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ISAVELLA MARIA VASILOGEORGI

INTERNATIONAL REGULATION OF AEROSPACE VEHICLES:
AT THE CROSSROADS OF REGENESIS AND REDEFINITION

Supervisor: Dr. Prof. Ram S. Jakhu

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To my *Family*, the one I was blessed with and
the one that I chose for myself, for the *ζῆν*
And to my *Teacher*, for the *εὖ ζῆν*.

INTERNATIONAL REGULATION OF AEROSPACE VEHICLES:
At the Crossroads of Regenesis and Redefinition

by

Isavella Maria Vasilogeorgi, LL.M.

This Doctoral Dissertation was prepared by the author in her personal capacity as a DCL Candidate with the Institute of Air & Space Law, Faculty of Law, McGill University. It is not related with the author's duties and responsibilities as an Associate Legal Officer with the General Legal Division, Office of Legal Affairs, of the United Nations, and it does not reflect, in any way, the official position of the United Nations for the issues discussed herein.
All opinions presented are exclusively those of the author.

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ABSTRACT

The imminent emergence of Hybrid Aerospace Vehicles (HASVs), capable of operating seamlessly through the airspace and outer space, is not only a technological milestone and the latest trend in space-related private investments and activities; first and foremost, it is a tangible representation of a jurisdictional conflict, which lay dormant for decades but is now stirring restlessly. The much anticipated beginning of commercial operations of HASVs necessitates the re-examination of the current legal framework regulating international transportation through the airspace and outer space, particularly with a view of ensuring safety. In this particular context, safety extends not only to passengers and crew of the HASVs themselves, but also to passengers and crew of aircraft operating in what is traditionally considered as airspace, as well as to traditional space objects operating in the various orbits around Earth. The best solution to achieving safety is through the integration of this new transportation technology into the two pre-existing systems.

The present Dissertation comparatively analyses suggested solutions to achieving as smooth an integration as possible, with emphasis on the issue of jurisdiction over Space Traffic Control. Devided in two parts, the Dissertation covers traditional approaches to jurisdiction, territorial and subject matter, in the first part, to progress on to addressing aspects of functional jurisdiction in the second. The primary original contribution of the Dissertation is the proposal for the creation of an International Space Traffic Control Authority and the corresponding arguments to support such suggestion.

What hopefully makes this Dissertation different, and constitutes its secondary original contribution to international (aerospace) law, is the approach selected to address the

jurisdictional challenges posed at both the theoretical level, as well as "on the field" by the technological developments leading to the creation of a new means of international transportation. These challenges include, among others, the integration of existing and emerging means of transportation; the revisiting of the very notion of internationality in transportation and corresponding consequences thereof; the law-making ability of international organizations, especially if they are self-portrayed as technical rather than political; the extrapolation of conclusions regarding the extension of authority of international organizations in domains, physical and subject-matter, that were not in their original purview; and the situating of space law within the broader context of global governance.

RESUME

L'émergence imminente de Véhicules Hybrides Aérospatials (HASVs), capables de fonctionner de façon transparente à travers l'espace aérien et de l'espace, est non seulement un jalon technologique et la dernière tendance dans les investissements et les activités privées liées à l'espace; d'abord et avant tout, il est une représentation tangible d'un conflit de compétence, qui sommeillait depuis des décennies, mais est maintenant en remuant nerveusement. Le début très attendu des opérations commerciales de HASVs nécessite le réexamen du cadre juridique en vigueur en matière de transport international à travers de l'espace aérien et de l'espace, notamment en vue d'assurer la sécurité. Dans ce contexte particulier, la sécurité étend non seulement pour les passagers et l'équipage du HASVs eux-mêmes, mais aussi pour les passagers et l'équipage des aéronefs opérants dans ce qui est traditionnellement considéré comme l'espace aérien, ainsi que les objets spatiaux traditionnels opérants dans les différentes orbites autour de la Terre. La meilleure solution pour assurer la sécurité est grâce à l'intégration de cette nouvelle technologie de transport dans les deux systèmes pré-existants.

La présente Thèse analyse relativement solutions proposées pour atteindre aussi lisse que possible une intégration, en mettant l'accent sur la question de la juridiction sur le contrôle du trafic spatial. Divisée en deux parties, la Thèse couvre les approches traditionnelles de la compétence, compétence matérielle et compétence territoriale, dans la première partie, afin de progresser à aborder les aspects de compétence fonctionnelle dans la deuxieme. La principale contribution originale de la Thèse est la proposition de la création d'une Autorité Internationale de Contrôle du Trafic Spatial et les arguments correspondants pour soutenir une telle suggestion.

Qu’est-ce qu’on espére mait cette Thèse différente, et constitue sa contribution originale secondaire au droit international (aérospatial), est l’approche choisie pour relever les défis de compétence posées à la fois au niveau théorique, ainsi que «sur le terrain» par les développements technologiques conduisant à la création d’un nouveau moyen de transport international. Ces défis comprennent, entre autres, l’intégration des moyens de transport existants et émergents; la revisitation de la notion même de l'internationalité dans le transport et les conséquences correspondantes de celle-ci; la capacité des organisations internationales de légiférer, surtout si elles sont auto-dépeint comme des organisations techniques plutôt que politiques; l’extrapolation des conclusions concernant l’extension de l’autorité des organisations internationales dans les domaines, physiques et matériels, qui ne figuraient pas dans leur ressort d’origine; et situer le droit de l’espace dans le contexte plus large de la gouvernance mondiale.

PROLOGUE

"… a space vehicle that can shuttle repeatedly from Earth to orbit and back. It will *revolutionize* transportation into near space, by *routinizing* it. It will take the astronomical costs out of astronautics. In short, it will go a long way toward delivering the rich benefits of practical space utilization and the valuable spinoffs from space efforts into the daily lives of Americans and all people."

USA President Nixon, on the development of the Space Shuttle by NASA (5 January 1972 – emphasis added)

When the first engineering studies and tests were run for the development of the Space Shuttle in the early 1970s,[1] the expectations for this new way of spatial transportation were significantly high. In the continuation of his afore-quoted speech, President Nixon described the Space Shuttle as a means of acquiring routine access to space, while reducing cost and preparation time.[2] Initial estimations at the time foresaw that approximately 445 launches would take place within just the first decade of the Shuttle's creation from both the launching facilities of the Kennedy Space Center and the Western Test Range.[3]

Forty years later, these greatly ambitious plans have not come to fruition. The Space Shuttle Era, which began in 1981 and terminated in 2011, has been marked by 135 launches and significantly elevated average cost per launch. While performance-wise the project as a whole was profoundly off-mark, nobody can dispute the fact that the mere existence of the Shuttle has opened a brand new chapter in space flight. For in fact the Shuttle was nothing less than the first

[1] NASA Release No. 74-258, *Supplemental Contract Award to RI*, Houston, Texas, 2 October 1974.

[2] For the complete quotation, see Diederiks-Vershoor I. H. Ph., The Legal Aspects of the Space Shuttle, I *Annals of Air and Space Law* 1976, pp. 197-204, at pp. 197-198.

[3] Junker L. J., *Ocean Recovery of Shuttle Solid Rocket Boosters*, American Institute of Aeronautics & Astronautics (A.I.A.A.) Paper No. 73-602, July 1973.

ever Hybrid Aerospace Vehicle, albeit partially reusable. Indeed, the Shuttle was not only a precursor, but also a catalyst behind the most recent endeavours of private space actors.

1. Historical and technical background: identifying a Hybrid Aerospace Vehicle

To this date, international law recognizes only two kinds of vehicles capable of operating within the domain of airspace or the domain of outer space: aircraft and space object (or, for the purposes of this Thesis, spacecraft) respectively. As per Annex 7[4] to the Convention on International Civil Aviation[5] an aircraft is defined as "any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the Earth's surface". On the other hand, under both the Convention on Registration of Objects Launched into Outer Space [6] and the Convention on the International Liability for Damage Caused by Space Objects,[7] a space object is defined as "includ[ing] component parts of a space object as well as its launch vehicle and parts thereof".[8] Both these definitions reflect the technological and scientific realities associated with the medium of operation of each respective craft and highlight the fundamental difference in their nature.

An aircraft needs the support of the Earth's atmosphere so as to be able to fly. Depending on the kind of aircraft, the presence of the Earth's atmosphere has a different, but at all times fundamental role to play. Fixed-wing aircraft require the surrounding air, because it is the

[4] Annex 7 to the Convention on International Civil Aviation – Aircraft Nationality and Registration Marks, Foreword, p. 5c.

[5] Convention on International Civil Aviation, 7 December 1944, 15 *UNTS* 295 (entered into force 4 April 1947) [henceforth Chicago Convention].

[6] Convention on Registration of Objects Launched into Outer Space, 14 January 1975, 1023 *UNTS* 15 (entered into force 15 September 1976) [henceforth Registration Convention].

[7] Convention on the International Liability for Damage Caused by Space Objects, 29 March 1972, 961 *UNTS* 187 (entered into force 1 September 1972) [henceforth Liability Convention].

[8] Article 1 of the Registration Convention; Article 1 of the Liability Convention.

combination of the diversified static air pressure above and below the wing that produces the aerodynamic lift. The altitude and corresponding air density, the speed of flight, as well as the shape and size of the actual wing can affect the aerodynamic lift produced and needed to maintain the aircraft in flight. At the same time, air is equally necessary to generate propulsion and help the aircraft move forward. Aircraft featuring propellers accelerate the surrounding air mass and, by pushing it in the opposite direction of their destination, achieve forward movement. On the other hand, jet or turbojet aircraft engines function by producing an exhaust gas stream, through the combustion of a mixture of jet fuel and air breathed into the engine during the flight. Technological limitations associated with either kind of aircraft – propeller-driven or equipped with a (turbo-)jet engine – can affect the maximum speed and altitude that can be safely reached, given the corresponding differentiations in air density. As such, and given the current state of technology, the maximum estimated altitude a jet-engine aircraft can fly to is no greater than 60km, with the majority of civil aircraft flying at a maximum altitude of roughly 20 km (60,000-65,000 feet).

Contrary to aircraft, the presence of atmospheric pressure is a hindrance and positively detrimental to space objects. Their operation is based on the juxtaposition of velocity in orbit and the gravitational pull of the Earth. The actual launch of the space object will provide it with the required velocity to sustain its position in the selected orbit. A successful spaceflight is the product of the striking of the delicate balance of orbital altitude and velocity defying the gravitational pull of the Earth, creating a perpetual state of free-fall for the space object. If the speed with which the space object reaches the desired altitude is too big, then the object will move beyond the targeted position and enter a hyperbolic trajectory that will eventually lead it to deep space. If the speed is not sufficient, then the space object will not be able to maintain the

targeted altitude, and defeated by the Earth's gravity, it will eventually enter a downward spiral leading to its complete or partial destruction by burn-up upon re-entering the Earth's atmosphere. The majority of the fuel used during any single launch is dedicated to generate the necessary speed and transporting the space object to the required altitude. The fuel stored on board the space object itself is limited to only sustaining it throughout its lifecycle for the performance of its intended mission. It is the afore-described delicate balance of powers allowing for the maintenance of the orbital position that currently prevents the increased manoeuvrability of traditional space objects similarly to aircraft or, in a more futuristic approach, to spacecraft depicted in popular works of science fiction. Resources being limited, any manoeuvre performed to adjust the orbital position of the space object, for example as a result of gravitational pull imbalances or to avoid collision with orbital debris, depletes the fuel stored on board at an accelerated pace and correspondingly reduces the lifecycle of the space object.

The imminent emergence of new modes of aerospace transportation, namely Hybrid Aerospace Vehicles (HASVs), necessitates the re-examining of the legal regime applicable to the current forms of flight. Indeed, these crafts are able of seamless operation between both the airspace and outer space, as a result of their advanced technology. A useful, though not agreed upon, definition of an aerospace object is that found in the relevant questionnaire circulated within the UNCOPUOS Legal Sub-Committee, which reads as follows: "an object which is capable both of traveling through outer space and of using its aerodynamic properties to remain in airspace for a certain period of time".[9] Discussion and development of the questionnaire[10] were initiated by the Soviet Union and later the Russian Federation regarding the future of

[9] UN Doc. A/AC.105/C.2/1995/CRP.3/Rev. 3 of 31 March 1995.

[10] UN Doc. A/AC.105/C.2/1993/CRP.1, *Draft questionnaire concerning aerospace objects*.

aerospace systems[11] and the corresponding legal regime[12] respectively. From the answers received by numerous States, it became apparent that HASVs aiming at fast, long-distance transportation through the domain of outer space would also fall within the suggested definition.[13]

As previously mentioned, the Space Shuttle can be considered to be the very first, partially reusable, Hybrid Aerospace Vehicle: while it needed the thrust of a rocket to escape the Earth's atmosphere and be placed in trajectory towards the International Space Station, where it would dock and follow the Station's orbit around the planet, the Space Shuttle had the technological elements needed for a more controlled travel through outer space. It could perform the necessary re-entry manoeuvres so as to obtain the correct angle that would allow it to successfully burst through the atmosphere. Its thermal shields could sustain the heat generated by the re-entry process, accounting for its reusability, whereas other, lesser equipped space objects would have been destroyed wholly or partially during a similar process. Its fixed wings allowed the Shuttle to gain support from the surrounding air, upon reaching denser atmospheric zones, so as to allow it to glide towards its final landing, exactly like any traditional aircraft using the aerodynamic lift for the same purpose. It is true that officially the Space Shuttle was registered as a space object,[14] chiefly because, at the time of its inception and operation, it was this definition that better

[11] UN Doc. A/AC.105/484 (1991), Annex II, § 9.

[12] UN Doc. A/AC.105/C.2/L/189 (1992).

[13] Gorove S., "Aerospace Object – Legal and Policy Issues for Air and Space Law" (1997) 25 Journal of Space Law 101-112 at 104.

[14] See indicatively COPUOS, *Information furnished in conformity with the Convention on Registration of Objects Launched into Outer Space, Note verbale dated 23 January 2001 from the Permanent Mission of the United States of America to the United Nations (Vienna) addressed to the Secretary-General*, UN Doc. ST/SG/SER.E/385 (1 February 2001).

described its intended use,[15] as opposed to that of an aircraft. Nevertheless, the functionality of the Space Shuttle, along with the sum of its technological characteristics, permits its reclassification as a HASV, even if only in the realm of legal aerospace literature.

Nowadays, the most well-known example of an undisputed HASV is Virgin Galactic's SpaceShipTwo; while still in the flight testing and reconstruction stage, majorly due to the piloting error accident of October 2014 over the Mojave Desert, which resulted in the fatality of the co-pilot and the serious injury of the pilot,[16] it is expected that it will not be long before commencing its commercial operation. Other companies that are currently in the developing stages of similar crafts are the US-based Space X, Blue Origin, Sierra Nevada, XCOR, Rocketplane, Lockheed Martin, the Swiss-based Swiss Space Systems, in Europe the space division of EADS/Airbus, Excalibur Almaz, Reaction Engines, the German space agency DLR etc. The Japanese space agency, JAXA, is also developing a high altitude, supersonic airplane, which can be used as a launching platform for small and cube satellites, with view of eventually venturing into suborbital flights.

Still at the first steps of their developments, the hybrid aerospace vehicles could be compared to aircraft during the nascent years of civil aviation. It is envisioned that the hybrids will be initially used for space tourism purposes, whereby the hybrid will be taking off and landing at the same location, reaching the lowest portions of outer space at the apex of its flight, where passengers will be able to experience a few moments of nearly zero gravity.

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[15] See for example the entry relating to Space Shuttle Endeavor in the national space registry of the USA, available online at:

<https://usspaceobjectsregistry.state.gov/Lists/SpaceObjects/DispForm.aspx?ID=1758&Source=https%3A%2F%2Fusspaceobjectsregistry.state.gov%2FPages%2FBrowse-Decade.aspx>.

[16] Malik T., Deadly SpaceShipTwo Crash Caused by Co-Pilot Errot: NTSB, *Space.com* 28 July 2015, available online at <www.space.com/30073-virgin-galactic-spaceshiptwo-crash-pilot-error.html>.

As extravagant an activity as this may seem, it is expected that, similarly with aviation, the technological progress and the development of competition between companies will both lower the prices, but also extend the capacities of these crafts. Plans are already in place for the creation of a multitude of commercial spaceports,[17] ready to serve point-to-point transportation on Earth through space, by use of hybrids. In order to achieve this, an altitude higher of the approximately mere 100km attainable by today's crafts will be necessary, putting the hybrids directly within the highly populated Low Earth Orbit. Additionally, during their ascent and descent to and from outer space, the hybrids will be crossing through airspace, potentially utilizing the same airways as international, national and foreign, civil aviation.

2. The Legal Question

The foreseeable coexistence of hybrids and aircrafts or conventional space objects in particular brings considerations of jurisdiction to the forefront. As this form of flight is completely novel, the current legal regime proves insufficient to address it as is. Whether the modification of the existing legal instruments or the creation of a whole new legal system is the most appropriate approach to this issue, one element remains unaltered: maintaining safety of all entities, objects and personnel involved is of paramount importance.

With that in mind, the Thesis will revolve around the core concept of jurisdiction, as is currently applicable in international law, both vis-à-vis States as well as international organizations. With respect to the latter, jurisdiction should, throughout this Dissertation, be

[17] Howard D., *The Emergence of an Effective National and International Spaceport Regime of Law*, McGill DCL Dissertation, 2015, available online at <http://digitool.Library.McGill.CA:80/R/-?func=dbin-jump-full&object_id=130384&silo_library=GEN01>; Lauer C., *Legal and Regulatory Aspects or US-Developed Suborbital Spaceplane Flights from International Spaceports*, Presentation for the ICAO – UNOOSA Aerospace Symposium, Montreal, 18 March 2015, available online at <www.icao.int/Meetings/SPACE2015/Pages/Presentations.aspx>.

understood not under the sense of territorial jurisdiction, which is the most common association made with regards to States; rather, as far as international organizations are concerned, the use of the term jurisdiction should be taken to denote the authority and/or the mandate vested with them under international law to perform specific functions, as elaborated in their respective constitutive instruments. Taking the above into account, the main problem to be addressed in this work could be summarily be phrased as follows: "Who has sufficient jurisdiction to create internationally binding rules relating to the use of HASVs, namely safety standards relating to space traffic control, taking into account both civil and military aspects of their usage? Which legal regime rules the issue? Can existing international organizations expand their jurisdiction to accommodate this nascent industry or is the creation of a new international organization required?" In order to answer these questions, one would have to delve into the tag-and-pull of unilateralism and coherence currently experienced in the space and aviation industries respectively.

Article I paragraphs 2 and 3 of the Outer Space Treaty[18] guarantees the freedom of scientific exploration and use of outer space for all States. Read in conjunction with Article VI, which imposes international responsibility on States for their spatial activities, as well as a strict obligation of maintaining jurisdiction and control over such activities, Article I paragraph 3 is the legal justification of unilateralism concerning the promulgation of space-related safety standards.

In essence, on the basis of the freedom of use and (scientific) exploration of outer space, States are enjoying the widest possible margin of liberty when designing and executing their spatial activities. Bar from the restrictions of Article IX of the Outer Space Treaty about due

[18] Treaty on Principles Governing the Activities of States in the Explorations and Use of Outer Space, including the Moon and Other Celestial Bodies, 27 January 1967, 610 *UNTS* 205 (entered into force 10 October 1967) [henceforth Outer Space Treaty].

regard for the corresponding interests of other States parties, States can effectively decide unilaterally on the standards to be followed in the carrying out of any space mission. The principle of sovereign equality is, within the context of space law, further reinforced by the principle of non-appropriation[19] of outer space: since outer space belongs to no one, but is rather characterized as a *res communis humanitatis*,[20] no State may give binding instructions to any other as to what safety standards are to be used in executing a space activity.

Naturally, an examination of the applicable safety standards in different space-faring nations[21] would reveal similarities, if not necessarily tautological provisions. Any potential uniformity that is to be deduced is the result of scientific consensus on the matter, literally a coincidence of opinions. The reasons for this are varied: whether it is the very physicality of outer space as an environment that dictates specific actions and/or qualifications, or mere convenience, or even scientists speaking their own *lingua franca* when developing space missions, the consensus reached is almost fortuitous. While there is little doubt that space agencies maintain open avenues of communication, the products of any such dialogue do not possess internationally binding power. This can be inferred, for instance, even for occasions where States have willingly

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[19] Article II of the Outer Space Treaty.

[20] Vereshchetin, V. S., Outer Space, *in Max Planck Encyclopedia of Public International Law*, §5, available online at < www.opil.ouplaw.com >.

[21] Shivers C. H., "NASA Space Safety Standards and Procedures for Human-rating Requirements" in Pelton J. N. & Jakhu R. S., eds., *Space Safety Regulations and Standards* (Oxford & Burlington, MA: Elsevier, 2011) 3-15; Meishan Goh G., "Space Safety Standards in Europe" in Pelton J. N. & Jakhu R. S., eds., *Space Safety Regulations and Standards* (Oxford & Burlington, MA: Elsevier, 2011) 30-48; Sekita, R., "Space Safety Standards in Japan" in Pelton J. N. & Jakhu R. S., eds., *Space Safety Regulations and Standards* (Oxford & Burlington, MA: Elsevier, 2011) 49-50; Zhdanovich O., "Russian National Space Safety Standards and Related Law", in Pelton J. N. & Jakhu R. S., eds., *Space Safety Regulations and Standards* (Oxford & Burlington, MA: Elsevier, 2011) 51-81; Juquian L., "Space Safety Regulations and Standards in China", in Pelton J. N. & Jakhu R. S., eds., *Space Safety Regulations and Standards* (Oxford & Burlington, MA: Elsevier, 2011) 83-93; Davis M. E., "Space launch safety in Australia" in Pelton J. N. & Jakhu R. S., eds, *Space Safety Regulations and Standards* (Oxford & Burlington, MA: Elsevier, 2011) 95-100.

cooperated to reach common understandings: the International Standardization Organization directives (ISOs) relating to outer space are nothing short of recommendations, adhered to by States only voluntarily and inasmuch as they are not superseded by national rules and regulations.[22] The same is true for the COSPAR Planetary Protection Policy,[23] a document indicative of best practices in the field, but in no way binding on States, despite being jointly drafted by representatives of the most eminent space agencies.

