driving synergies between air and space law

"The impact of advanced science and technology is the most incisive of the decisive forces which are reshaping contemporary society on a scale and at a rate unprecedented in human experience."—C. Wilfred Jenks[159]

I.H. Ph. Diederiks-Verschoor defined air law as, "a body of rules governing the use of airspace and its benefits for aviation, the general public and the nations of the world."[160] For Michael Milde, it is a basic axiom that, "law does not govern 'objects' as such but only the social relations, in some cases related to specific 'objects'."[161] He described air law as the regulation of social relations in airspace that are related to or generated by the aeronautical uses of airspace.[162] Of space law, Francis Lyall and Paul Larsen wrote, "At its broadest space law comprises all the law that may govern or apply to outer space and activities in and relating to outer space."[163] They elaborated:

> It is different from 'the law of contract' or 'law of torts/delects' where 'the law' elaborates a series of concepts within a single phylum. 'Space law is akin to 'family law' or 'environmental law', where many different laws are denoted by reference to the material with which they deal rather than being derived from the pure rational development of a single legal concept.[164]

These definitions are reproduced here not as an indication of the limitations or confines of the subject matters of air law and space law. Indeed, as illustrated by the depiction of space law by Lyall and Larsen, and as shall become further apparent through this thesis, the applications of air and space law are more complex than can be expressed in a definition. The definitions indicate, however, a commonality: the law regulates social activities, and in regards to air law and space law, the spatial domain and types of objects to be regulated can be determinative of the degree of application of the regimes of air and space law.

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[159] C. Wilfred Jenks, "The New Science and the Law of Nations" (1968) 17 Int'l & Comp. L.Q. 327.
[160] Diederiks-Verschoor *supra* note 68 at 1.
[161] Milde *supra* note 31 at 1.
[162] *Ibid.*
[163] Lyall & Larsen *supra* note 116 at 2.
[164] *Ibid.*

In rather universalistic terms, Judge Manfred Lachs wrote, "Space is obviously a basic dimension, a constitutive element of any legal system; the subjects of law perform acts achieved in space, it is within space that the events law is concerned with take place, that the consequences of compliance with or violation of the rules of law materialize."[165] As such, the activities of objects functioning within their spatial domains are considered in this chapter, wherein it is illustrated that advances in aerospace technology are creating synergies between air and space activities. This chapter begins by exploring the geographic spaces and objects functioning therein, which are relevant to the applications of air and space law. Next, it illustrates the hybrid nature of suborbital vehicles. Finally, it explores the relevance of these vehicles by way of their technologic and economic feasibility, illustrating the necessity for clarity in applicability of air and/or space law to these activities and geographic areas.

2.1 Aircraft and the atmosphere

Aircraft depend upon the Earth's atmosphere for lift, which is generated by aircraft speed and air density.[166] As an aircraft increases its speed, dense air flowing at different rates above and below the wings causes lift.[167] Annex 1 of the Paris Convention of 1919 featured the first generally accepted definition of the term 'aircraft.' [168] The definition incorporates the principle of atmospheric lift, stating, *"Le mot aéronef désigne tout appareil pouvant se soutenir dans l'atmosphère grâce aux reactions de l'air."*[169] According to Diederiks-Verschoor, "The rather sweeping definition included aircraft, airships, gliders, free balloons, barrage balloons and helicopters."[170] The 1944 Chicago Convention followed suit, defining aircraft as "any machine that can derive support in the atmosphere from the reactions of the air."[171] Eventually, this definition was amended to exclude hovercraft and now reads, "Aircraft is any machine that can derive support in the

[165] Manfred Lachs, *The Law of Outer Space: An Experience in Contemporary Law-Making* (Leiden: Martinus Nijhoff, 1972) at 11 [hereinafter, "Lachs"].
[166] Matthew A. Bentley, *Spaceplanes: From Airport to Spaceport*, (Rock River, Wyoming: Springer, 2009) at 40 [hereinafter "Bentley"].
[167] *Ibid* at 41.
[168] Paris Convention *supra* note 51.
[169] Diederiks-Verschoor*, supra* note 68 at 4.
[170] *Ibid.*
[171] *Ibid.*

atmosphere from the reactions of the air other than the reactions of the air against the earth's surface."

The Earth's atmosphere is not uniform. It can be regarded as consisting of five strata based upon air density and other characteristics.[172] The troposphere is the lowest and densest layer, stretching to 7 km at the Earth's poles and approximately 18 km at the equator. The stratosphere is the second lowest layer, extending from the top of the troposphere to approximately 50 km. Next is the mesosphere, ranging from 80 to 85 km, followed by the thermosphere (which contains the ionosphere in its lower region) reaching to over 640 km, and finally the exosphere, reaching up to 10,000 km.

As altitude increases, air density decreases, thereby decreasing lift. Aircraft compensate for decreased air density by increasing speed: the less dense the air, the more speed required to maintain lift.[173] There is a point of diminishing return, however, in regards to air density, speed and lift, making lift impossible to maintain above a certain altitude.[174] Most jets can operate at an absolute ceiling of approximately 16 km, although some high performance aircraft can ascend to approximately 21 km.[175] This means that most aviation activity occurs in the lowest stratum of the atmosphere: the troposphere.

The principle to be taken from the foregoing is that aircraft depend upon and exploit the atmosphere.[176] Propeller planes beat the air like a fan, creating thrust and a driving force to propel an aircraft. Jet engines suck in air, compress and combust it with fuel in the turbine and create propulsion by shooting it out of the back of the engine.[177] Aircraft need the atmosphere to escape Earth's gravitational pull. As is illustrated in the next section, spacecraft function, generally, under an antipodal principle.

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[172] The following designations and definitions were gleaned from: "The Layers of the Earth's Atmosphere" NASA Jet Propulsion Laboratory, online: http://airs.jpl.nasa.gov/maps/satellite_feed/atmosphere_layers/ .
[173] Bentley *supra* note 166 at 42.
[174] Jenks, *Space Law*, supra note 16 at 19.
[175] Bentley *supra* note 166 at 27.
[176] For more on the scientific and technical aspects of aviation, see: Marietto Benkö and Engelbert Plescher, *Essentials in air and space law: reconsidering the definition/delimitation question and the passage of spacecraft through foreign airspace*, (The Hague: Eleven International Publishing, 2013) 7-8 [hereinafter, "Benkö & Plescher"].
[177] Bentley *supra* note 166 at 41.

2.2 Launch vehicles and orbital launches

The vehicle for launching an object into orbit is a rocket. Since their creation in China, dated to 3000 B.C., rockets typically have been used for warfare, and, therefore, have been expendable, designed for one-time use.[178] The first successful spaceflight, conducted by Germany in 1942, was done with an expendable, single-use rocket.[179] In 1945, the Unites States captured 100 German V-2 rockets and used them to explore the upper edges of the atmosphere, shooting one as high as 186 km as early as 1950.[180] The Cold War arms race between the US and Soviet Union led to radical improvements in rocket technology in the form of intercontinental ballistic missiles, which proved highly effective as launch vehicles.[181] Ballistic missiles designed and constructed for warfare are still being converted to Expendable Launch Vehicles (ELVs) to launch civilian payloads into orbit.[182]

Rockets, like aircraft, are designed to defy gravity. Although some rockets, such as the early V-2 and modern cruise missiles, employed lift to extend their range, generally, they eschew aerodynamic lift in favor of explosive power.[183] Lift from Earth and propulsion in space are the result of excited gases exiting the rocket's engine like air escaping a punctured balloon, causing it to accelerate in the opposite direction.[184] This is not unlike a jet engine, in that gases and fuel are combusted, compressed and shot out of the back of the engine to produce thrust. With rockets, however, all of the gases and fuel are carried on board the craft.

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[178] Matte *supra* note 3 at 13.
[179] Patrick Collins & Adriano Autino, "What the growth of a space tourism industry could contribute to employment, economic growth, environmental protection, education, culture and world peace" (2010) 66 Acta Astronautica 1553 [hereinafter Collins & Autino].
[180] Clyde T. Holliday, "Seeing the Earth from 80 Miles Up" (October, 1950) XCVIII (4) The National Geographic Magazine 511, 521.
[181] Collins & Autino *supra* note 179 at 1553; David Salt, "NewSpace—delivering on the dream" (2013) 92 Acta Astronautica 178.
[182] Mike Gold, "Lost in Space: A Practitioner's First-Hand Perspective on Reforming the U.S.'s Obsolete, Arrogant, and Counterproductive Export Control Regime for Space-Related Systems and Technologies" (2008) 34(1) J Space L 163, 168, fn. 17 [hereinafter, "'Gold, Lost in Space'"].
[183] Jenks *Space Law, supra* note 16 at 19.
[184] Bentley *supra* note 166 at 43.

For the purposes of suborbital and orbital launches, rockets pierce the atmosphere at extremely high speeds in order to escape Earth's gravity.[185] The drag of the atmosphere is an impediment to rockets reaching orbital velocity and altitude, with the most resistance coming in the troposphere.[186] The US Space Shuttle accelerated from zero to almost 28,968 km per hour, a speed nine times faster than the average rifle bullet.[187] Within the first 8 seconds after lift-off, however, the Space Shuttle reached only 161 km per hour.[188] Although inertia and the extreme weight of the solid rocket boosters and external liquid fuel tank contributed to the slower initial speed, launch speed is controlled in the initial seconds at about 60 per cent of total thrust to avoid a slapping effect against the atmosphere. Unlike aircraft, more speed does not necessarily optimize performance when trying to defy atmospheric drag. Thus, vertically launched rockets face the greatest challenge to defying gravity in the troposphere, where aircraft experience the most lift.[189]

Like the atmosphere, Earth's orbits can be divided into strata, based not only on altitude but also on trajectory. These represent the geographic movement of a satellite based upon height and trajectory. Generally, orbits are referenced by perigee (lowest point) and apogee (highest point).[190] Professors Lyall and Larsen identify the following orbits: Low Earth Orbit (LEO) occurs between approximately 100-150 km above Earth; Highly Elliptical Earth Orbit (HEO) with a widely varying perigee and apogee; Medium Earth Orbit (MEO) between 2,000 and 35,000 km above Earth; and Geostationary Orbit (GSO) at 35,786 km above the equator.[191] Sources differ, however, as to the classification of Earth orbits, with ranges of perigee and apogee varying substantially.[192] The lowest orbit for an artificial (man-made) satellite was at a perigee as low as 96 km.[193]

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[185] *Ibid* at 28.
[186] Marietta Benkö, Willem de Graaff & Gigsbertha C.M Reijnen, *Space Law in the United Nations* (Dordrecht, The Netherlands: Martinus Nijhoff, 1985) at 124 [hereinafter "Benkö, *et al.*"].
[187] "Space Shuttle Basics: Launch" NASA, online: http://spaceflight.nasa.gov/shuttle/reference/basics/launch.html
[188] *Ibid.*
[189] Lachs *supra* note 165 at 6, fn 1.
[190] Lyall & Larsen *surpa* note 116 at 245.
[191] *Ibid* at 245-247.
[192] See, *e.g.*: Diederiks-Verschoor & Kopal *supra* note 4 at 20-21; *cf.* NASA, "What is an orbit?" (10 September 2003) online: http://www.nasa.gov/audience/forstudents/5-8/features/orbit_feature_5-8.html
[193] Jinyuan Su, "The Delimitation Between Airspace and Outer Space and the Emergence of Aerospace Objects" (2013) J Air L & Com 355, 361 [hereinafter Su].

Orbit occurs when an object is launched with a sufficient speed *and* altitude on a horizontal trajectory to allow continuous free fall without reentering the denser parts of the atmosphere.[194] Orbital velocity slows as perigee and apogee increase. The average velocity at LEO is approximately 10 km/second; at geosynchronous orbit, approximately 2 km/second.[195] Thus, altitude is only one factor contributing to the achievement and maintenance of orbit.

The foregoing section illustrates that, unlike aircraft, which need the atmosphere for lift, spacecraft are impeded by the atmosphere. Although launch vehicles can operate in both the atmosphere and outer space, generally the area of activity for spacecraft is in orbits above the Earth and beyond the appreciable effects of the atmosphere. The following section illustrates cross-over technologies that incorporate aspects of both aircraft and spacecraft, as well as both atmospheric and orbital travel.

2.3 Aerospace planes and suborbital trajectories

Having identified the geographical parameters and physical characteristics of air transportation and launches to Earth orbit, a comparison of these to suborbital flight is expedient. Aerospace planes are hybrid vehicles that combine aerodynamic lift and rocket propulsion. Generally, they are of two types: rocket planes and orbiters. Rocket planes have existed since the late-1920s.[196] During World War II, Germans developed the Messerschmitt Me 163 Komet, which was the first operational rocket plane.[197] The most successful rocket plane was the US Air Force X-15, which flew 200 times between 1961 and 1968 and reached altitudes as great as 108 km.[198] Similarly, SpaceShipOne was an experimental rocket plane designed for commercial suborbital flight.[199] In 2004, it

[194] Derek Webber, "Point-to-point sub-orbital tourism: Some initial considerations" (2010) 66 Acta Astronautica 1645, 1646 [hereinafter D. Webber, "Point-to-point"].
[195] Ram S. Jakhu, Tommaso Sgobba, & Paul Stephen Dempsey, eds, *The Need for an Integrated Regulatory Regime for Aviation and Space* (New York: Springer Wien, 2011) at 84 [hereinafter Jakhu, Sgobba & Dempsey].
[196] Derek Webber, "Space tourism: Its history, future and importance" (2013) 92 Acta Astronautica 138, 140 [hereinafter D. Webber, "Space tourism"]; For various models of rocket planes developed between 1929 and 1975, see, Bentley *supra* note 166 at 7-17.
[197] D. Webber, "Space tourism" *supra* note 196 at 140; Bentley, *supra* note 166 at 7.
[198] Jakhu, Sgobba & Dempsey *supra* note 195 at 80-81; Bentley, *supra* note 166 at 75-76.
[199] "SpaceShipOne" Scaled Composites, online: http://www.scaled.com/projects/tierone/

garnered the Ansari-X prize by completing two flights exceeding 100 km within a span of 14 days.[200]

Both the X-15 and SpaceShipOne were ferried high into the atmosphere by a carrier aircraft before being launched on a suborbital trajectory—the former by a modified B-52,[201] the latter by WhiteKnight, an aircraft designed specifically for SpaceShipOne and named after X-15 pilots Robert White and William Knight.[202] Although capable of exceeding an orbital altitude, these vehicles are not capable of attaining orbital velocity and, therefore, cannot orbit the Earth.[203]

The U.S Space Shuttle and Soviet Buran are examples of the second type of aerospace plane: orbiters.[204] The Space Shuttle used a three-staged rocket propulsion process. In the first stage, solid rocket boosters propelled the craft upward at a near vertical trajectory.[205] In the second stage, the solid rockets were jettisoned and the Shuttle's main engines boosted it into orbit using ½ million gallons of liquid fuel in its large, external tank.[206] In the third stage, the external tank was jettisoned and the Shuttle moved itself into orbit by firing two orbital maneuvering engines in its tail.[207] The Shuttle and Buron are considered to be aerospace planes because they had wings which generate aerodynamic lift on descent.[208] Noteworthy distinctions between these and the aforementioned rocket planes are orbital maneuvering capabilities and heat shields enabling them to reenter Earth's atmosphere. Dream Chaser, a modern, smaller version of the Space Shuttle, is being developed by Sierra Nevada Corporation.[209]

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[200] "SpaceShipOne Flies Again Within 14 Days—Wins $10M X Prize" Scaled Composites, online: http://www.scaled.com/projects/tierone/spaceshipone_flies_again_within_14_days_-_wins_10m_x_prize
[201] Bentley *supra* note 166 at 72.
[202] Jakhu, Sgobba & Dempsey *supra* note 195 at 9.
[203] D. Webber, "Point-to-point" *supra* note 194 at 1646.
[204] Bentley *supra* note 166 at 93-101.
[205] "Space Shuttle Basics: Launch" NASA online: http://spaceflight.nasa.gov/shuttle/reference/basics/launch.html
[206] "Space Shuttle Basics: Ascent" NASA online: http://spaceflight.nasa.gov/shuttle/reference/basics/ascent.html
[207] "Space Shuttle Basics: Orbit" NASA, online: http://spaceflight.nasa.gov/shuttle/reference/basics/orbit.html
[208] Bentley *supra* note 166 at 42.
[209] "Space Exploration Systems" Sierra Nevada Corporation, online: http://www.sncspace.com/ss_space_exploration.php

According to the US Government Accountability Office (GAO), "The difference between orbital and suborbital flights is based upon trajectory of the flight rather than altitude."[210] In regards to suborbital flight, United States law speaks of a "suborbital trajectory," which is defined as, "the intentional flight path of a launch vehicle, re-entry vehicle, or any portion thereof, whose vacuum instantaneous impact point does not leave the surface of the Earth."[211] The vacuum instantaneous impact point is the point on the Earth where an object will land, calculated in the absence of atmospheric influence. Therefore, an object that has a vacuum instantaneous impact point that is not on the surface of the Earth is an object that either remains in orbit or travels into deep space. An ICAO working paper, reproduced in a report by COPUOS, appears to have embraced this definition, stating, "A sub-orbital flight is a flight up to a very high altitude which does not involve sending the vehicle into orbit."[212]

Noteworthy is that suborbital flights can achieve altitudes much higher than objects in lower orbits. The first two US manned space missions were suborbital flights using a Mercury capsule mounted on a Redstone ballistic missile.[213] In May 1961, Alan Shepard reached an altitude of 187 km—well above the current lowest perigee of an artificial satellite.[214] Moreover, sounding rockets and other experimental rockets reach altitudes ranging from 140 km to 705 km—altitudes greater than the apogee of the International Space Station—on a suborbital trajectory before plummeting back to Earth.[215]

Just as rockets ascending to orbit pass through the same atmospheric space where aircraft travel, suborbital flights pass through the same outer space where orbital space objects travel. ICAO has recognized this characteristic of orbital and suborbital launches

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[210] US Government Accountability Office, "Commercial Space Transportation: Development of the Commercial Space Launch Industry Presents Safety Oversight Challenges for FAA and Raises Issues Affecting Federal Roles" GAO-10-286T (2 December 2009) (Statement of Gerald L. Dillingham, Director of Physical Infrastructure, before the Subcommittee on Aviation, Committee on Transportation, US House of Representatives) online: http://www.gao.gov/assets/130/123783.pdf at 10, fn. 8 [hereinafter GAO, *Commercial Space Transportation*].
[211] CSLA *supra* note 24 at § 50902 (20) (2010).
[212] *Concept of Sub-orbital Flights*, ICAO Working Paper, Council—175 Session, C-WP/12436 (2005).
[213] Bentley *supra* note 166 at 70.
[214] *Ibid* at 76; Jakhu, Sgobba & Dempsey *supra* note 195 at 79.
[215] *Ibid*.

as early as 1965, stating, "...the use of the same medium by different fields of activity necessarily requires adequate co-ordination to achieve the normal and efficient functioning of both these fields."[216] Commercial enterprises proposing to carry out these activities are considered in the following section.

2.4 Commercial suborbital activities

Commercial suborbital enterprises are developing both Vertical Takeoff/Vertical Landing (VTVL) and Horizontal Takeoff/Horizontal Landing (HTHL) technologies.[217] The former is epitomized by the Redstone rocket and Mercury capsule configuration described above; the latter by the X-15. Virgin Galactic is the first of these commercial enterprises to develop its own space craft and sell suborbital tourist flights. Its SpaceShipTwo will carry six passengers and two pilots to an altitude of approximately 100 km.[218] Various sources report prices ranging from 200,000[219] to 250,000[220] USD per seat. As of February 2014, Virgin has collected 80 million USD in deposits.

Similarly, XCOR expects to offer one seat aboard its Lynx suborbital craft for 95,000 USD per flight.[221] It is currently assembling its suborbital spacecraft.[222] Unlike SpaceShipTwo, which is launched horizontally from its mother ship WhiteKnightTwo, Lynx is not deployed from a mother ship but takes off directly from a runway.[223]

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[216] International Civil Aviation Organization, General Assembly Resolution A 15-1 (1965).
[217] *Annual Compendium of Commercial Space Transportation: 2013,* US Federal Aviation Administration Office of Commercial Space Transportation, (Washington, D.C., February 2014) at 48-55 [hereinafter "FAA Annual Compendium 2013"].
[218] *Ibid* at 52.
[219] D. Webber, "Space tourism" *supra* note 196 at 140; *cf.* John Sunyer, "The new market space: billionaire investors look beyond Earth", *Financial Times* (28 February 2014) online: http://www.ft.com/intl/cms/s/2/a441d9bc-9d65-11e3-a599-00144feab7de.html#axzz31MHPEYO4 [hereinafter Sunyer].
[220] FAA AST, *Annual Compendium: 2013 supra* note 217 at 52.
[221] *Ibid* at 49.
[222] "About Lynx" XCOR, online: http://www.xcor.com/lynx/; "XCOR Selects Matrix Composites to Develop Lynx Chines" Space Daily (10 June 2015) online: http://www.spacedaily.com/reports/XCOR_Selects_Matrix_Composites_to_Develop_Lynx_Chines_999.html
[223] D. Webber, "Space tourism" (2013) *supra* note 196 at 141.

Additionally, Swiss Space Systems (S3) is developing the suborbital vehicle SOAR to be launched from an Airbus A300.[224]

In the VTVL category, Masten Space Systems is developing a line of reusable suborbital vehicles.[225] Masten has been awarded a study contract by the US Defense Advanced Research Agency (DARPA) to define how it would design, build and fly an entrant in the US military's Experimental Spaceplane (XS-1) program—a reboot of the X-15.[226] Blue Origin, however, has successfully tested its BE-3 rocket engine and New Shepard capsule and appears to be winning the race to commercial space tourism services.[227]

In addition to VTVL and HTHL rocket powered vehicles, high-altitude balloons are entering the commercial suborbital market. Paragon Space is developing WorldView—a manned/unmanned flight capsule launched via high altitude helium balloon and capable of delivering participants in a 'shirtsleeve' environment to 30 to 40 km.[228] Due to life support systems similar to those used onboard the ISS, the FAA has agreed with Paragon to classify the capsule as a spacecraft, subjecting it to the jurisdiction of US domestic space law.[229]

The space tourism market appears ready to boom. A commercial demand for suborbital tourism already exists.[230] Astrium, part of Airbus Space and Defense and an

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[224] "Mission & Goals" Swiss Space Systems, online: http://www.s-3.ch/en/mission-goals
[225] "Masten's Reusable Launch Vehicles and Landers" Masten, online: http://masten.aero/vehicles-2/
[226] Doug Messier, "Masten Space Systems Aims High on XS-1 Military Space Plane Project" Space.com (26 August 2014) online: http://www.space.com/26881-xs1-military-spaceplane-masten-space-systems.html
[227] Tariq Malik, "Jeff Bezos'Blue Origin Launches Private Spaceship Test Flight (Photos, Video)" Space.com (30 April 2015) online: http://www.space.com/29278-blue-origin-launches-private-spaceship-test.html; Calla Cofield, "Blue Origin Offers Tantalizing Preview of Private Space Trips (Video)" Space.com (22 June 2015) online: http://www.space.com/29728-blue-origin-private-spaceflight-video.html
[228] Letter from FAA Office of the Chief Counsel to Paragon Space Development Corporation, 26 Sept 2014, online: http://www.faa.gov/about/office_org/headquarters_offices/agc/pol_adjudication/agc200/interpretations/data/interps/2013/meredith-zuckertscoutt&rasenberger%20-%20(2013)%20legal%20interpretation.pdf); see also, "Current Projects" Paragon (Online: http://www.paragonsdc.com/index.php?action=viewPost&postID=50).
[229] CSLA *supra* note 24 (51 US Code Chapter 509—Commercial Space Launch Activities)
[230] Derek Webber, "Point-to-point" *supra* note 194 at 1645.

EADS space company,[231] conducted a feasibility study concerning the orbital and suborbital tourism markets.[232] Through the use of qualitative and quantitative empirical data, the study predicts a range of 606 to 756 paying passengers in the first year of service, with steady growth resulting in as few as 43,148 and as many as 85,464 passengers by the 16th year of service.[233]

In addition to a market with potential for growth, the technology for suborbital tourism already exists. As explained above, the X-15 proved its feasibility and reliability more than 50 years ago. In 200 flights, it experienced only four major accidents and only one fatality.[234] Tapping into this feasibility and reliability is proving more difficult. Virgin Galactic suffered a tragic accident during a 2014 test flight.[235] Nevertheless, 98 per cent of its customers are still supportive.[236]

Notwithstanding technological difficulties, George Whitesides, Virgin Galactic's chief executive, claims that the suborbital travel market is too big to ignore.[237] Comparisons to the development of the aviation industry indicate that this prediction might not be far-fetched. The first regular commercial passenger service between Paris and London proved not financially viable.[238] It is predicted that, just as with aviation, suborbital tourism will open up a new market where competition will ensure improvements in safety and reliability, as well as decrease prices.[239] One of the expected markets to develop is Point-to-Point (PTP) suborbital transportation.

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[231] Airbus Defense and Space, "The Company" online: http://www.astrium.eads.net/en/who-is-astrium
[232] Thierry Le Goff & Antoine Moreau, "Astrium suborbital spaceplane project: Demand analysis of suborbital space tourism" (2013) 92 Acta Astronautica 144.
[233] *Ibid* at 148.
[234] Jakhu, Sgobba & Dempsey *supra* note 195 at 81.
[235] Stephen Clark, "Pilot dies in crash of Virgin Galactic rocket plane" Spaceflight Now (31 October 2014) online: http://spaceflightnow.com/2014/10/31/virgin-galactics-spaceshiptwo-suffers-anomaly-during-test-flight/
[236] "Virgin Galactic's Undaunted Passengers Pay $250,000…Waiting Two Years for Replacement of Crashed SpaceShipTwo" Satnews (8 June 2015) online: http://www.satnews.com/story.php?number=945203324
[237] John Sunyer, "The new market space: billionaire investors look beyond Earth", *Financial Times* (28 February 2014) at 5, online: http://www.ft.com/intl/cms/s/2/a441d9bc-9d65-11e3-a599-00144feab7de.html#axzz31MHPEYO4
[238] Walter Peeters, "From suborbital space tourism to commercial personal spaceflight" (2010) 66 Acta Astronautica 1625, 1626 [hereinafter, "Peeters"].
[239] D Webber, "Space tourism" *supra* note 196 at 140.

2.5 Suborbital point-to-point transportation

Sir Richard Branson, part-owner of Virgin Galactic, has stated that his ultimate end game is PTP suborbital transportation, which purportedly has the potential to reduce intercontinental travel to a fraction of the current time. [240] In regards to the feasibility of Branson's ultimate end game, discrepancies between suborbital tourism and PTP suborbital transportation must be taken into account. According to Derek Webber, former launch vehicle engineer and executive director of Spaceport Associates,[241] PTP suborbital transportation is an entirely different kind of space flight from suborbital tourism.[242] The shift from suborbital space tourism to PTP suborbital transportation is a technological leap of several orders of magnitude.

Webber explains that suborbital tourism is a ballistic lob: after the rocket engines are fired, the vehicle reaches speeds of Mach 3 during ascent; the engines are cut and it glides to approximately 100 km; finally it slowly glides back to Earth.[243] Like the X-15, SpaceShipOne had a horizontal velocity of almost zero at the apex of its suborbital trajectory.[244] Like a ball thrown almost straight upward, the vehicle reached the apex of its arc, stopped and plummeted back to Earth. Webber calculates that, given the duration of the flight and speed of Mach 3, SpaceShipOne could have traveled approximately 350 km.[245] This calculation is corroborated by Alan Shepard's suborbital Mercury flight, which landed approximately 480 km downrange from its launch point.[246] Although it would be a very quick trip, potentially traveling such distances in less than 30 minutes from the initial firing of the rocket engines, such flights are incapable of intercontinental travel—they are simply too short to cross an ocean.[247]

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[240] Ben Flanagan, "Branson: space tourism lift-off 'in months'" Al Arabiya News (10 February 2014) online: http://english.alarabiya.net/en/business/aviation-and-transport/2014/02/10/Space-tourism-lift-off-in-months-says-Branson.html
[241] Spaceport Associates, Commercial Space Transportation and Exploration Policy, Markets, Regulation, Online: "Who Are We?" http://www.spaceportassociates.com/whoarewe.php
[242] Derek Webber "Point-to-point" *supra* note 194 at 1646.
[243] *Ibid* at 1650.
[244] *Ibid* at 1645; Bentley *supra* note 166 at 77.
[245] D. Webber "Point-to-point" *supra* note 194 at 1650.
[246] Bentley *supra* note 166 at 77.
[247] D. Webber "Point-to-point" *supra* note 194 at 1650.

Webber further explains that it takes 90 minutes to orbit the Earth in LEO, which is approximately 28,000 km/hour—the fastest an object can travel in orbital free fall.[248] High-speed suborbital transportation seeks to tap into decreased atmospheric resistance and free-fall orbital velocity, making it more similar to placing an object in orbit than to performing a suborbital lob.[249] It is sometimes referred to as 'hemispheric' travel,[250] but semi-orbital travel might be equally accurate.

To achieve orbital speeds, and hence high-speed, long-distance transportation, SpaceShipTwo would need additional fuel to accelerate at near-orbital altitudes and heat shields to skip upon and reenter Earth's atmosphere.[251] These, as well as other technical difficulties, including increased risk and developmental costs, affect the market valuation of PTP suborbital transportation. In an effort to understand the potential market for PTP suborbital transportation, Webber examined historical data of passenger volume and prices for 1st class and Concorde air transportation. [252] These figures, Webber presumed, are the closest approximation of the volume of travelers and prices that a high-speed travel market might bear. The 1st class data indicates trends in luxury and business travel. The Concorde data indicates a market volume and price index for high-priced, high-speed travel. Based upon these, he concludes that, even if prices for PTP suborbital transport were as low as those for suborbital tourism (200,000 to 250,000 USD), the commercial viability of PTP suborbital transportation is marginal at best.[253] The data for 1st class and Concorde air transportation indicates that the high price-point for suborbital tourism—PTP promises to be priced even higher, given the greater development costs—would not be borne by the current market for high-speed transportation. Thus, from both a technological and market perspective, PTP suborbital transportation does not appear to be feasible. Nevertheless, as is discussed below, other uses for suborbital transportation, as well as government subsidies for infrastructure, may drive down costs, thus creating a viable market.

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[248] *Ibid* at 1646.
[249] *Ibid*.
[250] *Ibid* at 1650.
[251] *Ibid* at 1645, 1647; Salt *supra* note 181 at 181.
[252] Derek Webber "Point-to-point people with purpose—Exploring the possibility of a commercial traveler market for point-to-point suborbital space transportation" (2013) 92 Acta Astronautica 193, 196-198.
[253] *Ibid* at 195-196.

2.6 Suborbital craft and orbital launches—tapping into a small satellite market

In addition to suborbital tourism and PTP suborbital flights, commercial suborbital companies are developing orbital launch capabilities based upon their suborbital launch platforms. These companies are seeking to tap into a rapidly expanding small satellite launch market.[254] Virgin Galactic is currently developing Launcher One, a small satellite launcher mounted dorsally on its carrier aircraft WhiteKnightTwo.[255] Likewise, S3 plans to use its suborbital SOAR spacecraft for small satellite deployment.[256]

The concept is not new but it is being taken to new heights. Stratolaunch Systems, a joint venture involving Orbital ATK and Scaled Composites, is building a carrier aircraft with the world's longest wing-span to loft a dorsally mounted launcher.[257] According to Kevin Mickey, President of Scaled Composites, the benefits of an air launch system are flexibility and ability for an increased frequency of launches due to independence from a fixed launch location. Stratolaunch builds upon the concept of Orbital ATK's currently operational Pegasus launch system, which launches small payloads to orbit from a carrier aircraft flown over territorial waters.[258]

Benefits include not only flexibility in launch capabilities, but also exploitation of atmospheric lift in the first stage of the launch and reduced costs through reusable technology. Inherent in the use of ELVs is waste, as with each launch, valuable components are jettisoned and destroyed.[259] The Space Shuttle can be classified as a hybrid ELV-RLV, because the solid booster rockets and the Shuttle itself were reusable, with only the external liquid fuel tank being expended. Nevertheless, even the use of this one expendable component made it prohibitively expensive to continue with the Shuttle

[254] "Low Earth Orbit Satellite Volume Set to Rapidly Expand" Earth Imaging Journal (8 October 2014) online: http://eijournal.com/news/industry-insights-trends/low-earth-orbit-satellite-volume-set-to-rapidly-expand
[255] "We're Building Rockets that Will Launch the Small Satellite Revolution" Virgin Galactic, online: http://www.virgingalactic.com/satellite-launch/
[256] "Mission & Goals" Swiss Space Systems, online: http://www.s-3.ch/en/mission-goals
[257] Jonathon Charlton, "Stratolaunch Video Snagged by Local News Team" SpaceNews (27 February 2015) online: http://spacenews.com/stratolaunch-video-snagged-by-local-news-team/
[258] "Pegasus XL Launch Vehicle" Spaceflight 101, online: http://www.spaceflight101.com/pegasus-xl-info.html
[259] Bentley *supra* note 166 at 63.

program. According to one analyst, use of suborbital RLVs could lead to major reductions in marginal costs by reusing expensive equipment and by amortizing investments, spreading cost over more users.[260] This cost-reduction, coupled with increased Public-Private Partnership (PPP), as discussed below, may well lead to a viable market for suborbital activities.

2.7 Public-private partnerships supporting a nascent industry

It has been postulated that the birth of commercial civil aviation would not have occurred without considerable Public-Private Partnership (PPP).[261] Such PPP in suborbital transportation is underway. The UK announced a National Space Security Policy, endorsing a Space Growth Action Plan aimed to increase annual space industry revenues from 9 billion to 40 billion GBP by 2030.[262] Moreover, UK ministers have set up a National Space Flight Coordination Group to "'take forward space plane regulation, investment in space planes and the selection of a UK spaceport.'"[263] Virgin Galactic is backed by the Aabar Investments PJS, whose parent company is the International Petroleum Investment Company, wholly owned by the Government of Abu Dhabi.[264] David Willets, Minister for Universities and Science responsible for the new UK space policy, stated, "[Virgin Galactic] are going to operate from the Gulf and they will be looking for a European centre—and it would be great if it were in Britain."[265] The UK,

[260] Salt *supra* note 181 at 180.
[261] Peeters *supra* note 238 at 1626.
[262] *National Space Security Policy* , HM Government, UK (April 2014) online: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/307648/National_Space_Security_Policy.pdf; Clive Cookson, "Space industry plans win extra thrust" *Financial Times* (30 April 2014) online: http://www.ft.com/intl/cms/s/0/afa56914-d05e-11e3-8b90-00144feabdc0.html?siteedition=intl#axzz31nfVW5Cl
[263] *Ibid*.
[264] "Aabar Inventments and Virgin Group Agree Equity Investment Partnership in Virgin Galactic" Virgin News, online: http://www.virgin.com/news/aabar-investments-and-virgin-group-agree-equity-investment-partnership-virgin-galactic
[265] Clive Cookson, "Call for Britain to have its own spaceport" *Financial Times* (14 November 2013) online: http://www.ft.com/intl/cms/s/0/92afbc66-4d36-11e3-9f40-00144feabdc0.html?siteedition=intl#axzz31vOjX1T2

however, has a European competitor. Sweden hopes to court the likes of XCOR and Virgin Galactic to its Kiruna Spaceport.[266]

The US hosts 11 active spaceports, six of which are commercial and support suborbital flight.[267] It has instituted a Space Transportation Infrastructure Matching (STIM) Grants Program, matching up to 50 percent of private investment in space infrastructure projects.[268] Commercial spaceports in California, Oklahoma, Alaska, Virginia and New Mexico have benefited from STIM and other Federal grants.[269] For instance, "California received an FAA Airport Improvement Program grant of 7.5 million USD to expand existing runways to accommodate horizontal landing reusable vehicles."[270]

American States are funding commercial space endeavors as well. Virgin Galactic has signed a 20 year lease at New Mexico's Spaceport America, which is fully functional and financed by New Mexico taxpayers.[271] Florida granted 500,000 USD for the configuration of its SLC-26 launch site for suborbital launches.[272] The US Government Accountability Office reports the following expenditures: New Mexico—100 million USD for the construction of Spaceport America; Oklahoma—500,000 USD annually for spaceport operations; Florida—500 million USD in new space industry infrastructure development; Virginia and Maryland—providing half of the funding for the Mid-Atlantic Regional Spaceport.[273]

Tapping into suborbital tourism and satellite markets could increase production rates of RLVs, thereby reducing cost.[274] Built upon the platform of strong PPPs, the economies of scale that may result from suborbital tourism and satellite launches could

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[266] Miriam Kramer, "Space Sweden Launches Aerial Northern Lights Tours, Aims for Space" Space.com (14 February 2014) online: http://www.space.com/24697-spaceport-sweden-auroras-commercial-spaceflight.html
[267] FAA AST, *Annual Compendium: 2013, supra* note 217 at 67-68.
[268] 51 USC §§ 51101, *et seq.*
[269] FAA AST, *Annual Compendium: 2013, supra* note 217 at 70-77.
[270] GAO, *Commercial Space Transportation, supra* note 210 at 6.
[271] FAA AST, *Annual Compendium: 2013, supra* note 217 at 77.
[272] *Ibid* at 71.
[273] GAO, *Commercial Space Transportation, supra* note 210 at 5-6.
[274] Martin Sippel, "Promising roadmap alternatives for the SpaceLiner" (2010) 66 Acta Astronautica 1652, 1655.

pave the way for PTP suborbital transportation.[275] An additional factor to consider, however, is insurance.

2.8 "Amateurs talk propellant, professional [sic] talk insurance"[276]

Rocket engines are extremely dangerous. In 2007, while test firing rockets used to propel SpaceShipTwo, Scaled Composites lost three of its personnel in an explosion.[277] As with any other industry, mandatory insurance regimes have been put in place for aviation and space activities and assets. The lack of an explicit regulatory framework for aerospace vehicles and suborbital flights, however, make it difficult for the insurance sector to apply standard rules for aviation and space insurance.[278] Issues, such as whether hull risk is an aviation or space risk, are heavily influenced by the classification and registration of the vehicle under air law and/or space law.[279] Thus, the resolution of apparent conflicts between international air law and international space law is essential not only to the nascent aerospace transport and launch service industries, but also to the insurance sector that supports them.

2.9 Conclusions

The foregoing chapter serves to introduce some advancing technologies and their applications which are driving synergies in activities in airspace and outer space. As will be illustrated below, these technological advancements run the risk of giving rise to conflicts between air and space law. Jurists engaged in questions regarding the application of air law and space law are faced with the difficulty that aerospace planes incorporate features of both airplanes and launch vehicles, and that they are capable of functioning in both atmospheric airspace as well as above the lowest perigee of artificial satellites. These variables—vehicle type and area of activity—are the basic components of jurists' considerations. An increased frequency of launches and reentries due to the

[275] D. Webber, "Space tourism" *supra* note 196 at 142-143.
[276] Statement of Pete Bahn, Founder to TGV rockets, as reported by Denis Bensoussan, "Space tourism risks: A space insurance perspective" (2010) 66 Acta Astonautica 1663 [hereinafter "Bensoussan"].
[277] Peter Walker, "Three die in Branson's space tourism tests" The Guardian (27 July 2007) online: http://www.theguardian.com/uk/2007/jul/27/spaceexploration.world
[278] Ana Cristina van Oijuizen Galhego Rosa, "Aviation or space policy: New challenges for the insurance sector to private human access to space" (2013) 92 Acta Astronautica 235.
[279] Bensoussan *supra* note 276 at 1634-1635.

proliferation of reusable technology, as well as to a growing small satellite launch market, is creating the potential for more accidents. Thus, issues of both safety and financial security are compelling a better understanding of the place of these burgeoning activities within the air and space law regimes.

Chapter Three: Jenks on the conflict of law-making treaties, the ILC Report on fragmentation, air and space law as 'self-contained regimes'

"*For why do we compare? To find cases where existing rules can be applied, to lighten the work of lawmakers. And in the air there will certainly be cases where maritime rules apply."*—J. F. Lycklama à Nijeholt[280]

As introduced above in the Prologue of this thesis, the ILC Report on the fragmentation of international law acknowledges that Jenks sketched the background of fragmentation over one-half century ago in an article entitled, "The Conflict of Law-Making Treaties."[281] Curiously, the ILC Report begins by concluding that there is little to add to Jenks' analysis.[282] Thus, Jenks' conception of fragmentation will be granted special attention.

Notwithstanding the ILC's initial conclusion that there is little to add to Jenks' analysis, the authors of the ILC Report continue to examine the phenomenon identified by Jenks, for "present fragmentation contains many new features, and its intensity differs from analogous phenomena in the past."[283] In this vein, the ILC sought to know, "What is the nature of specialized rule-systems? How should their relations *inter se* be conceived? Which rules should govern their conflict?"[284]

This chapter explores the foregoing questions with an eye toward apparent conflicts between air and space law and with the aim of contextualizing air and space law regimes within the framework of the ILC Report. It begins by examining Jenks' conception of the conflict of law-making treaties. Next it turns its attention to the ILC Report on the fragmentation of international law, exploring the concept of fragmentation and the ICL's process for the identification and resolution of conflicts between rules or sets of rules. Finally, Chapter Three examines the concept of 'self-contained' regimes, as described by the ILC, illustrating that air and space law are specialized, 'self-contained' regimes.

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[280] J. F. Lycklama à Nijeholt, *Air Sovereignty* (The Hague: Martinus Nijhoff, 1910) at 21.
[281] ILC Report *supra* note 5 at 10 (citing Jenks, *supra* note 18).
[282] *Ibid* at 10.
[283] *Ibid* at 15.
[284] *Ibid* at 245.

3.1 Jenks on conflicts of law-making treaties and the presumption against conflicts

Jenks did not use the term 'fragmentation' but described the phenomenon as "conflicts of law-making treaties."[285] He acknowledged scholarship on the matter stretching back to Grotius, and including Pufendorf and Vattel.[286] For Jenks, conflicts are an unavoidable incident of international law.[287] He noted that, "law-making treaties are tending to develop in a number of historical, functional and regional groups which are separate from each other and whose mutual relationships are in some respects analogous to those of separate systems of municipal law."[288] Building upon this analogy, Jenks sought to identify the nature and scope of conflicts in law-making treaties, as well as to outline ways in which they can be either avoided or resolved in the vein of private international law.[289] These will be outlined in more detail below.

Jenks defined a conflict as a direct incompatibility where a party to two treaties cannot simultaneously comply with its obligations under both instruments.[290] He described myriad ways in which conflicts can arise but identified conflicts between multipartite instruments as the source of real difficulty in seeking a resolution to a conflict.[291] By way of an example that is rather *apropos* for this study, Jenks noted conflicts between the Paris Convention of 1919 and the Havana Convention of 1928 that made simultaneous compliance with both instruments virtually impossible.[292]

In addition to conflicts arising out of direct incompatibility, Jenks identified the phenomenon of divergence between treaty provisions dealing with the same subjects.[293] He described divergence as the situation where two law-making treaties with a number of common parties deal with the same subject from different points of view, are applicable in different circumstances, or embody obligations more far-reaching than, but not

[285] Jenks *supra* note 18 at 401.
[286] *Ibid* at 405.
[287] *Ibid* at 402.
[288] *Ibid* at 403.
[289] *Ibid* at 405.
[290] *Ibid* at 426.
[291] *Ibid* at 404.
[292] *Ibid* at 410.
[293] *Ibid* at 425.

inconsistent with, one another.[294] He explained that such divergences, although not leading to a direct incompatibility, can nevertheless defeat the object of one or both of the instruments.[295] He further explained that in the case where a party to two instruments is prevented from taking advantage of a provision of one of the instruments because it would entail a violation of or failure to comply with the other instrument, such divergence is as serious as a conflict.[296] At stake, for Jenks, is uniformity, which he describes as "only one of the objectives of international legislation…but…generally an important and often the main objective."[297] As may become apparent in the review below of the ILC Report, these divergences, which might be thought of as *de facto* conflicts, embody much of what has come to be known as 'fragmentation'.