One could potentially argue the creation of (instant) custom[24] with regards to the applicability of these standards. Given that States must at all times supervise space-related activities, and given that space agencies can be categorized as State organs,[25] their activities can be considered indicative of State practice. However, the other requisite element for the creation of customary international law,[26] namely *opinio iuris*, would be hard to identify. The existing safety standards are not formulated with a conviction of adhering to a specific international rule or principle, but rather to satisfy particular scientific exigencies.

As such, the current picture of safety standards for outer space missions and/or objects appears to be fragmented, or at least distorted, due to the multi-layering of unilateral national decisions. The sustainability of such a regime is doubtful, especially on the face of the high degree of reliance we nowadays place on various space assets.

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[22] Pelton J. N. & Jakhu R. S., "Introduction" in Pelton J. N. & Jakhu R. S., eds., *Space Safety Regulations and Standards* (Oxford & Burlington, MA: Elsevier, 2011) at xliii.

[23] COSPAR Planetary Protection Policy, 20 October 2002, as amended, available online at <http://cosparhq.cnes.fr>.

[24] Cheng B., "United Nations Resolutions on Outer Space: "Instant" International Customary Law?" (1965) 5 Indian Journal of International Law 23-48.

[25] Article 4, UN Doc. A/RES/56/83 (2001), Articles on the Responsibility of States for Internationally Wrongful Acts (with commentaries) [henceforth ASR].

[26] *North Sea Continental Shelf Cases (Federal Republic of Germany v. Denmark / Federal Republic of Germany v. the Netherlands)*, Judgment, [1969] ICJ Rep. at 3.

On the other hand, in the aviation industry, the coherence of the legal framework is unmistakable. Civil aviation boasts an extensive array of regulation of international safety standards. This is the result of a different regulatory environment, created with specific objectives and restrictions, the combination of which has played an essential role in achieving international uniformity.

The driving force behind the standardization of safety requirements for civil aviation is none other than the International Civil Aviation Organization (ICAO). Tasked with the orderly advancement of international civil aviation, ICAO is bringing its mission into fruition while maintaining a balance with competing sovereign interests over portions of the airspace. It is exactly in that area where ICAO's success becomes all the more apparent: whereas the international airspace falls directly within ICAO's jurisdiction,[27] the national airspace of each member State remains within the exclusive jurisdiction of said State.[28] Nevertheless, the internationally agreed upon standards of ICAO are applicable even within the national airspace, superseding any domestic legislation. A characteristic example is the standards relating to the manufacturing of aircraft:[29] while States might impose stricter individual standards, the only caveat being the respect of the GATT[30] and GATS[31] vis-à-vis competing aircraft manufacturers, the minimum standards of ICAO must at all times be upheld within their respective jurisdictions. Simply put, a plane cannot fly within the territory of State A, if the manufacturing standards of State B, where it was assembled, are sub-par to those of ICAO.

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[27] Article 12 of the Chicago Convention.

[28] Article 1 of the Chicago Convention.

[29] Annex 8 to the Chicago Convention.

[30] General Agreement on Tariffs and Trade, 15 April 1994, 1867 *UNTS* 187 (entered into force 1 January 1995).

[31] General Agreement on Trade in Services, 15 April 1994, 1869 *UNTS* 183 (entered into force 1 January 1995).

One set of standards is of particular importance with regards to the scope of this Dissertation. These are the standards relating to the jurisdiction exercised over aircraft, in particular relating to the provision of air navigation and air traffic control services[32] (discussed in detail in Part II).

However, "between the making and the application of law time passes by and thus the legal context and the factual circumstances may change".[33] This is very much true for international aerospace law, where we note a movement from State-centric to private investor-centric development and activities. Case in point: the hybridity of the emerging modes of aerospace transport challenges the legal *status quo*, since there is uncertainty as to which standards should be applicable. The issue of the applicable rules is directly linked with the nature of the hybrids.[34]

Should the hybrids be classified as hybrids, then the creation of a whole new applicable regime would be necessary. This option seems rather favourable, as it could take into consideration all particular elements of the flight of these crafts, as well as provide a much needed opportunity for the modernization of certain aspects of current international space law. However, one must necessarily recognize that the creation of a new international instrument regulating this matter will be time-consuming and onerous, potentially to the detriment of the further development of hybrids and of the safety of the ones already flying in the interim.

Should they be classified as space objects, as was for instance the Space Shuttle,[35] arguably the first hybrid to be ever created and used, then the resulting situation will be largely similar to

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[32] Annex 2 to the Chicago Convention.

[33] Fastenrath U., A Political Theory of Law: Escaping the Aporia of the Debate on the Validity of Legal Argument in Public International Law, *in* Fastenrath U., Geiger R., Khan D.-E., Paulus A., von Schorlemer S. & Vedder C. (eds), *From Bilateralism to Community Interest, Essays in Honour of Judge Bruno Simma*, Oxford University Press, Oxford New York 2011, pp. 58-78, at p. 64.

[34] de Juglart M., "La conquête juridique de l'espace" (1988) 13 Annals of Air and Space Law 267-277.

[35] Diederiks-Verschoor I. H. P., "The Legal Aspects of the Space Shuttle" (1976) 1 Annals of Air and Space Law 197-204.

the one currently governing outer space. Movement will indeed be free, but with the insertion of the hybrids and with the constant advancement of their capacities, the situation would quickly become chaotic. It will not be long before hybrids and space objects find themselves sharing parts of the same orbits, making flight increasingly dangerous due to the potential risks of collisions amongst them.

In juxtaposition, and inspired by the admittedly successful example of international civil aviation, the extension of the relevant ICAO standards to hybrids has also been suggested.[36] In essence, such an extension would require an amendment to particular Annexes to the Chicago Convention, so as to include the hybrids within the definition of an aircraft. Naturally, hybrid-related infrastructure,[37] certification, manufacturing etc would also have to follow the ICAO SARPs. Inescapably, this would also include the standards relating to Air Navigation Services (ANS) / Air Traffic Control (ATC) provision. However, a vertical prolongation of Flight Information Region (FIR) limits, extending towards outer space, is unfeasible, both from a pragmatic and a legal point of view. From a realistic perspective, the rotation of the Earth prevents the exercise of jurisdiction over a fixed area, as is the case with (international) airspace. From a legal perspective, the recognition of the exploration and use of outer space as "the province of mankind",[38] taken in conjunction with the absolute prohibition of territorial

[36] Galloway E., "Space Law in the 21st Century" (1998) 22 Journal of Space Law 187-192; Halstead C. B., "Hybrid Hops On (and Over) the Horizon: The Future Has Arrived and Requires a New Look at Air and Space Law" (2009) 34 Annals of Air and Space Law 775-807 at 796; Jakhu R. S. & Nyampong Y. O. M., "International Regulation of Emerging Modes of Space Transportation" in Pelton J. N. & Jakhu R. S., eds., *Space Safety Regulations and Standards* (Oxford & Burlington, MA: Elsevier, 2011) 216-238 at 234; Dempsey P. S. & Mineiro M. C., "Space Traffic Management: A Vacuum in Need of Law" IAC-08-E.3.2.3 at 3.

[37] Lessard S. & Nordlund F., Les bases de lancement: évolution et aspects juridiques, XV *Annals of Air and Space Law* 1990, pp. 359-400; *See* <http://www.spaceportamerica.com/>.

[38] Article I of the Outer Space Treaty.

appropriation of outer space, apparently precludes the establishment of a system similar to that of ICAO, as no individual State may exercise jurisdiction over any portion of the celestial dome.

Thus, it becomes necessary to explore alternative options as per the regulation of the movement of the hybrids. While the suggestion to extend ICAO's scope of responsibility is flawed, for the reasons described in Part II of this Thesis, the almost instinctual turn towards an international organization is correct. Where any one State is not able to exercise sovereign rights, in the form of exclusive jurisdiction over movement control in outer space, an international organization representing the entirety of States could.

What is basically suggested is the creation of an international organization with the mandate to exercise effective space traffic control and provide space traffic navigation services for the hybrid aerospace vehicles. This highly technical organization[39] would require increased jurisdictional capacity, for, like ICAO, it would have to develop and supervise the application of pertinent safety standards for the hybrids. As such, some concession of State sovereignty would be necessary: while movement through outer space would remain free, States would have to abdicate their right to unilaterally choose the exact pathways of the hybrids. This authority would be relinquished to the organization, which would in turn provide real time guidance throughout the outer space portion of the flight, while coordinating with the appropriate ANS/ATC authorities for the ascend and descend part of the flight.

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[39] Lowe V., *International Law* (Oxford: Oxford University Press, 2007) at 90-97; Amerasinghe C. F., *Principles of the International Law of International Organisations* (Cambridge: Cambridge University Press, 2005) at 6; Higgins R., *The Development of International Law through the Political Organs of the United Nations* (Oxford: Oxford University Press, 1963) at 2; Higgins R, "The Role of Resolutions of International Organizations in the Process of Creating Norms in the International System" in Butler W., ed., *International Law and the International System* (Dordrecht: Martinus Nijhoff, 1987) 21-47 at 21-23, 25-30; Sands P. & Klein P., *Bowett's Law of International* Institutions, 6th edition (London: Sweet and Maxwell, 2009) at 286-297.

The fast approaching date of hybrid suborbital flights emphasizes the need for increased coordination and regulation on an international level. Without such arrangements, any unregulated movement in, through and out of outer space and airspace would be nothing short of reckless, putting aircraft, spacecraft and hybrids alike at risk. "Without proactive action on the part of governments and international regulators, a convenient combination of regulatory inertia, procrastination, and unpreparedness would cause the safety laws and regulations for passenger spaceflight to evolve through repeated accidents, as they had to do with civil aviation".[40] It is doubtful that this cost is affordable, let alone wanted.

It is more than apparent that in this era, space assets are considered precious at a global level. We are already experiencing elements of the "tragedy of the commons"[41] with regards to our use of outer space: the completely unregulated movement of space objects has inadvertently resulted in collisions, the result of which is the exponentially augmentation of space debris. The future of space travel includes the flight of hybrid aerospace objects within a region of outer space already greatly populated by both active satellites and space debris of varying sizes. "As any arena of human collective life becomes significant frameworks of governance develop to bring a certain order and predictability to that sphere. […] regulation of some kind will transpire if a given social space is to have any stability and longevity".[42] Similarly, "growing needs to govern global matters have prompted the establishment and expansion of many superstate regulatory

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[40] Lee R. J., "Development of Laws and Regulations for Range Safety, Flight Safety, and Accident Investigation in the Era of Commercial Passenger Spaceflight" in *Sixth IAASS Conference: Safety is not an Option (Montreal, Canada – 21-23 May 2013)*, (European Space Agency, e-publication, 2013) 1-42 at 4.

[41] For detailed analysis, see *infra* Part II, Chapter 2.

[42] Scholte J. A., "Global Governance, Accountability and Civil Society" in Scholte J. A., ed., *Building Global Democracy? Civil Society and Accountable Global Governance* (Cambridge: Cambridge University Press, 2011) 8-41 at 9.

arrangements. […] rules and administering agencies that apply to places and people spread across the Earth can be termed 'global governance'".[43] While the creation of an International Space Traffic Control Authority of global reach may not completely eradicate the risk of accidents in outer space, it certainly increases the operational safety of hybrids, aircraft and spacecraft alike. If such a project were to prove successful, then the inclusion of other, more traditional space assets within its regulatory scope would be a possibility worth exploring.

3. Methodology – Theoretical Approach

This dissertation does not propose a Justinian approach to the question at hand. Nor does it embrace the purely Platonic nature that often characterizes doctrinal writing. On the contrary, it is the author's aspiration and intention to follow a theoretical analysis that is, to the greatest extent possible, equal parts Aristotelean, Kantian and Anzilotian. As per Collins, "despite heterogeneity in approaches […] to understanding the operation of the law, at a doctrinal level the structures of modern international law can be said to rest ultimately upon a positivist epistemology".[44] Revolving around a rationally structured framework, this Dissertation finds its place in contemporary legal literature in the realm of reinvented positivism, with transcending legally interdisciplinary elements.

The core notion around which all of the aforementioned issues revolve is "jurisdiction". As such, it will be necessary to apply the concept in all relevant areas, trying to ascertain through empirical research whether it sufficiently covers all aspects, including identifying possible gaps and suggesting appropriate solutions. "Indeed, whether we characterize modern method as

[43] *Ibid*.

[44] Collins R., "Modernist-positivism and the Problem of Institutional Autonomy in International Law" in Collins R. & White N. D., eds., *International Organizations and the Idea of Autonomy: Institutional Independence in the International Legal Order* (London and New York: Routledge, 2011) 22-47 at 25.

sociological in approach,[45] or as 'modernist'[46] or 'enlightened'[47] positivism – and in that sense progressive or internationalist in orientation – it is difficult to deny the inductive empiricism at the heart of mainstream doctrine which portends (still) an important distinction between the *is* and the *ought*.[48],,[49] The (comparative) analysis of available bibliography and empirical data collected by industrial practices will follow a fairly traditional positivist approach in an area of law where solid foundations within the existing legal framework are sorely needed, so as to facilitate further development, taking full advantage of existing structures.

More elaborately, a comparative legal analysis of the regimes of international air law, international space law, as well as analogies drawn from other branches of (mostly) public international law, such as law of the sea, environmental law or human rights law, will provide the legal framework for establishing a concrete theoretical basis for the regulation of HASV movement in the international navigable domains. Furthermore, theories stemming from the political, the environmental and the economic sciences are also informing the *de lege lata* findings of this Dissertation. This interdisciplinary approach showcases the fluid interaction between law and other sciences and testifies to the mutually influential effect developed amongst them. In this sense, the law is what it is, not only because the international legislator made it so,

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[45] Koskenniemi M., "Theory: Implications for the Practitioner" in Allott P., ed., *Theory and International Law: An Introduction* (London: British Institute for International & Comparative Law, 1991) 3-45 at 4-7.

[46] Miller R. A. & Bratspies R. M., "Progress in International Law – An explanation of the Project", in Miller R. A. & Bratspies R. M., eds., *Progress in International Law* (Leiden: Martinus Nijhoff, 2008) 9-31 at 20-22.

[47] von Bogdandy A., "Constitutionalism in International Law: Comment on a Proposal from Germany" (2006) 47 Harvard International Law Journal 223-242 at 227.

[48] Waldron J., "Normative (or Ethical) Positivism" in Coleman J., ed., *Hart's Postscript: Essays on the Postscript to the Concept of Law* (Oxford: Oxford University Press, 2011) 411-433; Capps P., *Human Dignity and the Foundations of International Law* (Oxford: Hart, 2009) at 53-56.

[49] Collins, *supra* note 44 at 26.

but also because other sciences corroborate the selection at hand. This way, where there appears to be a seemingly global convergence of opinions with regards to basic norms,[50] but where there is also difficulty in taking stock of which opinions matter,[51] it is necessary to escape moral subjectivism.[52] It is through this interdisciplinary objectivity that reinvented positivism should be understood.

In search of normativity for this emergent industry, it seems necessary to build a functional system based on the will of States, which, while being founded upon the core notion of State sovereignty, will nevertheless be able to flexibly manoeuvre though the particular exigencies of an industry[53] led primarily, if not exclusively, by the private sector.[54] In essence, the goal is to reimagine the voluntarist approach to public international law, as expressed in the *SS Lotus* case, whereby "the rules of law binding upon States therefore emanate from their own free will as expressed in conventions or by usages generally accepted as expressing principles of law and established in order to regulate the relations between these co-existing independent communities

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[50] Caney S., *Justice Without Borders: A Global Political Theory* (Oxford: Oxford University Press, 2005) at 45-46.

[51] Koskenniemi M., "International Law in a Post-Realist Era" (1995) 16 Australian Yearbook of International Law 1-19 at 8-9.

[52] Ryngaert C., *Unilateral Jurisdiction and Global Values* (The Hague: Eleven International Publishing, 2015) at 41.

[53] The combination of official and non-traditional sources of law-making, in this particular instance States and aerospace industry pioneers, would lead to Simma-inspired considerations of so-called "soft" or "inclusive" positivism. *See*: Hart H. L. A., *The Concept of Law*, 2nd ed (Oxford: Clarendon Press, 1994) at 256; Stein E., "Bruno Simma, The Positivist?" in Fastenrath U., Geiger R., Khan D.-E., Paulus A., von Schorlemer S. & Vedder C., eds, *From Bilateralism to Community Interest, Essays in Honour of Judge Bruno Simma* (Oxford & New York: Oxford University Press, 2011) 19-31 at 20-21.

[54] Kerrest A., "The Launch of spacecraft from the Sea" in Lafferranderie G. & Crowthier D., eds., *Outlook on space law over the next 30 years: essays published for the 30th anniversary of the Outer Space Treaty* (The Hague – Boston: Kluwer Law International, 1997) at 217-218; Otto M., *Feasibility Study and Future Projections of Suborbital Space Tourism at the Example of Virgin Galactic* (GRIN Verlag GmbH, 2010).

or with a view to the achievement of common aims. Restrictions upon the independence of States cannot therefore be presumed".[55]

Nowadays, it looks as though the so called 'Lotus statement', i.e. the last sentence of the aforementioned quote, has been mostly perceived as an *obiter dictum* with reduced precedential value.[56] From the overall development of international law, the transition from the community of independent States to the concept of the international community operating within a context of globalization, it becomes apparent that certain restrictions have been placed;[57] however, in keeping with the voluntarism theory, such restrictions have emanated from the States themselves.[58] In the grand scheme of all things related to outer space, a discussion about a tactic erosion of State sovereignty,[59] in favour of safeguarding the common interest of Mankind in outer space is hence well overdue. The author will attempt to expound the existing legal rules and explicate the authoritative legal sources as identified by practitioners in the field.[60] Through

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[55] *The S.S. Lotus case (France v. Turkey)* (1927), Judgment, PCIJ Series A No. 10 at § 44.

[56] Spiermann O., "*Lotus* and the Double Structure of International Legal Argument" in Boisson de Chazournes L. & Sands P., eds, *International Law, the International Court of Justice and Nuclear Weapons* (Cambridge: Cambridge University Press, 1999) 131-152 at 137.

[57] *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, [1996] ICJ Rep., Dissenting Opinion of Judge Shahabuddeen; Koskenniemi M., *From Apology to Utopia – The Structure of International Legal Argument*, 2nd edition (Cambridge: Cambridge University Press, 2006) at 220; von Bogdandy A. & Rau M., The Lotus, in *Max Planck Encyclopedia of Public International Law*, available online at < www.opil.ouplaw.com>, § 17.

[58] *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America)*, Merits, Judgment, [1986] ICJ Rep. at § 269.

[59] Trimble P. R., "Globalization, International Institutions, and the Erosion of National Sovereignty and Democracy (review of Thomas M. Franck, Fairness in International Law and Institutions (Oxford 1995))" (1996-1997) 95 Michigan Law Review 1944-1969.

[60] In this regard, Simma observes **"**that international law should serve certain ends of justice; and that the lawyer has a responsibility to recognize which international law rules, past, present, and future, do or do not further those goals." Simma B., "From Bilateralism to Community Interest in International Law" (1994) 250 Recueil de Cours de l'Académie de Droit International 221-384 at 229, 292 (defending *ius cogens* as reflecting values 'which are not at the disposal of individual States (any more)'). Further, as

critical commentary of the current doctrine, this research is designed to yield a unifying theory or redefined/-identified legal perspective by which rules may be understood and their application in the case-study at hand can be evaluated and controlled.[61]

A brief overview of the current literature would reveal that, overall, international air and space law scholars have so far focused primarily, if not exclusively, on the commercial space flights aspect[62] of the use of partially reusable hybrid aerospace vehicles, with particular emphasis on matters such as registration, responsibility and/or liability for the use of the hybrids.[63] The role of ICAO as a potential regulatory body for the development of safety

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Ratner notes "Simma is willing, if not eager, to see the positivist international lawyer engage with morality and justice, as long as it does not threaten the second criterion – the use of formal sources to determine the validity of a supposed norm". Ratner S.R., "From Enlightened Positivism to Cosmopolitan Justice: Obstacles and Opportunities" in Fastenrath U., Geiger R., Khan D.-E., Paulus A., von Schorlemer S. & Vedder C., eds, *From Bilateralism to Community Interest, Essays in Honour of Judge Bruno Simma* (Oxford & New York: Oxford University Press, 2011) 155-171 at 156. A combined reading of these two perspectives would substantiate that similarly with the use of extra-legal considerations and/or disciplines, such as morality and justice, the international lawyer can use the tools and methodologies of other sciences, disciplines and/or even principles. At the same time, and despite reaching such a pluralistically informed conclusion, from an epistemological point of view, that same lawyer can still remain within the realm of positivism, since the conclusion reached will obtain legal validity by being endorsed, applied and engaged with as law.

[61] *Law and Learning: Report to the Social Sciences and Humanities Research Council of Canada by the Consultative Group on Research and Education in Law*, April 1983, p. 66.

[62] Kayser V., "An Achievement of Domestic Space Law: US regulation of Private Commercial Launch Services" (1991) 16 Annals of Air and Space Law 341-379; Nesgos P. D., "Commercial Space Transportation: A New Industry Emerges" (1991) XVI Annals of Air and Space Law 393-422; van Fenema P., "Recent Parallel Developments in Aviation and Space Launch Regulation" (1997) 22 Annals of Air and Space Law 363-368; Hazan N., "The UNIDROIT Preliminary Draft Protocol on Matters Specific to Space Assets" (2003) 28 Annals of Air and Space Law 219- 255 at 222; Dempsey P. S., "The Evolution of US Space Policy" (2008) 33 Annals of Air and Space Law 325-343 at 339-341. For further literature on the subject, see the Introduction to Part I of the present Dissertation.