In identifying measures for resolving conflicts, Jenks first puts forth a general presumption against conflict.[298] He explains that this presumption is really an application the fundamental principles of treaty interpretation: the principle of reasonableness, the principle of good faith and the presumption of consistency with international law.[299] He is careful to note, however, that while the presumption against conflict can eliminate certain potential conflicts, it cannot eliminate the phenomenon of conflict itself.[300] Next he points out that many conflicts can be avoided by precautions, such as inter-agency cooperation, taken in conjunction with the drafting of an instrument.[301] Finally he defines principles of conflict resolution, which include the hierarchic principle, the *lex prior* principle, the *lex posterior* principle, the *lex specialis* principle, the autonomous operation principle, the pith and substance principle and the legislative intention principle.[302] These principles will be considered in further detail in Chapter Five of this thesis.

It is important to note that the presumption against conflict works to resolve apparent conflicts that do not rise to the level of actual conflicts. This is done prior to the

[294] *Ibid* at 425-426.
[295] *Ibid* at 426.
[296] *Ibid*.
[297] *Ibid* at 427.
[298] *Ibid* at 427-428.
[299] *Ibid* at 428.
[300] *Ibid* at 429.
[301] *Ibid* at 429-433.
[302] *Ibid* at 436.

employment of conflict resolutions techniques.[303] This point is elaborated by the ILC Report in its process for conflict ascertainment and principle of systematic interpretation, which are discussed next.

3.2 The ILC Report on the fragmentation of international law: Conflict ascertainment and the harmonization of norms

As described in the Prologue to this thesis, the ILC defines fragmentation as "the rise of specialized rules and rule-systems that have no clear relationship to each other," and attributes to globalization the emergence of technically specialized regimes and specialized intergovernmental organizations.[304] The ILC Report notes both institutional and substantive problems with fragmentation, "The former having to do with the competence of various institutions applying international legal rules and their hierarchical relations *inter se*."[305] The ILC characterizes the latter as, "the splitting up of international law into highly specialized 'boxes' that claim relative autonomy from each other and from the general law." [306] The ILC Report did not examine institutional fragmentation, but limited itself to questions of substantive problems, seeking to understand the effects of specialization and how the relationship between such boxes should be conceived.[307]

The ILC Report elaborates Jenks' conception of conflicts as both direct incompatibility and divergence by describing a spectrum of conflicts, as follows.[308] At one end of the spectrum, laws invalidate each other. At other times their priority is relative: one is set aside temporarily while often still influencing the interpretation and application of the other law. At other times, the laws act concurrently, supporting each other. Finally, at the other end of the spectrum, there is no conflict or divergence. This spectrum of conflict is further elaborated in a discussion on what constitutes a conflict, as illustrated below.

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[303] *Ibid* at 429.
[304] ILC Report *supra* note 5 at 244-245.
[305] *Ibid* at 13.
[306] *Ibid* at 13-14.
[307] *Ibid*.
[308] *Ibid* at 16.

The ILC Report notes that the question of 'what is a conflict' can be approached from two perspectives: the subject-matter of the relevant rules or the legal subjects bound by them.[309] This conception of conflict is not unlike debates on whether air law and space law apply to activities, geographic areas or the vehicles that pass through them.[310] The ILC Report notes that the subject-matter criterion appears to be embraced by Article 30 of the Vienna Convention on the Law of Treaties (VCLT), which deals with the "Application of successive treaties related to the same subject matter."[311] In a section of the ILC Report dedicated to conflicts between successive norms, the ILC states that, "[T]he test for whether two treaties deal with the 'same subject matter' is resolved through the assessment of whether the fulfillment of the obligation under one treaty affects the fulfillment of the obligation under another."[312] The ILC is critical, however, of the notion that the determination of the application of a law or the existence of a conflict can be based upon subject-matter alone. [313] The ILC's criticism is as follows.

According to the ILC Report, it is sometimes suggested that the subject-matter criterion removes the applicability of Article 30 to specialized regimes dealing with different subject matters, for example, environmental law or trade law.[314] However, this is tempered by the ILC's assertion that "…the characterizations ('trade law', 'environmental law') have no normative value *per se*. They are only informal labels that describe the instruments from the perspective of different interests or different policy objectives."[315] The ILC Report continues:

> If conflict were to exist only between rules that deal with the "same" subject-matter, then the way a treaty is applied would become crucially dependent on how it would classify under some (presumably) pre-existing classification scheme of different subjects. But there are no such classification schemes. Everything would be in fact dependent on argumentative success in pigeon-

[309] *Ibid* at 17.
[310] See, Chapter 2 *supra*.
[311] *Vienna Convention on the Law of Treaties,* 23 May 1969, 1155 UNTS 331 [hereinafter, "VCLT"].
[312] ILC Report *supra* note 5 at 130.
[313] *Ibid* at 17-18.
[314] *Ibid* at 17.
[315] *Ibid* at 17.

> holing legal instruments as having to do with "trade", instead of "environment"….[316]

By way of example, the ILC Report offers that for maritime insurers, the maritime carriage of chemical substances is about carriage, while for an environmental organization, it is about the environment.[317] Thus, in the absence of rules on classification, "any classification relates to the interest from which the rules are described [and] it might be possible to avoid the appearance of conflict by what seems like a wholly arbitrary choice between what interests are relevant and what interests are not."[318] The ILC Report concludes that the subject-matter criterion "leads to a *reductio absurdum*. [I]t cannot be decisive in the determination of whether or not there is a conflict."[319]

The ILC identifies the employment of the subject-matter criterion as only an initial step, which is fulfilled where "two different rules or sets of rules are invoked in regard to the same matter or…seem to point to different directions in their application by a party."[320] The ILC Report elaborates this concept of pointing in different directions by embracing Jenks' distinction between direct conflicts and divergences. Of the former, the ILC notes that, "conflict exists if it is possible for a party to two treaties to comply with one rule only by failing to comply with another rule."[321] Of the latter, the ILC Report states, "A treaty may sometimes frustrate the goals of another treaty without there being any strict incompatibility between their provisions."[322] Thus, the ILC defines a conflict as "a situation where two rules or principles suggest different ways of dealing with a problem.," effectively condensing Jenks differentiation into one broad definition.[323]

The foregoing pertains to conflict ascertainment. Therefore, the first step in conflict resolution is "an initial assessment of what might be the applicable rules and

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[316] *Ibid* at 18.
[317] *Ibid*.
[318] *Ibid*.
[319] *Ibid*.
[320] *Ibid*.
[321] *Ibid* at 19.
[322] *Ibid*.
[323] *Ibid*.

principles."[324] Next, harmonization is attempted by interpreting apparent conflicts so as to render obligations as compatible.[325] In embracing this next step, the ILC appears to be applying Jenks' first principle for conflict resolution: a strong presumption against normative conflict. The ILC notes, however, that while harmonization can resolve apparent conflicts, it cannot resolve genuine conflicts.[326] Where harmonization is not plausible, conflict-solution techniques are employed to establish definitive relationships of priority between norms: the norm that is set aside remains in the background, "continuing to influence the interpretation and application of the norm to which priority has been given."[327]

This process of resolution, however, is not as linear as described above. The ICL notes that, "Interpretation does not intervene only once it has already been ascertained that there is a conflict. Rules appear to be compatible or in conflict *as a result of interpretation*."[328] Thus, even in ascertaining whether a conflict exists, classic conflict resolution tools, some described by Jenks and some codified in the VCLT—*i.e.*: reference to normal meaning, party will, legitimate expectations, good faith, subsequent practice, the object and purpose and principle of effectiveness—are employed.[329] Where a definite priority needs to be established, then the principles of *lex specialis* and *lex posterior* come into play.[330] These are applied as guidelines, however, and not mechanically, in order to suggest "a pertinent relationship between the relevant rules in view of the need for consistency of the conclusion with the perceived purposes of functions of the legal system as a whole."[331] This the ILC Report identifies as the 'principle of systematic interpretation.'[332]

The principle of systematic interpretation does not "merely restate the applicability of general international law in the operation of particular treaties. It points to

[324] *Ibid* at 24.
[325] *Ibid* at 207.
[326] *Ibid* at 27 (quoting Christopher J. Borgen, "Resolving Treaty Conflicts" (2005) 37 George Washington Law Review pp. 606-610).
[327] ILC Report *supra* note 5 at 25, 207.
[328] *Ibid* at 207 (emphasis in the original).
[329] *Ibid* at 208.
[330] *Ibid*.
[331] *Ibid* at 25, 208.
[332] *Ibid* at 208.

the need to take into account the normative environment more widely."[333] The ILC Report identifies this as the purpose of Article 31(3)(c) of the VCLT, which states, *inter alia*, that when interpreting a treaty, "There shall be taken into account…any relevant rules of international law applicable in the relations between the parties." It requires "the integration into the process of legal reasoning…of a sense of coherence and meaningfulness."[334]

In unpacking the meaning of Article 31(3)(c), the ILC takes note of several important features. The reference to "rules of international law" precludes resort "to broader principles or considerations which may not be firmly established as rules…."[335] The ever-nebulous 'policy', so important to international relations, springs to mind as something that might be precluded. Nevertheless, the reference to 'rules of international law' incorporates all sources of international law, including general principles of international law and, where applicable, other treaties.[336] Finally and perhaps the most obviously, the rules must be relevant and applicable to the parties.[337]

The ILC notes that the principles of *lex specialis* and *lex posterior* are nowhere mentioned or employed in Articles 31 and 32 of the VCLT—the fundamental provisions relating to treaty interpretation. As discussed above, these principles come into play only after the necessity of prioritizing conflicting norms arises. They are addressed in more detail in the Chapter Four of this thesis, which deals with conflict resolution techniques employed where a direct conflict (in the parlance of Jenks) or an incompatibility (in the parlance of the ILC Report) exists.

The foregoing section illustrated the phenomenon of fragmentation and identified the process of conflict ascertainment and the principle of systematic interpretation for conflict resolution as defined by the ILC Report. Specifically, when evaluating an apparent conflict between specialized regimes, the first step is to ascertain whether two different rules or rule sets apply to the same subject matter and whether they suggest

[333] *Ibid* at 209.
[334] *Ibid*.
[335] *Ibid* at 214.
[336] *Ibid* at 215.
[337] *Ibid*.

different ways of dealing with an issue. Next, harmonization of the divergent rules is attempted by interpreting apparent conflicts so as to render obligations compatible. In this regard, a strong presumption against normative conflict is employed. These techniques, beginning with identifying the applicability of air and space law to suborbital flight, are applied in Chapter Four. Before doing so, the concept of 'self-contained' regimes is explored in a brief excursus. It is deemed as an excursus because the relevance of such designation as 'self-contained' is questionable, as is discussed below.

3.3 Excursus on air and space law as specialized, 'self-contained' regimes

The ILC Report describes a subset of specialized regimes referred to as 'self-contained.' Discussed in more depth, below, this term has been employed by both the Permanent Court of International Justice (PCIJ) and International Court of Justice (ICJ) to describe certain types of specialized regimes. The significance of this designation and its effects on conflicts between rules or rule sets is, however, unclear. It appears to have most relevance to a choice of law for secondary rules that arise upon the breach of a primary obligation. At least one author, however, identifies the 'self-perpetuating' nature of self-contained regimes when accompanied by an international administrative body.[338] She remarks:

> The institutions and tribunals of regimes are set up in order to administer the continued application of their specific rules and principles. Born of the rationality embodied in a given regime's particular hierarchies of norms and values, its implementation bodies deal with issues formulated on the basis of that rationality. Their judgements are made with the aim of perpetuating the values expressed in their methods of reasoning. In this way, regimes perpetuate themselves.[339]

The concept of the self-perpetuation of self-contained regimes will be of some relevance to a discussion of institutional fragmentation in Chapter Six. Thus, the notion of self-

[338] Alexandra Khrebtukova, "A Call to Freedom: Towards a Philosophy of International Law in an Era of Fragmentation" (2008) 4(1) J Int'l L & Int'l Rel 51, 63.
[339] *Ibid* at 64.

contained regimes is explored in more depth here, and it is illustrated that both air and space law can be considered as 'self-contained.'

According to the ILC Report, the notion of a self-contained regime can be understood in three senses: a narrow sense, as defined by the ILC's Commentary to article 55 (*lex specialis*) of the Draft Articles on the Responsibility of States (ARS) for Internationally Wrongful Acts[340]; a broader sense, encompassing "interrelated wholes of primary and secondary rules, sometimes also referred to as 'systems' or 'subsystems' of rules that cover some particular problem differently from the way it is covered under general law"; and a further extension of this broader sense, describing "whole fields of functional specialization" as self-contained.[341] Each of these will be examined to illustrate that both international air law and international space law should be considered as self-contained regimes.

In regards to self-contained regimes in the narrow sense, the ILC's Commentaries to Draft ARS, "defined self-contained regimes as a subcategory (namely a "strong form") of *lex specialis* within the law of State responsibility."[342] The ILC's Commentaries to Draft ARS note that, "When defining the primary obligations that apply between them, States often make special provisions for the legal consequences of breaches of those obligations…."[343] Such regime constitutes "… a special set of secondary rules under the law of State responsibility that claims primacy to the general rules concerning consequences of a violation."[344] By default, then, a "weaker" form of *lex specialis* is a special set of primary obligations, the breach of which is resolved by general international law, including the ARS and other customary norms.[345]

International air law contains specialized rules for breach of an international obligation, and therefore, might be described as a self-contained regime. Chapter XVIII

[340] UN, International Law Commission, *Commentaries to the Draft Articles on Responsibility of States for Internationally Wrongful Acts*, UN Doc. A/56/10/chp.IV.E.2/Sup.No.10 (2001) [hereinafter "ILC Commentaries to Draft ARS"].
[341] ILC Report *supra* note 5 at 68.
[342] *Ibid* at 66.
[343] ILC Commentaries to Draft ARS *supra* note 340 at 356.
[344] ILC Report *supra* note 5 at 68.
[345] ILC Commentaries to Draft ARS *supra* note 340 at 358.

of the Chicago Conventions establishes the quasi-judicial role of the ICAO Council for the settlement of disputes. Article 84 of the Chicago Convention states, *inter alia*:

> If any disagreement between two or more contracting States relating to the interpretation or application of this Convention and its Annexes cannot be settled by negotiation, it shall, on the application of any State concerned in the disagreement, be decided by the Council.

This method of adjudication has been used on five occasions wherein States have alleged breaches of international obligations owed under the Chicago Convention.[346] Article 85 establishes a system for appeal from a Council settlement to either an *ad hoc* arbitral tribunal or to the PCIJ—today, such appeals being heard by the ICJ. In addition to, and perhaps more important than the dispute resolution mechanism provided for under the Chicago Convention, most bilateral air service agreements include provisions for the settlement of disputes, including negotiation, consultation, mediation, conciliation and/or arbitration.[347] Thus, international air law contains a method for the resolution of disputes arising out of the breach of primary obligations owed under its constitutive treaty and bilateral air service agreements.

It is less clear whether international space law establishes specialized secondary obligations arising out of a breach of primary obligations. Article VII of the Outer Space Treaty renders States "internationally liable for damage to another State Party to the Treaty…." The Liability Convention builds on Article VII of the Outer Space Treaty, creating a system of absolute liability for damage caused to the surface of the Earth and fault-based liability for damages caused elsewhere than on the surface of the Earth.[348] According to Bin Cheng, these obligations are not secondary. Liability under Article VII of the Outer Space Treaty and the Liability Convention is a primary obligation arising out of the consent of Parties to be bound to the obligation to pay compensation for damages.[349]

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[346] Dempsey *supra* note 50 at 703-719.
[347] *Ibid* at 672-675.
[348] Liability Convention *supra* note 112 at Articles II and III.
[349] Bin Cheng, "Article VI of the 1967 Outer Space Treaty Revisited" (1998) 26 J Space L 7, 11.

Article VI of the Outer Space Treaty, moreover, imposes 'international responsibility' for national activities carried out in outer space. This provision, in conjunction with Article III of the Outer Space Treaty, which states, *inter alia*, "State Parties…shall carry on activities in the exploration and use of outer space, in accordance with international law," directly incorporates, into the space law regime, customary international law as embodied by many of the ARS. In addition, Article XII of the Liability Convention states, *inter alia*, "The compensation…for damages under this Convention shall be determined in accordance with international law and the principle of justice and equity, in order to provide such reparation in respect of the damage as will restore the person…[or] State…to the condition which would have existed if the damage had not occurred." This is a restatement of the measure of damages announced by the PCIJ in the *Chorzów Factory* case, illustrating the significance of customary international law for the purposes of secondary obligations arising out of a breach of primary obligations in international space law.[350]

Given the foregoing provisions of international space law, it is questionable whether space law establishes both primary obligations and secondary obligations that arise out of a breach of these primary obligations. The failure to pay compensation owed under the Liability Convention would constitute a breach of a primary obligation giving rise to a secondary obligation to make reparations for such breach.[351] Unless a system of primary obligations for the payment of compensation for damages can be cast as a regime supplanting customary international norms for obligations arising out of a breach of international obligations, then it appears that international space law is not a self-contained regime under the narrow sense, but is actually a 'weaker' form of *lex specialis*. Nevertheless, as described below, both international air law and international space law can be classified as self-contained regimes under the broader sense, thus rendering this conclusion potentially irrelevant.

Self-contained regimes, as understood under the broader sense, are defined in the ILC Report as an "interrelated cluster (set, regime, subsystem) of rules on a limited

[350] *Case of the Factory at Chorzów (Germany v Poland)* (1928) PCIJ (Ser A) No 17 at 47.
[351] UN International Law Commission, *Articles on Responsibility of States for Internationally Wrongful Acts*, UN Doc A/56/83 (2001) at Articles 1 and 31.

problem together with the rules for the creation, interpretation, application modification or termination…of those rules."[352] As referenced by the ILC Report, this categorization is drawn from the *Case of the S.S. Wimbledon*, wherein the PCIJ described a primary set of specialized obligations as a 'self-contained regime', notwithstanding the absence of a specialized set of secondary obligations.[353] As is illustrated below, both air and space law fall under this broader category of self-contained regimes.

It has been illustrated that international air law creates a method for dealing with the breach of obligations owed under the Chicago Convention.[354] In addition, Chapter VI of the Chicago Convention creates a system allowing ICAO to "adopt and amend, from time to time, as may be necessary, international standards and recommending practices and procedures…" dealing with a host of aviation issues, including, "…such other matters concerned with the safety, regularity, and efficiency of air navigation as may from time to time appear appropriate."[355] Article 3 describes the Convention's applicability only to civil aircraft. Moreover, Articles 94 allows and provides a procedure for its amendment. Article 95 governs its denunciation. Thus, international air law provides for the creation, interpretation, application, modification and termination of its rules. These criteria indicate that international air law is a self-contained regime under the broader sense of the term, as described by the PCIJ.

International space law is replete with provisions that govern its application. Examples include: Article I of the Outer Space Treaty, governing "The exploration and use of outer space, including the Moon and other celestial bodies…";[356] the Rescue Agreement, applying to personnel and spacecraft suffering accidents, distress, emergencies and unintended landings;[357] Articles I of the Liability Convention and Registration Convention, making space law applicable to a "launching State" and "space objects";[358] Article II of the Registration Convention, making it applicable to objects

[352] ILC Report *supra* note 5 at 81.
[353] *Ibid* at 67 (citing: *Case of the S.S. Wimbledon* (1923) PCIJ (Ser A) No 1 at 23-24.).
[354] Chicago Convention *supra* note 85.
[355] *Ibid* at Article 37.
[356] Outer Space Treaty *supra* note 107.
[357] Rescue and Return Agreement *supra* note 111 at Articles 1-5.
[358] Respectively: Liability Convention *supra* note 112; Registration Convention *supra* note 113.

launched "into Earth orbit or beyond." Articles XV and XVI of the Outer Space Treaty create provisions for its modification and termination. Unlike international air law, however, international space law did not create an administrative entity such as ICAO, endowed with the power to create and/or modify rules for outer space. Arguably, COPUOS fills this role through its progressive development of international space law. As a committee organized under the General Assembly, however, its determinations are not quasi-legislative in the same manner as ICAO SARPS. Nevertheless, international space law appears to meet the broader sense of the definition of a self-contained regime as defined by the PCIJ in the *Case of the S.S. Wimbledon*, in that it creates a specialized set of primary obligations for space-related activities.

Finally, the ILC defines 'self-contained' regimes, as understood in a third and even wider sense, as "…whole fields of functional specialization…[wherein] special rules and techniques of interpretation and administration are thought to apply."[359] Space law is expressly named in the ILC Report as one such field, "often identified as 'special' in the sense that rules of general international law are assumed to be modified or even excluded in their administration."[360] Thus, both international air law and international space law are self-contained regimes under this broadest sense of the term.

As mentioned above, it is unclear what effect the classification of international air law and international space law as self-contained regimes has on their interpretation. According to Crawford, the principle of *lex specialis* of Article 55 of ARS is applicable to both self-contained regimes and 'weaker' specialized regimes.[361] Where such special rules create legal consequences for the breach of international obligations, "The question then is whether those provisions are exclusive."[362] According to Dempsey, aviation disputes are increasingly resolved through avenues such as the WTO dispute settlement mechanism, the European Court of Justice and the International Court of Justice.[363] By mandating that activities in space be carried out "in accordance with international law"[364]

[359] ILC Report *supra* note 5 at 68.
[360] *Ibid*.
[361] ILC Commentaries on ARS *supra* note 340 at 356.
[362] *Ibid*.
[363] Dempsey *supra* note 50 at 666-667.
[364] Outer Space Treaty *supra* note 107 at Article III.

and that States "bear international responsibility for national activities in outer space,"[365] international space law expressly incorporates customary norms for the pacific settlements of disputes arising out of the breach of an international obligation. Thus, it can safely be concluded that, at least in terms of dispute settlement and State responsibility, although international air law and international space law are self-contained regimes, they are not exclusive.

In regards to specialized regimes in the third, broadest sense, described above, the ILC Report states that their effect is predominantly to provide "interpretive guidance and direction that in some way deviates from the rules of general international law."[366] Contextualizing and endorsing special regimes, the ILC Report states:

> The rationale of special regimes is the same as that of *lex specialis*. They take better account of the particularities of the subject-matter to which they relate; they regulate it more effectively than general law and follow closely the preferences of their members.[367]

After identifying definitions of self-contained regimes and exploring their meaning, the ILC Report concludes, "But no regime is self-contained."[368] This statement is not a denial of their existence—which existence the ILC Report had already illustrated—but a contextualization of their meaning and placement within a larger framework of pubic international law, with general international law in the backdrop. The ILC explains that:

> Even in the case of well-developed regimes, general law has at least two types of function. First, it provides the normative background that comes in to fulfil aspects of its operation not specifically provided by it. ***Second, the rules of general international law also come to operate if the special regime fails to function properly.[369]

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[365] *Ibid* at Article VI.
[366] ILC Report *supra* note 5 at 70.
[367] *Ibid* at 99.
[368] *Ibid* at 100.
[369] *Ibid*.

Here, the ILC again appears to embrace Jenks' notion of a "common law of mankind", which suggests a period of confidence in fragmentation (diversification) similar to the period following 1960, as identified by Martineau.[370] Emphasizing this, the ILC Report states, "…the term 'self-contained regime' is a misnomer. No legal regime is isolated from general international law."[371]

Thus, the ILC outlines the relationship of a specialized regime to general international law, identifying three ways in which they link up. The ILC states:

> (2) Because a special regime is "special", it does not provide all the conditions of its operation. General law provides resources for this purpose. *** General international law influences the operation of a special regime above all in three distinct ways:
>
> (a) General international law (that is, general custom and general principles of law) fulfils gaps in the special regime and provides interpretive direction for its operation;
>
> (b) Most of the VCLT (including, above all, article 31 and 32) is valid as customary international law and applicable in the sense referred to in (a);
>
> (c) General international law contains principles of hierarchy that control the operation of the special regime…providing resources for determining in case of conflict what regime should be given priority or, at least, what consequences follow from the breach of the requirements of one regime by deferring to another (usually State responsibility)….[372]

Although these precepts pertain to the relationship between a special regime and general international law, they will play a vital role where two specialized regimes conflict and can heavily influence a resolution of apparent conflicts between air and space law.

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[370] See: Chapter 1 *supra* at subpart 1.4; Martineau *supra* note 12 at 20-21.
[371] ILC Report *supra* note 5 at 100.
[372] *Ibid* at 101.

3.4 Conclusions

The foregoing Chapter renders apparent that, although international air law and international space law are distinct, autonomous and special regimes, perhaps even self-contained, they are nevertheless subject to the rules of interpretation provided for under general international law when a conflict between two such regimes arises. These rules include the sketch of conflict resolution techniques identified by Jenks and incorporated into the ILC Report on the fragmentation of international law. Specifically, when evaluating an apparent conflict between air and space law, the first step is to ascertain whether two different rules regard the same subject matter and indicate different ways of dealing with an issue. Next, harmonization of the divergent rules is attempted by interpreting apparent conflicts so as to render obligations compatible. In this regard, a strong presumption against normative conflict is employed. Where harmonization is not possible, conflict resolution techniques are then employed to establish definitive relationships of priority between the rules. These techniques include those identified by Jenks, in particular the *lex specialis* and *lex posterior* principles as elaborated by the ILC Report, and will be discussed in further detail in Chapter Five. Finally, the rule that is set aside remains in the background and continues to influence the interpretation and application of the rule to which priority was given. In the next Chapter, this process for systematic interpretation is used to ascertain conflicts between air and space law.

Chapter Four: Ascertaining and harmonizing conflicts between air and space law

"Whenever human beings commence some new form of activity they are bound to be inconvenienced to some extent by constitutions, laws and decisions which have been made to fit the older activities…. We must, however, in building up the law of aviation adapt ourselves to things as they are and particularly to all existing laws of property rights and liabilities even though these matters were all determined at times when men were merely dreaming about flying."—Chester W. Cuthell[373]

As described in Chapter Three of this thesis, the first step in conflict resolution is conflict ascertainment. This involves examining two different rules or rule sets to determine whether they apply to the same subject matter, and if so, whether they suggest different ways of dealing with an issue. Thus, air and space law will be examined below to illustrate their applicability to suborbital flight. After illustrating the applicability of air and space law to suborbital flight, the extent of such applicability and apparent conflicts will be addressed under a presumption against conflicts in order to harmonize provisions that do not rise to the level of an incompatibility. Conflicts that cannot be harmonized will be addressed in Chapter Five, wherein conflict resolution techniques, as identified by Jenks and elaborated by the ILC Report, will be explored.

4.1 The applicability of international air law to suborbital flight

As illustrated in Chapter One of this thesis, the Chicago Convention is the constitutive treaty for the international regime governing commercial, civil aviation. It speaks of 'airspace' and 'aircraft,' in the following ways.[374] Article 1 of the Chicago Convention recognizes that, "every State has complete and exclusive sovereignty over the airspace above its territory." Article 12 of the Convention states, "Each contracting State undertakes to keep its own regulations…uniform, to the greatest extent possible, with those established…under this Convention." Moreover, Article 12 mandates that, "Over the high seas, the rules in force shall be those established under this Convention." Finally, Article 96(b) defines 'international air service' as that "which passes through the air space over the territory of more than one State." Thus, the Chicago Convention is

[373] Chester W. Cuthell, "Development of Aviation Laws in the United States" (1930) 1 Air L. Rev 86 (Address to the annual meeting of the New York State Bar Association by Cuthell, then Chairman of the Committee Aeronautical Law, American Bar Association (1929)).
[374] Chicago Convention *supra* note 85.

applicable to international airspace, as well as to domestic airspace via State implementation of the norms of the Convention, particularly where a vehicle passes over more than one State.

The Chicago Convention does not define the term aircraft, which has been left to its Annexes. Aircraft are defined as "any machine that can derive support in the atmosphere from reactions of the air other than the reactions of the air against the Earth's surface."[375] Article 3(a) limits the application of the Convention to only civil aircraft and states that it shall not be applicable to State aircraft. Nevertheless, Article 3(c) prohibits State aircraft from flying over the territory of another State without authorization. As Dempsey and Mineiro point out, the effect of Article 3(c) is that the Convention does apply in limited ways to State aircraft, notwithstanding Article 3(a).[376] Thus, the Convention applies to civil aircraft that derive support from the air and, in a limited way, to State aircraft.

The Outer Space Treaty does not differentiate between State and civil space objects.[377] Haanappel identifies Article 3 of the Chicago Convention as perhaps the most significant difference between air law and space law.[378] Article 3(b) describes State aircraft as those "used in military, customs and police services" but the definition is not exclusive. Prior to commercial suborbital activities, the only space objects that could derive support from the air were the US Space Shuttle and Soviet Buran.[379] They fit the definition of aircraft under Annex 7 of the Chicago Convention, but could be described as State vehicles beyond the purview of the Chicago Convention. Therefore, the limited application of the Chicago Convention to civil aircraft served to insulate the Convention from potential conflicts with international space law, particularly the Outer Space Treaty, by removing questions of its applicability to State aerospace planes. A question remains

[375] Chicago Convention *supra* note 85 at Annexes 2, 7, and 11.
[376] Paul S. Dempsey and Michael C. Mineiro, "ICAO's Legal Authority to Regulate Aerospace Vehicles" Proc. 3rd IAASS Conference (22 October 2008), online: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1289547 1, fn. 1 [hereinafter, "Dempsey and Mineiro"].
[377] Outer Space Treaty *supra* note 107.
[378] Haanappel *supra* note 66 at 11.
[379] Chapter 2 *supra* at section 2.3.

as to whether the Article 3(c) prohibition of overflight without authorization would apply to these space objects that derive support from the air.

Article I of the Outer Space Treaty provides freedom of use of outer space. So long as a space object stays in orbit, there is no issue with movement over a subjacent State—no authorization is needed.[380] Some scholars have argued that the freedom of use of outer space necessarily includes access to space and creates a right of innocent passage for objects traversing foreign airspace during launch and re-entry.[381] ICAO has rejected the notion of innocent passage for space objects on the basis of the Chicago Convention. In 1986, ICAO prepared a Draft Brief for the ICAO Observer to the Legal Subcommittee of COPUOS, in reference to the issue of the definition and delimitation of outer space.[382] The Brief stated:

> The right of innocent passage of spacecraft through the sovereign airspace is a proposal *de lege ferenda* (i.e. a legislative proposal not reflecting the existing law); such right does not exist under the present international law of the air; an unconditional right of passage through the sovereign airspace does not exist even with respect to civil aircraft and is specifically subject to a special authorization with respect to State aircraft and pilotless aircraft.[383]

Thus, at least under ICAO's interpretation of the Chicago Convention, a right of innocent passage through sovereign airspace does not exist for space objects—authorization under such circumstances is necessary.

Indeed, there have been instances where the US Space Shuttle passed over the Soviet Union upon re-entry, although at altitudes greater than those achievable by aircraft. Under those circumstance, the US notified the Soviet Union of the impending overflight, but both the US and Soviet Union agreed that such notifications were

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[380] Chapter 1 *supra* at section 1.3; Cheng *supra* note 90 at 36.
[381] For a summary of scholarly treatment of this issue, see: C. Brandon Halstead, "Prometheus Unbound? Proposal for a New Legal Paradigm for Air Law and Space Law: Orbit Law" (2010) 36 J Space L 143, 158.
[382] Draft Brief for the ICAO Observer to the Legal Subcommittee of the UN Committee on the Peaceful Uses of Outer Space, ICAO Doc. C-WP/8158 (15 January 1986)
[383] Id.

"'voluntary and prompted by international courtesy.'"[384] Benkö and Plescher point to these acts as potential State practice and *opinio juris* regarding the vertical limits of State sovereignty—the rationale being that if the vehicle had passed through the sovereign airspace of the subjacent State, then authorization would have been required pursuant to Articles 1 and 3(c) of the Chicago Convention. This conclusion presumes that the Chicago Convention would have applied to the spacecraft had it entered the subjacent State's airspace. There may be, however, another related significance. The act of notification (as opposed to seeking authorization) and the statements that such notifications were voluntary could be construed as State practice and *opinion juris* on the inapplicability of the Chicago Convention, particularly Article 3(c), to space objects, regardless of whether they derive support from the air and regardless of whether they enter the airspace of a subjacent State.

The foregoing discussion serves to illustrate that international air law, particularly the Chicago Convention, applies to aircraft and airspace, but that it is unclear whether it applies to space objects. At this point, it is worth revisiting the description of suborbital vehicles in Chapter 2 of this thesis. Suborbital vehicles include both winged vehicles that execute horizontal landings deriving support from reactions with the air, as well as Vertical Take-off, Vertical Landing (VTVL) vehicles (*i.e.*: a rocket and capsule configuration) that do not derive support from the air.[385] The Chicago Convention, according to the definition of aircraft, would not apply to the latter. Nevertheless, these vehicles pass through airspace. In this regard, the scope of international air law is broad, as is illustrated by ICAO's mandate, set forth below. ICAO has been established with the following objectives, *inter alia*:

> …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;

[384] Benkö & Plescher, *supra* note 176 at 33 (quoting: UN Doc. A/AC.105/C.2/L.189 (20 March 1992)).
[385] Chapter 2 *supra* at subparts 2.3 & 2.4.

(b) Encourage the arts of aircraft design and operation for peaceful purposes;

(c) Encourage the development of airways, airports, and air navigation facilities for international civil aviation;

(d) Meet the needs of the people of the world for safe, regular, efficient and economical air transport;

* * *

(h) Promote safety of flight in international air navigation;

(i) Promote generally the development of all aspects of international civil aeronautics.[386]

Because suborbital vehicles—both those that derive support from the air and those that do not—pass through airspace, they pose a safety risk to international civil aviation. The regulation of the passage of these vehicles through airspace falls within ICAO's mandate as described by Article 44 (a), (c), (d) and (h), above. Air Navigation Services (ANS), which pertain to the air routes taken by aircraft, and Air Traffic Management (ATM), which pertains to the ingress and egress of aircraft from airports, are provided by national or regional authorities. During suborbital and orbital launches, the airspace near launch sites must be monitored and controlled in order to maintain the safety of civil aviation. Often, such airspace is closed, causing flights to be re-routed, increasing fuel costs and flying times.[387] Article 44 (c) and (d) bring these activities within ICAO's mandate. Therefore, notwithstanding the limitation of the application of the Chicago Convention to aircraft that derive support from the air, suborbital vehicles function within the airspace which ICAO can regulate through the promulgation of SARPs and procedures related to ensuring the safety of international civil air navigation.

[386] Chicago Convention, *supra* note 85 at Article 44.
[387] John Croft, "SpaceX Dragon Helping FAA Free Up More Airspace" Aviation Week & Space Technology (26 May 2015) online: http://aviationweek.com/commercial-aviation/spacex-dragon-helping-faa-free-more-airspace

To meet its mandate, ICAO promulgates SARPs and procedures pursuant to Article 37 of the Chicago Convention. Article 37 lists particular areas of competence for which ICAO can promulgate SARPs and procedures, including: characteristics of airports and landing areas; rules of the air and air traffic control practices; licensing of operating and mechanical personnel; airworthiness certificates; registration and identification of aircraft; aircraft in distress and investigation of accidents.

In regards to all types of suborbital vehicles, ICAO's competence to promulgate SARPs pertaining to rules of the air and air traffic control practices appears to be well-founded, as these vehicles pass through airspace and pose a risk to international civil aviation. Because aerospace planes derive support from the air and meet the definition of aircraft in the Annexes of the Convention, ICAO could promulgate SARPs regulating these vehicles, including airworthiness certificates and registration and identification of the vehicles. ICAO's competence to promulgate SARPs pertaining to the technical aspects of VTVL vehicles appears to be more tenuous, however, as they do not derive support from the air. Thus, there is a lacuna in ICAO's competence to regulate VTVL suborbital vehicles.

To cure this lacuna, Dempsey and Mineiro point to a catch-all provision of Article 37, which states, *inter alia*, "ICAO shall adopt…international standards and recommended practices and procedures dealing with…such other matters concerned with the safety, regularity, and efficiency of air navigation as may from time to time appear appropriate." They note that ICAO has, pursuant to this power, adopted SARPs addressing the environment and security—two areas where the Chicago Convention does not expressly empower ICAO to act.[388] Alternatively, or perhaps in conjunction with the catch-all provision of Article 37, Dempsey and Mineiro observe that ICAO could amend the definition of aircraft in the Chicago Convention Annexes, thereby bringing all suborbital vehicles within its ambit of regulation, including those that do not derive support from the air.[389] The necessity that Chicago Convention Annexes be amended to

[388] Dempsey and Mineiro *supra* note 376 at 4.
[389] *Ibid* at 8.

do so, however, indicates that in its current state, international air law does not apply to aerospace planes during the ballistic portion of their flight.[390]

In determining whether conflicts exist between air law and space law *vis-à-vis* suborbital vehicles, the first step is conflict ascertainment, which requires identifying two sets of rules that regard the same subject matter. As was illustrated above, international air law, particularly the Chicago Convention, is applicable to aircraft flying through airspace. These are the subjects, activities and geographical area regulated by international air law. They include the activities of aerospace planes, but also VTVL vehicles to the extent that they pass through airspace. As also explained above, ICAO could bring both of these vehicles within its mandate by modifying the Annexes to the Chicago Convention. Thus, the foregoing discussion serves to indicate the subject-matter of the regime of international air law and its applicability to suborbital vehicles. Next, international space law will be explored in a similar fashion to determine its applicability to suborbital flight.

4.2 The applicability of international space law to suborbital flight

The scope of application of the Outer Space Treaty is set forth in its broadest terms by Articles I and III, which pertain to the "exploration and use of outer space."[391] Thus, the Outer Space Treaty applies to specified activities (exploration and use) and to a defined geographic area (outer space). Subsequent articles within the Outer Space Treaty further elaborate upon its scope. For instance, Article VI brings the activities of non-governmental actors and international organizations within its sphere of application. Articles VII and VIII, which pertain respectively to liability and registration of objects, elaborate on the types of activities covered, namely the launch of an object into outer space. In addition, Article VII pertains to damage caused, "on the Earth, in airspace or in outer space." Thus, launching is an activity that falls squarely within the purview of the Outer Space Treaty. Its scope of geographic application is outer space and, at least in terms of liability, the surface of the Earth and airspace.

[390] Stephen Hobe, "The legal regime for private space tourism activities—An overview" (2010) 66 Acta Astronautica 1593, 1594 [hereinafter, "Hobe 'Legal regime for space tourism'"].
[391] Outer Space Treaty *supra* note 107.

The scope of application of the Outer Space Treaty is modified and further elaborated by subsequent treaties. Most relevant to the considerations herein are the Liability Convention and Registration Convention.[392] These will be considered below to determine whether the Outer Space Treaty and its progeny apply to suborbital flight.

Article VII of the Outer Space Treaty speaks of "Each State Party…that launches or procures the launching of an object into outer space….and each State Party from whose territory or facility an object is launched…." Article I of the Liability Convention elaborates this phrase by creating and defining the term 'Launching State' and by clarifying that, "The term 'launching' includes attempted launching." Furthermore, Article I of the Liability Convention provides an ambiguous definition of a space object: "The term 'space object' includes component parts of a space object as well as its launch vehicle and parts thereof." Article II creates absolute liability for damage caused on the surface of the Earth or to aircraft in flight. As to damages caused elsewhere, Article III recognizes fault-based liability. Thus, the Liability Convention elaborates Article VII of the Outer Space Treaty but retains its original sphere of application in regards to activities (launching) and geographic scope (surface of the Earth, airspace and outer space).

As with the Liability Convention, the Registration Convention builds upon provisions of the Outer Space Treaty, specifically Article VIII, which speaks of "an object launched into outer space." Article II of the Registration Convention elaborates Article VIII of the Outer Space Treaty. An important discrepancy is that Article VIII of the Outer Space Treaty does not require that an object launched into outer space be registered—it merely establishes that if a State creates a national register, any object carried thereon will fall under the jurisdiction and control of that State. For State parties to both the Outer Space Treaty and Registration Convention, Article II of the Registration Convention modifies Article VIII of the Outer Space Treaty by rendering mandatory both the creation of a national register and the registration of space objects.

Article III of the Registration Convention creates an international register under the auspices of the UN Secretary-General. An international register had been created by

[392] Respectively: Liability Convention *supra* note 112; Registration Convention *supra* note 113.

UN General Assembly Resolution 1721 (XVI) prior to the Registration Convention.[393] Although a non-binding resolution, subsequent state practice and *opino juris* appear to confirm obligations under Resolution 1721 (XVI) as customary norms. Article III of the Registration Convention codifies and elaborates this resolution. Thus, two separate international registers are maintained by UNOOSA on behalf of the UN Secretary-General: one pursuant to UNGA Res 1721 (XVI) for non-parties to the Registration Convention, the other pursuant to the Registration Convention for its adherents.[394]

Article I of the Registration Convention incorporates the definitions of Article I of the Liability Convention with important exceptions: it does not define 'launching' and does not include the Liability Convention's extension of the term to include 'attempted launching.' Furthermore, Article II limits the geographic scope of the Registration Convention to space objects "launched into Earth orbit or beyond." Thus, the application of the Registration Convention is limited to successful launches to Earth orbit or beyond. This is consistent with Article VIII of the Outer Space Treaty, which applies to objects "launched into outer space." That 'launched' is in the past tense, and that 'into outer space' is specified, indicate that Article VIII of the Outer Space Treaty applies only to successful launches to outer space, while the Registration Convention applies only to successful launches to 'Earth orbit or beyond.'

A question remains as to whether the phrase 'into Earth orbit or beyond' in the Registration Convention modifies or elaborates the term 'outer space' of Article VIII of the Outer Space Treaty. This is important for a determination of the scope of application of Article VIII, for suborbital trajectories, by their very nature, preclude orbit.[395] For instance, if outer space is not equivalent to 'Earth orbit or beyond,' then it is possible that a State could place on a national register an object launched on a suborbital trajectory, pursuant to Article VIII of the Outer Space Treaty. The determination of applicability of Article VIII would fall to the question of whether the object reaches outer space, not

[393] See: UNGA Res 1721 (XVI) *supra* note 108.
[394] See: "Convention on Registration of Objects Launched into Outer Space" UN Office of Outer Space Affairs, online: http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introregistration-convention.html
[395] See, Chapter 2 *supra* at subpart 2.3 (discussion of the US definition of suborbital flight as one in which the vacuum instantaneous impact point of launched objects does not leave the surface of the Earth).

whether it is placed into Earth orbit or beyond. It seems clear, however, that registration is not required for such an object pursuant to the Registration Convention, which applies only to objects launched 'into Earth orbit or beyond.'

Frans G. von der Dunk presents an interesting argument that 'Earth orbit or beyond' should be interpreted to mean that the Registration Convention applies to any geographic space beyond the lowest perigee of a satellite.[396] This would render States subject to registration requirements for suborbital vehicles that surpass this altitude. An interpretation according to the plain meaning of the text, however, would seem to indicate that the phrase limits the application of the Registration Convention to any object placed into Earth orbit or launched beyond Earth orbit—*i.e.*: an object that either orbits the Earth once or more, or escapes the gravitational pull of Earth. Under the US definition of a suborbital trajectory—a definition that was somewhat endorsed by ICAO and is discussed in further detail in Chapter Two, subpart 2.3, above—this would not include suborbital flight.

Article VII of the Outer Space Treaty and the Liability Convention do not contain the geographic limitation to objects placed 'into Earth orbit or beyond'. This makes sense from the perspective of creating a liability regime. The real danger with launches would come when a launch is unsuccessful, for these are the launches that are most likely to cause damage to the surface of the Earth. Unlike Article VII of the Outer Space Treaty, the Liability Convention does not speak in terms of 'an object launched into outer space.' It employs the phrases 'launching of a space object' and 'a space object is launched,'—the qualifying phrase 'into outer space' is not included. The use of the phrase 'into outer space' by Article VII could raise a question of intent: must a launch be intended to reach 'outer space' in order for liability provisions to apply? Is the qualifying criteria for application of Article VII of the Outer Space Treaty and the Liability Convention merely that an object is 'launched,' regardless of the altitude attained? These questions, amongst others, have prompted jurists to seek clarity in the definition of 'outer space.'

[396] Frans G. von der Dunk, "Beyond *What?* Beyond *Earth Orbit*?...! The Applicability of the Registration Convention to Private Commercial Manned *Suborbital* Spaceflight" (2013) 43(2) Calif. Western Int'l L J 269, 328 [hereinafter, "Von der Dunk].