[63] Maniatis D., "The Law Governing Liability for Damage Caused by Space Objects: From State Responsibility to Private Liability" (1997) 22 Annals of Air and Space Law 369-401; Lee R. J., "The Liability Convention and Private Space Launch Services – Domestic Regulatory Responses" (2006) 31 Annals of Air and Space Law 351-380; Trepczynski S., "The Benefits of Granting Immunity to Private

standards regarding the HASVs has also been explored considerably.[64] Jurisdictional aspects have been explored only inasmuch as determining the applicable legal regime for HASVs was concerned.[65] Nevertheless, jurisdictional aspects pertaining to the regulation of HASVs, or emerging technologies in a more general context, as specifically relating to the competences of international organizations,[66] within the framework of global governance[67] as juxtaposed to the ongoing academic discourse on the erosion of State sovereignty,[68] have not been adequately addressed by either the aerospace legal community or the current general international law scholarship.

Companies Involved in Commercial Space Ventures" (2006) 31 Annals of Air and Space Law 381-404. For further literature on the subject, see the Introduction to Part I of the present Dissertation.

[64] See *supra* note 39; Pelton J. N. & Jakhu R. S., eds., *Space Safety Regulations and Standards* (Oxford & Burlington, MA: Elsevier, 2011); Abeyratne R. I. R., *Regulation of Commercial Space Transport: The Astrocizing of ICAO* (Springer International Publishing, 2015); Jakhu R. S., Sgobba T., & Dempsey P. S., eds., *The Need for an Integrated Regulatory Regime for Aviation and Space: ICAO for Space?* (Vienna: Springer, 2011). For further literature on the subject, see Part II, Chapter 1 of the present Dissertation.

[65] Kerrest A., "Le rattachement aux Etats des activités privées dans l'espace: Réflexions à la lumière du droit de la mer" (1997) 22-II Annals of Air & Space Law 113-145.

[66] See *supra* note 39. For further literature on the subject, see the introduction to Part II of the present Dissertation.

[67] Abi-Saab G., ""Unused Charter Capacity" for Global Governance" in *Issues on Global Governance – Papers Written for the Commission on Global Governance* (London: Kluwer Law International, 1995) 143-160; Blanck K., Hable A. & Lechner U., "Der Europäische Verfassungsprozess als Inspirationsquelle für "global governance"?" (2005) 30 ZfV aktuell 21-28. For further literature on the subject, see Part II, Chapter 3 of the present Dissertation.

[68] Schreuer C., "The Waning of the Sovereign State: Towards a New Paradigm for International Law?" (1993) 4 European Journal of International Law 447-471; Weiss T. G. et al., "Sovereignty under Siege: From Intervention to Humanitarian Space" in Lyons G. & Mastaduno M., eds., *Beyond Westphalia?: State Sovereignty and International Intervention* (Baltimore: John Hopkins University Press, 1995) 87; Camilleri J. A. & Falk J., *The End of Sovereignty? The Politics of a Shrinking and Fragmenting World* (Cherennam: Edwin Elgar, 1992); Thakur R., *The Responsibility to Protect: Norms, Laws and the Use of Force in International Politics* (London: Routledge, 2011). For further literature on the subject, see Part II, Chapter 1 of the Present Dissertation.

The examination of the current legal framework and corresponding literature would reveal, as previously mentioned, a *lacuna* as far as this particular technology is concerned. However, steps are being taken in a domestic level to regulate certain aspects of this nascent industry, while maintaining a situation of *tabula rasa* on the international plane. Even though it would appear that in the case of commercial spaceflight it is primarily the industry, represented by its scientists, engineers, lawyers and management experts that is setting the pace by discussing operational guidelines,[69] leaving the theoretical framework unresolved should not be the way to move forward, lest we put into question any level of authority granted in the future. This legal uncertainty is not conducive in the robust development of the industry, and as such needs to be addressed with urgency. This is the wish of the industry, which for lack of clear rules as to what is expected of the players in the field can only take tentative steps towards development. This over-cautious approach seems fitting in an inherently dangerous environment such as that of outer space, but it also results from the concentrated attempts of certain States to avoid reaching an international agreement on this issue, in view of exporting their proper legal system and regulations to other interested States. As such, modest political agendas and atheoretical strategies reflect the limits of imagination at a critical moment in the history of technological and legal development, and should be curtailed through the exercise of some strategic self-consciousness by posing some fundamental questions.[70]

Should the present Dissertation answer them successfully, then the proffered responses will stimulate new reactions amongst the international air and space law community, by providing a new perspective over an already flammable problem ("*Regenesis*"), as well as draw the attention

[69] Cheng B., "The Commercial Development of Space: The Need for New Treaties" (1991) 19 Journal of Space Law 17-44 at 43.

[70] Abel R. L., "The Globalization of Public Interest Law" (2008) 13 UCLA Journal of International Law and Foreign Affairs 295-306 at 299.

of the General Public International Law community, by discussing the contemporary concepts of State sovereignty as manifested through international organizations of global reach ("*Redefinition*").

PART I: TERRITORIAL & SUBJECT MATTER JURISDICTION: THE TOOLS OF THE TRADE

Introduction: Vertical, Concentric Zones of State Jurisdiction: New Challenges for Old Questions

The inherent tendency to study international law with the use of maps has created an automatic two-dimensional understanding of the limits of State sovereignty, by focusing on outer borders and delimitation of zones defined on the surface of the Earth, be they the actual territory of the State or the outer limits of its various marine zones. In almost unconsciously reverting to viewing a flat world, the current international law system can be described as a mesh of concentric zones of State jurisdiction largely resembling the ripple effects created on the surface of a lake by the plummeting of stones: emanating horizontally outwards from the territory of each State and stretching towards the meeting point of similar State claims and as far as current international law allows. These two conditions are not mutually exclusive; rather, they operate on a basis of precedence and complementarity.

Nevertheless, when examining activities undertaken in the completely opposite axis of surface transportation, namely the move of aircraft, spacecraft, and much closer to the core of this Dissertation, HASVs, remaining blindly faithful to this two-dimensional depiction of sovereignty creates a distorted image of legal and operational reality.

Attempting to rectify this misunderstanding, the first part of the Dissertation proposes upfront the modification of the paradigm of concentricity, by examining the emanation of jurisdiction in a way similar to that of an antenna emitting radio frequencies. The movement towards the

vertical axis of jurisdiction creates a more complete picture of State jurisdiction and provides the necessary three-dimensional perspective for the accurate regulation of HASVs. It also accounts for the *lex lata* with regard to both air and outer space, taking into consideration issues such as the delimitation question and presenting the underlying principles associated with the development of contemporary tools used in the exercise of State jurisdiction in these two domains (Chapters 1 and 2), both for civil and military purposes (Chapter 3). In doing so, it identifies both the limits placed by international law in the use of these tools, and by comparison, the impermissible extensions of jurisdiction of either States or international organizations.

1. The long-standing question of the delimitation of outer space

a. Theories on delimitation and their true relevance for HASVs

The lack of clear delimitation between airspace and outer space is often placed at the heart of any discussion pertaining to HASVs.[1] The product of lack of foresight in 1944, when reasons for selecting an upper boundary for airspace were beyond the imagination of the Chicago Conference, the delimitation question became all the more complex with the advent of the space era. The omission of a firmly established upper boundary for airspace undoubtedly made the negotiations on and the adoption of the Outer Space Treaty that much easier, since no agreement on a lower boundary for outer space was needed either.

As such, international law finds itself before the frustrating case of two adjacent domains that are not clearly separated[2] but are, nevertheless, governed by significantly different regimes.

[1] Hobe S., Meishan Goh G. & Neumann J., "Space Tourism Activities – Emerging Challenges to Air and Space Law?" (2007) 33 Journal of Space Law 359-373.

[2] He Q. Z., "The Problem of Definition and Delimitation of Outer Space" (1982) 10 Journal of Space Law 157-164; Cheng B., "Delimitation of Outer Space and Definition of Peaceful Uses" (1983) 11 Journal of Space Law 89-106; McDougal M. S., Laswell H. D. & Vlasic I. A., eds., *Law and Public*

"Trite" as this observation might be,[3] it is nevertheless becoming problematic. The emergence of HASVs, designed for either suborbital flights for space tourism purposes or for longer space transportation, seemingly upsets the stagnation of the issue, by posing new operational considerations on the academic and regulatory table.

Currently, from a completely operational stand-point, civil aviation activities take place up to an altitude of 60,000 to 65,000 feet, i.e. roughly 20 km, which is the purview covered by civilian air traffic controllers. Military aircraft might fly at higher altitudes, but still firmly within the atmosphere and, thus, the airspace, depending on their design and technological capacity. Similarly, the lowest possible perigee achieved by a man-made satellite is at an altitude of 95-110 km.[4] This operational difference had lowered the exigency on States of reaching a consensus on the delimitation issue, despite the ongoing debate among space law scholars over the past four decades, both within the COPUOS legal sub-committee and within the realm of space law literature.

Two schools of thought emerged from these long-standing deliberations:[5] the functionalist approach favours the nature of the proposed activity or the technical characteristics of the vehicle

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Order in Space (New Haven: Yale University Press, 1964) at 323; Gorove S., "On the Threshold of Space: Toward a Cosmic Law" (1958) 4 New York Law Forum 305-328; Goedhart R. F. A., *The Never Ending Dispute: Delimitation of Air Space and Outer Space* (Gif-sur-Yvette: Editions Frontiéres, 1996).

[3] Oduntan G., *Sovereignty and Jurisdiction in the Airspace and Outer Space* (New York: Routledge, 2012) at 283.

[4] Cheng B., *Studies in International Space Law* (Oxford: Clarendon Press, 1999) at 396.

[5] Perek L., "Delimitation of Air Space and Outer Space: Is it Necessary?" in *Earth Oriented Space Activities and their Legal Implicaions* (Montreal: McGill Centre for Research on Air and Space Law, 1982) 275-286; Terekhov A. D., "Passage of Space Objects through Foreign Airspace: International Custom?" (1997) 25 Journal of Space Law 1-16 at 1.

in question[6] as the determinative factor of the applicable legal regime, while considering that a fixed boundary is irrelevant. On the contrary, the spatialist approach requires the existence of a fixed boundary; its proponents being further divided into supporters of either the application of the von Karman line standard[7] or those of the lowest possible perigee standard.[8]

b. The concept of internationality regarding flights

The initial phase of HASV operations envisages an almost completely vertical flight path, in the sense that the HASV will take off and return to the same given point within the territory of a single State or a location under the jurisdiction of a State or group of States, after spending some time at the apex of its ascend in such altitude as to place it within outer space. The vast majority of aerospace scholars, as well as of aerospace transportation developers and operators, seem to consider such an operation scheme to be completely "domestic", due to the tautology of taking off and landing locations.[9] Nevertheless, such a consideration is, in this author's opinion, a misconception both in fact and law.

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[6] Hobe S., "Legal Aspects of Space Tourism – Conference on Security and Risk Management in a New Space Era: Military, Commercial, and Tourism Dimensions" (2007) 86 Nebraska Law Review 439-458.

[7] Diederiks-Verschoor I. H. Ph. & Butler M. A., *Introduction to Space Law*, 2nd edition (The Hague: Kluwer Law International, 1999) at 18.

[8] Christol C. Q., *The Modern International Law of Outer* Space (New York: Pergamon Press, 1982) at 504; Cheng B., *Studies in International Space Law* (Oxford: Clarendon Press, 1997) at 497; Gorove S., "Aerospace Object – Legal and Policy Issues for Air and Space Law" (1997) 25 Journal of Space Law 101-112 at 102; Gorove K. M., "Delimitation of Outer Space and the Aerospace Object – Where is the Law?" (2000) 28 Journal of Space Law 11-28; Vereshchetin V. S., Next Steps in International Space Law, *in* Jasentuliyana N. (ed.), *Perspectives on International Law: A Publication on the Occasion of the Fiftieth Anniversary of the United Nations and a Contribution to the Decade of International Law*, Kluwer Law Interntional, London – The Hague – Boston 1995, pp. 463-478, at pp. 471-472.

[9] Fitzgerald P. P., "Inner Space, ICAO's New Frontier" (2014) 79 Journal of Air Law & Commerce 3-34 at 4.

The parallel on this particular aspect is drawn by considering parameters associated with the issuance of an air carriage ticket and its corollaries to the issue of liability in case of an accident, delay or damage. These parameters are the understanding of territory as set by the Chicago Convention, and the concept of internationality as derived from the Warsaw[10] and/or Montreal[11] Conventions on International Carriage by Air. Under these instruments, a flight is considered international when it consists of "any carriage in which, according to the agreement between the parties, the place of departure and the place of destination, whether or not there be a break in the carriage or a transhipment, are situated either within the territories of two States Parties, or within the territory of a single State Party if there is an agreed stopping place within the territory of another State, even if that State is not a State Party".[12] Flights not covered by these definitions can be assumed domestic by default, at least for the States parties to the Warsaw and Montreal Conventions. For States non-parties to these instruments, it is accurate to assume that the flights under discussion are non-international. However, this assessment is only relevant to the issue of liability and does not affect the international character of the transportation. It should be noted that the Warsaw and Montreal Conventions have been ratified by a total of 152 and 113 States respectively.[13] While an argument could be made as to the relevance of the international or domestic flight dilemma for non-contracting States to the Warsaw and Montreal Conventions,

[10] Convention for the Unification of Certain Rules Relating to International Carriage by Air, 12 October 1929, 137 *LNTS* 11 (entered into force 13 February 1933) [henceforth Warsaw Convention].

[11] Convention for the Unification of Certain Rules for International Carriage by Air, 28 May 1999, 2242 *UNTS* 309 (entered into force 4 November 2003) [henceforth Montreal Convention].

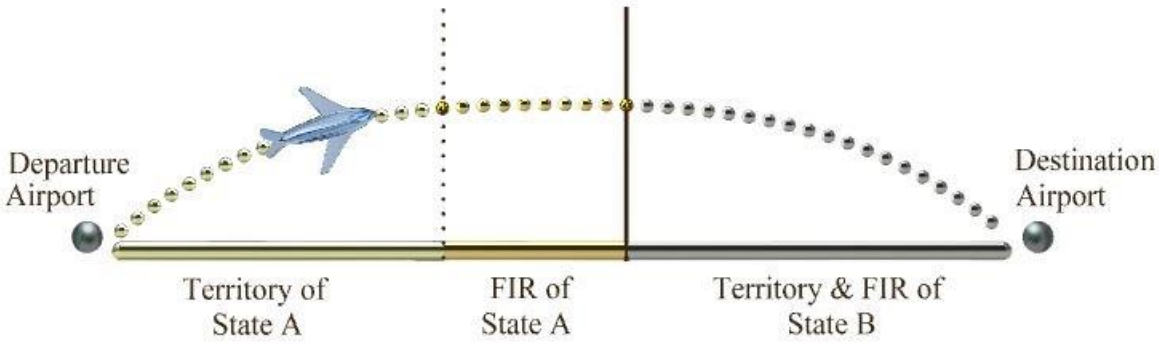
[12] Article 1 of the Warsaw Convention; Article 1 of the Montreal Convention.

[13] For the status of both the Warsaw System Treaties and the Montreal Convention see <http://www.icao.int/secretariat/legal/Lists/Current%20lists%20of%20parties/AllItems.aspx>; American Society of International Law, International Air Transportation, *in* Amann M. D., (ed.), *Benchbook on International Law*, § III.D.

under a *pacta tertiis* scope,[14] the long standing practice of States on the matter suggests that the understanding based on this division is of customary nature.

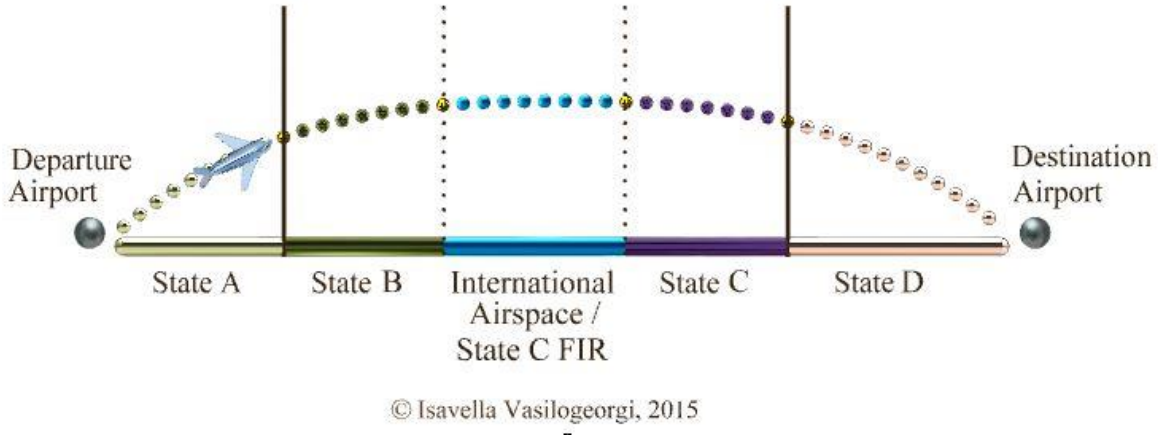
In a Cartesian viewing of the world, the concept of internationality, as attributed to a flight, could be described by the following set of graphics, as adapted to the different flight paths recognized under the Chicago and Warsaw/Montreal Conventions. If we could visualize borders as perpendicular lines rising from the surface of the Earth, and given the foregoing analysis, a flight is international or presents elements of internationality when it crosses these lines.

a. Flight between two adjacent States, International

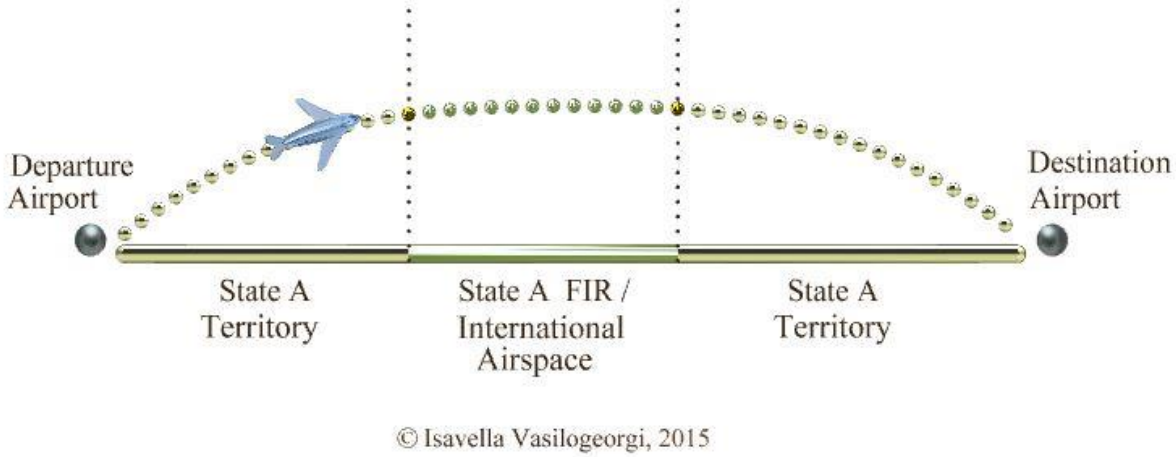


b. Flight between two States separated by other States, International

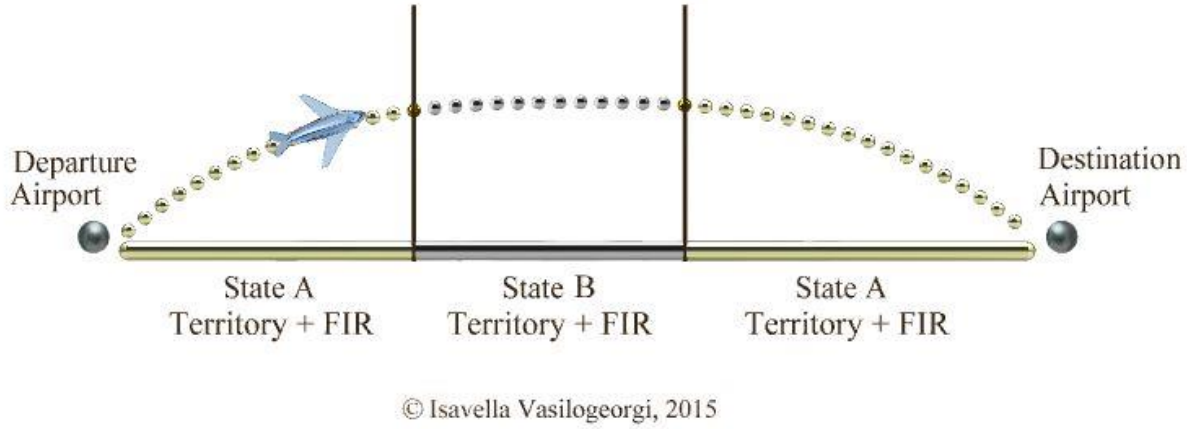
[14] Article 34 of the VCLT.



c. Flight between two different locations within a State, Domestic



d. Flight between two different locations within a State separated by third State territory/FIR, Domestic with elements of internationality

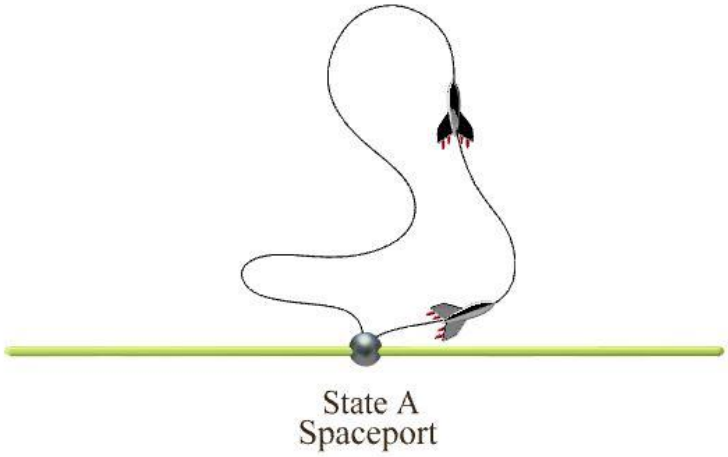


From an international law perspective, and as evidenced by the graphs above, a flight taking off and landing within the jurisdiction of the same State is considered domestic. However, when said flight is transiting through the national airspace of a third State or the international airspace falling within the limits of the Flight Information Region (FIR) assigned to that third State for control, then some elements of internationality can be attributed to the flight, at least as far as air navigation and air traffic control are concerned. Let us consider, for example, a flight from Paris, Charles De Gaul airport, to New Caledonia, Nouméa – La Tontouta airport, both points of departure and destination being within the jurisdiction of a single State, namely France, and the fact of whether such a flight can be performed on a single leg or an intermediary lay-over will be necessary being irrelevant for its classification under both Chicago and Montreal Conventions. In cases such as these, while all other legal obligations and rights associated with the flight are those of domestic flights (namely compensation in case of accident, delay or damage, criminal jurisdiction for offenses committed on board etc), there is little doubt that from an air navigation and air traffic control services provision perspective, such flight presents intense elements of internationality. The aircraft in our example will eventually exit French national airspace and

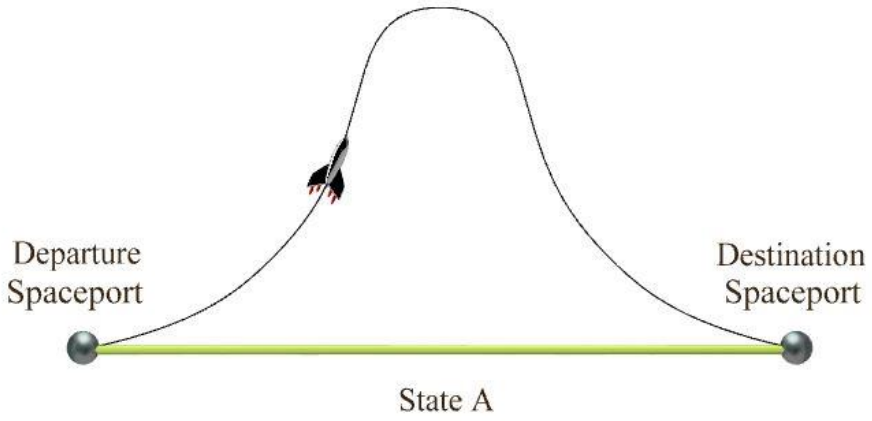
international airspace whose control is allocated to France, to transit over the respective airspaces of a number of States across Europe, Asia and Oceania, before returning into French airspace. At each point of its transit, the aircraft crosses from one FIR to the next, the control of its avian pathway being similarly passed to air traffic controllers of different jurisdictions.