For nearly five decades, international lawyers have sought in vain for the definition and delimitation of outer space.[397] Generally, the problem has been approached from two perspectives: the spatialist approach and the functionalist approach.[398] The spatialist approach seeks to establish a boundary between the sovereign airspace of a State and outer space.[399] At least eight possible criteria for establishing this boundary have been put forth, including the highest possible altitude of an aircraft in flight and the lowest possible perigee of a satellite in orbit.[400] Of the spatialist approaches, the approximate lowest perigee of a satellite has gained the most support of States.[401] Australia has followed the spatialist approach, setting the upper boundary of its airspace at 100 km.[402]

The proposed flights of SpaceShipTwo illustrate problems with the spatialist approach. Flights on SpaceShipTwo are advertised as space travel and originally were projected to reach 100 km. Difficulties with the engines of SpaceShipTwo have revealed that this vehicle will probably reach only 80 km with six people and two pilots aboard.[403] If this vehicle were to operate in Australia, it would not be considered as having reached outer space and would be regulated solely by air law. Thus, the same activity can at times be subject to very different regulatory regimes when the spatialist approach is employed. This could render it difficult to craft insurance products based upon the vehicle's classification as an aircraft or spacecraft and could lead to jurisdiction shopping for use of an aerospace vehicle.

Under the functionalist approach, the applicability of international space law is based upon the nature and type of the particular activity. [404] For example, if an object is intended to go to orbit, then it could be classified as a space object, but if it simply is intended to go up and come back down on a suborbital trajectory, then it could be

[397] For a history of the activities of COPUOS in this regard, see, generally: Su *supra* note 193.
[398] *Ibid* at 367-368.
[399] Benkö and Plescher *supra* note 176 at 31.
[400] *Ibid.*
[401] *Ibid*.
[402] Jakhu, Sgobba, & Dempsey *supra* note 195 at 57.
[403] David Gilbert, "Virgin Galactic Passengers Just Miss Going to Space" International Business Times (12 May 2014) online: http://www.ibtimes.co.uk/virgin-galactic-may-not-bring-passengers-into-space-1448266
[404] Benkö and Plescher *supra* note 176 at 35.

classified as an aircraft.[405] Under this approach the applicability of international space law to suborbital vehicles will be determined by how the vehicle is classified. As will be illustrated below, States seem to be favoring this approach.

For the purposes of a discussion of fragmentation, it is important to recognize that the choice of approach can be determinative of whether suborbital vehicles are governed by air and/or space law. As expressed above, the first step in determining whether a conflict exists is to determine the applicable norms. If only international air law applies, then there is little room for conflict, at least between these two regimes. As is illustrated below, however, neither approach seems wholly to remove the risk of conflicting regimes.

According to Jakhu and Dempsey, "A spatialist approach might require that vehicles be certified under, and regulated by, two separate regimes—one an air law regime created by ICAO, and another, a space law regime…."[406] Under the spatialist approach, two sets of rules regard the same matter and suggest different ways to deal with a problem.[407] Thus, under the spatialist approach, apparent conflicts arise.

Under the functionalist approach, if suborbital vehicles were classified as a spacecraft subject to space law, the definition of an aircraft in the Annexes to the Chicago Convention still could render the spacecraft subject to air law if it derives support from the air. Thus, this approach could remove apparent conflicts for VTVL suborbital vehicles, but not for HTHL vehicles. Conversely, under the functionalist approach, suborbital vehicles could be classified as aircraft subject to air law. There are two problems with this approach. First, it leaves a lacuna in the law for VTVL suborbital vehicles that do not derive support from the air. Second, as is explained in further detail below, suborbital vehicles are not simply aircraft but are also considered to be munitions, rendering other aspects of space law applicable. Thus, as with the spatialist approach, under any permutation of the functionalist approach, apparent conflicts arise.

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[405] Su *supra* note 193 at 368.
[406] Jakhu, Sgobba, & Dempsey *supra* note 195 at 57.
[407] ILC Report *supra* note 5 at 59.

4.3 Scholarly treatments of apparent conflicts and attempts at harmonization

The question of conflicts between air and space law *vis-à-vis* suborbital vehicles is not new. Many authors have visited conflicts arising out of the regulation of these vehicles, sometimes from the perspective of the delimitation issue,[408] other times from the perspective of vehicle type,[409] and still other times from the perspective of the type of activity (*i.e.*: space tourism).[410] Canvassing all of the analyses of conflicts between air and space law is beyond the scope of this thesis, which seeks merely to re-contextualize the discussion of conflicts within scholarly debate over fragmentation. Some of these articles will be referenced in order to glean perspectives on the appropriate regime for the regulation of suborbital vehicles. Additionally, some issues of conflict will be visited in order to illustrate that, at times, harmonization is possible, and at other times, harmonization is less likely.

In 1992, Tanja Masson-Zwaan described the aerospace plane as, "an object at the cross-roads between air and space law."[411] She begins the article with the presumption that the function of the vehicle—whether it is used for PTP transport or for orbital missions—will be determinative of the legal regime.[412] Thus, she appears to embrace a functionalist approach. More recently, Masson-Zwaan specifically addressed suborbital vehicles, again embracing the functionalist approach, indicating that suborbital vehicles designed to reach outer space should be treated like space objects, but both those

[408] See, *e.g.*: Vernon Nase, "Delimitation and the Suborbital Passenger: Time to End Prevarication" (2012) 77 J Air L & Com 747; Su *supra* note 193.
[409] See, *e.g.*: Tanja Masson-Zwaan, "The Aerospace Plane: An Object at the Cross-Roads between Air and Space Law" in T.L. Masson-Zwaan and P.M.J. Mendes de Leon (eds), *Air and Space Law: De Lege Ferenda*, 247-261 (The Netherlands: Klewer Law International, 1992) [hereinafter, Masson-Zwaan, "The Aerospace Plane"]; Stephan Hobe, "Aerospace Vehicles: Questions of Registration, Liability and Institutions—A European Perspective" (2004) XXIX Annals of Air & Space L 377 [hereinafter, "Hobe, 'Aerospace Vehicles'"]; Varlin J. Vissepó, "Legal Aspects of Reusable Launch Vehicles" (2005) 31 J Space L 165.
[410] See, *e.g.*: Ruwantissa Abeyratne, "Space Tourism – Parallel Synergies Between Air and Space Law?" (2004) 53 ZWL 184; Stephan Hobe, "Legal Aspects of Space Tourism" (2007-8) 86 Nebraska L R 439 [hereinafter, "Hobe, 'Space Tourism'"]; Tanja Masson-Zwaan & Rafel Moro-Aguilar, "Regulating private human suborbital flight at the international and European level: Tendencies and suggestions" (2013) 92 Acta Astronautica 243-254 [hereinafter, "Masson-Zwaan, 'Human suborbital flight"].
[411] See, generally, Masson-Zwaan, "The Aerospace Plane", *supra*, note 409.
[412] *Ibid* at 248.

intended for tourism (up and down flights) and those intended for PTP transportation could face conflicts through the applicability of both air and space law.[413]

Stephan Hobe likewise treated the subject of the applicability of air and/or space law to suborbital vehicles in a series of articles.[414] In a 2004 article, he addressed issues arising out of conflicts between liability and registration regimes for aircraft and suborbital vehicles.[415] In a 2007 article on the "Legal Aspects of Space Tourism," Hobe recognized that vehicle type and geographic locations of operations are determinative of whether air law, space law or both apply to the activities.[416] In determining the applicability of air law and/or space law to suborbital vehicles, he described two distinct approaches: geographic area in the context of the arguments over the delimitation of airspace and outer space and the status of the vehicle.[417] He too appears to favor the functionalist approach, indicating that air law will apply until a vehicle separates from its carrier aircraft and that space law will apply to the ballistic portion of the flight.[418]

As illustrated above, as well as through the scholarship of Masson-Zwaan and Hobe, even the functionalist approach is not without complications. It does not remove the applicability of one regime or another to such vehicles or their activities. As these authors illustrate, there is a high likelihood that both air and space law will be applicable to suborbital vehicles, particularly if they derive support from the air. Thus, it will be necessary to rectify apparent conflicts, first through a presumption against conflicts and attempts to harmonize the divergent norms.

A hotly debated area of potential conflict is the requirement of vehicle certification under air law and the requirement of a license under the Outer Space Treaty.[419] Article 31 of the Chicago Convention requires all aircraft engaged in

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[413] Masson-Zwaan, "Human suborbital flight" *supra* note 410 at 245-247.
[414] Hobe, "Aerospace Vehicles" *supra* note 409; Hobe, "Space Tourism" *supra* note 410; Hobe, "Legal regime space tourism" *supra* note 390.
[415] Hobe, "Aerospace Vehicles" *supra* note 409 at 379, 384.
[416] Hobe, "Space Tourism" *supra* note 410, at 441-444.
[417] *Ibid* at 442.
[418] *Ibid* at 443-444.
[419] See, *e.g.*: George Nield, *et al.* "Certification Versus Licensing for Human Space Flight in Commercial Space Transportation" 63rd International Astronautical Congress (2012) IAC-12-D6.1.3, online:

international navigation to carry a certificate of air worthiness. Thus, the aircraft must go through a process of certification. Article VI of the Outer Space Treaty, on the other hand, requires authorization of activities in outer space. States have implemented this provision by requiring a license or permit for space-related activities. Because these rules indicate different ways to deal with a problem, they are in conflict in accordance with the terms of the ILC Report.[420] This conflict can be harmonized: the rules are not mutually exclusive. A State could require a certificate of airworthiness for an aerospace plane, as well as a launch license. Nevertheless, it should be noted that these are fundamentally different processes: the former, the certification of a vehicle; the latter, the licensing of an activity. Thus, States have chosen different modes of regulation in two separate and distinct legal regimes. To apply one mode of regulation of one regime could frustrate the object and purpose of the other regime.

Another area of potential conflict arises under registration regimes. As illustrated above, it is questionable whether suborbital vehicles fall within the registration regime of space law. If these objects traverse outer space, then the States from which they are launched have no legal claim to jurisdiction and control over the objects while in outer space unless they are registered pursuant to the space law regime. If, however, the objects can be considered as aircraft engaged in international flight, then they will have to be registered pursuant to Articles 17 and 20 of the Chicago Convention. Thus, quasi-territorial jurisdiction could be maintained over these objects pursuant to air law, and the effect would be similar to registration under space law.

Article 17 of the Chicago Convention, however, raises an interesting potential conflict with Article II of the Outer Space Treaty. Article 17 of the Chicago Convention states, "Aircraft have the nationality of the State in which they are registered." Article II of the Outer Space Treaty prohibits national appropriations in outer space. The question raised by these articles is whether an object having nationality in space might run afoul of the Article II prohibition of national appropriation. The effect of registration under space law is merely the retention of jurisdiction, control and property rights over a space object

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http://www.faa.gov/about/office_org/headquarters_offices/ast/programs/international_affairs/media/Certification_vs_Licensing_Nield_FAA-IAC-Naples-Oct-2-2012.pdf [hereinafter, "Nield, 'Certification'"].

[420] ILC Report *supra* note 5 at 19.

by the launching State. The retention of jurisdiction, control and property rights over an object is not the same as the conferral of nationality on an object. While it is unlikely that an object possessing nationality in outer space contravenes the prohibition on national appropriations in outer space, as it does not appear to be an appropriation, the issue seems to describe a divergence between the regimes and may warrant closer scrutiny.

Finally, an additional conflict worth mentioning at this point arises within space law itself, but it has the potential to cause additional conflicts with air law. Space law includes disarmament and export control laws.[421] At the international level, export controls include the Missile Technology Control Regime (MTCR) and the Wassenaar Arrangement (WA), which are implemented through domestic legislation and regulations.[422] MTCR Guidelines apply to technologies which can deliver 500 kg and/or weapons of mass destruction to a range of 300 km.[423] Items listed in Category I of the MTCR Annex are subject to a strong presumption against export and include rocket systems (space launch vehicles and sounding rockets), production facilities for these, and major subsystems (rocket stages, re-entry vehicles, rocket engines and guidance systems).[424] Likewise, certain propellants fall under the WA Munitions List and are subject to a strong presumption against export. This means that approval must first be granted before an item can be exported. Approval is often denied. Aerospace and propulsion items appear under Category 9 of the WA Dual-Use List.[425] These items are subject to less stringent controls based upon their status as 'dual-use' items, which means that they have both civilian and military applications. Unlike munitions, dual-use items are allowed to be exported, so long as notice is first given to the relevant government and that government does not prevent such export thereafter.

Potential conflicts exist within international space law in regards to the ballistic missile control regime and the corpus of space law devoted to peaceful uses (*i.e.*: the body of law developed through the work of COPUOS). One of the impediments to

[421] See, *e.g.*: Jansentuliyana *supra* note 93 at 102; Chapter 1 *supra* at subpart 1.5.
[422] CRS Report *supra* note 152 at 44-48.
[423] *Ibid.* at 45.
[424] *Ibid.*
[425] "Control Lists," Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies (Online: http://www.wassenaar.org/controllists/index.html).

applying the Outer Space Treaty and Liability Convention to suborbital launches is that intercontinental ballistic missiles are, from a functional perspective, suborbital vehicles—they are objects launched on a suborbital trajectory. Thus, if the Outer Space Treaty and Liability Convention were to apply to suborbital launch vehicles, then States Parties to those treaties would be absolutely liable for damage caused on the surface of the Earth resulting from the launch of an intercontinental ballistic missile. Such interpretation would lead to the absurd conclusion that States are absolutely liable for defensive missile strikes. Nevertheless, it presents a conflict between the ballistic missile control regime and the corpus of space law developed by COPUOS.

If ICAO were to amend its SARPS to include suborbital vehicles, then it would be attempting to promulgate regulations for the very same technology that is covered by the MTCR. This would make it very difficult for ICAO to gain access to the information needed to draft technical Annexes for vehicle safety. A conflict analysis, as described by the ILC Report, would require harmonizing the Chicago Convention and ICAO SARPs with international export control provisions, as both would apply to spacecraft. Here, the ILC Report's description of systematic interpretation is particularly relevant.

As discussed in Chapter Three, subpart 3.2, the reference to "rules of international law" in VCLT Article 31(3)(c) precludes resort "to broader principles or considerations which may not be firmly established as rules…."[426] It incorporates, however, "all sources of international law," which classically are described by the Statute of the International Court of Justice as international conventions, international customs, general principles of law and judicial decisions and the teachings of highly qualified publicists.[427] Informal executive arrangements are not international conventions, are most likely not part of customary law (because of an express lack of *opinio juris*—they are, after all, 'non-binding') and are not general principles of law. Nevertheless, where the State doing the interpretation is a participant in these technology control regimes, it is most likely that these informal arrangements would be considered for the purposes of conflict ascertainment and conflict resolution. Because the possibility exists that these informal

[426] ILC Report *supra* note 5 at 214.
[427] *Charter of the United Nations and Statute of the Court of Justice*, 26 June 1945, 892 UNTS 119, Article 38 [hereinafter "UN Charter"].

arrangements do not rise to the level of "rules of international law", it is less clear whether ICAO would resort to such regimes for the purposes of interpretation. Thus, by refusing to execute binding arrangements for technology controls, States may have opened doors to multiple, conflicting interpretations.

If harmonization is not possible, then the norms are prioritized—the lower priority norm is set aside, but it remains in the background and influences interpretation. It is not likely that States will prioritize safety over national security, which could render ICAO SARPs on these issues largely ineffective. Moreover, even if ICAO were able to promulgate SARPs on suborbital vehicles, States could avoid their application by filing differences pursuant to Article 38 of the Chicago Convention.

The foregoing section illustrated the difficulty with determining the metes and bounds of the application of international space law to suborbital vehicles. Notwithstanding debates over whether suborbital vehicles are space objects, States are implementing norms of international space law for the regulation of these vehicles. Two such examples are illustrated in Chapter Five. Moreover, scholars are in general agreements that space law will apply in one manner or another to suborbital flights and that some provisions of the air and space law regimes are in conflict. Conflict resolution techniques are explored in the next chapter.

4.4 Conclusions

Chapter Four demonstrated the applicability of international air law and international space law to suborbital vehicles traveling through airspace on suborbital trajectories. It set forth means by which ICAO could further increase its involvement in the regulation of suborbital transportation and examined some scholarly perspectives on the application of air law and space law to suborbital flight. Finally it illustrated that some conflicts between air and space law regarding suborbital vehicles can be harmonized, while others, such as sensitive issues involving technology controls regimes, are complex and potentially invoke conflict resolution techniques. In the next chapter, these conflict resolution techniques are examined.

Chapter Five: Conflict resolution techniques, the resolution of conflicts between air and space law, case studies in State prioritization of norms.

"The projecting of detailed regulations for situations as yet unborn is sure to be not-worth-the-trouble, since one builds either on prophecies that will perhaps never be realized at all, or perhaps in an altered form; or one proposes rules regarding the few facts that are actually accomplished, thus building on an insufficient basis, overlooking all further development." ."—J. F. Lycklama à Nijeholt [428]

As discussed above, the process of conflict resolution first requires the ascertainment of a conflict, then an attempt at harmonization under a presumption against conflicts in international law.[429] Where such harmonization is not possible, conflict resolution techniques are employed to prioritize norms—the norm that is set-off remains in the background, influencing the interpretation of the prioritized norm.[430] This chapter addresses conflict resolution techniques by first examining those set-forth by Jenks in his analysis of conflicts of law-making treaties. Next, it analyses the ILC Report on the conflicts between special and general law and conflicts between successive norms. It concludes by examining two States' regulatory regimes for suborbital flight—one existent and one proposed—to illustrate how States are attempting to harmonize and prioritize such norms.

5.1 Conflict resolution techniques as outlined by Jenks

As mentioned in Chapter Three of this thesis, after describing a general presumption against conflicts and some techniques for conflict avoidance, Jenks outlined conflict resolution techniques, namely, the hierarchic principle, the *lex prior* principle, the *lex posterior* principle, the *lex specialis* principle, the autonomous operation principle, the pith and substance principle and the legislative intention principle.[431] Some of these principles will be dealt with in greater detail in the section discussing the work of the ILC. Several of them, however, were not discussed in the ILC Report and may be relevant to issues affecting air and space law. As such, each will be briefly described according to Jenks' initial sketch of the conflict of law-making treaties.

[428] Lycklama à Nijeholt *supra* note 280 at 2.
[429] ILC Report *supra* note 5 at 24, 207.
[430] *Ibid* at 25, 207.
[431] Jenks *supra* note 18 at 436.

The hierarchic principle is somewhat self-explanatory and best embodied by Article 103 of the Charter of the United Nations, which states: "In the event of a conflict between obligations of the Members of the United Nations under the present Charter and their obligations under any other international agreement, their obligations under the present Charter will prevail."[432] Thus, the hierarchic principle serves to prioritize conflicting norms, rendering the one of higher priority applicable over other inconsistent norms. Even where not expressly stated in an instrument, this principle recognizes that certain instruments, or certain provisions within instruments, may prevail over inconsistent instruments or obligations, because the intrinsic character and the degree of acceptance which they have secured render them as superior norms.[433] Given the example of a conflict between export control regimes and aviation laws described in Chapter Four, it is unclear how this principle might be employed. This example is discussed further in the next section on the ILC Report.

Somewhat less self-explanatory, the *lex prior* and *lex posterior* principles are antipodal principles in function. In regards to the *lex prior* principle, Jenks quotes Vattel as having stated, "'if there is a conflict between two treaties made with two different States, the earlier treaty prevails.'"[434] Relying on Lauterpacht's *Report on the Law of Treaties*, prepared for the ILC, Jenks explains that the *lex prior* principle proceeds from the notion that a treaty is void if its performance involves a breach of a prior treaty obligation, but is subject to the qualifications that:

> [The *lex prior* principle] is applicable only if the departure from the terms of the prior treaty is such as to interfere seriously with the interests of the other parties to the treaty or seriously to impair the original purpose of the treaty; and…that it does not apply to subsequent multilateral treaties…'partaking of a degree of generality which imparts to them the character of legislative enactments properly affecting all members of the international community or

[432] UN Charter *supra* note 422 at Article 103.
[433] Jenks *supra* note 18 at 439.
[434] *Ibid* at 442.

which must be deemed to have been concluded in the international interest.'[435]

Furthermore, Jenks points out that, given the complexity of multilateral arrangements of a specialized character, it is not always reasonable to assume that parties knew or can be deemed to have known of the existence of an inconsistent, prior obligation.[436] "In these circumstance one of the essential elements in the *lex prior* principle, the principle of good faith, ceases to be at issue," thus calling into question its applicability in such circumstance.[437]

The *lex posterior* principle stands for the proposition that later legislation supersedes earlier legislation.[438] It is most applicable between original and revising instruments. Jenks explains that its application is limited by the absence of an overriding international legislative authority entitled to repeal earlier law-making treaties explicitly or by implication.[439] In this regard, he references certain procedural techniques for applying this provision at the international level, such as the quasi-legislative authority of ICAO, which allows it to annex provisions to the Chicago Convention and to modify such Annexes.[440] On the contrary, he points out that, "like the *lex prior* principle, the *lex posterior* principle is not particularly helpful when applied to conflicts between norms evolved in different functional or geographic orbits."[441] He notes, however, that "A *lex specialis* may have a particularly strong claim to be regarded as such if it is also a *lex posterior,*" which nonetheless implicates the relevance of the *lex posterior* principle to conflicts arising between multilateral arrangements and specialized regimes.[442] Thus the application of the *lex posterior* principle may prioritize space law over the provisions of the Chicago Convention, but this prioritization could be challenged by the development of subsequent SARPs for outer space.

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[435] *Ibid* at 443 [citing: UN Doc. A/CN.4/63 of 23 March 1953, pp. 198-208].
[436] Jenks *supra* note 18 at 444.
[437] *Ibid*.
[438] *Ibid* at 445.
[439] *Ibid.*
[440] *Ibid* at 446.
[441] *Ibid.*
[442] *Ibid.*

Moving on to the *lex specialis* principle, Jenks traces its application back to Grotius, who wrote that preference should be given to a provision, "'which is most specific and approaches most nearly to the subject in hand; for special provisions are ordinarily more effective than those that are general.'"[443] Jenks recognizes the unimpeachable character of the principle, yet notes that the limits of its application are more difficult to determine in regards to conflicts in treaties than in respect of conflicts between statutes.[444] He offers that the *lex specialis* principle is sometimes applicable to conflicts between instruments establishing a specialized international regime for a particular area and general international conventions, but does not address its limitations regarding conflicts between specialized regimes, such as air and space law.[445]

The next principle to be addressed is the autonomous operation principle. According to Jenks, it stands for the notion that:

> "[E]ach international organization must regard itself as being bound in the first instance by its own constitution and will naturally apply instruments which it is itself responsible for administering, rather than other instruments with which they may be in conflict."[446]

He further describes it as "a truism which is of no assistance to a party to conflicting instruments confronted with the difficulty of reconciling its conflicting obligations."[447] Thus, this principle appears to be more of a source of conflict than a means for resolving a conflict. Nevertheless, as will be illustrated below, it may be an important principle for States to consider as they decide which international organization should be vested with responsibilities for the legislation and regulation of new and advancing technologies. Such decision may be outcome-determinative of the type and character of legislation and regulation employed.

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[443] *Ibid* [quoting: Hugo Grotius, *De Jure Bellis et Pacis,* Book II, Cap. XVI, sec. xxxix (I): translation by Kelsey in *Classics of International Law* edition, vol. ii (1929), p. 428].
[444] Jenks *supra* note 18 at 446.
[445] *Ibid* at 447.
[446] *Ibid* at 448.
[447] *Ibid*.

Next, the pith and substance principle is, according to Jenks, of unimpeachable validity.[448] Stated in general terms relevant to conflicts at the international level, the principle stands for two propositions:

> [T]hat subjects which in one aspect and for one purpose fall within the jurisdiction of [one organization], may in another aspect and for another purpose fall within the jurisdiction of [another organization], and that in such cases the…object and scope [of the legislation] must always be determined in order to ascertain the class of subject to which it really belongs, and any merely incidental effect it may have over other matters does not alter the character of the law.[449]

For Jenks, the underlying principle applies to conflicts of treaties, "in which the question at issue is which of two conflicting norms really deals with the essentials of the matter and must therefore be regarded as of primary authority."[450]

This, of course, may be subject to criticism based upon the autonomous operation principle. The authority that makes a determination as to the applicability of two norms is likely to find that the norm embodied in its constitutive instrument is the pith and substance of the matter. Nevertheless, the pith and substance principle indicates an important feature of interpretation: it is the pith and substance of the *law* that is determinative of its applicability. Whether or not the law is applicable to a particular subject (i.e.: a vehicle) comes only after an understanding of the object and purpose of a rule is achieved.

Finally, in regards to the legislative intention principle, Jenks concludes that none of the foregoing principles can be regarded as absolute but all may afford useful clues to legislative intention.[451] Here, Jenks presumes that the intention of States in making treaties is one basis for resolving conflicts. In this vein and in supplement to the

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[448] *Ibid* at 449.
[449] *Ibid* at 449 [citing Leroy's *Legislative Power in Canada*, published in 1897, at Proposition 35, p. 393 and Proposition 36, p. 416].
[450] Jenks *supra* note 18 at 449-450.
[451] *Ibid* at 450.

foregoing principles, Jenks indicates that resort to preparatory work or, "particularly in the case of some of the highly technical instruments applicable to modern technological development," scientific or other expert evidence of States' intentions in formulating the provisions of treaties can be useful for resolving conflicts.[452]

Subsequent to Jenks' analysis, many of the foregoing principles, which had been recognized as customary norms, were codified in the VCLT.[453] Under Article 31, a treaty shall be interpreted in accordance with the good faith principle and in light of its object and purpose—thus echoing both the presumption against conflicts and the pith and substance principle. Article 32 allows recourse to supplementary means of interpretation, including the preparatory work, which is in-line with the legislative intention principle. Article 32 limits such application, however, to confirmation of the meaning resulting from Article 31, or to a determination of the meaning when the application of Article 31 leaves the meaning ambiguous or obscure or leads to a result that is manifestly absurd. Article 41, addresses *inter se* agreements for the modification of multilateral treaties and incorporates the limitations of the *lex prior* principle, described above. The hierarchic principle is espoused by Article 53, which renders a treaty void when it conflicts with a peremptory norm of general international law. Finally, the *lex posterior* principle is reflected in Article 59.

The foregoing is a summary of the tools outlined by Jenks for the resolution of conflicts between law-making treaties. The ILC Report builds upon and adopts many of the conclusions reached by Jenks. The aforementioned provisions of the VCLT will be explored in greater detail below, in the discussion of the ILC Report.

5.2 The ILC Report on conflicts between special and general law and conflicts between successive norms

The ILC Report identifies several types of conflicts, two of which are most relevant to air and space law: those between special and general law on the one hand,

[452] *Ibid*.
[453] VCLT *supra* note 311.

and those between successive norms on the other.[454] In regards to the former, the ILC Report addresses three types of fragmentation: fragmentation through conflicting interpretations of general law; fragmentation through the emergence of special law as exception to the general law; and fragmentation as differentiation between types of special law.[455] The last of these best describes apparent conflicts between air and space law. It is curious, however, that this third categorization would be included in a section on conflicts between special and general law, as such fragmentation does not entail a conflict between special and general law.[456]

Unfortunately, the ILC does not elaborate much on conflicts between special regimes except through discussions of the applications of the *lex specialis* and *lex posterior* principles. In his critique of the ILC Report, briefly mentioned in the Prologue of this thesis, Murphy recognized this as one of the weaknesses of the Report. He stated that the ILC Report, "fails to perceive a more fundamental form of fragmentation, one in which two very different legal systems are colliding."[457] That the ILC Report fails to take these forms of fragmentation into consideration is somewhat of an overstatement. As illustrated above, the ILC Report expressly incorporates them into the discussion of conflicts between special and general law. Additionally, the ILC directly addresses the conflict between two specialized norms in its discussion of the weakness of the subject-matter criterion.[458] Moreover, as is illustrated below, it can be presumed that conflicts between successive norms would include conflicts between two specialized regimes.

As noted in Chapter Three of this thesis, Jenks identified conflicts between multipartite instruments as a source of real difficulty in seeking a resolution. [459] It may be

[454] In addition, the ILC Report addresses conflict resolution through the hierarchy of norms presented by priority given to *jus cogens* and obligations *erga omnes*. ILC Report *supra* note 5 at 166-206. Although certain provisions of the Outer Space Treaty are sometimes described as *jus cogens* or obligations *erga omnes*, these principles generally are not in conflict with provisions of international air law, or they are in an apparent conflict with provisions of an equal hierarchical status, such as apparent conflicts over the issue of sovereignty in airspace and lack thereof in outer space. Conflicts between those provisions cannot be resolved by placing them in hierarchical relation with each other and, therefore, relations of norms in a hierarchy appear to be beyond the scope of this study. Thus, they are not addressed by this thesis.
[455] ILC Report *supra* note 5 at 2, 31-34.
[456] *Ibid* at 34.
[457] Murphy *supra* note 14 at 301.
[458] See, Chapter 3, *supra* at subpart 3.2.
[459] Jenks *supra* note 18 at 404.

that he too recognized the difficulty that arises when trying to resolve conflicts between conflicting specialized regimes. Thus, that the ILC Report does not wade too far into this area of conflicts might be viewed as cautious pragmatism or the recognition that such instances of conflict can only be dealt with on a case-by-case basis when examining particular provisions in conflict. Regardless, the ILC's findings on the resolution of conflicts between special and general law, on the one hand, and conflicts between successive norms, on the other, offer valuable insights into the resolution of conflicts between two specialized regimes, as is illustrated below.

In order to resolve conflicts between special and general law, the ILC turns to the *lex specialis* principle.[460] It notes that the principle is applicable "even in the absence of direct conflict between two provisions and where it might be said that both apply concurrently."[461] In such cases, the special rule applies, unless the other rule contains "a prior obligation that might enjoy precedence for example under articles 30 or 41 of the VCLT."[462] Here, the ILC Report takes note of the interplay of the *lex specialis* and *lex prior* principles, for Articles 30 and 41 deal with the application of successive treaties relating to the same subject matter and agreements to modify treaties, respectively.

It seems apparent that air law and space law are *lex specialis*. Nevertheless, the determination as such cannot be done in the abstract, but only in relation to other rules.[463] By way of illustration, the ILC Report references the Anti-Personnel Landmines (Ottawa) Treaty,[464] which it describes as laying down general law on the use of landmines—a special aspect of the general rules of humanitarian law.[465] Thus, a rule can be general or special, depending on its relation to another rule.

Often the importance of the relationship of principles and rules arises with subsequent instruments that elaborate a prior treaty.[466] For instance, the Outer Space

[460] ILC Report *supra* note 5 at 34.
[461] *Ibid* at 50.
[462] *Ibid* at 52.
[463] *Ibid* at 61.
[464] *Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction*, 18 September 1997, 2056 UNTS 211.
[465] ILC Report *supra* note 5 at 60-61.
[466] *Ibid* at 61.

Treaty has been described as a treaty of principles for the conduct of activities in outer space.[467] As explained above, these principles were further elaborated by subsequent treaties.[468] In this case, the subsequent treaties are an application or elaboration of *legi generali*.[469] Thus, in relation to its progeny, the Outer Space Treaty can be considered *lex generalis*. Nevertheless, certain provisions of the Outer Space Treaty, such as Article II, which prohibits national appropriations in outer space, and Article VI, which subjects State parties to international responsibility for their national activities in outer space, are *lex specialis* in relation to general principles and customary norms of international law. In this way, the Outer Space Treaty constitutes both general principles as well as *lex specialis*.

A question arises as to whether the status of the Outer Space Treaty, as a treaty of principles, has any bearing on a determination of the character of its norms in relation to the highly specialized rules of the Chicago Convention. Trying to analyze the treaties in the abstract invites peril. Particular provisions of each instrument, as well as their *travaux preparatoires* under certain circumstances, should be analyzed within the process described above before any specific conclusions can be drawn. Nevertheless, it is hard to conceive of provisions of the Outer Space Treaty as anything other than *lex specialis* in relation to another treaty regime.

The ILC Report, however, generally eschews presumptions in regards to the classification of a norm as special or general based upon subject matter. Moreover, it recognizes that such determination is often based upon the priorities of the interpreter.[470] This is akin to Jenks' description of the autonomous operation principle. For instance, the safety of civil aviation is often at the fore of the concerns of those who call for ICAO to regulate suborbital transportation.[471] Where national security is the predominant concern, aerospace planes are ballistic missiles outside of the purview of ICAO's mandate, which

[467] Michael Mineiro, "FY-1C and USA-193 ASAT Intercepts: An Assessment of Legal Obligations Under Article IX of the Outer Space Treaty" (2008) 34 J Space L 321, 325.
[468] See, Chapter 1 *supra* at subpart 1.4.
[469] ILC Report *supra* note 5 at 54.
[470] *Ibid* at 63.
[471] See, *e.g.*: Jakhu, Sgobba, & Dempsey, *supra* note 195.

pertains to *civil* aviation.[472] Thus, the perspective of the party conducting the interpretation can be determinative of a treaty regime's applicability.

Alongside the *lex specialis* principle, the principle that *lex posterior derogate lege priori* may be relevant to considerations of conflicts between air and space law. The ILC Report notes that, "conflicts between earlier and later treaties gain importance with the constant increase of multilateral treaty-law often of a quasi-legislative character…."[473] As with conflicts between special and general law, the first step is to attempt to harmonize treaties.[474] Where this is not possible, "the *lex posterior* maxim may be turned to as a presumption of intent to derogate from the earlier agreement."[475]

As with Jenks' analysis, the ILC Report notes the interplay of the *lex specialis* and *lex posterior* principles.[476] Jenks identified the strength of a norm that is *lex specialis* when it can also be considered as *lex posterior*.[477] The ILC Report takes note of this relationship by reference to the *Mavrommatis Palestine Concessions* case (1924), wherein the PCIJ prioritized an agreement that was both special and more recent.[478] The ILC Report also observes a somewhat opposite phenomenon: "[T]he *lex posterior* will not abrogate a prior treaty obligation if the specialty of that prior obligation may be taken as indication that the parties did not envisage this outcome."[479] Thus, under some circumstances, the *lex specialis* and *lex posterior* principles work in concert. Under other circumstances, one may yield to the other, and the *lex prior* principle can be involved. Again, as described by Jenks above, intent of the parties plays a special role in the application of these principles.

The Outer Space Treaty can be considered as both *lex specialis* and *lex posterior* in relation to the Chicago Convention. These principles, however, apply only where,

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[472] See, generally: Chapter 1 *supra* at subpart 1.5; Chapter 4 *supra* at subpart 4.3 (discussions of international export control arrangements).
[473] ILC Report *supra* note 5 at 116.
[474] *Ibid* at 119.
[475] *Ibid.*
[476] *Ibid* at 120
[477] Jenks *supra* note 18 at 446.
[478] ILC Report *supra* note 5 at 120-121 (citing: *Mavrommatis Palestine Concessions* case, PCIJ Series A, No. 2 (1924) p. 31).
[479] ILC Report *supra* note 5 at 62.

"The provisions of the later treaty are so far incompatible with those of the earlier treaty that the two are not capable of being applied at the same time."[480] Thus, only after harmonization fails will these principles have any relevance, and particular provisions of the Outer Space Treaty and Chicago Convention must be examined before any conclusions can be drawn.

The ILC Report states that Article 30 of the VCLT, which deals with the application of successive treaties relating to the same subject matter, "…works best when it deals with a relationship between two treaties between identical parties on a related topic."[481] Although this discussion is set forth in a part of the Report devoted to analyzing the effect of certain clauses negotiated in the course of modifying a treaty, it appears to be of relevance to conflicts between air and space law. In this regard, the ILC notes that, "The relationship between treaties that belong to different regimes is a general problem."[482] By way of example of this difficulty, it offers conflicts arising between trade and environmental regimes, two separate yet related regimes with a relationship akin to that of air and space law regimes.

Because of the universal acceptance of the Chicago Convention, its parties and those of the Outer Space treaty will always be identical.[483] There could be discrepancies, however, between parties to other treaties, such as those dealing with liability for air and space-related activities. For instance, the Rome Convention of 1952 and the Liability Convention, both of which deal with liability for damage caused on the surface of the Earth, have fewer adherents than the aforementioned treaties.[484] This gives rise to a likelihood that the resolution of a conflict between these two regimes could be more difficult.

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[480] VCLT *supra* note 311 at Article 59(b).
[481] ILC Report *supra* note 5 at 138.
[482] *Ibid*.
[483] See, Chapter 1 *supra* at subparts 1.3 & 1.4.
[484] For status of the Rome Convention of 1952, see: ICAO, "Current lists of parties to multilateral air law treaties" online: http://www.icao.int/secretariat/legal/lists/current%20lists%20of%20parties/allitems.aspx; for status of the Liability Convention, see: UNOOSA, "Status of International Agreements relating to Activities in Outer Space" online: http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/status/index.html

The foregoing section served to elaborate on the *lex specialis* and *lex posterior* principles, as described by the ILC. It is important to recall, however, the process of conflict resolution described above. These principles play a role only after it is determined that harmonization is not feasible. Additionally, it is important to recognize that, even after conflict resolution techniques are employed, the norm that is set aside remains in the background, influencing the interpretation of the prioritized norm. Thus is the process of systematic interpretation employed to suggest "a pertinent relationship between the relevant rules in view of the need for consistency of the conclusion with the perceived purposes of the functions of the legal system as a whole."[485] With these prescriptions in mind, the next section examines two instances of State interpretation and application of air and space law to suborbital flight.

5.3 The US Commercial Space Launch Act and amendments thereto

Most of the progress in the development of commercial suborbital vehicles has occurred in the US over the last decade.[486] To support this development, the US has put into place a comprehensive legal and regulatory framework for these activities, codified under its domestic, commercial space law.[487] As will be illustrated below, it incorporates aspects of both air and space law, harmonizing the regimes and creating a hybrid air and space law system for the regulation of suborbital flight.

In regards to the launch and reentry of vehicles, the US has implemented the international space law treaties through its Commercial Space Launch Act (CSLA) and amendments thereto.[488] Under US law, launch means "to place or try to place a launch vehicle or reentry vehicle and any payload, crew or space flight participant from Earth—(A) in a suborbital trajectory; (B) in Earth orbit in outer space; or (C) otherwise in outer space."[489] With these definitions, the US has embraced the meaning of launch as an attempted launch, in accordance with Article VII or the Outer Space Treaty and Liability Convention, as well as the meaning of launch as a successful launch, in accordance with

[485] ICL Report *supra* note 5 at 208.
[486] See, Chapter 2 *supra* at subpart 2.4.
[487] CSLA *supra* note 23. The CSLA is codified in Title 51 of the United States Code (USC).
[488] *Ibid.*
[489] 51 USC § 50902 (4).

Article VIII of the Outer Space Treaty and Registration Convention.[490] Moreover, the geographic scope of the application of US space law is outer space, including Earth orbit and beyond, and includes suborbital trajectories. Thus, US domestic space law encompasses the activities and geographic scope of international space law.

Suborbital vehicles are defined by the CSLA as 'launch vehicles.'[491] For the following reasons, however, it is not clear whether US space law classifies suborbital vehicles as space objects subject to international space law. 'Reentry' is defined as "to return or attempt to return…a reentry vehicle…from Earth orbit or from outer space to Earth."[492] Likewise, 'reentry vehicle' is defined as "a vehicle designed to return from Earth orbit or outer space to Earth…."[493] Through deduction, it could be concluded that, because suborbital trajectories are not included in these definitions, the US does not consider suborbital vehicles to be reentry vehicles. Thus, under US space law, suborbital vehicles are launch vehicles but not reentry vehicles. If suborbital vehicles are not considered to be reentering when they return, then it could also be concluded that they do not enter outer space. From this, it appears that the US may have implemented the Outer Space Treaty in a manner that renders it inapplicable to suborbital vehicles.

Supporting this conclusion is the US national register for objects launched into outer space. SpaceShipOne flew for the first time on 17 December 2003. No entry in the US national register appears on that date.[494] Likewise, the US did not communicate information regarding this launch to the international register. As described above, the nature of suborbital vehicles is such that they do not enter orbit. Therefore, it makes sense that this object would not appear on the international register. Because it does not appear on the US national register, it indicates several possible and non-mutually exclusive possibilities: the US does not consider that SpaceShipOne reached outer space, notwithstanding the fact that it achieved 100 km, thereby rendering Article VIII of the Outer Space Treaty inapplicable; the US does not consider suborbital vehicles to be space

[490] See, Chapter 4 *supra* at subpart 4.2
[491] 51 USC at § 50902 (8).
[492] *Ibid* at § 50902 (13).
[493] *Ibid* at § 50902 (16).
[494] US Registry of Object Launched in Outer Space, online: https://usspaceobjectsregistry.state.gov/Pages/Browse-Decade.aspx

objects, likewise rendering Article VIII of the Outer Space Treaty inapplicable; the US may interpret the provisions of the Registration Convention, requiring launch to Earth orbit or beyond, as a modification of the term 'outer space' in Article VIII of the Outer Space Treaty, thereby rendering national registration requirements inapplicable, and finally, the US simply decided that retaining jurisdiction and control over this object while in outer space was not necessary. All but that last of these indicate the possibility that the US does not consider suborbital vehicles to be subject to *international* space law.

At times, SpaceShipTwo is treated like an aircraft. US domestic air law, requires a special airworthiness certificate,[495] and 'N' tail number,[496] which are consistent with Articles 31 and 20 of the Chicago Convention, respectively. Special airworthiness certificates are designated for experimental aircraft, however, so the analogy to Article 31 airworthiness certificates is not perfect. The FAA does not, however, use a certification regime for spacecraft as is required for aircraft.[497] Instead, it issues experimental permits and launch and reentry licenses.[498] The FAA claims that a certification regime is neither practical nor necessary and that it would be an expensive and overwhelming burden on the burgeoning commercial space transportation industry.[499] If air law applies to suborbital flight, then this is a curious conclusion. That the FAA is even considering an aircraft certification process—as opposed to believing it to be an obligation under the Chicago Convention or under US domestic air law—seems to indicate a policy choice: a weighing of costs and benefits as the rationale for choosing a licensing regime over a vehicle certification regime. Issuing a license for this activity, however, is consistent with the requirements of Article VI of the Outer Space Treaty. The fact that the US issues licenses and permits for suborbital launches indicates that the US interprets the Outer Space Treaty as applicable to suborbital vehicles. Should it not, the US would be in keeping with China, whose domestic legislation expressly states that sounding rockets

[495] FAA Annual Compendium 2013 *supra* note 217 at 86.
[496] Tail number N339SS. See: Airliners.net (Online: http://www.airliners.net/search/photo.search?regsearch=N339SS&distinct_entry=true).
[497] Nield "Certification" *supra* note 419.
[498] 51 USC § 50904
[499] Nield "Certification" *supra* note 419 at 2, 4.

and ballistic missiles that temporarily cross outer space shall not be regarding as space objects.[500]

The US defines a 'spaceflight participant' as an "individual, who is not crew, carried within a launch vehicle or reentry vehicle."[501] These participants are not passengers in the normal sense, and domestic and international passenger liability regimes are considered not to apply. The FAA requires spaceflight participants to execute a waiver of liability against the US government based upon informed consent.[502] It is curious that the US government would want spaceflight participants to waive liability claims *against the US government*. The US government is not liable for aviation accidents under either domestic or private international air laws.[503] It is liable, however, for damages under the Outer Space Treaty and Liability Convention, at least when accidents occur outside of US territory or in outer space. The FAA claims that the waiver process gives the fledgling industry "room to grow and develop."[504] Again, this expresses a policy choice rather than harmonization and prioritization of obligations.