Transposing this understanding in the case of space transportation and the different flight paths used by HASVs, as has so far been the case by the majority of aerospace scholars, legal and otherwise, the corresponding two-dimensional depiction would be as follows:

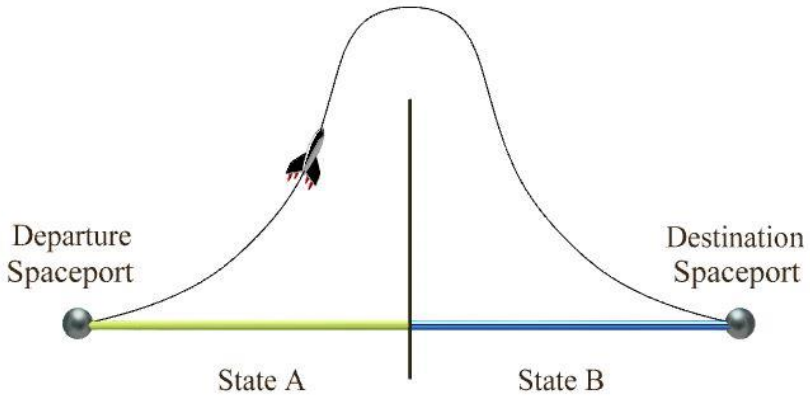
a. HASV flight with same point of origin and destination within a single jurisdiction, Domestic



b. HASV flight with different points of origin and destination within a single jurisdiction, Domestic



c. HASV point-to-point flight between different jurisdictions, International

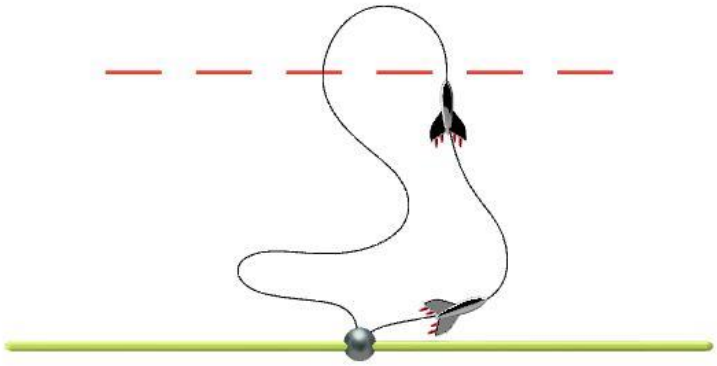


However, as previously mentioned, such a Cartesian understanding of the world, and correspondingly of different types of flight, detracts and destructs from the perception of the second, unseen limit to internationality. Operating within a system of axes, what is essentially a

three-dimensional environment becomes a distorted representation of operational and legal reality, for lack of a ceiling. Such a scheme is flawed, for it does not take into consideration what are the outer limits of State sovereignty and jurisdiction to exercise sovereign rights. Similarly, it does not reflect the outer limits of ICAO jurisdiction, as far as flights within international airspace are concerned.

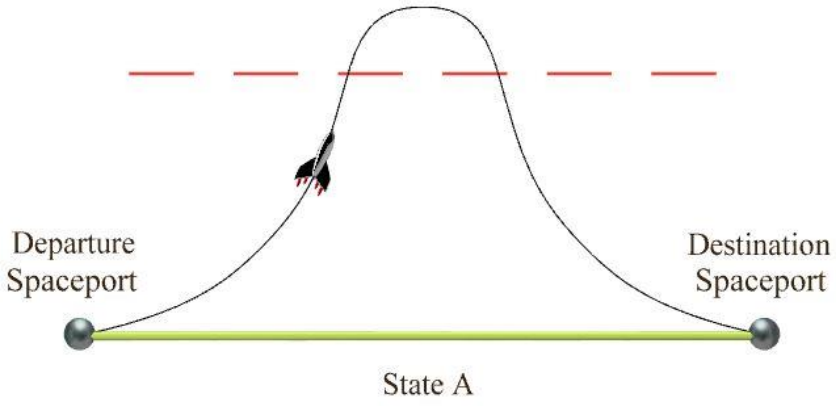
"L'espace est une zone entièrement internationale" mentions Kerrest,[15] which essentially means that every activity that crosses the line separating airspace and outer space, wherever that line may eventually be drawn, is of international character. By taking into account the top-most limits of State sovereignty, as well as ICAO jurisdiction, the correct version of the aforementioned different types of HASV flights, would be as follows:

a. HASV flight with same point of origin and destination within a single jurisdiction, International domesticized

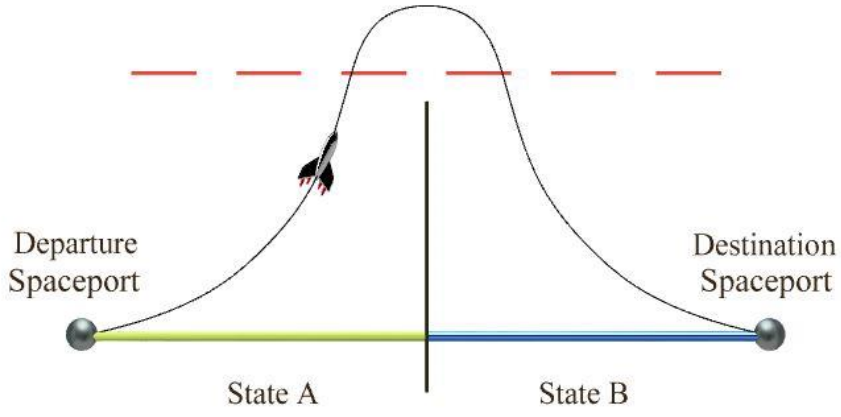


[15] Kerrest A., "Le rattachement aux Etats des activités privées dans l'espace: Réflexions à la lumière du droit de la mer" (1997) 22-II Annals of Air & Space Law 113-145 at 115.

b. HASV flight with different points of origin and destination within a single jurisdiction, International domesticized



c. HASV point-to-point flight between different jurisdictions, International



It therefore becomes apparent that the collective experience of flight perception in general and potentially the non-delimitation of the boundary between airspace and outer space, provide a

false sense of lack of one more additional line. This one would have to be parallel to the surface of the Earth and denote the end of national airspace. Whether this line is drawn in ink upon reaching a final decision on the delimitation issue or whether a system of parallel, concentric lines is created to represent the highest most point of exercise of Air Traffic Control and the boundary of airspace and outer space, one thing remains certain. There is at least one more line to be drawn, it represents the ceiling of exercise of national jurisdiction and any travel beyond it cannot be considered domestic, because such a consideration defies both fact and law.

2. Examining the necessity and permissibility of the creation of a new zone

a. Double ceiling theories and the "protozone" issue

Keeping in mind the various different suggestions on the matter, it would appear that the turn towards resolving the issue of the delimitation of the airspace – outer space boundary is emanating from the very core of contemporary legal instincts. As Oduntan phrases it, "[t]he legal instinct to delimit and demarcate is so strong that to ignore its imperative nature will be to completely disregard the impetus for much of the occurrence of international behaviour as practiced within the overarching scope of sovereignty and jurisdiction".[16] However, accepting the inherent legal normalness of delimitation does not answer the question of how many delimitations are necessary or even desirable for any given activity. In other words, where and under what rules do we draw the line on drawing lines?

In addition to the classic delimitation issue, which operates on the basis of adjacency of the two navigable domains, another assumption of double delimitation has also been proposed. This assumption places the upper ceiling of the airspace, national and international alike, at an altitude

[16] Oduntan, *supra* note 3 at 19.

of 80 km above sea level, and the lowermost point of outer space at an altitude of 110 km.[17] These limits are drawn on the basis of contemporary operational capabilities of States, although it has been argued that such criteria are neither conclusive nor binding vis-à-vis the competing legal regimes.[18] The direct result of this dual delimitation tactic is the creation of a new, controversial zone between the two known domains and regimes.[19] This zone appears problematic, inasmuch as it remains unregulated and hence requires "international agreement or another form of accommodation [...] to resolve any dispute that may arise" from the operation of a HASV.[20]

A further point of contention appears to be the existence of what has been recently called the "protozone".[21] This zone has been defined as "the zone above normal commercial air space (i.e. above 21 km, or "flight-line 60k", in air traffic control jargon) and below the area that most nations consider the start of outer space (i.e. below 100 km)".[22] It is argued that this area deserves special status, because of the growing number of commercial applications that can be materialized therein. These include, among others, high altitude telecommunications or remote sensing platforms, dark sky stations used for scientific experiments, high altitude ballooning and other sub-orbital space tourism activities, and supersonic velocity transportation.[23]

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[17] Hobe, Meishan Goh & Neumann, *supra* note 2 at 362.

[18] Su J., "The Delimitation Between Airspace and Outer Space and the Emergence of Aerospace Objects" (2013) 78 Journal of Air Law & Commerce 355-378 at 360.

[19] Vitt E., "Grundbegriffe und Grundprinzipien des Weltraumrechts" in Böckstiegel K. H. et als, eds., *Handbuch des Weltraumrechts* (Cologne: Heymanns, 1991) 43; Vissepó V. J., Legal Aspects of Reusable Launch Vehicles, 31 *Journal of Space Law* 2005, pp. 165-218.

[20] Gorove (1997), *supra* note 9 at 106.

[21] Pelton J. N., Inclusiveness in the New Space and Protozone Transportation Services, Presentation for the ICAO – UNOOSA Aerospace Symposium, Montreal, 18 March 2015, available online at <www.icao.int/Meetings/SPACE2015/Pages/Presentations.aspx>.

[22] Pelton J. N., *New Solutions for the Space Debris Problem* (Springer International, 2015) at 77.

[23] *Ibid.*

Nevertheless, recognition and distinct regulation of this particular zone appears problematic, both in fact and in law. From a factual perspective, the mere fact that commercial activities have to the present date been confined to an altitude of less than 21 km, does not mean that this point represents the upper-most ceiling of the airspace. On the contrary, this approach patently disregards the military applications employed within the airspace, at an altitude higher than 21 km, as explained above. Granted, said applications fall outside the regulatory scope of the Chicago Convention, articles 3 and 3bis thereof notwithstanding;[24] however, they are not indifferent to international law in general, and specifically to the issue of the territorial apex of State sovereignty.

Similarly, from a purely theoretical and normative perspective, dividing the airspace solely on the basis of its commercial exploitation defies its legal treatment by present day international law. Airspace is understood as a single unit and all pertinent legal instruments, including the Chicago Convention, have at all times treated it as such. The fact that no other distinction is made with regards to airspace, apart from domestic and international, proves that the vertical slicing thereof is not easily justifiable,[25] if not outright impermissible. In essence, establishing a separate zone on the basis of a criterion such as the commercial footprint of a particular altitude merits the same normative treatment as that of establishing an Air Defence Identification Zone (ADIZ).[26] It defies the principle of *expressio unius est exclusio alterius*,[27] and hence, cannot be tolerated by international law.

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[24] Further analysis of this point will be provided in Chapter 3 of the present Part, *infra*.

[25] de Oliveira Bittencourt Neto O., *Defining the Limits of Outer Space for Regulatory Purposes* (Springer International, 2015) at 64.

[26] See Chapter 3, *infra*.

[27] *Arbitration between Petroleum Development (Trucial Coast) Ltd and Sheikh of Abu Dhabi* (1951), 47 *American Journal of International Law* 1953, p. 156.

Despite the suggestion that the adoption of the protozone could smoothen out the need for delimiting airspace and outer space,[28] it is not clear whether discussions of merging air law and space law constitute progress or showcase a tendency towards regression. Perhaps the most accurate time to do so would have been at the beginning of the Space Era. With five space treaties already in place and numerous resolutions dealing with different space issues, any such fusion appears to have become remote.[29]

b. A "contiguous zone" analogy

Considering the traditional implications of international transportation for a State, and generally of activities taking place outside the jurisdiction of a State that may nevertheless affect it, an interesting point to examine is whether the establishment of a quasi-contiguous zone in outer space could be acceptable and under what conditions.

Traditionally established just out-width of the territorial sea, the contiguous zone is the area where States may exercise their jurisdictional control in order to safeguard their fiscal, customs, sanitary and immigration laws, which form the limits of the legislative and jurisdictional limits of the activities of the coastal State.[30] A historic overview of domestic legislation or international instruments adopted towards regulating the contiguous zone[31] proves that by establishing such

[28] Heraud B., "The Problem of the Delimitation of Outer Space" in *Proceedings of the Twenty Second Colloquium on the Law of Outer Space* (Munich: IISL, 1979); Reijnen G. C. M., *Legal Aspects of Outer Space* (Utrecht: Drukkerij Elinkwijk, 1977) at 86-91; Haanappel P. P. C., "Airspace, Outer Space and Mesospace" in *Proceedings of the Nineteenth Colloquium on the Law of Outer Space* (IISL: New York, 1977) 161-162.

[29] Gorove S., "Aerospace Object – Legal and Policy Issues for Air and Space Law" (1997) 25 Journal of Space Law 101-112 at 102.

[30] Article 33 of the UNCLOS.

[31] Great Britain Anti-Smuggling Legislation, [1709] 8 Anne c 7; [1718] 5 Geo 1 c 11; United States 1922 Tariff Act, 42 Stat 858; United States 1935 Anti-Smuggling Act, United States Code § 1711;

zones, States are essentially projecting their jurisdiction outside of their territorial waters by exercising sovereign rights.[32]

While it is understood that a State may take legal measures, including the seizure of the offending vehicle and arrest of its crew, as a method of ceasing and preventing criminal activity,[33] it is doubtful that the taking of these measures in outer space is allowed. Article II of the Outer Space Treaty prohibits any expression of territoriality in outer space; thus, the exercise of sovereign rights stemming from the concept of territoriality is incompatible with international space law. States cannot take measures to prevent the internationally protected free movement of space objects[34] through part of the celestial dome, even if the portion in question is directly adjacent to the apex of their territorial airspace.

However, considering the changing environment of international aerospace activities, States should be able to deflect unwanted incoming traffic. To date, States tolerated the passing of foreign space objects through their domestic airspace,[35] since the outgoing space object would

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Helsinki Convention for the Suppression of the Contraband Traffic in Alcoholic Liquors, 19 August 1925, 42 *LNTS* 75 (24 December 1925); Convention between the United States of America and the Great Britain respecting the Regulation of Liquor Traffic, 28 January 1924, 27 *LNTS* 181 (entered into force 22 May 1924); United Nations Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances, 20 December 1988, 1582 *UNTS* 95 (entered into force 11 November 1990); Council of Europe Agreement on Illicit Traffic by Sea, Implementing Article 17 of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances, 31 January 1995, ETS No 156, 2136 *UNTS* 81 (entered into force 1 May 2000); Frommer A. M., "The British Hovering Acts: A Contribution to the Study of the Contiguous Zone" (1981) 16 Revue Belge du Droit International 434-458 at 440.

[32] Gilmore W., "Hot Pursuit and Constructive Presence in Canadian Law Enforcement" (1988) 12 Marine Policy 105-111; Gilmore W., "Hot Pursuit: The Case of R v. Mills and Others" (1995) 44 International and Comparative Law Quarterly 949-958.

[33] Shearer I. A., "Problems of Jurisdiction and Law Enforcement against Delinquent Vessels" (1986) 35 International and Comparative Law Quarterly 320-343 at 330.

[34] Article I of the Outer Space Treaty.

[35] UN COPUOS, *The Question of the Definition/Delimitation of Outer Space*, UN Doc. A/AC.105/C.2/7 (1970) § 31; Christol C. Q., *The Modern International Law of Outer* Space (New York:

remain in outer space in perpetuity. It is not clear whether this tolerance has already been translated into customary international law,[36] or whether it would equally extend to space objects that would be capable of multiple ascends and descends to and from outer space.[37]

This traffic deflecting ability presupposes that sufficient advance notification is provided, allowing ample time for a determination of entry permission to be made or an alternative atmosphere re-entry point to be identified. Additionally, it is in keeping with the concept of internationality attributed to flights of HASVs, as discussed just above, irrespective of the particular operational design of the flight in question.

Since States cannot make individual projections of customs and immigration control in outer space, this task could and should form part of the jurisdictional scope of an international regulatory body. The limits of action should be specifically delineated so as to only address issues of entry authorisation permission and selection of the most suitable flight paths to be followed. While the management of flight paths located within the airspace, domestic or international, must remain with the internationally appointed FIR controller, selection of flight paths while in outer space and for this particular kind of activity cannot occur independently by

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Pergamon Press, 1982) at 435; Benkö M. & Plescher E., *Space Law: Reconsidering the Definition / Delimitation Question and the Passage of Spacecraft through Foreign Airspace* (The Hague: Eleven International Publishing, 2013) at 32-35.

[36] Terekhov A. D., "Passage of Space Objects through Foreign Airspace: International Custom?" (1997) 25 Journal of Space Law 1-16 at 14-15; See also the opinion of the Council of ICAO presented to the Legal Subcommittee of the COPUOS at its 1986 session, ICAO Doc. C-WP/8158 of 15 January 1986, whereby it is stated that:

"(d) The right of innocent passage of spacecraft through the sovereign airspace is 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 exit even with respect to the civil aircraft and is specifically subject to a special authorization with respect to State aircraft and pilotless aircraft;

(e) The operation of spacecraft in the airspace may require operational co-ordination with air navigation services to ensure the safety of air navigation"

[37] Benkö & Plescher, *supra* note 35 at 9-29.

States. Were the contrary scenario acceptable, then one State could effectively deregulate the entire airspace management of a third State, by dictating preferred re-entry paths over foreign territory or jurisdictional domain. Upsetting an idea as this may be, the situation would only deteriorate, when multiple HASV flights intersect in outer space, each with an independently designated flight path, none of which would have passed the test of central coordination.

Therefore, a necessary supplement to the concept of internationality as attributed to HASV flights is that of a notification and manoeuvre zone, in which an international regulatory body can accommodate and safeguard competing interests of States: on the one hand, the interest for the freedom to use, explore and exploit outer space, and on the other, the interest to maintain respect for the domestic laws of the State that are at the heart of its *domaine reservé*.

Part I Introductory Conclusions

The foregoing constitutes an umbrella analysis which brings together elements from all three subsequent chapters. It gives a first impression of the existing zones, which will be followed by a detailed presentation on their creation, particularly within the navigable domains of airspace (Chapter 1) and outer space (Chapter 2), and critically analyses the parameters that affect the exercise of control therein, taking into consideration instruments of both public international law, namely the Chicago Convention and the Outer Space Treaty, and private international law, namely the Warsaw and Montreal Conventions, as well as the various military considerations associated with both airspace and outer space (Chapter 3).

From a methodological perspective, it becomes apparent that considerations of creating a whole new legal regime exclusively for the benefit of HASVs are moot. They stem from a convoluted understanding of the interaction between the transit and liability regimes applicable

in international civil aviation and international space activities.[38] By emphasizing the operational characteristics of these crafts, the appropriate authority for the exercise of traffic control, air and space, can be readily identified, while leaving irrelevant liability considerations aside.

This emphasis on the operation of the HASVs is also in tandem with the functionalist approach in addressing the boundary delimitation of airspace and outer space. DiPaolo is correct in asserting that technological considerations are at the heart of the resistance of States to settle on an agreed upon demarcation line.[39] However, the physical characteristics of the operational environment and the corresponding economic parameters can define the point of transition from an area of nationally-coordinated to an area of internationally-coordinated traffic control. Taken in conjunction with the normative framework of international law, this chapter sought to provide critical answers to the fairly recent trend of *de lege et tecnologiae ferenda* identifying new zones within domains with established regulation and contrast them to domains of internationally protected free movement.

[38] Scott B. I., International Suborbital Passenger Transportation: An Analysis of the Current Legal Situation of Transit and Traffic Rights and its Appropriate Regulation, 14 *Issues in Aviation Law and Policy* 2015, pp. 277-312.