The FAA has signed Memoranda of Cooperation (MOCs) with the UK CAA and UK Space Agency, as well as with Italy's Ente Nazionale per l'Aviazione Civile (ENAC) for cooperative enhancement in the compiling of safety data, in the recovery of persons and vehicles involved in space transportation, and in the development of safety regulations for commercial space transportation.[505] Most importantly, they call for enhancement in the free movement of space transport vehicles between the respective

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[500] Benkö & Plescher *supra* note 176 at 39.
[501] 51 USC § 50902 (17)
[502] See, George Nield, *et al.* "Informed Consent in Commercial Space Transportation Safety" 64th International Astronautical Congress (2013) IAC-13-D5.1.4, online: http://www.faa.gov/about/office_org/headquarters_offices/ast/programs/international_affairs/media/Informed_Consent_paper_IAC_Sept_2013_FAAfinal.pdf at 1-2.
[503] See, *e.g.*: Warsaw Convention *supra* note 70; Montreal Convention *supra* note 137.
[504] *Ibid* at 5.
[505] See: Memorandum of Cooperation in the Development of Commercial Space Transportation Between: the Federal Administration, Department of Transportation, USA; the Department of Transport, UK; the UK Space Agency; and the UK Civil Aviation Authority (2014, NAT-I-4012) online: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/344556/memorandum-of-cooperation.pdf; Memorandum of Cooperation in the Development of Commercial Space Transportation Between the Federal Administration, Department of Transportation, USA and the Ente Nazionale per l'Aviazione Civile, Italy (2014) (Online: https://www.faa.gov/about/office_org/headquarters_offices/ast/programs/international_affairs/media/Memorandum_of_Cooperation_FAA_and_Italy_ENAC_signed_March-12-2014.pdf).

countries, including commercial transatlantic space travel. This indicates a willingness to be flexible about the implementation and application of international missile technology control regimes. Recently the US entered into a similar MOC with France.[506]

This section serves to illustrate that the US has implemented a hybrid air and space law regime for suborbital vehicles traveling on suborbital trajectories. In doing so, it appears to have harmonized international obligations, as well as prioritized certain aspects of air law and space law over others. Such prioritization, particularly in regards to the issue of certification versus licensing, seems to be based not on legal analysis, but on economic concerns over the development of commercial space transport. The FAA is attempting to export this regulatory scheme through the execution of MOCs. As will be illustrated below, the UK is proposing a hybrid air and space law regime that in some ways incorporates FAA objectives while harmonizing and prioritizing international obligations in equally creative ways.

5.4 The UK proposal for spaceplane certification and operation

In 2014, the UK Space Agency, Department for Business Innovation & Skills and Department for Transport, published a report drafted by the UK Civil Aviation Authority (CAA), entitled, "UK Government Review of commercial spaceplane certification and operations."[507] The CAA Report outlined how the UK could accommodate and support future spaceplane operations.

The CAA defined a spaceplane as a "[rocket-powered], winged vehicle that acts as an aircraft while in the atmosphere and as a spacecraft while in space.[508] The report pertains mainly to HTHL vehicles, including those that take off from a runway and those

[506] FAA, "US and France Sign Memorandum of Cooperation to Share Commercial Space Transportation Research and Development Activities" Press Release (16 June 2015) online: http://www.faa.gov/news/press_releases/news_story.cfm?newsId=19075&omniRss=press_releasesAoc&cid=102_P_R
[507] CAA Report *supra* note 24.
[508] *Ibid* at 11.

that are ferried to a higher altitude by a carrier aircraft, but it also considers VTVL suborbital vehicles.[509]

Like the US, the UK has ratified all of the international space law treaties, save the Moon Agreement.[510] It has implemented international space law through its Outer Space Act of 1986.[511] The CAA Report acknowledges UK obligations under international space law for ensuring that activities carried out by its nationals in outer space are consistent with those treaties and with international law, generally.[512] Likewise, the CAA acknowledges that the UK is bound by the Chicago Convention and the definition of an aircraft under its Annexes.[513] In this regard, the Report states, "[S]paceplanes clearly meet this definition, and so the existing body of aviation safety regulation would apply to them."[514]

The report states, "As they are vehicles that act as aircraft while in the atmosphere and as a spacecraft while in space, both space law and aviation law are applicable to spaceplane operators." [515] Thus, the UK appears to treat suborbital vehicles as space objects. The Report continues, however, stating that neither regime is wholly appropriate to the nature of spaceplane operations.[516] This is a curious statement. It could indicate a direct incompatibility between the regimes, in which case the rules of one would have to be prioritized while the other rule is off-set and placed in the background, influencing the interpretation of the prioritized regime.[517] Or it could mean a divergence, wherein the two regimes simply affect the same subject-matter and suggest different ways to deal with spaceplanes, thereby requiring an attempt to harmonize the rules before they are prioritized.[518] Finally, it could indicate a lacuna in both regimes in regards to spaceplanes, and thus, the necessity to revert to general international law and/or *lege ferenda.* It turns

[509] *Ibid* at 29.
[510] See, Chapter 1 *supra* subpart 1.4.
[511] CAA Report *supra* note 24 at 61; UK Outer Space Act of 1986, Chapter 38, online: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/295760/outer-space-act-1986.pdf
[512] CAA Report *supra* note 24 at 60-61.
[513] *Ibid* at 63.
[514] *Ibid.*
[515] *Ibid* at 59.
[516] *Ibid*.
[517] ILC Report *supra* note 5 at 25, 207.
[518] *Ibid.*

out to be none of these. As is illustrated below, the CAA Report seems to indicate that the applicable law is simply impracticable, and therefore decides that it should be set aside.

The UK has delegated many of its regulatory powers for aviation to the European Aviation Safety Agency (EASA), which now implements the provisions of the Chicago Convention and its Annexes through such delegation of authority.[519] This means that spaceplanes would have to comply with EASA standards for vehicle certification and air transport.[520] As with the FAA, the UK seeks to balance its priorities through a risk-based analysis, seeking regulation that provides "an acceptable level of safety without being so burdensome that it stifles the development of this emerging industry."[521] For this reason, the UK does not want to comply with EASA standards. The CAA Report proposes a "ring-fence" around commercial spaceplane operations to render them entirely separate from EASA regulations.[522]

The CAA Report identifies four ways to create this ring-fence.[523] First, the UK could assert that spaceplanes are not aircraft. The Report characterizes this as a difficult proposition, given ICAO's definition of aircraft. Second, the Report suggests that the UK could assert that sub-orbital transportation is not air transport. This understanding of air transport, the Report claims, is inconsistent with both suborbital tourism as well as proposed intercontinental, high-speed travel, as both are in fact air transport. Thus, this option is equally not viable. Third, the UK could classify spaceplanes as space objects, rendering them subject to international space law, as implemented through the Outer Space Act of 1986. The Report claims this option is not viable because, although the EU has yet to exercise its competence to regulate the commercial space market, it may yet do so. This could create space regulations that conflict with those that the UK proposes to develop, thus disrupting operators.

This entire analysis is remarkable. The UK seems to treat its obligations arising under both international space law and international air law as options from which it can

[519] CAA Report *supra* note 24 at 63.
[520] *Ibid.*
[521] *Ibid* at 77.
[522] *Ibid* at 65.
[523] *Ibid.*

choose for the regulation of spaceplanes. The UK appears to skip an attempt at harmonization and to start by prioritizing regimes and the rules within the regimes according to its economic and political objectives. This is not unlike the FAA's stance on certification versus licensing, described above.

The UK ultimately endorses a fourth option: to classify the vehicles as experimental aircraft pursuant to Annex II of the EASA Basic Regulation, thereby removing them from the ambit of EASA jurisdiction and subjecting them to national regulation.[524] The CAA Report notes that experimental aircraft are not typically allowed to conduct public transport operations because the payment of money for transport triggers higher safety standards, and suggests waivers of liability based upon informed consent, similar to the FAA process.[525]

Thus the UK has proposed a system for regulation somewhat similar to US commercial space law. It differs in its classification of suborbital vehicles as aircraft and proposes to regulate these vehicles as experimental aircraft as opposed to launch vehicles. Nevertheless, it appears that the UK is trying to harmonize and prioritize its international obligations, while at the same time, setting some aside based upon economic and policy interests. This approach is not unlike that of the US.

5.5 Conclusions

This chapter explored conflict resolution techniques as described by Jenks and the ILC. It investigated the applicability of some of these techniques to conflicts arising between air and space law. Next, it examined US commercial space law and UK proposed regulations pertaining to suborbital flight. It illustrated that States are attempting to harmonize and prioritize norms, in keeping with the process set-forth in the ILC Report, but also are picking norms based upon political and economic concerns. The latter ignores the process set forth by general international law for conflict ascertainment and conflict resolution, as depicted by the ILC Report. It places policy considerations

[524] *Ibid*.
[525] *Ibid* at 67-69.

above rights and obligations of parties to international instruments applicable to suborbital flight.

The next chapter will re-contextualize these regulatory trends within discussions of globalization by revisiting debates over fragmentation and legal pluralism. It will examine literature published subsequent to the ILC Report on the fragmentation of international law in an attempt to explain some of the regulatory choices of States in light of a growing hegemony of global administrative bodies.

Chapter Six: Institutional fragmentation and the administration of international air and space law

> *"Must the progress of law to cope with the new problems arising from the progress of science and technology always await upon disaster?"* —C. Wilfred Jenks[526]

The ILC Report recognized a positive side to fragmentation, noting that, "New types of specialized law do not emerge accidentally but seek to respond to new technical and functional requirements."[527] International space law is an excellent example of this phenomenon. In a speech before the 15th UN General Assembly in 1960, US President Dwight Eisenhower stated:

> The emergence of this new world poses a vital issue: will outer space be preserved for peaceful use and developed for the benefit of all mankind? Or will it become another focus for the arms race—and thus an area of dangerous and sterile competition? The choice is urgent. And it is ours to make.[528]

When novel technologies opened up a new international space for national activities, the international community responded by recognizing the applicability of international law to outer space and by creating new norms to ensure its peaceful uses. These laws deviated significantly from older, general international law and from the law of other specialized branches, for instance by prohibiting the acquisition of new territory in outer space.[529] In this way, "Each rule-complex or 'regime' comes with its own principles, its own form of expertise and its own 'ethos', not necessarily identical to the ethos of neighboring specialties."[530] Thus, differences between regimes cannot be trivialized, nor can provisions of one regime be set aside based upon whim or expediency, for to do so threatens the very purpose—the ethos—of the regime.

This chapter explores tensions between the necessity for cooperation between global administrative organizations in order to avoid or minimize the effects of

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[526] Jenks, "The New Science and the Law of Nations" *supra* note 159 at 328.
[527] ILC Report *supra* note 5 at 14.
[528] US State Department, "Address by President Dwight Eisenhower to the UN General Assembly" (22 September 1960) online: http://www.state.gov/p/io/potusunga/207330.htm
[529] Outer Space Treaty *supra* note 107 at Article II.
[530] ILC Report *supra* note 5 at 14.

fragmentation, on the one hand, and the dangers inherent in such cooperation, on the other hand. As discussed in Chapter Three of this thesis, the ILC Report limited itself to substantive problems with fragmentation, but it did not address problems of institutional fragmentation.[531] The ILC defined institutional fragmentation as having to do with, "…the competence of various institutions applying international legal rules and their hierarchical relations *inter se*."[532] The notion of institutional fragmentation calls into question the nature and structures of the institutions that are called upon to administer to specialized branches of international law. These are addressed in the next section of this chapter. Then, the evolution of space law is briefly explored through an article that addresses the debates over the progressive development of space law as envisioned by two of its earliest and seminal scholars. Finally, the scholarship of Koskenniemi on fragmentation, published subsequent to the ILC Report, is used to illustrate some issues of institutional fragmentation and to contextualize the administrative bodies for air and space law within fragmentation concepts.

6.1 Global administration and types of global administrative organization

In a 2005 article, Benedict Kingsbury, Nico Krish and Richard B. Stewart addressed, "The Emergence of Global Administrative Law," by building upon the efforts of the Global Administrative Law Project of New York University School of Law.[533] The authors recognized that:

> …many of the international institutions and regimes that engage in 'global governance' perform functions that most national public lawyers would regard as having a genuinely administrative character: they operate below the level of highly publicized diplomatic conferences and treaty-making, but in aggregate they regulate and manage vast sectors of economic and social life through specific decisions and rulemaking.[534]

[531] *Ibid* at 13-14.
[532] *Ibid* at 13.
[533] Kingsbury *supra* note 26.
[534] *Ibid* at 17.

These activities include "rulemaking, not in the form of treaties negotiated by states, but of standards and rules of general applicability adopted by subsidiary bodies."[535] In this regard, the authors identify several types of global administration, some of which are described as follows.

The first type of global administration is 'international administration', entailing formal inter-governmental organizations established by treaty or executive agreement.[536] The authors cite as an example of this type of arrangement, "the UN Security Council and its committees, which adopt subsidiary legislation [and] take binding decisions related to particular countries…."[537] ICAO, established by the Chicago Convention, appears to fit this description. Unlike the Security Council, however, it has only quasi-legislative and quasi-judicial powers.[538] COPUOS, however, was not established by treaty, but by UNGA Resolution and, as a committee under the General Assembly, has no legislative powers. As discussed below, this distinction is crucial when examining the effects of global administration on the progressive development of air and space law.

The second and third types of global administration identified by the authors appear to be somewhat related. They are 'transnational networks and coordination arrangements', on the one hand, and 'distributed administration' on the other. The former are "characterized by the absence of binding, formal decision-making structure and the dominance of informal cooperation among state regulators."[539] The authors describe this arrangement as a "horizontal form of administration [that] can, but need not, take place in a treaty framework." 'Distributed administration', on the other hand, occurs where "domestic regulatory agencies act as part of the global administrative space: they take decisions on issues of foreign or global concern."[540]

The MTCR and Wassenaar Arrangement, described above, appear to fall under the category of 'transnational networks and coordination arrangements'. They are

[535] *Ibid.*
[536] *Ibid* at 21.
[537] *Ibid*.
[538] See: Chapter 1*supra* at subpart 1.3; Chapter 3 *supra* at subpart 3.3.
[539] Kingsbury *supra* note 26 at 21.
[540] *Ibid* at 21.

informal arrangements between States which function through the domestic implementation of their provisions, notwithstanding their character as non-binding.[541] As another example of this type of global administration, the authors offer bilateral arrangements for the mutual recognition of national regulatory standards or conformity of procedures, executed by national regulatory authorities.[542] The space-related MOCs executed between the US FAA-AST and civil aviation regulatory agencies of the UK, Italy and France are examples of this type of administrative organization.[543] It is in this regard that the second and third types of global administration appear to overlap, for both the second category (transnational networks and coordination arrangements) and the third category (distributed administration), seem to describe the current status of the participation of domestic regulatory agencies in the administration of, and thereby, the progressive development of, space law.

Finally, the last type of global administration identified by the authors occurs when regulatory functions are carried out by private bodies.[544] By way of example, the authors offer the International Standardization Organization (ISO), which develops standards that harmonize product and process rules around the world, including standards for aviation and space-related activities.[545] The European Cooperation for Space Standardization and the European Committee for Standardization are further examples of these types of administrative organization.[546]

The foregoing categorizations are not absolute and merely represent ways to conceive the entities that administer to the regimes of air and space law. The utility of these categorizations stems from their differentiation of the various types of global administration. From these categorizations, it can be seen that States have embraced different types of administrative organization for air law and space law. For air law, States have created a formal, treaty-based type of global administration, embodied for the most part by a single international administrative organization: ICAO. On the other

[541] See, Chapter 4 *supra* at subpart 4.3.
[542] Kingsbury *supra* note 26 at 21.
[543] See, Chapter 5 *supra* at subpart 5.3.
[544] Kingsbury *supra* note 26 at 22.
[545] *Ibid*; Jakhu, Sgobba and Dempsey *supra* note 195 at 36.
[546] *Ibid* at 33-35.

hand, States have embraced more fluid and disembodied types of global administration for space law. Although the fragmentation of air and space law into separate and distinct regimes may have been an historical accident,[547] the types of administrative organization that grew up around these specialized regimes were not accidental and, at least in regards to space law, they resulted out of debates over the nature of public international law itself. These debates and their outcome are described in the next section.

6.2 A critique of the evolution of space law: Jenks v McDougal

According to S.G. Sreejith, Jenks was instrumental in laying the foundation for space law, framing it within positivist notions that international law should develop into a 'common-law of mankind' and thereby charting a course for space law's progressive development.[548] In order to illustrate this, Sreejith contrasts Jenks' approach with that of American jurist Myers McDougal. [549] The contrast is explained as follows.

In an address to the International Institute of Space Law (IISL), Jenks stated, "Space law, like air law, is not a substantive branch of the law…. It consists of an angle of preoccupation with a wide range of diverse problems rather than a well-defined area demarcated by the substance of the problems which it embraces."[550] For Jenks, "[S]pace law had to be integrated into the development of the common law of mankind."[551] He advocated, "a holistic approach toward space law, asserting that space law is not a self-sufficient discipline distinct from international law."[552] This approach involved the formulation of a robust, international legal framework of comprehensive treaties and principles.[553] Thus, Jenks sought "to develop rules of universal applicability through

[547] See, Chapter 1 *supra* at subpart 1.4 (describing the failure of air and space law to coalesce into a unified aerospace law regime as the effect of the Soviet Union's abstention from the Chicago Conference).
[548] See, generally, Sreejith *supra* note 117.
[549] *Ibid* at 348.
[550] *Ibid* at 349 (quoting: C. Wilfred Jenks, "Seven Stages in the Development of Space Law" (1968) 11 Proc. Colloq. Outer Space 246, 262-263).
[551] Sreejith *supra* note 117 at 350.
[552] *Ibid* at 354.
[553] *Ibid*.

comparative study and synthesis of various legal systems."[554] Implicit in this approach, however, is a classical, State-centric view of the international legal order.

McDougal, on the other hand, advocated a 'policy-oriented jurisprudence' of an individual-centered world.[555] In order to bring about what he referred to as a 'space commonwealth,' McDougal sought to shift the focus from the sovereignty of nation-States to a 'world social process' in which individuals participated directly.[556] Based upon his realization that officials of nation-States "will manipulate doctrines and principles for the realization of preferred values," McDougal found objectionable Jenks' faith in legal doctrines and "eschews [Jenks'] traditional positivist approach of laws as rules and rules as binding."[557] He linked law with the "'patterns of effective and authoritarian decisions concerning the distribution of values in [a] social system' and thereby provided a social spectrum for evaluating legal relationships."[558]

Sreejith concisely summarizes the difference between these two approaches:

> "Whereas Victorian positivists like Jenks stood for a legal order based on doctrines, rules, and equity and compromising treaties, international custom, and general principles of law, American scholars held an instrumentalist view that law is an apparatus to balance societal interests and that any further action should be directed in terms of this conception of law."[559]

He points to the divide between American instrumentalists and Victorian positivists (rather than differences between two superpowers locked in a bi-polar battle over capitalist and communist ideologies) as the real source of impasse in the progressive development of international space law.[560] At the international level, Jenks' view was embraced, for "…space law scholars vigorously pursued the positivist strategy by

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[554] *Ibid*.
[555] *Ibid* at 350-351.
[556] *Ibid* at 351.
[557] *Ibid* at 355.
[558] *Ibid* at 356 (citing: Oran R. Young, "International Law and Social Science: The Contributions of Myers S. McDougal" (1972) 66 Am. J. Int'l L 60, 63).
[559] Sreejith *supra* note 117 at 356.
[560] *Ibid.*

regulating state conduct through treaties and rules; most of the time they ignored the societal dimension of space activities."[561]

Ironically, rather than brining about Jenks' common law of mankind, the Victorian-positivist sensibilities of space law jurists contributed to the creation of a fragmented, specialized regime, somewhat disassociated from other branches of international law.[562] Moreover, States' sensitivities to national security concerns, implicit in outer space affairs, appear to have frozen international space law within Jenks' positivist scheme—the progressive development of space law is dominated by formalistic State-to-State diplomacy within COPUOS, the Conference on Disarmament or *ad hoc* meetings of States.[563] In a further twist of irony, the inability of States to come to any kind of agreement over binding norms within these frameworks has led to only minor breakthroughs in the progressive development of space law in the form of 'soft law'—guiding principles, recommendations and non-binding codes of conduct that are not unlike public policy at the domestic level and, arguably, similar to the policy-oriented jurisprudence of McDougal.

The US is somewhat responsible for this phenomenon, as today it generally opposes the formulation of binding international norms for outer space.[564] US domestic policies have followed suit: in terms of export controls, the notion of static, formulaic laws has given way to authoritarian, *ad hoc* decision-making by the US Department of Defense.[565] This authoritarianism is much in line with the description of McDougal's policy-oriented jurisprudence. Witness further in this regard, the rise of the George Washington Space Policy Institute as the focal-point of US academic endeavors for the

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[561] *Ibid.*
[562] *Cf. Ibid* at 377-413 (Contending that space law, for the most part, avoided the pitfalls of fragmentation and only recently, with the advent of training space lawyers to function in a burgeoning commercial market brought about by globalization, began to experience the fragmentation witnessed with other branches public international law).
[563] See, *e.g.*: "Multilateral Negotiations on International Code of Conduct for Outer Space Activities" EU Delegation to the UN—New York (27-31 July 2015) online: http://eu-un.europa.eu/articles/en/article_16615_en.htm
[564] See, *e.g.*: Bill Gertz, "US Opposes New Draft Treaty from China and Russia Banning Space Weapons" The Washington Free Beacon (19 June 2014) online: http://freebeacon.com/national-security/u-s-opposes-new-draft-treaty-from-china-and-russia-banning-space-weapons/
[565] See, *e.g.*: Gold *supra* note 182; Mike N. Gold, "Thomas Jefferson, We Have a Problem: The Unconstitutional Nature of the U.S.'s Aerospace Export Control Regime as Supported by Bernstein v. U.S. Department of Justice" (2009) 57 Clev. St. L. Rev. 629.

progressive development of space law,[566] or the launch of *The Journal of Astrosociology*, with its inaugural edition published in 2015.[567] Thus, at least in the US, McDougal's policy-oriented jurisprudence, with its emphases on authoritarianism, policy (as opposed to law) and social relevance, may have won out in the long-run.

The globalization of space is prompting States to seek a relaxation of export controls in order to allow the operation of US-developed suborbital vehicles within foreign territories. These developments are coming by the way of *ad hoc* executive agreements for cooperation in the export of suborbital vehicles.[568] Moreover, concerns over safety, driven largely by the increase in commercial suborbital launch providers, has hastened the involvement of ICAO—a global administrative body that is breaking down the inherent character of international space law as a largely State-centric diplomatic process and replacing this process with bureaucracy driven largely by technical experts balancing interests.[569] Thus is the landscape of the global administration of space law evolving, as is further explored in the next two sections.