[39] DiPaolo A., "The Definition and Delimitation of Outer Space: The Present Need to Determine Where "Space Activities" Begin" (2014) 39 Annals of Air & Space Law 623-644 at 630.

CHAPTER 1: FUNDAMENTAL CONCEPTS OF JURISDICTION IN THE INTERNATIONAL NAVIGABLE DOMAINS: AIRSPACE

Chapter Introduction

The second international navigable domain to be conquered, airspace presented unique challenges with regards to its management and the setting up of traffic administration rules, as opposed to what was done, vastly as a result of customary international law,[1] with the sea. This chapter demonstrates how different use of the same key principle, namely sovereignty, was used within the context of air law so as to control movement. Unlike with the sea, where the great powers of the Great Explorations era of the 15th-17th centuries sought to extend their sovereignty over the oceans themselves,[2] a quest terminated for good[3] with the predominance of Grotius's theory of *mare liberum*,[4] when it came to airspace States sought to entrench their respective sovereignties over their territory, without thoughts of expansions beyond it. Therefore, where appropriate and plausible, analogies will be drawn between these two navigable domains, so as to explain both the evolution of the corresponding legal regimes, as well as the freedoms and restrictions imposed as a result thereof.

This chapter will elucidate the inner functioning and underlying principles with regards to traffic control over the airspace, domestic and international, in a manner consistent with the foregoing analysis over outer and upper limits of State sovereignty. It will also lay the theoretical

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[1] Treves T., *A Handbook on the New Law of the Sea* (Dordrecht: Martinus Nijhoff, 1991).

[2] Selden J., *Mare Clausum: of the Dominion or Ownership of the Sea* [1635] (reprinted by The Lawbook Exchange Clark, 2004).

[3] Hoffmann A., Freedom of Navigation, *Max Planck Encyclopedia of Public International Law*, available at < www.opil.ouplaw.com >.

[4] Grotius H., *The Freedom of the Seas Or the Right Which Belongs to the Dutch to Take Part in the East Indian Trade* ([1609] translated and reprinted by Read Books, 2010) at 7.

groundwork for understanding the framework wherein decisions of specialized international organizations, in this particular case the International Civil Aviation Organization (ICAO), may be considered of a binding nature, and constitute the foundation for any further analysis on limits placed on the decision-making powers of such organizations, especially when there is a tendency towards creeping extension of jurisdiction.

1. The legal status of the air

a. Controlling the freedom of movement within the airspace

Understanding how the freedom of movement works within the international air law context would be an exercise in vain, if one did not to fully grasp the notion of "airspace". A general definition of "airspace" would include the grand total of space over the surface of the Earth, be it over the territory of a specific State or over an area beyond the jurisdiction of any State.[5] It is evident that these two kinds of airspace fall under different jurisdictional control, an element of paramount importance in the context of international aviation, where an aircraft is most likely to over fly both national and international airspace to reach its destination. The differentiated degrees of control over either kind of airspace are the result of a series of events, war being perhaps the most defining. A short flashback to air law history can help clarify the current legal *status quo*.

Even from the very first years of aviation, States were in agreement as per the condition of the airspace above their respective territories: it was perceived to be an extension of their territorial

[5] Hobe S., Airspace, *Max Planck Encyclopedia of Public International Law*, § 1, available at < www.opil.ouplaw.com >.

sovereignty, hence under their complete and absolute control,[6] without any kind of vertical limitation.[7] The affirmation of the creation of a customary rule of international law is provided when examining European State practice of that era: it was prohibited for a foreign aircraft, be it civil or military, to enter the national airspace of a State without its prior express permission.[8] The demand for consent for flight within the national airspace of a State can be read as creating an additional rule: were no consent is required, because it cannot be granted by any one State, i.e. in airspace beyond the control of a particular State, thus international, freedom to fly is guaranteed.[9] The most easily identifiable airspace satisfying this precondition is that over the

[6] A similar understanding with what customary international law regarding the territorial waters of the coastal State already dictated, nowadays crystalized in Article 2, United Nations Convention on the Law of the Sea, 10 October 1982, 1833 *UNTS* 396 (entered into force 16 November 1994) [henceforth UNCLOS]; See also, Jessup P. C., *The Law of Territorial Waters and Maritime Jurisdiction* (New York: Kraus, 1927) at 115.

[7] Huet P., "La limite verticale des compétences de l'Etat en Droit Aérien" (1966) RGAE 209; de la Pradelle P., "Les frontières de l'air" (1954) 86-II Recueil de Cours de l'Académie de Droit International 121.

[8] Milde M., *Essential Air and Space Law – International Air Law and ICAO* (The Netherlands: Eleven International Publishing, 2008) at 7.

[9] For the contrary opinion *see*: Fauchille P., "Le domaine aérien et le régime juridique des Aérostats" (1901) 8 Revue General de Droit International Public 414-485. With regards to ships, however, it should be noted that the introduction of the Exclusive Economic Zone placed limits to the navigational freedom in the high seas, in that the exclusivity of the coastal State's jurisdiction over economic, environmental and scientific issues within the zone creates in and by itself a limit to free navigation, indeed differentiating it from the one enjoyed in the high seas. For more information on the issue of restricting the freedoms of the high seas through specific zones and the corresponding jurisdictional capacities of States therein, *see*: *Case Concerning the Continental Shelf (Libyan Arab Jamahiriya v. Malta)*, Judgment, [1985] ICJ Rep. at 33; *Case Concerning Delimitation of the Maritime Boundary in the Gulf of Maine Area (Canada/United States of America)*, Judgement, [1984] ICJ Rep. at 246; *Case Concerning Filleting within the Gulf of St. Lawrence*, Canada v. France [1986], (1990) XIX RIAA 225; Nelson D., Exclusive Economic Zone, *Max Planck Encyclopedia of Public International Law*, available at < www.opil.ouplaw.com >; Gavouneli M., *Functional Jurisdiction in the Law of the Sea* (Leiden & Boston: Martinus Nijhoff, 2007) at 69; Castañeda J., "Negotiations on the Exclusive Economic Zone at the Third United Nations Conference on the Law of the Sea" in Makarczyk J, ed., *Essays in International Law in Honour of Judge Manfred Lachs* (The Hague: Nijhoff, 1984) 605-623 at 615; van Dyke J. M., "The Disappearing Right to Navigational Freedom in the Exclusive Economic Zone" (2005) 29 Marine Policy

high seas, as reaffirmed in a number of international instruments.[10] By extension, and for as long as the correlation between international airspace and high seas exists, the easiest way to restrict the freedom of movement in the former is to decrease the expanse of the latter.

Consequently, during the preparatory conference for the 1919 Convention on the Regulation of Air Navigation[11] in Paris, States were not perceived to be creating, but rather to be codifying existing customary norms, as far as the principle of the absolute sovereignty of the airspace over the territory and the territorial waters of a State, as well as the freedom of flying over the high seas were concerned.[12] Further proof of the global recognition of the customary nature of the aforementioned principles can be derived from the relevant provisions of regional instruments[13] concurrent to the Paris Convention. The novel element introduced through these agreements, was the recognition of a right to freely overfly the territory of other Contracting Parties, in essence the granting of a continuous consent.

107-121; Becker M. A., "The Shifting Public Order of the Oceans: Freedom of Navigation and the Interdiction of Ships at Sea" (2005) 46 Harvard International Law Journal 131-230 at 171; Booth K., *Law, Force and Diplomacy at Sea* (London: Allen & Unwin, 1985) at 38.

[10] Article 2, Convention on the High Seas, 29 April 1958, 450 *UNTS* 11 (entered into force 30 September 1962) [henceforth High Seas Convention]; Article 87 of the UNCLOS. However, unlike with the exclusive jurisdiction of the flag State over sea vessels, as deriving from Article 6 of the High Seas Convention and Article 90 of the UNCLOS, aircraft crossing the international airspace are still subject to the jurisdiction of the State exercising traffic control in the particular area, as analyzed bellow. It should also be noted, that since access to the air transport is possible for all States, there was no need to establish specific freedom provisions for landlocked States, similar to the ones of Article 4 of the High Seas Convention or Article 90 of the UNCLOS.

[11] Convention on the Regulation of Air Navigation, 13 October 1919, 11 *LNTS* 173 (entered into force 1922).

[12] *Ibidem.*

[13] Article 1, Ibero-American Convention on Air-Navigation, 1 November 1926, (1926) 3 *Hudson* 2019; Article 1, Convention on Commercial Aviation, 20 February 1928, 129 *LNTS* 223 (entered into force 13 June 1929).

However, the over flight freedom was not extended to military or State aircraft, similarly to the legally recognised granting of a right of innocent passage for military or State ship under the law of the sea.[14] This position was solidified after the outbreak of World War II and the intensive use of military aircraft during the armed conflict. With the memories of entire cities being reduced to rubble due to air strikes, States were simply reluctant to allow foreign military or State aircraft to freely navigate their skies. This otherwise justified apprehension made the need for further, multi-level international cooperation in the field of aviation even more pronounced, especially with regards to legal, technical and financial issues. Even amidst the War, States were strongly calling for the modernisation of air law provisions. The call was answered with the organisation of the Chicago Conference by invitation of the United States government, the 1944 Chicago Convention on Civil Aviation being the result of this effort.[15] Both the absolute sovereignty of States over their national airspace and the freedom of over flight for civil aircraft are crystallised as principles of customary law under Articles 1 and 3 (c) respectively.

Nevertheless, according to both the Convention and the relevant Annexes, air traffic control does not take place only over national airspace, but covers regions beyond the jurisdiction of any State. It was therefore necessary to come up with a method of administering such jurisdictional control while reconciling the varying degrees of State jurisdiction over the national and international airspace. The ICAO Council was tasked by the ICAO Assembly with bringing to

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[14] Articles 17-32 of the UNCLOS; *Corfu Channel case (United Kingdom of Great Britain and Northern Ireland v. Albania)*, Judgment, [1949] ICJ Rep. at 4; Hakapää K., Innocent Passage, *Max Planck Encyclopedia of Public International Law*, §§29-33, available at < www.opil.ouplaw.com >; See indicatively USA-USSR Agreement on Uniform Interpretation of Rules of International Law Governing Innocent Passage, 23 September 1989, 28 *ILM* 1444, according to which: "All ships, including warships, regardless of cargo, armament or means of propulsion, enjoy the right of innocent passage through the territorial sea in accordance with international law, for which neither prior notification nor authorization is required (at p. 1446)".

[15] 1944 Convention on International Civil Aviation, 15 *UNTS* 295 (henceforth Chicago Convention).

fruition this balancing exercise in authority division. In order to secure the orderly functioning of international aviation, the Council divided the international and national airspace of the contracting States into great Air Navigation Regions, each of which includes a number of Flight Information Regions (FIRs). This lengthy process was concluded in 1967 when the status of the North-American Region was regulated, thus dividing the global map in nine Air Navigation Regions.[16] Currently, the Chicago Convention and its corresponding international organization, now a specialized agency of the UN, the International Civil Aviation Organisation, number 191 State Parties, thus safeguarding the global application of international air law. While not all 191States participated in the process to be described just below, primarily because not all of them existed as independent States at that time, the outcome of these deliberations is binding upon them as well. The reasons for this will be explained just after the analysis of the process of establishing Air Navigation Regions.

The division of authority for providing air navigation and air traffic control services between States was completed by the conclusion of a series of Regional Aeronautical Agreements, one for each of the primary Air Navigation Regions. These agreements are the product of a Regional Aeronautical Meeting, a cooperative mechanism among States of a greater region, which only has an advisory capacity vis-à-vis the ICAO Council, to delimit FIRs.[17] The Regional Aeronautical Meeting is bound to observe certain prerequisites pertaining to the delimitation and

[16] Yokaris A. S., *The Jurisdiction of the Coastal State to the Airspace, National and International (the international legal regime of FIRs) (Οι Δικαιοδοσίες του Παράκτιου Κράτους στον Εναέριο Χώρο, Εθνικό και Διεθνή – Το Διεθνές Νομικό Καθεστώς των Περιοχών FIR)* (Athens – Komotini: Ant. Sakkoulas Publications, 1991) [in Greek] at p. 137; Yokaris A. & Kyriakopoulos G., *International Law of Airspace (Διεθνές Δίκαιο Εναερίου Χώρου)* (Athens: Nomiki Bibliothiki, 2013) [in Greek] at 97-100.

[17] Yokaris A. S., "Les régions d'information de vol (Le statut juridique international du FIR d'Athènes)" (1992) 45 Revue Hellénique du Droit International 23-38 at 31.

delegation of jurisdictional control of FIRs, which can be found in Annexes 2 and 11 to the Chicago Convention, on "Rules of the Air" and "Air Traffic Services" respectively.

In the most common situation, a FIR includes both national and international airspace,[18] within which the "appropriate Air Traffic Services (ATS) authority"[19] is expected to fulfil the fundamental objects of the Convention,[20] i.e. to exercise air navigation control, provide flight information services and search and rescue services to aircraft in distress, to name a few. It becomes, hence, apparent that the benchmark for allocation of authority is the creation of a primarily functional-oriented legal regime,[21] technical and operational criteria are to be examined for the delimitation of each region. Taking into account the common interest of all States for the safety of international aviation, any decisions made on the basis of these considerations safeguard the achievement of maximised efficiency in service providing by the appropriate ATS authority: States are not in charge in title only, but must prove their ability to provide actual and functional air traffic control.[22] This element of functionality introduces delimitation criteria not typically used in general international law: instead of showing preference to the national borders of the respective States,[23] the foremost standard is the incorporation of all available airways in the radius of the delimited FIR.[24] Given the manner in which airways for international aviation

[18] Article 2.1.3 Annex 11 to the Chicago Convention.

[19] Article 1 Annex 11 to the Chicago Convention.

[20] Article 2.2 Annex 11 to the Chicago Convention.

[21] Dempsey P. S., *Public International Air Law* (Montreal: McGill University Institute and Centre for Research in Air and Space Law, 2008) at 171.

[22] ICAO Assembly Resolution A 24-7; ICAO Assembly Resolution A 26-8; ICAO Assembly Resolution A 27-10.

[23] Article 2.7.1, Annex 11 to the Chicago Convention.

[24] Article 2.7.2, Annex 11 to the Chicago Convention.

are actually designed, national borders are eventually used to define a FIR, since potential deviations would greatly frustrate the providing of ATS.[25]

The coexistence of national and international airspace within a single FIR is the very *raison d'être* of the holding of the Regional Aeronautical Meetings. Since ICAO exercises jurisdiction over all international airspace, [26] meaning the airspace over the high seas or the airspace of areas of undefined sovereignty, any assignment of authority over parts of this airspace, which is not tantamount to allocation of sovereignty, must be made through the delimitation of the relevant FIR by a competent body or mechanism approved by the ICAO Council.[27] The delimitation process to be followed by a Regional Aeronautical Meeting can be described as follows:

The legitimacy of the advisory opinion of the Regional Aeronautical Meeting with regards to the delimitations within the region in question is derived from the powers allocated to the ICAO Council by the Assembly. Pursuant to the provisions of Articles 49 and 54 of the Chicago Convention, the Council in entrusted by the Assembly to monitor and ensure the orderly application of the Convention. Each delegation of authority by the Assembly to the Council is concluded by Assembly decisions, which the Council is bound to follow under Article 54 (b) of the Convention. In exercising its relevant authority, the Council proceeded to the division of the grand total of airspace in the nine Aeronautical Regions and organised the corresponding meetings to allocate jurisdiction over the multiple FIRs contained therein. Said allocation is performed by the drafting, during the Meeting, of a Proposed Regional Aeronautical Plan for the Council. Since the Council has ultimate authority over the international airspace contained in the airspace covered by the geographical scope of each Region, the Proposed Plan only depicts what

[25] Note 1, Article 2.7.1, Annex 11 to the Chicago Convention.

[26] Dempsey, *supra* note 21, at 80.

[27] Article 2.1.2, Annex 11 to the Chicago Convention; Article 2.1.2, Annex 2 to the Chicago Convention.

the States consider an optimal division of authority, but has no legal effects on the Organisation its own, other than to determine the legality of potential claims arising out of State practice disputing the jurisdictional allocation of finally delimited FIR. The legal effect of the Proposed Plan nevertheless commence once it is approved by the Council and transformed into a Regional Aeronautical Agreement under Articles 2.1.2 of both Annexes 2 and 11, and is notified to all ICAO member States as a Council decision.

Having described the process in its entirety, the next issue that needs to be analysed is that of the actual legal nature of this Council decision. What differentiates this decision from other international organisations resolutions towards making it legally binding on the ICAO Member States?

b. The binding character of the Regional Aeronautical Agreements

In the international law arena, the law-making capacity was initially and primarily still is reserved for States. Having within their grasp their full arsenal of sovereign powers (*Kompetenz-Kompetenz*),[28] States can reinvent their authority on an issue as necessary. The same however is not true for international organisation, whose sole goal is to fulfil the mandate assigned to them by their creators, i.e. the States. An international organisation cannot act outside the scope of its mandate, pursuant to the doctrine of attributed or conferred powers,[29] for the range of its functions is defined by its constituent document, and not by its mere existence. Even a potential addition of powers to an international organisation by its own actions, for instance by the formation of a new practice, would only be permissible to the extent that the member States do

[28] Schmalenbach K., International Organisations or Institutions, General Aspects, *Max Planck Encyclopedia of Public International Law*, available at < www.opil.ouplaw.com >.

[29] Sarushi D., *International Organisations and their Exercise of Sovereign Powers*, Oxford 2005, pp. 25-27.

not oppose this new practice from taking place, hence providing their tacit consent or acquiescence.[30]

It should then come as no surprise that the concept of international organisations as law makers has created such a heated debate among the international law community.[31] There are two major points of contention: the first has to do with the origin of this law-making ability *per se*; the second relates to the legal value and/or enforceability of the produced rules.

i) The origins of the law-making ability of international organisations

With regards to the issue of the origins of the law-making ability of international organisations *per se*, the differentiation in approach has created, on the one hand, the theory of *ultra vires* actions and, on the other hand, the theory of implied powers.

i. a) The ultra vires *theory*

When it comes to the theory of the *ultra vires* action, emphasis should be placed on the constricting nature of the constitutive document of the international organisation in question. International organisations are the products of instruments granting them explicitly defined,

[30] *Case Concerning Delimitation of the Maritime Boundary in the Gulf of Maine Area (Canada/United States of America)*, Judgement, [1984] ICJ Rep. at §130; *Land, Island and Maritime Frontier case (El Salvador v. Honduras: Nicaragua Intervening)*, Judgment, [1992] ICJ Rep. at §80; Shaw M. N., *International Law*, fifth edition (Cambridge: Cambridge University Press, 2003) at 84, 437; Malanczuk P., *Akehurst's Modern Introduction to International Law* (London: Routledge, 1997) at 154; McGibbon I., "The Scope of Acquiescence in International Law" (1954) 31 British Yearbook of International Law 143-186 at 143.

[31] Lowe V., *International Law* (Oxford: Oxford University Press, 2007) at 90-97; Tunkin G. I., "The Legal Nature of the United Nations" (1966) 119 Recueil de Cours de l'Académie de Droit International de la Haye 6-66 at 20-25; Seyersted F., *Objective International Personality of Intergovernmental Organisations* (Copenhagen: Krohns Bogtrykkeri, 1963).

limited legal personality and capacity.[32] As such, any action they undertake, which cannot be firmly placed in the context of their authority, can be deemed as exceeding said authority and, therefore, lacking in legitimacy.[33]

With judicial review of decisions of international organisations not always being an option, the consequences of an illegitimate action of an international organisation are obscure. The ICJ was reluctant to pronounce on the absolute, *ipso iure* invalidity of a decision, despite the relevant argumentation of the affected State.[34] The same reluctance is evident in literature, with multiple alternatives being proposed as remedies to an allegedly *ultra vires* action:[35] from the partial to the full invalidity of a decision, either *ex nunc* or even *ex tunc*, to the upholding of the validity if only rules of minor import have been breached.[36] Considering that States might base in good faith their proper actions on the presumption of legitimacy of a decision, any subsequent pronouncement of invalidity might need to be disregarded, creating thus the paradox of an otherwise null and void instrument producing binding effects.[37] Similarly, if no State reacts to what might be an obviously *ultra vires* decision of an international organisation, then the

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[32] *Advisory Opinion on the Constitution of the Maritime Safety Committee of the Inter-Governmental Maritime Consultative Organisation (IMCO)*, Advisory Opinion, [1960] ICJ Rep. at 150.

[33] *IMCO Advisory Opinion*, *supra* note 32; *Legality of Use by a State of Nuclear Weapons in Armed Conflict*, Advisory Opinion, [1996] ICJ Rep. at §22; *Judgment of the Maastricht Treaty*, Bundesverfassungsgericht (German Federal Constitutional Court) 12 October 1993, (1994) 33 *ILM* 395, p. 441.

[34] *Appeal Relating to the Jurisdiction of the ICAO Council (India v. Pakistan)*, Judgment, [1972] ICJ Rep. at 46.

[35] Obsieke E., "The Legal Validity of Ultra Vires Decisions of International Organisations" (1983) 77 American Journal of International Law 239-256.

[36] *Certain Expenses of the United Nations (Article 17, paragraph 2 of the Charter)*, Advisory Opinion, [1962] ICJ Rep., Separate Opinion of Judge Morelli, at 224.

[37] Article 27, Vienna Convention on the Law of Treaties between States and International Organisations or between International Organisations, 21 March 1986, (1986) 25 *ILM* 543 (not into force).

development of new rules of customary international law, in due time, is a perfectly plausible outcome.

i. b) The implied powers theory

With its origins found in general principles of law recognised in the constitutional order of most States,[38] the doctrine of implied powers recognises the possible existence of some powers based on but not expressly provided for in the constitutive document of an international organisation.[39] These supplementary powers are recognised inasmuch as they are necessary for the fulfilment of the functions of the international organisation in question.[40] Consequently, what might at first appear as a *carte blanche* for task-related action or decision- / law-making, cannot be elevated to the level of all-empowering *Kompetenz-Kompetenz*, precisely due to the mooring notion of "task".[41] In fact, four elements have emerged as definitive limits[42] of the implied powers range: first, the powers in question must be necessary, essential or indispensable for the fulfilment of the organisation objective;[43] second, they must be compatible with the pre-existing

[38] *Jurisdiction of the European Commission of the Danube between Galatz and Braila* (1927), Advisory Opinion, PCIJ Series B No. 14 at 64; *McColloch v. the State of Maryland*, (1819) 17 U.S. 316, 385; Sarooshi D., *International Organizations and Their Exercise of Sovereign Powers* (Oxford: Oxford University Press, 2005) at 26-27.