6.3 Koskenniemi on the fate of public international law

In an article published subsequent to the ILC Report, Koskenniemi again addressed the subject of fragmentation.[570] Although the article does not expressly address institutional fragmentation, it casts problems with institutional fragmentation within larger debates over constitutionalism and legal pluralism in international law, as well as within discourse regarding the relationship of international law to the substantive field of international relations.

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[566] See, "About the Space Policy Institute" George Washington University, online: https://www.gwu.edu/~spi/about.cfm; See also, Benjamin Soloway, "Lawyers in Space" Foreign Policy (15 April 2015) online: http://foreignpolicy.com/2015/04/15/lawyers-in-space-legal-international-space-station/ (Explaining that Henry R. Herztfeld, a space policy expert at George Washington University Space Policy Institute, was a private sector advisor to the US delegation at the 2015 meeting of the UN COPUOS Legal Subcommittee).

[567] Astrosociology Research Institute, *Journal of Astrosociology*, volume 1(2015), online: http://www.astrosociology.org/Library/PDF/Journal/JOA-Final/JournalOfAstrosociology-Vol1.pdf

[568] See, Chapter 5 *supra* at subpart 5.3.

[569] See, Chapter 1 *supra* at subpart 1.5.

[570] Koskenniemi *supra* note 10.

Koskenniemi wrote, "Some 60 to 80 years ago, a small group of cosmopolitan-minded lawyers translated the diplomacy of States into the administration of legal rules and institutions."[571] He identifies the work of Oppenheim and Lauterpacht as leading the way toward a "political realist reading of statehood with a strong anti-sovereignty ethos…."[572] He explained that this 'cosmopolitan ethos' found a home in the UN, prompting scholars such as Jenks and Friedmann to identify it as "the transformation of international law from a law of co-ordination to a law of world-wide co-operation to further shared ends."[573]

Rather than a common law of mankind, however, a fragmented international law began to emerge. Koskenniemi explained:

> Specialization…started to *reverse* established legal hierarchies in favour of the structural bias in the relevant functional expertise. Even though this process was often organised through intergovernmental organizations, the governmental delegations were composed of technical…experts in a way that transposed the functional differentiation at the national level onto the international plane.[574]

It may be that the success of highly technical international intergovernmental organizations such as the International Telecommunications Union (ITU) and ICAO, both of which preceded the creation of the UN, lead the way toward this transposition, as they routinely employ functional experts and create highly specialized and technical rules for the global governance of particular functionally-organized activities.

Returning to Koskenniemi's article, he explained that "The point of the emergence of [a specialized regime] is precisely to institutionalise the new priorities carried within such fields. As a result, political conflict will often take the form of conflict of jurisdiction," wherein jurisdictional competence will be determined by how a

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[571] *Ibid* at 2.
[572] *Ibid.*
[573] *Ibid* at 3 (citing, W. Jenks, *The Common Law of Mankind* (London: Stevens, 1958); W. Friedmann, *the Changing Structure of International Law* (London: Stevens, 1964).
[574] Koskenniemi *supra* note 10 at 4.

matter is described.[575] He cites the 1998 *Beef Hormones* case as an example of a legal principle of one regime being determined as inapplicable by an administrative institution—in this case, a quasi-judicial body—of another regime.[576] He explained that the Appellate Body of the World Trade Organization determined that the Precautionary Principle of international environmental law was not binding on the WTO.[577] Naturally, this example raises the questions as to whether there are principles of international space law that may be determined to be inapplicable by ICAO in its regulation of space-related activities.

Koskenniemi echoes some of the statements in the ILC Report on the importance, or lack thereof, of the subject-matter criterion. He wrote, "If legal principles that emerge in certain fields may be inapplicable in others, the crucial question will be to determine under which regime they should be decided."[578] And further, "A standard way to go about this would be to try to find the regime that is most relevant, or specific, to a matter."[579] He points out the weakness of this approach, stating:

> "The choice of one among several applicable legal regimes refers back to what is understood as significant in a problem. And the question of significance refers back to what the relevant institution understands as its mission, its structural bias."[580]

Thus, the choice of the relevant institution tends to predetermine the choice of regime, and thereby, predetermine which principles will be applicable.

Koskenniemi points out a further difficulty: even where an institution is called upon to apply another legal regime—for example, the case of ICAO applying principles of space law to regulate suborbital vehicles—the institution would apply the principles of

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[575] *Ibid* at 5.
[576] *Ibid* (citing: *European Communities—Measures Concerning Meat and Meat Products (Hormones)* 13 February 1998, WT/DS26/AB/R, WT/DS48/AB/R at 123-125).
[577] Koskenniemi *supra* note 10 at 5.
[578] *Ibid*.
[579] *Ibid*.
[580] *Ibid* at 6.

the other legal regime according to that institution's object and purpose.[581] It stands to reason that this phenomenon—somewhat akin to an institutional bias—could undermine the object and purpose of the regime being applied. Koskenniemi postulates that the danger of a world of plural regimes (i.e.: a fragmented international order) is that, "political conflict is waged on the description and re-description of aspects of the world so as to make them fall under the jurisdiction of particular institutions."[582] Thus, "fragmentation becomes struggle for institutional hegemony."[583] The problem, he noted, is that, "If there are no regime-independent ways of describing an issue, the door is open to the unilateral assumption of jurisdiction by experts who feel themselves powerful enough to have the last word."[584] Rather than conceiving themselves as part of the Lauterpacht tradition of global federalism, these experts "may work for private or public-private institutions, national administrations, interest groups or technical bodies, developing best practices and standardized solutions…as part of the management of particular regimes."[585] By "recasting problems of politics as problems of expert knowledge * * * traditional international law is pushed aside by a mosaic of particular rules and institutions, each following its embedded preferences."[586] This phenomenon seems to describe current trends in the regulation of suborbital vehicles, as is explored in more detail in the following section.

6.4 The fate of public international air and space law

The divergent mandates and processes of ICAO and COPUOS offer an interesting example of the phenomena described in the previous paragraphs. For instance, as discussed above, COPUOS works under State-to-State dialogue and consensus decision-making. Although experts contribute to the development of new guidance materials in working groups and expert groups under the Subcommittees of COPUOS,[587] State-to-State consultations are the norm whereby these materials are developed and adoption of

[581] *Ibid* at 7.
[582] *Ibid*.
[583] *Ibid* at 8.
[584] *Ibid*.
[585] *Ibid*.
[586] *Ibid* at 8-9.
[587] See, *e.g.*: UNOOSA, "Long-term Sustainability of Outer Space Activities" online: http://www.unoosa.org/oosa/en/ourwork/topics/long-term-sustainability-of-outer-space-activities.html

principles and guidelines takes place via consensus decision-making in the plenary sessions of the Committee and its Subcommittees.[588] Moreover, in order to amend the UN treaties on space law, a diplomatic conference with State-to-State negotiations would have to be convened. Thus, notwithstanding its characterization as a specialized regime that typifies the phenomenon of fragmentation, by functioning under consensus decision-making and employing State-to-State dialogue, the legal regime for outer space, as well as the Committee responsible for the progressive development of space law, exhibits many of the political decision-making processes of traditional international law—the Victorian-positivist sensibilities advocated by Jenks and described by Sreejith, above.

ICAO, on the other hand, does not employ consensus decision-making and its constitutive instrument, the Chicago Convention, can be amended much more easily. The ICAO General Assembly, which is composed of all Contracting States to the Chicago Convention, takes decisions and adopts resolutions by majority vote and can amend the Chicago Convention by decisions taken by a qualified majority.[589] New SARPs and Procedures for Air Navigation Services (PANS) are formulated with input from technical experts—often representatives of industry stakeholders—in Working Groups and Panels formed under the ICAO Air Navigation Commission (ANC).[590] The ANC is composed of 19 members, who are appointed by the ICAO Council on the basis of professional expertise.[591] According to Diederiks-Verschoor, "The members of the [ANC] carry out their task in accordance with personal technical and professional expertise rather than by virtue of a mandate of a State."[592] Proposed SARPs and PANS are presented for adoption to the ICAO Council, which is composed of 36 States elected by the ICAO General Assembly based upon geographic and professional qualification criteria.[593] Generally, ICAO Council decisions are taken by majority vote.[594] Thus, in ICAO, State-to-State dialogue and consensus-based decision-making are not employed. Instead, new measures are developed by technical experts and adopted by majority voting. Jansentuliyana

[588] Jasentuliyana *supra* note 93 at 23-29.
[589] Diederiks-Verschoor *supra* note 68 at 33.
[590] *Ibid* at 34.
[591] *Ibid* at 35.
[592] *Ibid*.
[593] *Ibid* at 34.
[594] *Ibid* at 33.

identifies the separation of technical and political aspects civil aviation as the source of ICAO's success in law-making.[595]

ICAO's involvement in the regulation of space-related activities is spear-headed by a space learning group.[596] ICAO is compiling regulatory materials relative to the commercial space sector and plans to outline a work program for consideration by the ANC.[597] The ICAO secretariat administering to the learning group has recognized the legal short-comings of ICAO's mandate for the regulation of space-related activities, but nevertheless has recommended moving forward by addressing technical aspects of the regulation of such activities—a presumption that the law will follow. In this vein, the ICAO secretariat has recommended the formulation of language pertaining to suborbital flights to be included in future iterations of ICAO's Global Air Navigation Plan (GANP) and Global Aviation Safety Plan (GASP).[598] The GANP and GASP are essentially long-term policy statements approved by the ICAO General Assembly and updated periodically to take account of evolving circumstances in global aviation.

Thus, ICAO is attempting to lay to the side issues of conflicts between air law and space law and to address technical considerations presented by suborbital flight, related to global air navigation and global aviation safety. It is unclear whether this process is positive or negative for the progressive development of space law. On the one hand, Jenks noted the importance of conflict avoidance and recommended procedural safeguards for avoiding the creation of conflicts when creating new norms.[599] One of the safeguards he recommended was inter-agency cooperation in the formulation of new norms by intergovernmental bodies.[600] In this regard, the participation of UNOOSA in the ICAO space learning group offers some promise, as inputs from UNOOSA could avoid the creation of new conflicts or could lead to the harmonization of apparent conflicts between air and space law. UNOOSA, however, does not have a mandate to

[595] Jansentuliyana *supra* note 93 at 379.
[596] The author of this thesis is a member of the ICAO space learning group.
[597] ICAO State Letter *supra* note 143.
[598] Respectively: ICAO Global Air Navigation Plan, online: http://www.icao.int/sustainability/pages/GANP.aspx; ICAO Global Aviation Safety Plan, online: http://www.icao.int/safety/safetymanagement/pages/gasp.aspx
[599] Jenks *supra* note 18 at 429-433.
[600] *Ibid* at 429.

formulate policy on behalf of COPUOS member States. Thus, the extent of its participation in the ICAO space learning group may be limited.

On the other hand, by including suborbital flights in the GANP and GASP, ICAO is applying its own norms—its own ethos—to suborbital flights without first determining the extent to which air law or space law is the applicable regime. Furthermore, by focusing on technical aspects only, ICAO is doing this without attempting to harmonize the legal regimes. This process by-passes the first steps in conflict resolution—conflict ascertainment and harmonization—and moves directly to a prioritization of norms. Because of the autonomous operation principle, which indicates that ICAO should apply its constitutional framework—its procedures and rules—there exists a danger that ICAO will prioritize air law over space law.[601] Or similarly, as described by Koskenniemi and discussed above, ICAO may grant priority to norms of space law, but it will do so according to its own administrative objectives and purposes, thus risking the subjugation of the object and purpose of the space law regime to ICAO's ethos. Under either circumstance, because this prioritization will be done on the basis of technical considerations, it is certain that the conflict resolution techniques identified by Jenks and the ILC—*e.g.*: *lex special* principle, *lex posteriori* principle—will not be employed.

In regard to the autonomous operation principle, Jenks is careful to note that, "…organizations governed by or responsible for the administration of conflicting instruments must…operate provisionally on the basis of their own instruments until the conflict can be dealt with by negotiations…."[602] Given ICAO's internal process for the development of SARPs and PANS by technical experts, it is unclear when such negotiations would take place. For space law, States have retained the Victorian-positivist sensibilities of traditional international law. This was made abundantly clear during the EU Multilateral Negotiations on an International Code of Conduct (ICOC) for Outer Space Activities, wherein much of the State-to-State dialogue was spent in advocating for the appropriate forum for the development of an ICOC.[603] States vied for COPUOS, the Conference on Disarmament or the UN General Assembly, with their choice of forum

[601] *Ibid* at 448.
[602] *Ibid.*
[603] Multilateral Negotiations on an ICOC for Outer Space Activities *supra* note 558.

dependent upon their prioritization of space law and disarmament law norms.[604] This debate is not happening in regards to ICAO's involvement in the regulation of space-related activities. Indeed, ICAO appears to be acting *sua sponte*. If nothing more, by including language pertaining to suborbital flights in the GANP and GASP, ICAO undermines the political processes of State-to-State dialogue and consensus-based decision-making employed by the member States of COPUOS and replaces these with its own rule-making preferences.

As described above in subpart 6.1, COPUOS is not a global administrative body in the same sense as ICAO: it has no quasi-legislative powers. Global administration of space law is done largely by domestic regulators functioning on the international plane. Koskenniemi also recognized that national administrations can be a hegemonic force in the determination of the application of a regime and in its interpretation.[605] Eyal Benvenisti and George W. Downs have characterized this, as well as the use of informal government-to-government coordination—such as the MOCs executed by the FAA—as stronger States exploiting fragmentation to maximize their own gains at the expense of weaker States.[606] Although this seems nefarious, it may simply be that the US prefers not to have to remake the wheel by further conforming its already existent regulations to a new aviation regime promulgated at the international level by ICAO. It should be noted, however, that it is domestic regulators (via bilateral intergovernmental agreements) that are jockeying with an international administrative organ for institutional hegemony in the regulation of suborbital flight. The self-perpetuating nature of a specialized regime that is administered by a global body with quasi-legislative powers could present serious problems for domestic regulators in their efforts to shape international space governance according to their domestic space law regimes.[607]

Thus, the choice of organization for the administration of air and space law *vis-à-vis* suborbital flight seems to fall to the poles of the types of global administration: an

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[604] *Ibid*; See also, Summary of the Chair, Multilateral Negotiations on an ICOC for Outer Space Activities (31 July 2015) online: http://papersmart.unmeetings.org/media2/7650931/chairs-summary-corrected-1-.pdf
[605] Koskenniemi *supra* note 10 at 8-9.
[606] Eyal Benvenisti and George W. Downs, "The Empire's New Clothes: Political Economy and the Fragmentation of International Law" (2007) 60(2) Stanford L R 595, 618.
[607] Khrebtukova *supra* note 338 at 63-64; Chapter 3 *supra* at subpart 3.3.

international administrative organ (ICAO) on the one hand; domestic regulators (US FAA, UK CAA, Italy's ENAC, *etc.*) on the other. There is, however, a third alternative: the creation of a global administrative body dedicated to space-related activities and endowed with quasi-legislative authority. Jansentuliyana recommended the establishment of such an entity, empowered with the quasi-legislative powers to promulgate SARPs for outer space.[608] This option seems to be the best, as it avoids the potential that ICAO will apply air law to suborbital flights, or apply space law but under ICAO rules and procedures. It also avoids the potential institutional hegemony of administration by domestic regulatory agencies. A global regulatory body dedicated to space-related activities could apply whichever regime States choose for the regulation of suborbital flight, or even a hybrid of air and space law, but in a manner that avoids the sacrifice of the object and purpose of one regime for that of another.

It should be recognized, however, that the creation of such organization would not eliminate the problem of fragmentation itself or its effects on the regimes of air and space law, but would actually be a step toward further calcification of space law as a specialized regime, separate and distinct from other branches of international law. Thus, the process to avoid the effects of fragmentation—such effects being, in this case, the potential sacrifice of the object and purpose of one regime for those of another regime—further enhances derisive forces—in this case, specialization and managerialism implicit in the dominance of technical expertise—thereby further exacerbating the problems of fragmentation, which have been visited upon the regimes of air and space law by globalization and the advancement of norm-cross-cutting technologies.

6.5 Conclusions

Global administrative organization has expanded at pace with globalization and fragmentation, and it appears that these trends are linked. Chapter Six illustrated that the entities administering to international law can take various forms, each with a genuinely administrative character regulating and managing increasingly greater areas of economic and social life. The types of organizations administering to air and space law have grown

[608] Jansentuliyana *supra* note 93 at 381.

out of the innately unique characteristics of those substantive fields of law, thus endowing these administrative organizations with the ethos of their respective substantive regime.

Where globalization and advancements in technology cause specialized regimes of international law to overlap and conflict, their administrative organizations also can have overlapping competencies. In the case of air and space law, this has resulted not only in ICAO moving toward the regulation of space-related activities, but also in domestic regulators making hegemonic ovations to secure the success of their type of organization and their domestic substantive regimes. The danger is that one administrative organization may, by its structure and/or influence, be more powerful and, through its bureaucracy and level of technical expertise, come to impose its ethos within the sphere of another specialized regime, thereby undermining that regime's object and purpose.

This phenomenon can be avoided by the establishment of an appropriate organization for the administration of the most relevant international regime, in particular for suborbital flight, but also for space-related activities generally. A hybrid of two or more regimes could also be employed, where the organization is specifically tailored to administer to such hybrid regime. In the case of the application of the air and space law to suborbital vehicles, it is not yet clear which regime is most appropriate, but both appear to apply. Likely, the most appropriate administrative organization for the regulation of space-related activities would be a new entity endowed with the quasi-legislative authority for such regulation.

Epilogue: a critical evaluation of this thesis

The foregoing thesis attempted to contextualize air and space law within larger discussions over globalization and the progressive development of public international law. Particularly, it attempted to contextualize conflicts between air and space law within scholarship addressing the fragmentation of international law. The thesis did so by first introducing the regimes of air and space law, and couching their development within the history of scholarly debates over the fragmentation and/or diversification of international law. This was followed by an introduction of the burgeoning global market for advancing space-related technologies that are driving synergies and exacerbating conflicts between air and space law.

Next, the thesis proceeded to examine both Jenks' concept of the conflict of law-making treaties and the ILC Report on the fragmentation of international law. It outlined the processes for conflict ascertainment, conflict resolution and systematic interpretation, as identified by Jenks and further developed by the ILC. The thesis explored scholarly treatments of conflicts between air and space law *vis-à-vis* suborbital flight. It applied some of the conflict ascertainment and resolution techniques to questions arising out of the application of air and/or space law to such activities. Furthermore, it studied the treatment of suborbital flight by two States' regulatory regimes—one existent and one proposed. Finally, it explored the effects of different types of global administrative organization on the application of one or more specialized legal regimes. The thesis concluded that the best option for dealing with conflicts between air and space law arising out of cross-cutting technologies is to establish a global organization specifically tailored to administer to space-related activities.

As Jenks and the ILC Report acknowledged, public international law has always been somewhat fragmented due to the diversity of national regimes that participate in it.[609] Globalization, as well as administrative organization at the global level, add new complexities to this already fragmented world. These new elements are made manifest

[609] ILC Report *supra* note 5 at 15.

through the application of technical expertise and managerialism at the international level.

Koskenniemi associates the movement away from the political project of international law, as well as the employment of technical managerialism at the global level, with the rise of international relations.[610] He explains that:

> International law and sociology both arose in the late nineteenth century to map the breakdown of a traditional world—in the one case into sovereign States, supported by narratives of history, culture and spirit, in the other case into increasingly specialized, functionally organized ways of life emerging from narratives about economic and technological progress.[611]

For Koskenniemi, "Thinking about international law in apolitical and technical terms opened the door for expert rule and managerialism, not in competition with politics as in the domestic realm, but as a *substitute* for it."[612] He identifies such managerialism as "the dark side of the inter-war project of imagining international law in technical terms."[613] If history repeats itself, as it so often does, this current period of confusion could lead to new efforts at the constitutionalization of international law.[614]

New narratives, such as those of international relations experts, political scientists and sociologists, however, seek to explain and reform global structure in ways that did not exist in the post-World War I period. Thus, Koskenniemi recognizes that international relations experts seek to replace "international law's archaic mores by a political science inspired language of governance, regulation, compliance and legitimacy."[615] Of this, he writes:

> I like to think of this as a hegemonic move on the part of international relations experts as an effort to occupy the normativity previously held by

[610] Koskenniemi *supra* note 10 at 20-21, 24, 29.
[611] *Ibid* at 24.
[612] *Ibid* at 29 (emphasis in the original).
[613] *Ibid*.
[614] Martineau *supra* note 12 at 10, 13-14; Chapter 1 *supra* at subpart 1.2.
[615] Koskenniemi *supra* note 10 at 29.

> lawyers. A sociology of complexity articulates a project of technological reason that seems, after all, so much more up to date than the Victorian antics of international law. Normative politics is replaced by what the newspeakers call 'new global division of regulatory labour'. When I hear this language I recognize the blank stare in the eyes of my European colleagues—and share it.[616]

This thesis simultaneously succumbed to the hegemony of international relations as well as advocated a position in opposition to such hegemony. It focused on regime interactions and often conflated law and regulation, thus embracing the habits of international relations studies.[617] At least in regards to space law, however, Jenks' Victorian-positivist scheme still seems most appropriate: States charting a course for the "exploration and use of outer space…for the benefit and in the interest of all countries, irrespective of their degree of economic or scientific development" requires a formalism and stateliness implicit in Victorian antics.[618]

Thus, the ethos of the regime for space law rises above the technical expertise and managerialism that have become inherent in the application of air law by ICAO. By advocating the establishment of a global organization for the administration of space law and for the regulation of space-related activities, this thesis seems to fail: in an attempt to preserve the object and purpose of both air and space law regimes, it advocates for a movement away from the ethos of the space law regime. Nevertheless, by re-contextualizing conflicts between air and space law within fragmentation rubric, it is hoped that this thesis provides a valuable contribution to future efforts at the resolution of conflicts between the regimes of air and space law, thereby enabling their application in a manner that preserves the ethos of both regimes.

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[616] *Ibid* at 23.
[617] *Ibid.*
[618] Outer Space Treaty *supra* note 107 at Article I.

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