[39] *Reparations for Injuries Suffered in the Service of the United Nations*, Advisory Opinion, [1949] ICJ Rep. at 182.

[40] Skubiszewski K., "Implied Powers of International Organisations" in Dinstein Y., ed., *International Law at a Time of Perplexity: Essays in Honour of Shabtai Rosenne* (Dordrecht: Nijhoff, 1989) 855-868 at 860. Implied powers are a rational concession in the face of the impossibility to spell out in exhaustive detail every single permissible action of the organization exercising them for the accomplishment of its functions. *See*: Blokker N. M., International Organizations or Institutions, Implied Powers, *Max Planck Encyclopedia of Public International Law*, available online at <www.opil.ouplaw.com>, § 5.

[41] *Nuclear Weapons in Armed Conflict Advisory Opinion*, *supra* note 33, § 25.

[42] Campbell A. I. L., "The Limits of the Powers of International Organisations" (1983) 32 International and Comparative Law Quarterly 523-533.

[43] *Reparation for Injuries Advisory Opinion*, *supra* note 39.

explicit powers of the organisation;[44] third, they must conform to fundamental rules and principles of international law;[45] and last, they must not disrupt the balance of functions between the organs of the international organisation.[46]

Whether the implied powers are deduced from the explicitly attributed powers of the organisation,[47] or they stem from its overall tasks and functions,[48] is an issue not often distinguished in international jurisprudence.[49] The latter focuses more on the justification of the exercise of said powers, which is primarily at the heart of all relevant disputes between States and international organisations they are members to.[50]

The doctrine of implied powers has gained more favour with the international community, by virtue of the practicable impossibility to explicitly spell out every single power that could be used in fulfilling the organisation's function. This is even more so reinforced and held true for

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[44] *Certain Expenses Advisory Opinion*, Dissenting Opinion of Judge Bustamante, *supra* note 36 at 288; *Certain Expenses Advisory Opinion*, Dissenting Opinion of Judge Moreno Quintana, *supra* note 36 at 239.

[45] Gill T. D., "Legal and Some Political Limitations on the Power of the UN Security Council to Exercise its Enforcement Powers under Chapter VII of the Charter" (1995) 26 Netherlands Yearbook of International Law 33-138.

[46] *Certain Expenses Advisory Opinion*, *supra* note 36.

[47] *Competence of the International Labour Organisation to Examine Proposals for the Organisation and Development of Methods of Agricultural Production* (1922), Advisory Opinion, PCIJ Series B No 3.

[48] *Reparations for Injuries Advisory Opinion*, *supra* note 39.

[49] *Legal Consequences for States of the Continued of South Africa in Namibia (South West Africa) notwithstanding Security Council Resolution 276 (1970),* Advisory Opinion, [1971] ICJ Rep., Dissenting Opinion of Judge Fitzmaurice, at 282.

[50] *Effect of Awards of Compensation Made by the United Nations Administrative Tribunal*, Advisory Opinion, [1954] ICJ Rep. at 47; *Certain Expenses Advisory Opinion*, *supra* note 36 at 151; ICTY, *Prosecutor v Tadić (Decision on the Defence Motion for Interlocutory Appeal on Jurisdiction)*, ICTY-94-1, 2 October 1995, §18; ECJ *Case 8/55 Fédération Charbonnière de Belgique v. High Authority of the European Coal and Steel Community* [1956] ECR 292; ECJ *Case 22/70 Commission of the European Communities v. Council of the European Communities (ERTA Case)*, [1971] ECR 263; Dehousse F. & Maczkovics C., "Les arrêts open skies de la Cour de justice: L'abandon de la competence externe implicite de la Communauté?" (2003) 11 Journal des Tribunaux 225-236; Holdgaard R., "The European Community's Implied External Competence after the Open Skies Cases" (2003) 8 European Foreign Affairs Review 365-394.

organisations created with undetermined time scope, whereby the possibility of foreseeing every potential incident, and consequently necessary action, of the organisation is nothing short of a miracle.[51] In such situations, explicit implied powers provisions have been included in the constitutive instrument of the organisation, permitting for the adoption of "all necessary measures" to implement its purpose.[52]

ii) The enforceability of decisions of international organisations

Regardless of how a law-making decision of an international organisation comes into existence, the second major issue that needs to be addressed is whether this decision has binding legal effects on States. Again, the international community stands divided.

The question of the enforceability of decisions of international organisations could very well be rephrased as: what legal instruments are of legal, authoritative significance, when settling an international dispute? The answer naturally depends on the judicial body called upon to solve the dispute, but scholars have come to identify the "sources of international law" in the contents of Article 38 of the ICJ Statute.[53] Hence, a strictly dogmatic approach would exclude the decisions

[51] *Certain Expenses Advisory Opinion*, *supra* note 36 at 167.

[52] Article 4, Convention Establishing the European Centre for Medium-Range Weather Forecasts, 11 October 1973, 1000 *UNTS* 3 (entered into force 1 November 1975); Article 5 § 1, Convention for the Establishment of a European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), 24 May 1983, 1434 *UNTS* 3 (entered into force 19 June 1986); Annex Section 1, § 1, Agreement Relating to the Implementation of Part XI of the United Nations Convention of the Law of the Sea, 28 July 1994, A/RES/48/263 (1994) (entered into force 28 July 1996); Article 308, Treaty Establishing the European Community (Nice Treaty), 26 February 2001, [2006] OJ 321E/37 (entry into force 1 February 2003). However, it should be noted that such implied powers do not coincide with the functional immunities of international organizations, as per Klabbers J., *An Introduction to International Institutional Law* (Cambridge: Cambridge University Press, 2002) at 37.

[53] Art. 38§1 ICJ Statute reads as follows: "The Court, whose function is to decide in accordance with international law such disputes as are submitted to it, shall apply:

of international organisations from the exhaustively enumerated sources of international law, even though the articulation of Article 38 of the ICJ Statute is meant only for the use by the ICJ and not for general international law pedagogy.

In juxtaposition, a more flexible interpretation of legally binding instruments would have to move past what is in essence a *verbatim* copy of the corresponding provision of the statute of the predecessor of the ICJ. An exhaustive enumeration of sources, indicating the express will of States to be bound or being indicative of their *opinio iuris* toward the creation of customary law, was indeed in tandem with the predominantly bilateral conventional framework of the Interwar era.[54] There is no denying, however, that it was post World War II when the majority of international organisations were created. Therefore, purely from a temporal scope, it would have been impossible to foresee the pervasiveness of international organizations, so as to include their decisions in the enumerated sources of law of Article 38 of the ICJ Statute. Further, given the foregoing analysis on the law-making ability of international organizations, one could come to the following conclusion: various statements made by States and their overall conduct within the framework of a given international organisation could contribute to the creation of customary rules, thus providing in due time binding value to its decisions.[55] With these criteria in mind, a

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a. International conventions, whether general or particular, establishing rules recognised by the contesting States;

b. international custom, as evidence of a general practice accepted as law;

c. the general principles of law recognised by the civilised nations;

d. subject to the provisions of Article 59, judicial decisions and the teachings of the most highly qualified publicists of the various nations, as subsidiary means for the determination of the rules of law."

[54] Amerasinghe C. F., *Principles of the International Law of International Organisations* (Cambridge: Cambridge University Press, 2005) at 6.

[55] Higgins R., *The Development of International Law through the Political Organs of the United Nations*, Oxford 1963, p. 2; Higgins R, "The Role of Resolutions of International Organizations in the Process of Creating Norms in the International System" in Butler W., ed., *International Law and the International System* (Dordrecht: Martinus Nijhoff, 1987) 21-47 at 21-23, 25-30.

tripartite distinction of the binding value of international organisations' decisions can be made: decisions being of absolutely binding character; decisions being binding under specific conditions; and decisions with no binding force, more commonly known as recommendations.[56]

Decisions of absolutely binding nature would be placed at the core of what was previously referred to as the "law-making" ability of international organisations. Their legal basis would be primarily founded in a provision explicitly allowing for implied powers contained in the constitutive document of the organisation, and their purpose would be to alter the pre-existing legal situation between the Member States.[57]

iii) Application to Regional Aeronautical Agreements

Pursuant to the preceding analysis, it is evident that the Regional Aeronautical Agreements adopted by the ICAO Council are absolutely binding for the Member States.[58] The delimitation of FIRs constitutes the alteration of a previous legal situation, by either addressing the lack of any relevant arrangement, or by modifying previous local arrangements between States. The latter are directly and immediately bound by this new jurisdictional allocation of air navigation and control services, as a result of their affirmative obligations stemming from the Chicago Convention.[59] While States are permitted under the Convention to notify the Council of their

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[56] Sands P. & Klein P., *Bowett's Law of International* Institutions, 6th edition (London: Sweet and Maxwell, 2009) at 286-297.

[57] Sands & Klein, *ibid.*, p. 286.

[58] Pepin E., "ICAO and other Agencies dealing with Air Regulations" (1952) 19 Journal of Air Law and Commerce 152-165; Naskou-Perraki P., *The Law of International Organisations: The Institutional Dimension (Το Δίκαιο των Διεθνών Οργανισμών: Η Θεσμική Διάσταση)* (Athens – Komotini: Ant. N. Sakkoulas Publications, 2005) [in Greek] at 79, 244-249; Bredimas A., *International Organisations, Volume II (Διεθνείς Οργανισμοί, Τόμος ΙΙ)* (Athens – Komotini: Ant. N. Sakkoulas Publications, 1990) [in Greek] at 195; Yokaris (1991), *supra* note 16, at 138.

[59] Dempsey, *supra* note 21, at 73.

incapacity to comply,[60] partially or fully, with an altered regulation, it should be noted that no ICAO Member State has questioned the legal authority of ICAO to make such delimitations of jurisdiction. Nevertheless, some authors[61] have interpreted this notification of non-compliance right as a direct dispute of the law-making ability of ICAO, since there is no "opt-out" clause in *stricto sensu* law. Concurring that this kind of flexibility is not common occurrence when it comes to law, the sheer number of States participating in the ICAO proceedings are not doing so under any misunderstanding of the functions of the organisation. On the contrary, their participation guarantees the orderly function of international civil aviation.[62]

The exclusive law-making authority of ICAO over the airspace above the high seas,[63] which comprises of roughly 72% of the Earth's surface, further reinforces and proves the legally binding nature of the air navigation and control standards. Additionally, and similarly with the results of the freedom of navigation in the sea, this exclusive law-making authority of ICAO is of dual nature: on the one hand there is a positive aspect that safeguards the freedom of navigation for all aircraft found within ICAO's jurisdictional domain, and on the other a negative aspect, prohibiting any State sovereignty claims over it.[64]

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[60] Article 38 of the Chicago Convention; Article 2.1.2, Annex 2 to the Chicago Convention; Article 2.1.2, Annex 11 to the Chicago Convention.

[61] Alvarez J. E., *International Organizations as Law-makers* (Oxford: Oxford University Press, 2006) at 223-224; Buergenthal T., *Law-Making in the International Civil Aviation Organization* (New York: Syracuse University Press, 1969) at 98-101; Kirgis F. L. Jr, *International Organizations in Their Legal Setting*, 2nd ed (St. Paul, MN: West Publishing, 1993) at 307-308; Tomas L., Chicago Convention (1944), *Max Planck Encyclopedia of Public International Law*, §11, available at < www.opil.ouplaw.com >.

[62] Buergenthal, *supra* note 61, at 120.

[63] Article 12 of the Chicago Convention.

[64] Vasilogeorgi I. M., "Delimitation of IMO-ICAO Search and Rescue Regions: A Case of Jurisdictional Compilation and Complication" (2011) 36 Annals of Air and Space Law 251-278 at 269.

Chapter Conclusions

It is thus apparent that where airspace is concerned, the tools of the trade developed for its administration were a combination of positive law-making by States, either through the development of customary international rules during the early stages of international aviation, or through the elaboration of new rules during the drafting of the Chicago Convention, and the development of a series of rules, regulations and standards created over the past seven decades through the various Annexes to the Chicago Convention, under the authority of ICAO. Whereas the enforceability of the grand total of these rules, regulations and standards is not uniform, the ones pertaining to the administration of air traffic have been deemed as definitively binding, chiefly through the unwavering adherence of all ICAO member States thereto.

Further, ICAO's authority over the international airspace is not self-existing; rather, it is the product of an allocation of what was untouchable by individual State sovereignty, by common agreement of States through the Chicago Convention. The fact that further allocation of the administration of sub-parts of the international airspace is done through a decision of the ICAO Council, while possibly creating a false image of ownership and limitless powers, does not substitute the lack of *Kompetenz-Kompetenz* of ICAO. Indeed, the example of constructing the global FIR scheme stands as proof of actions of a specialized international organization executed under an admittedly broad, but equally strictly defined framework of permissible action.

CHAPTER 2: FUNDAMENTAL CONCEPTS OF JURISDICTION IN THE INTERNATIONAL NAVIGABLE DOMAINS: OUTER SPACE

Chapter Introduction

Outer space, often referred to as the 'last frontier', has been the last conquest of the navigable domains. In fact, the manner of its conquest made it an international navigable domain from the very first moment of the space era. This chapter demonstrates how this character of internationality was established and has been since maintained even to date. It analyses the particularity of a navigable domain that is, in its entirety and by definition, beyond the jurisdiction of any single State. Indeed, the only jurisdictional claims States may pose in outer space relate exclusively to the space objects to be found in their national registries or those whose information they have submitted to the international UN registry. This fact ties in the subsequent analysis with what was presented in previous pages, regarding the inherently international nature of space flights, regardless of the points of origin and destination of a re-entry-capable space object.

Further, this chapter analyses the only currently available form of space administration, i.e. the allocation of satellite placement slots within the Geostationary Orbit. Nevertheless, one should not overlook the fact that even this form of space traffic administration is, in fact, an indirect one, in that the primary element of focus is the use of the designated radio frequencies from a particular altitude, providing certain geographic, technological and economic advantages. However, elements of this administrative process may be of use for future developments in space traffic management, as will be explained in Part II of the Dissertation.

1. The legal status of outer space

a. The free use and non-appropriation principles

The launch of Sputnik-1, the first manmade object, in 1957 into outer space has literally shaken firmly rooted preconceptions of sovereignty. The Roman maxim "*cuius est solum eius est usque ad coelom et ad sidera*",[1] allowing for infinite vertical private property[2] and infinite vertical sovereignty over the airspace above the territory of a State,[3] was no longer relevant. The insightful analysis of Manfred Lachs[4] on the absurdity[5] of such extension of sovereignty *ad infinitum*,[6] even disproportionately to the actual territorial expanse of a State,[7] explains why the principle was so readily abandoned.

Instead, the *genesis* of space law has brought forth the principle that "outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of

[1] Cooper J. C., "Roman Law and the *Maxim Cuius Est Solum* in International Law" (1952) 1 McGill Law Journal 23-168; de la Pradelle A., "De l'origine de la maxime cuius solum eius coelum" (1932) 1 Revue générale de droit aérien 294.; Lycklama à Nijeholt J. F., *Air Sovereignty* (The Hague: Nijhoff, 1910) at 34; Hyde C., *International Law, Chiefly as Interpreted and Applied by the United States, Vol. I*, (Boston: Brown Little, 1947) at 590.

[2] Banner S., *Who Owns the Sky? The Struggle to Control Airspace from the Wright Brothers On* (Cambridge, MA: Harvard University Press, 2009) at 14.

[3] Giraud E., "La notion d'espace dans les relations internationales" (1958) 19 Zeitschrift für ausländisches öffentliches Recht unde Völkerrecht 102-130 at 120.

[4] Lachs M., *The Law of Outer Space: An Experiencce in Contemporary Law-Making (Reissued on the Occasion of the 50th Anniversary of the International Institute of Space Law)* (Leiden – Boston: Martinus Nijhoff, 2010) at 41.

[5] Fenwick G. G., "How High is the Sky?" (1958) 52 American Journal of International Law 96-99 at 98; Quadri R., "Droit international cosmique" (1959) 98 Recueil de Cours de l'Academie de Droit International de la Haye 509-597 at 531.

[6] Sapora D., "Les satellites artificiels" (1955) 18 Revue générale de l'air 297-300; Hingorani R. C., "La Souverainete sur l'espace extra-atmospherique" (1957) 20 Revue generale de l'air 248-252; Dahm G., *Völkerrecht Vol I.* (Stuttgart: Kohlhammer, 1958) at 730; Schachter O., "Who Owns the Universe?" in Ryan C., ed., *Across the Space Frontier* (New York: Viking Press, 1952) 130-147.

[7] Cheng B., "From Air Law to Space Law" (1960) 13 Current Legal Problems 232-233; Jenks C. W., "International Law and Activities in Space" (1956) 5 International and Comparative Law Quarterly 99-114 at 103.

sovereignty, by means of use or occupation, or by any other means".[8] The non-appropriation principle bars States from exercising in outer space any such rights they would have otherwise, which would be manifestations of or relating to aspects of their territorial sovereignty.[9] More specifically, displays of State authority, either continuous and peaceful,[10] or indicative of the exercise of power,[11] cannot be used as the foundation of any ownership rights over outer space. The same is true for "any other means" of obtaining a title of ownership. The oldest of potential alternatives, discovery, was already considered insufficient *eo ipso* to establish a title of ownership, providing only an "inchoate" title,[12] which had to be perfected in a reasonable period of time by effective occupation, or else it would too lapse.[13] Contiguity is also insufficient, for the exact same reasons.[14] In fact, since the strongest among potentially competing titles is the one acquired by effective occupation,[15] and since this means of acquiring a title of ownership over outer space is *ab initio* unlawful, if not unrealistic, it is clear that outer space cannot fall under the exclusive jurisdiction of any given State, in the same way that territory could. And this

[8]Article 2, Treaty on Principles Governing the Activities of States in the Explorations and Use of Outer Space, including the Moon and Other Celestial Bodies, 27 January 1967, 610 *UNTS* 205 (entered into force 10 October 1967) [henceforth Outer Space Treaty].

[9] *North Atlantic Coast Fisheries Arbitration*, VII *Permanent Court of Arbitration* 1910, p. 114.

[10] *The Island of Palmas Case*, United States of America v. The Netherlands, (1928) 2 RIAA 829, p. 839; *The Indo-Pakistan Western Boundary (Rann of Kutch) Case*, India v. Pakistan, (1968) 17 RIAA 1, p. 19.

[11] *Legal Status of East Greenland (Denmark v. Norway)* (1933), Judgment PCIJ Series A/B No 53 at 45-46.; Sharma S. P., *Territorial acquisition, disputes and International Law* (The Hague: Kluwer Law International, 1997) at 331.

[12] Dixon M., *Textbook on International Law* (Oxford: Oxford University Press, 2007) at 160; Jessup P. C., "The Palmas Island Arbitration" (1928) 22 American Journal of International Law 735-752 at 738.

[13] Kelsen H., *Principles of International Law* (New York: Holt-Rinehart & Winston, 1967) at 314.

[14] Schwarzenburger G., "Title to territory: Response to a challenge" (1957) 51 American Journal of International Law 308-324 at 318.

[15] Lauterpacht H., *International Law: Collected Papers* (Cambridge: Cambridge University Press, 1977) at 186.

relatively new rule, according to Lachs, is not just a rule incorporated in a convention. It is "based on the whole complex of States' rights and obligations, written and unwritten. Thus it is scarcely conceivable that by withdrawing from the [Outer Space Treaty] a State could acquire freedom of action or the right to extend its sovereignty to outer space."[16] It would then not be a hyperbole to say that given the lack of exceptions and its overall placing within the framework of general international law, the principle of non-appropriation of outer space has indeed transformed into a rule of *ius cogens*.[17]

Indeed, an examination of the elements of *ius cogens*, i.e. a norm accepted by the international community as a whole, from which no derogation is permitted, and which can only be modified by a norm of the same character,[18] would verify the assertion that this characterization is applicable to the non-appropriation principle. As Hannnikainen mentions, it is not necessary to secure the consent of every single member of the international community of States in order to satisfy the "as a whole" part of the definition; instead, an overwhelming majority would suffice.[19] The current number of States Parties and signatories to the Outer Space Treaty, including the most prolific space faring nations, signifies that such a majority has in fact been

[16] Lachs, *supra* note 4 at 42; Goedhuis D., *ILA Report, 53rd Conference*, Buenos Aires 1969, p. 159.

[17] Article 53, Vienna Convention on the Law of Treaties, 23 May 1969, 1155 *UNTS* 331 (entered into force 27 January 1980) [henceforth VCLT].

[18] It should be noted that in the only case that the ICJ has affirmatively pronounced on the existence of a *iure cogens* norm, the element of the potential modification by a rule of the same nature, i.e. not by a rule within the *ius dispositivum*, was not examined. The Court was satisfied by the existence of the first three criteria in order to reach the relevant pronouncement, in that particular instance concerning the prohibition of torture. *Questions Relating to the Obligation to Prosecute or Extradite (Belgium v. Senegal)*, Merits, Judgment, [2012] ICJ Rep. at § 99. Similarly, the present analysis will concentrate on the elaboration of the first three criteria of the definition of *ius cogens*, the satisfaction of which guarantees the impossibility of the creation of a contrary norm of the same nature, thereby safeguarding the application of the non-appropriation principle in perpetuity.

[19] Hannikainen L., *Peremptory Norms* (Jus Cogens) *in International Law: Historical Development, Criteria, Present Status* (Helsinki: Lakimiesliiton Kustannus, Finnish Lawyers' Publishing Company, 1988) at 4.

attained. It is also worth mentioning that even the "Bogotá Declaration" States[20] did not denounce the non-appropriation principle as a whole, rather they chose, unsuccessfully, to unilaterally impose an exception for those segments of the Geostationary Orbit that were directly superjacent to their respective territories, thus accepting the overall binding nature of the norm. Their lack of success was precisely premised on the objections of other States on the basis of the *iure cogens* nature of the non-appropriation principle, which reaffirmed its universally obligatory quality[21] as "an overriding rule depriving any act or situation which is in conflict with it of legality".[22]

The non-derogation requirement is equally satisfied by the text of the Outer Space Treaty itself, which, as already analysed, does not recognize any kind of means of obtaining sovereign title over outer space or the celestial bodies. In fact, it has been suggested that the visitation rights to permanent installations of States on celestial bodies, which have been accorded to representatives of other States under Article XII of the Outer Space Treaty, is another expression of the non-appropriation principle, in that it causes a distinction between ownership of the settlement, under Article VIII of the Outer Space Treaty, vis-à-vis ownership of the territory on which the settlement is constructed.[23]

The principle of non-appropriation is to be read in conjunction with the principle of the freedom of use of outer space, comprising of three distinct components of permissible actions. First, it is recognised that outer space is "free for exploration and use by all States without

[20] See *infra* note 62.

[21] Zhukov G. & Kolosov Y., *International Space Law* (New York: Praeger, 1984) at 33-41.

[22] ILC Report 1966, UN Doc. A/6309/Rev. 1, p. 89.

[23] Jiménez de Aréchaga E., "International law in the past third of a century" (1978) 159 Recueil des Cours Académie de Droit International de la Haye 1-344 at 255.

discrimination of any kind and on a basis of equality and in accordance with international law".[24] Thus, the freedom of actions in outer space is conditional upon the principles of non-discrimination, equality and legitimacy, which can be seen as creating a circle of complementarity in their application. And this circular conditionality is of paramount importance, in light of the limited number of States actively engaging in space activities. In essence, it prevents the sanctioning of a *de facto* monopolisation of outer space by the prominent space-faring nations, safeguarding the equality of opportunity of all States to partake in the exploration and use of outer space.

Based on the combined reading of the freedom of exploration and use with the non-appropriation principle, there is one additional reason why it is fitting to accord the character of *ius cogens* to the latter, if not to both.[25] The very recognition and protection of the rights and interests of *all* States in outer space could be recognized as the *ratio legis* of *ius cogens* as articulated by Rozakis: "In principle, the *ratio legis* of the *ius cogens* rules is to protect some common concerns of the subjects of law. A contractual arrangement, despite its being *inter partes*, may nevertheless affect such general values and interests as are considered indispensable by a society at a given time. In an organised legal order, therefore, the function of *ius cogens* norms is to protect the society and its institutions from harmful consequences of individual agreements".[26] This assertion is further substantiated by Suy's understanding of the role of such

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[24] Article I § 2 of the Outer Space Treaty.

[25] Christol C. Q., *The Modern International Law of Outer* Space (New York: Pergamon Press, 1982) at 4-7; Jakhu R. S., "Developing Countries and the Fundamental Principles of International Space Law" in Gutiérrez Girardot R., ed., *New Directions in International Law: Essays in Honour of Wolfgang Abendroth: Festschrift zu seinem 75. Geburtstag* (Frankfurt & New York: Campus Verlag, 1982) 351-373 at 359-364.

[26] Rozakis Ch., *The Concept of* Jus Cogens *in the Law of Treaties* (Amsterdam: North Holland Publ., 1976) at 2.

rules for the viability of the system they establish, i.e. "rules of law whose non-observance may affect the very essence of the legal system to which they belong to such an extent that the subjects of law may not, under pain of absolute nullity, depart from them".[27] There is little doubt that the non-appropriation principle, acting as a protector of vital interests and values of the international community,[28] is as essential for the expression of the freedom of exploration and use of outer space by all States, so as to place it at the heart of the space law system, and in turn, elevating to the *ius cogens* realm.

The freedom to conduct space activities, as established above, is not limitless. Activities must be conducted "with due regard to the corresponding interests of all other States."[29] Such an obligation may also be derived for States that are not parties to the Outer Space Treaty, through the application of the due regard obligation stemming from customary international law.[30] The existence of an interest indicates the existence of a corresponding right, where said interest originates from. These rights can be found in the other provisions of the Outer Space Treaty and

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[27] Suy E., "The Concept of *Jus Cogens* in International Law" in *The Concept of Jus Cogens in International Law: Papers and Proceedings Conference on International Law, Lagonisi (Greece), April 3-8, 1966*, (Geneva: Carnegie Endowment for International Peace (European Centre), 1967) 17-77 at 18.

[28] Verdross A., "Jus Dispositivum and Jus Cogens in International Law" (1966) 60 American Journal of International Law 217-225 at 219-220; Herczegh G., *General Principles of Law and the International Legal Order* (Budapest: Institute for Legal and Administrative Sciences of the Hungarian Academy of Sciences, Akadémiai Kiadó, 1969) at 76-77; Abi-Saab, "Introduction" in *The Concept of Jus Cogens in International Law: Papers and Proceedings Conference on International Law, Lagonissi (Greece), April 3-8, 1966* (Geneva: Carnegie Endowment for International Peace (European Centre), 1967) 5-15 at 13; Tunkin G., "International Law in the International System" (1975) 147 Recueil de Cours de l'Académie de Droit International de la Haye 1-218 at 98; Mosler H., "The international Society as a Legal Community" (1974) 140 Recueil des Cours 1-230 at 134-139; Frowein J.A., "*Jus Cogens*" in Bernhardt R., ed., *Encyclopedia of Public International Law, Instalment 7*, (Amsterdam: 1984) 327-330 at 329.

[29] Article IX of the Outer Space Treaty.

[30] *The Trail Smelter Arbitration*, USA *v.* Canada, *ad hoc* Arbitral Tribunal, III UNRIAA (1941), p. 1905.

on the rules of general international law, where applicable in outer space.[31] Emphasis is given in particular to the "freedom of scientific investigation in outer space, including the Moon and other celestial bodies, and States shall facilitate and encourage international cooperation in such investigation".[32] Additionally, the Moon and other celestial bodies are covered by a right of "free access to all areas".[33] Broadening up the interpretative scope, so as to ensure maximum freedom, the term "access" can be read as comprising the landing of objects, the placement of objects and personnel and the establishment of contact between objects and/or personnel and the celestial body.[34] It appears as though special legal protection is extended to activities such as exploration and investigation of outer space, which for the better part of the space era, have been the primary activities undertaken.[35] Whether this is the outcome of a communal inclusion or, rather, communal exclusion of capacities between the two super powers of the Cold War era, States are in any event barred from hampering or preventing other States from accessing outer space.

The combined interpretation of the tripartite freedom of use and the principle of non-appropriation has led to the understanding that outer space is a *res communis* or *res communis omnium*.[36] Whereas the application of similar characterisations has been accepted in general international law, application in the domain of outer space appears largely problematic. As Lachs rightfully explains,[37] outer space has no concrete element of physicality; it is an infinite void,

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[31] Article III of the Outer Space Treaty.

[32] Article I § 3 of the Outer Space Treaty.

[33] Article I § 2 of the Outer Space Treaty.

[34] Lachs, *supra* note 4 at 45.

[35] Lachs, *supra* note 4 at 44.

[36] Cheng B., "Le Traité de 1967 sur l'espace" (1968) 95 Journal du droit international 533-645 at 565; Valladão H., "The Law of Interplanetary Space" in *Proceedings of the Second Colloquium on the Law of Outer Space* (London: IISL, 1958) at 8.

[37] Lachs, *supra* note 4 at 46.

indeed a new dimension. The celestial bodies contained therein, while objectively present, cannot be reduced to mere "objects", or things, to be freely conquered, used and disposed. The terrestrial notion of "res" being inapplicable, outer space cannot be considered a *res communis* or *res communis omnium*. The objective of space law is thus to regulate spheres of States' activities, as manifested in this new dimension.

The prohibition of States to exercise specific jurisdictions in outer space, as well as the regulation and protection of certain activities, both of which can be projected in favour and against other States, can be interpreted as indications, if not proof, of the creation of an objective regime,[38] even from the early days of the Outer Space Treaty, when only few States were bound by its provisions. Such legally binding rules even for third States are common practice in cases of inter-State border delimitation[39] or for the mitigation of areas of great interest for mankind in general.[40] McNair's words on justifying the necessity of objective regimes draw a rather clear picture on the matter:

"When it is remembered that international society has at present no legislature, the treaty is the only instrument available for doing many of the things which an individual State would do by means of its legislature; and the making of rules of law is not the only function of a legislature. It is therefore not surprising that from time to time groups of States should have assumed the responsibility of leadership and used the instrument of a treaty *to make certain territorial or*

[38] Barnes R. A., "Objective Regimes Revisited" (2000) 9 Asian Yearbook of International Law 97-146.

[39] Treaty on the Final Settlement with Respect to Germany, 12 September 1990, 29 *ILM* 1187 (1990) (entered into force 15 March 1991).

[40] Antarctic Treaty, 1 December 1959, 402 *UNTS* 71 (entered into force 23 June 1961).

other arrangements required, or which they consider to be required, in the interest of this or that particular part of the world ".[41]

In the present case, the instrument creating the necessary arrangements objectively opposed to all is the Outer Space Treaty. It is a convention regarding a specific area, outer space, which recognises that the benefits derived from its exploration and use are to be enjoyed by all countries and not just by its States Parties. Therefore, any State could be affected by the (in-)application of the freedom of use and the non-appropriation principle. To date most objective regimes have been created by regional treaties; thus, one could potentially argue that their binding nature results from their gradual transformation into regional custom.[42] However, there is nothing to preclude the creation of a global objective regime. On the contrary, it could be conceivable that the creation of such a regime is indeed the optimum solution for addressing an issue of interest to Mankind as a whole in the most expeditious way.[43]

b. The freedom of use, exploration and exploitation principle as the backbone for the exercise of exclusive jurisdiction over space assets

As already mentioned in the general introduction of this Dissertation, and reaffirmed by the introduction to Part I, the freedom of use, exploration and exploitation of outer space has had two distinct results: the first, as presented just above, is that outer space in and of itself, is beyond the

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[41] McNair A. D., *Law of Treaties* (Oxford: Clarendon Press, 1961) at 259 (emphasis added).

[42] *Case concerning Right of Passage*, Portugal v. India, ICJ Reports 1960, p. 39; Roucounas E., *International Law, Volume I (Διεθνές Δίκαιο, Τόμος Ι)* (Athens – Komotini: Ant. N. Sakkoulas Publications, 2004) [in Greek] at 102-103; Roucounas E., *Public International Law (Δημόσιο Διεθνές Δίκαιο)*, 2nd edition (Athens: Nomiki Bibliothiki, 2015) [in Greek] at 61-62; Lowe V., *International Law* (Oxford: Oxford University Press, 2007) at 53-55.

[43] Delbrück J., ed., *New trends in international lawmaking, international legislation in the public interest: proceedings of an international symposium of the Kiel Walther Schücking-Institute of International Law, March 6 to 8, 1996* (Berlin: Duncker & Humblot, 1997) 121.

jurisdiction of any State, understood in a context of territoriality as applicable on the surface of the Earth. The second, on which this part will focus, is the jurisdiction to be exercised by States on space objects, as expressed in their actual navigation into and through outer space and in the development of technological and/or safety standards.

From a purely navigational perspective, freedom of use, exploration and exploitation meant a freedom of movement without traffic rules to be taken into advisement, as there still exists no competent entity to impose them. States are at complete liberty to devise and realize space missions, so long as they conform with general international law, a liberty which also includes autonomous selection of the orbital path to be followed by any given space object. At the same time, the flip side of this liberty is that States cannot authoritatively exclude other States from making their own, independent selections. Nevertheless, should States have concerns over potentially harmful interference of designed space activities with pre-existing space activities, then international consultations may be entered into.[44] The burden for conducting said consultations shifts, depending on the State that takes initiative in expressing concerns. In case of tautology of the planning State and the State expressing concerns, then space law places an affirmative obligation to conduct international consultations with third States.[45] If a third State expresses such concerns for the planned activities of the State, then the former may request international consultations.[46] It should be noted that in this latter case, the concerned State is given a margin of discretion for its request, whereas the planning State has no legal obligation to enter into consultations. In both cases however, the Outer Space Treaty remains silent as to whether consultations should lead to some kind of compromise or modification of the planned

[44] Article IX of the Outer Space Treaty.

[45] *Ibid*.

[46] *Ibid*.

mission, especially if some reassurances of due regard to the interests of others have already been provided, as this would constitute a prejudice over the all-encompassing freedoms of Article I of the Outer Space Treaty.

The other fundamental corollary of the space freedoms is that the only entity mandated to authorise and supervise national activities[47] in outer space is the (appropriate launching)[48] State, as per Article VI of the Outer Space Treaty. This authorization requirement extends equally to activities undertaken by governmental entities, as well as by non-governmental entities, the end effect being in both cases that the State bears international responsibility for any such activities. Therefore, the distinction between State activities, in a context similar to the one accorded to warships and State aircraft, and civil activities, or rather, the distinction between State space objects and non-State space objects is moot, as at the end of the day the Outer Space Treaty does not differentiate between the two. Indeed, Article VIII of the Outer Space Treaty further clarifies the context of international responsibility, by expressly demanding that States maintain jurisdiction and control over their space objects and the personnel thereof at all times such objects are in outer space or on a celestial body, so long as said objects are carried on their national registry. Registration of a space object would be thus tantamount to identification of a

[47] General international law criteria are used for the determination of the genuine link necessary to attribute the qualification of "national" to the activities at hand, either for individuals or for legal persons. The same holds true for the conflict resolution criteria in case of unclear genuine links, through the application of the effective and overall control tests. *See*: *Nottebohm Case (Liechtenstein v. Guatemala)*, Judgment, [1955] ICJ Rep. at 23; *Barcelona Traction, Light and Power Company, Limited (Belgium v. Spain)*, Second Phase, Judgment, [1970] ICJ Rep. at §§ 85, 88; *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America)*, Merits, Judgment, [1986] ICJ Rep. at § 115; *Prosecutor v. Tadić*, IT-94-1-T, 10 August 1995, §§ 120, 131, 137; *Prosecutor v. Tadić*, IT-94-1-A, 15 July 1999, §§ 137-138, 146.

[48] Article I, Convention on the International Liability for Damage Caused by Space Objects, 29 March 1972, 961 *UNTS* 187 (entered into force 1 September 1972) [henceforth Liability Convention]; Article I, Convention on Registration of Objects Launched into Outer Space, 14 January 1975, 1023 *UNTS* 15 (entered into force 15 September 1976) [henceforth Registration Convention].

flag State, signalling to the rest of the users of outer space which State possesses exclusive authority over any given space object. However, "the non-registration of a space object and the non-fulfillment of authorization and supervision obligation might not result in any damage or injury; nevertheless such actions or omissions will still entail the international responsibility of the offending States".[49]

c. The legal status of the GEO and the ITU: an exception to the non-appropriation principle?

The combined interpretation of the principles of freedom of use and non-appropriation prevents the laying of claims of possession over the whole or part of the volume of outer space.[50] It does not however extend to harnessing the natural phenomena occurring in outer space, such as the solar radiation, electromagnetic and cosmic rays as sources of energy or the interstellar gases.[51]

One of the most important such phenomena, with extremely valuable practical applications, is the Geostationary/Geosynchronous Orbit (GEO). Found at an altitude of 35,787 km directly above the Earth's equator, the GEO enables satellites placed therein to orbit the Earth at such speeds and rotation rates, so that they may keep pace with the planet itself.[52] The high altitude of the orbit makes for a broad scope of the satellite's beam: it takes but three satellites placed in

[49] Jakhu R. S. & Vasilogeorgi I. M., "The Fundamental Principles of Space Law and the Relevance of International Law" in Stephan Hobe et al., eds., *In Heaven as on Earth? The Interaction of Public International Law on the Legal Regulation of Outer Space, Conference Proceedings,* (Cologne: Cologne Institute of Air & Space Law and DLR, 2013) 29-40 at 38.

[50] Gorove S., "Interpreting Article II of the Outer Space Treaty" (1968-1969) 37 Fordham Law Review 349-354 at 351-353.

[51] McDougal M. S., Lasswell H. D. & Vlasic I. A., *Law and Public Order in Space* (New Haven: Yale University Press, 1963) at 750.

[52] Diederiks-Verschoor I. H. Ph., "Telecommunication Satellites and International Law" (1990) 3 Hague Yearbook of International Law 105-111 at 108.

GEO to cover the entire surface of the Earth, the only potential exceptions being the extreme most Northern and Southern regions, whereas a single satellite can cover up to 43% thereof. The value of these space assets is further increased by their lifespan, which currently averages at 15 years.

To the "naked eye", GEO satellites would appear stationary. In reality, the physical phenomena developing in outer space preclude such a notion. The attraction of the mass of the Earth, the oblateness of the Earth, the attraction of the Moon and the Sun, the ellipticity of the Equator and solar radiation pressure affect the orbiting of the satellite, which moves along its orbit in a "figure 8" motion.[53] Due to all these reasons, a placement in GEO is not an exact location, but rather a nominal position, whose maintenance requires manoeuvring and adjustments. The constant motion of the satellites necessitates the adoption of collision avoidance techniques: satellites are kept at all times at a 0.1 degree angle east or west from their original nominal position, the divergence creating an extensive zone of manoeuvrability around the satellite. Consequently, the GEO is not a one-dimensional, linear orbit, but rather a three-dimensional band of 150km in width and 30km in height, indeed a very specifically defined volume of outer space. What is more, this volume is not only defined but, most importantly, finite. With the afore-described collision avoidance precautions, only 1,800 satellites can be placed within the 360 degree arc of the GEO, kept at a 0.2 degree distance from one another,[54]

[53] Hobe S., Geostationary Orbit, *Max Planck Encyclopedia of Public International Law*, available at < www.opil.ouplaw.com >.

[54] Smith M. L., *International Regulation of Satellite Communication* (Martinus Nijhoff: Dordrecht, 1990) at 13.

although more recent calculations have doubled the maximum number to 3,600 satellites by reducing the degree distance by half.[55]

Nevertheless, it should not be overlooked that not all GEO positions are of equal financial and/or commercial value, an observation which also explains why there are currently less than 500 satellites placed in GEO.[56] While they all present the same physical qualities, from a commercial exploitation point of view, the most sought-after positions are those allowing for a maximum coverage of territorial instead of oceanic expanse. In other words, a position overlooking Eurasia is more valuable than one overlooking the Pacific Ocean. As such, there is higher congestion of primarily broadcasting and telecommunications satellites in the parts of the GEO arc that service highly-populated areas. It is thus the coverage area and the frequency beam used that become of paramount importance in the placement of GEO satellites.

The legal recognition of the finite nature of GEO orbit slots and corresponding useful frequencies is provided in the International Telecommunication Union (ITU) Constitution,[57] which in Article 44 (2) reads: "*Member States shall bear in mind that radio frequencies and any associated orbits, including the geostationary orbit, are limited natural resources and that they must be used rationally, efficiently and economically […] so that countries or groups of countries may have equitable access to those orbits and frequencies*…". Therefore, for a State to be able to use a GEO slot, a balancing exercise between rational and efficient use and equitable

[55] Weeden B., Dealing with Galaxy 15: Zombiesats and On-Orbit Servicing, *The Space Review*, 24 May 2010, available online at < thespacereview.com/article/1634/1 >.

[56] Johnston E., List of Satellites in Geostationary Orbit, *Satellite Signals*, 08 January 2017, available online at < www.satsig.net/sslist.htm >. As of August 2016, the number of active satellites placed in GEO was 429, with 10 new satellites having been added as compared to the 2015 statistics.

[57] Constitution and Convention of the International Telecommunication Union, 22 December 1992, 1825 *UNTS* 143 (entered into force 1 July 1994) (henceforth ITU Constitution).

access is required.[58] These contradictory tendencies are reflected in the mechanisms adopted by the ITU on slot allocation. While initially slots were registered on a "first come, first served" basis, ensuring protection from interference to the State that first registered with the ITU about the use of a GEO slot and corresponding frequency, the equitable access criterion was largely neglected, to the displeasure of developing States.[59] The ITU attempted a compromise by creating the *a priori* planning and allocation plans, though for a very limited number of frequency bands and only two services (Fixed Satellite Service and Broadcasting Satellite Service): GEO slots were allocated to all States, following relevant negotiations for the World Administrative Radio Conference WARC ORB 1985–88 allotment plans (WARC 1977 for regions 1 and 3 [Europe, Asia, Australia], and WARC 1983 for region 2 [America]). The attempts to circumvent the "first come, first served" system by the introduction of paper satellites[60] has resulted in the institution of an allocation method with strict conditions, whereby the physical presence of the satellite in the orbital slot in question is a prerequisite for the associated protection from interference.

In practical terms, this means that for as long as a State can maintain a satellite in a GEO orbital position, its activities are protected against interference from other States or competing

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[58] Perek L., "What Future for the Discussions of the Geostationary Orbit?" in International Institute of Space Law, ed., *Proceedings of the 42nd Colloquium on the Law of Outer Space* (Reston, Virginia: American Institution of Aeronautics and Astronautics, 2000) 132-136.

[59] Jakhu R. S., "The Evolution of the ITU Regulatory Regime Governing Space Radiocommunication Services and the Geostationary Satellite Orbit" (1983) 8 Air and Space Law 381-407.

[60] Lyall F. & Larsen P. B., *Space Law: A Treatise* (Farnham: Ashgate Publishing Ltd, 2009) at 236; Wong H., "The "Paper Satellite" Chase: The ITU Prepares for its Final Exam in Resolution 18" (1997-1998) 63 Journal of Air Law and Commerce 849-879; Lyall F., "Paralysis by Phantom: Problems of the ITU Filing Procedures" *39th Colloquium on the Law of Outer Space* (International Institute of Space Law, 1997) 187-193; Gibbons K. G., "Orbital Saturation: The Necessity for International Regulation of Geosynchronous Orbits" (1979) 9 California Western International Law Journal 139-156; Cahill S., "Give Me My Space: Implications for Permitting National Appropriation of the Geostationary Orbit" (2000) 19 Wisconsin International Law Journal 231-248.

interests. With an average 15 year lifespan of GEO satellites, scheduling and executing the replacement of an aging satellite is an easily achievable process. The practical result is that a State can be renewing its notification to the ITU and subsequent use of the GEO slot in perpetuity. The obvious question then is: how is such practice compatible with the non-appropriation and free use principles? Could someone own the GEO?[61]

While such a use of a GEO slot could indeed be "peaceful and continuous", it would never satisfy the basic element of the *Palmas* arbitration necessary to transform it into a title of ownership: permanency of location. While islands are static, slots are not. They may be a defined volume overlooking a specific area, but they are not static in space. Their position revolves and constantly changes accordingly to that of the Earth. There is no permanency with regards to a specific occupied area, because the satellite never remains in a single area for such a long time, as to satisfy the *Palmas* criteria. Additionally, the same area or volume is continuously passing from the use of one satellite to the next. Whereas the satellite movements in other orbits may be converging and intersecting, the resulting freedom of navigation image being reminiscent of anarchy, in GEO this freedom translates into the orderly rotation and alternation of satellites within the same, commonly shared and regulated three-dimensional ring.

While the constant movement in space seems to be the safeguard of the non-appropriation of GEO, some equatorial States expressed a contrary understanding of the law, by declaring sovereignty over this particular orbit.[62] They hence recognised the freedom of transit over portions of outer space that could be overlooking their territory but were not in GEO, but insisted upon the need for them granting express permission to other States to place space objects directly

[61] Gangale T., "Who Owns the Geostationary Orbit?" (2006) 31 Annals of Air & Space Law 425-446.

[62] 1976 Bogotá Declaration: First Meeting of Equatorial Countries, 15 *Revue Belge de Droit International* 1980, p. 48.

above their territory.[63] The eight States of the Bogotá Declaration tried to legally justify their position on the basis of UN General Assembly Resolutions[64] calling for a New International Economic Order.[65] The Declaration has encountered the strong opposition of non-equatorial States, who correctly maintain that the GEO is an indispensable part of outer space, and is thus not subject to national appropriation, under Article I (2) of the Outer Space Treaty. It should be however noted that Colombia still maintains a sovereignty clause in its constitution.[66]

Chapter Conclusions

The foregoing analysis demonstrated that outer space is an international navigable domain by default, where no jurisdictional restrictions stemming from State sovereignty may be placed upon other users, as is often the case in the sea or even the airspace. States have collectively agreed to abstain from any claims of territorial-like sovereignty over outer space, as well as the celestial bodies, and this agreement is the cornerstone upon which the whole construct of contemporary space law is premised. The freedoms of outer space, absolute and universal in their normative articulation, and unwaveringly respected by all States throughout the six decades of human activity in outer space, could never be materialized, let alone safeguarded, were it not for the exclusion of conflicting sovereign claims through the non-appropriation principles.

As such, similarly to ships, States only maintain jurisdiction over their proper space objects, but cannot project it to those of others. The constant repetition of the principle of international

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[63] Leanza U., *The Future of international telecommunications: the legal regime of telecommunications by geostationary-orbit satellite, Volume 1* (Rome: University of Rome II, 1993) at 447.

[64] A/RES/2692 (XXV) (1970); A/RES/3281 (XXIX) (1974).

[65] A/RES/3201 (S-VI) (1974), *Declaration on the Establishment of a New International Economic Order*.

[66] Art. 101 Constitución Política de la Republica de Colombia, 1991, available at < http://confinder.richmond.edu/admin/docs/colombia_const2.pdf >.

cooperation throughout the text of the Outer Space Treaty is the normative conciliation for such an incompetence, which in the other navigable domains is not as strongly present, due to their distinct governing regimes and subsequent clarifying and/or modifying international rules.

The previous pages also provide a first example of how an exclusive, international mechanism of administering a portion of outer space, even indirectly, can lead to the creation of a functioning system of centralized rule-making and standard-setting for a domain completely outside the territorially defined jurisdictional purview of States. It will serve as an inspiration for subsequent proposals, this time direct and targeted, with regards to the administration of international space traffic, as primarily generated by HASVs.

CHAPTER 3: JURISDICTION OVER MILITARY OBJECTS IN THE INTERNATIONAL NAVIGABLE DOMAINS

Chapter Introduction

As has already been heavily alluded to in the introduction to this First Part, military activities have played a pivotal role in the development of the jurisdictional tools regulating the airspace and outer space. Indeed, it was through the experience of war and inter-State conflict that international air law was forged, with the maintenance of the inviolability of State sovereignty being the anvil against which all other provisions were tested. Similarly, it was the memories of World War II combined with the Cold War era that inspired the ground-breaking normative compromises on freedoms of use, non-appropriation and international responsibility for activities in outer space hence reflected in the Outer Space Treaty, which have been analyzed in previous pages of this Dissertation.

Nevertheless, military activities are not just a past occasion, mere regulatory tool shapers. On the contrary, the utilization of the airspace, national and international alike, as well as outer space by different militaries around the world demonstrates the continued State interest in these domains, expressed through what is perhaps the most pronounced countenance of their sovereign powers. The test of military activities and jurisdiction over them has direct implications in the estimation of the furthermost outreaches of territorial State sovereignty, both on the horizontal but also the vertical axis. Further, the need to coordinate civilian and military uses, already apparent since the early stages of international aviation, is gaining in emphasis in the domain of outer space as well, and is bound to do so exponentially with the inaugural operations of HASVs. The present chapter provides the analysis for these issues and sets the stage for considerations

necessary for the setting up of an international administration system bringing together the experiences of both domains.

1. Jurisdiction over military and State aircraft

The Chicago Convention addresses the issue of jurisdiction over military and State aircraft only in its article 3, which is used to further frame the Convention's scope. Paragraph (a) immediately renders State aircraft beyond the scope of the Convention. Paragraph (b) then goes on to define State aircraft as "aircraft used in military, customs and police services". Herein lays the first interpretative issue[1] regarding the exhaustive nature of the aforementioned definition, which is in itself twofold. First, it is imperative to ask whether State aircraft can be determined on the basis of an ownership criterion, thereby encompassing aircraft used by the State even for commercial purposes. If this qualification seems too expansive an interpretation, then the subsequent question that arises regards the function of the aircraft, and particularly its potential

[1] Unlike warships, whereby the definition criteria available are more detailed, and have been established following through long-term maritime practice and validated through the inclusion in numerous international instruments. The traditional criteria were initially identified in the Declaration respecting Maritime Law between Austria, France, Great Britain, Prussia, Russia, Sardinia, and Turkey, 16 April 1856, 61 *BFSP* 155 [henceforth 1856 Paris Declaration], which outlawed the previously used practice of privateering (Article 1 of the 1856 Paris Declaration). Firmer and more extensive criteria were set with the Convention Relating to the Conversion of Merchant Ships into War-Ships, 18 October 1907, (1907) 205 *CTS* 277 (entered into force 26 January 1910) [henceforth Hague Convention VII], the combined reading of Articles 1-4 thereof provide that a merchant ship can lawfully be converted into a warship, so long as the following are cumulatively applicable: i) the obligation of the flag State to exercise direct authority, control and responsibility; ii) the obligation for the vessel to bear external marks distinguishing it as a warship of a particular nationality; iii) the identification of the commanding officer as under the commission of the flag State, verified by the inclusion of his name in the fleet officers list; and, iv) crew under military discipline. Similarly, the Convention on the High Seas, 29 April 1958, 450 *UNTS* 11 (entered into force 30 September 1962) [henceforth High Seas Convention] defined in its Article 8 § 2 a warship as "a ship belonging to the naval forces of a State and bearing the external marks distinguishing warships of its nationality, under the command of an officer duly commissioned by the government and whose name appears in the Navy List, and manned by a crew who are under regular naval discipline".

use by the State for public purposes other than providing military, customs or police services. It would appear that this interpretation of the definition seems more appropriate, as it takes into account the concept of sovereign purposes, as well as the operation and control of the aircraft in question. Under this scheme, aircraft used for mailing services, search and rescue operations, coastal guard and firefighting, when different from the *stricto sensu* armed forces of the State, scientific research and provision of humanitarian aid can qualify as State aircraft.[2, 3] This interpretation is further supported by the corpus of international air law, whereby other types of State aircraft, but the three recognized in article 3 (b) of the Chicago Convention, are recognized and regulated.[4]

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[2] Wouters J. & Verhoeven S., State Aircraft, *Max Planck Encyclopedia of Public International Law*, available online at <www.opil.ouplaw.com>, § 1.

[3] This interpretation seems to also be more in line with what is currently applicable to warships, following the adoption of the 1982 United Nations Convention on the Law of the Sea, 1883 *UNTS* 3 [henceforth UNCLOS]. Having accepted the use of warships for the satisfaction of security concerns of States and the interest to safeguard uninterrupted trade routes and the modified and modernized structures of the naval forces of the States parties, so as to accommodate the possibility of military uses of State vessels which do not strictly fall within a State's navy, the definition of warship has now crystalized as follows: "a ship belonging to the armed forces of a State bearing the external marks distinguishing such ships of its nationality, under the command of an officer duly commissioned by the government of the State and whose name appears in the appropriate service list or its equivalent, and manned by a crew which is under regular armed forces discipline" (Article 29 UNCLOS). This definition enjoys universal acceptance, beyond the scope of the UNCLOS, as attested by its inclusion in different naval war manuals. For more information, see: Heintschel von Heinegg W., Warships, *Max Planck Encyclopedia of Public International Law*, available at < www.opil.ouplaw.com >, §34; Colombos C. J., *The International Law of the Sea*, 6th edition (London: Longmans, 1967) at 259; O' Connel D. P., *The International Law of the Sea, Vol 2* (Oxford: Clarendon Press, 1984) at 1106; Tucker R. W., *The Law of War and Neutrality at Sea* (Washington, DC: US Government Printing Office, 1957) at 38; US Department of the Navy, *The Commander's Handbook on the Law of Naval Operations*, US Department of the Navy, Newport RI 2007, NWP 1-14M, § 2.2.1; Federal Ministry of Defence of the Federal Republic of Germany, *Manual on Humanitarian Law in Armed Conflicts*, Federal Ministry of Defence, Bonn 1992, §1002; International Institute of Humanitarian Law, *San Remo Manual on International Law Applicable to Armed Conflicts at Sea*, (1995) 309 *IRRC* 595, Article 13 (g).

[4] Convention on the International Recognition of Rights in Aircraft, 19 June 1948, 310 *UNTS* 151 (entered into force 17 September 1953); ICAO Convention on Offences and Certain Other Acts Committed on Board Aircraft, 14 September 1963, 704 *UNTS* 21 (entered into force 4 December 1969);

The use of the term "services" in article 3 (b) of the Chicago Convention can be the cause of another interpretative consideration. If the term "services" is not interpreted as "discipline", but rather as "functions" or "purposes", then it could be argued that even civil aircraft, normally within the regulatory scope of the Chicago Convention, would fall outside the Convention's purview[5] if used for military, customs or police purposes.[6] The futile attempt to distinguish

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Convention for the Suppression of Unlawful Seizure of Aircraft, 16 December 1970, 860 *UNTS* 105 (entered into force 14 October 1971); Convention for the Suppression of Unlawful Acts against the Safety of Civil Aviation, 23 September 1971, 974 *UNTS* 177 (entered into force 26 January 1973); Convention on Damage Caused by Foreign Aircraft to Third Parties on the Surface, 7 October 1952 310 *UNTS* 181 (entered into force 4 February 1958); Convention for the Unification of Certain Rules Relating to Assistance and Salvage of Aircraft or by Aircraft at Sea, 28 September 1938 (not in force); Convention for the Unification of Certain Rules Relating to International Carriage by Air, 12 October 1929, 137 *LNTS* 11 (entered into force 13 February 1933); Additional Protocol No 3 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 and at Guatemala City on 8 March 1971, 25 September 1975 (not in force); Protocol 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, 8 March 1971 (not in force); 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, 28 September 1975, 2145 *UNTS* 31 (entered into force 14 June 1998); Article 57, Convention for the Unification of Certain Rules for International Carriage by Air, 28 May 1999, 2242 *UNTS* 309 (entered into force 4 November 2003).

[5] Contrarily, the regulatory scope of the UNCLOS recognizes a wider range of activities as permissible by warships (Article 87 § 1), including military manoeuvres, exercises, tests and research, making reference to rules of international law that also govern warship activities, including international humanitarian law, particularly in the case of an armed conflict, as well as in other norms and general principles of international law. For instance, the principle of proportionality vis-à-vis naval manoeuvres performed by the United States and the Honduras outside the territorial waters of Nicaragua played a major role in the determination of the International Court of Justice as to whether said manoeuvres, otherwise permissible in international law, were in fact an act of intervention into the internal affairs of Nicaragua, in violation of customary international law. *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America)*, Merits, Judgment, [1986] ICJ Rep. at §§ 92, 202-209. In any event, any activities performed by warships in the exercise of their right to free navigation must at all times take into consideration and the interests of other States and ensure the safety of international navigation and aviation (Article 87 § 2 UNCLOS). Wolfum R., Military Activities on the High Seas: What are the Impacts of the U.N. Convention on the Law of the Sea?, *in* Schmitt M. N. & Green L. C. (eds.), *The Law of Armed Conflict: Into the Next Millenium*, Naval War College, Newport 1998, pp. 501-513, at p. 504; Jenisch U., *Das Recht zur Vornahme militärischer Übungen und Versuche*

military and civil aircraft on the basis of technological elements that was performed in the early 1920s,[7] as well as the relative ease of configuration of an aircraft as either civil or military[8] further demonstrates this point.

Unlike contemporary international law with regards to warships and the sovereign immunity they enjoy,[9] the situation is not similarly clear with regards to State aircraft. On this note, a

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auf Hoher See in Friedenszeiten (Hamburg: Forschungsstelle für Völkerrecht und Ausländisches Öffentliches Recht an der Universität Hamburg, 1970) at 75-76.

[6] Wouters & Verhoeven, *supra* note 39 at § 8.

[7] Cooper J. C., "The International Air Navigation Conference Paris 1910" in Vlasic I. A., ed., *Explorations in Aerospace Law, Selected Essays by John Cobb Cooper 1946-1966* (Montreal: McGill University Press, 1968) 306.

[8] Milde M., *Essential Air and Space Law – International Air Law and ICAO* (The Netherlands: Eleven International Publishing, 2008) at 63.

[9] Article 32 of the UNCLOS. Whereas civil vessels can be subject to visit, search, arrest, seizure, taxation and have obligations of information disclosure with regards to passengers and cargo, warships are immune of all of these requirements, irrespective of their presence in international or territorial waters, contrary treatment being a violation of international law. In other words, under article 95 of the UNCLOS, warships are exempt from the civil, criminal and other jurisdiction of a State other than the flag State when on the high seas. A combined interpretation of articles 95 and 58 § 2 of the UNCLOS results in the application of the same immunity, while warships are within the EEZ of a third State. These were the exact arguments presented by the USA upon the most recent occasion of the seizure of an unmanned underwater vehicle (UUV) operated by the US oceanographic vessel USNS Bowditch in the South China Sea off of the coast of the Philippines. *See*: Starr B. & Browne R., Pentagon Demands China Return US Underwater Drone, *CNN Politics*, 17 December 2016, available online at < http://edition.cnn.com/2016/12/16/politics/chinese-warship-underwater-drone-stolen/>. According to the BBC, China indicated that the UUV "would be returned in an 'appropriate manner'. It is not clear when this might happen". BBC, China to return seized US underwater drone, Pentagon says, *BBC News*, 18 December 2016, available online at <www.bbc.com/news/world-asia-china-38352761>. Further, immunity is maintained when in the territorial waters of a third State, the only exhaustively enumerated restrictions being the obligation of warships to respect domestic laws and regulations of the coastal State regarding innocent passage (provided that said laws and regulations are compatible with the relevant provisions of the UNCLOS) under pain of immediate departure from the territorial waters, engaging the international responsibility of the flag State for any violation of both national and international law. *See* Articles 21, 22, 30 and 31 of the UNCLOS. *See* also: ITLOS, *M/V "Saiga" (No 2)*, Saint Vincent and the Grenadines v. Guinea, (Merits) (Judgement) 1999 ITLOS Reports 10; *Schooner "Exchange" and Bonaparte (on the application of United States) v McFaddon and Greetham*, 11 US (7 Cranch) 116 (1812), at p. 147; Papastavridis E., *The Interception of Vessels on the High Seas: Contemporary Challenges to the Legal Order of the Oceans* (Oxford: Hart, 2013); Papastaurides E. D., "The Right of

distinction needs to be drawn between military aircraft and other State aircraft. The 1919 Paris Convention recognized the exact same immunities and privileges to aircraft as those accorded to foreign warships at port.[10] As such, military aircraft were under the exclusive jurisdiction of the State of registry, they could not be boarded without express permission, nor arrested or seized. The denunciation of the Paris Convention and its replacement by the Chicago Convention complicates the situation further, as it is not clear whether the relevant provisions of the Paris Convention had attained the status of customary law before 1944. The inherent secrecy of States regarding matters of national security, comprising the operations of military aircraft, does not allow for the extrapolation of accurate reflections of State practice, let alone of *opinio iuris*, in view of examining the creation of customary international law.[11] Deplorably limited legal scholarship has addressed this issue.[12] The situation is even less elucidated with regards to State aircraft other than military, which were not regulated with equal precision by the Paris

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Visit on the High Seas in a Theoretical Perspective: Mare liberum versus mare clausum revisited" (2011) 24 Leiden Journal of International Law 45-69; Lowe V. & Tzanakopoulos A., Ships, Visit and Search, *Max Planck Encyclopedia of Public International Law*, available at < www.opil.ouplaw.com >; Ronzitti N., "The Law of the Sea and the Use of Force against Terrorist Activities" in Ronzitti N., ed., *Maritime Terrorism and International Law* (Dordrecht: Nijhoff, 1990) 1-14 at 8; Wendel P., *State Responsibility for Interferences with the Freedom of Navigation in Public International Law* (Heidelberg: Springer, 2007) at 6.

[10] Article XXXII, 1919 Convention on the Regulation of Air Navigation, 11 *LNTS* 173.

[11] Milde (2008), *supra* note 8 at 61. Nevertheless, Greece, citing the need to conform to the exigencies of international law, recently returned to Turkey a military Black Hawk helicopter, which landed near the city of Alexandroupolis and which was used for the defection of (former) officers of the Turkish armed forces seeking political asylum, following the attempted coup of 15 July 2016. *See*: *Political Tensions between Turkey and Greece Grow over Eight Coup Plotters*, Kathimerini Newspaper (English edition), 25 July 2016, available online at < www.ekathimerini.com/210714/article/ekathimerini/news/political-tensions-between-turkey-and-greece-grow-over-eight-coup-plotters>.

[12] Peng M. M., *Le status juridique del' aeroneuf militaire* (LaHaye: Martinus Nijhoff, 1957); Milde M., "Status of Military Aircraft in International Law" in Benkö M. & Kröll W., eds., *Luft- unde Weltraumrecht im 21. Jahrhundert / Air and Space Law in the 21st Century, Liber Amicorum Karl Heinz Böckstiegel* (Cologne: Heymanns, 2001) 152-165.

Convention. Elements of immunity may be found in instruments relating to diplomatic,[13] consular[14] or special missions,[15] as well as the, as of yet still not in force, UN Jurisdictional Immunities Convention.[16]

With respect to navigational rights, and in keeping with the exclusive sovereignty of the State over its national airspace,[17] article 3 (c) of the Chicago Convention prohibits overflights and landings performed by State aircraft over and into the territory of a third State without the latter's express permission. This provision constitutes a codification of pre-existing customary international law dating back to the practice of European States regarding the first flights performed by hot air balloons.[18] Unauthorized entry into the national airspace of a State can trigger identification and interception procedures, issuance of directions to immediately exit the airspace, escorting of the offending aircraft towards such exit and even forcing the offending aircraft to land at a designated airfield. Given the obscurity surrounding the benefit of sovereign immunity by military aircraft, it has been argued that the forfeiture of the aircraft and the imprisonment of its crew in favour of and by the injured State are valid forms of sanctions.[19, 20]

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[13] Article 22, Vienna Convention on Diplomatic Relations, 18 April 1961, 500 *UNTS* 95 (entered into force 24 April 1964).

[14] Article 31 § 4, Vienna Convention on Consular Relations, 24 April 1963, 596 *UNTS* 261 (entered into force 19 March 1967).

[15] Convention on Special Missions, 16 December 1969, 1400 *UNTS* 231 (entered into force 21 June 1985).

[16] UN Convention on Jurisdictional Immunities of States and their Property, 2 December 2004, (2005) 44 *ILM* 803 (not in force).

[17] Article 1 of the Chicago Convention.

[18] Milde (2008), *supra* note 8 at 7.

[19] Milde (2008), *supra* note 8 at 64.

[20] Similarly, when violations of the right to innocent passage are committed by warships, and are sufficiently clear and grave, then the coastal State is allowed to visit, search and even temporarily seize the offending warship. *See*: Berg A., "Das sowjetische U-Boot 137 in schwedischen Hoheitsgewässern:

Keeping in mind that such unauthorized overflights have been recognized as breaches of State sovereignty[21] and the prohibition of threat or use of force, the injured State has the right to use force in self-defence against the offending aircraft,[22] the article 3bis of the Chicago Convention notwithstanding. The navigational rights of State aircraft are further elaborated, paradoxically, in the UNCLOS, whereby they follow the rights accorded to ships in the high seas,[23] the EEZ,[24] as well as the traversing of international straights[25] and archipelagic waters.[26] The remaining navigational obligation imposed on States with regards to State aircraft is that the latter must operate with due regard for the safety of international civil aviation.[27] This obligation was elaborated through the issuance adoption and periodical revision of the "Consolidated Statement of ICAO Continuing Policies and Associate Practices Related Specifically to Air Navigation",[28] which envisions the full integration of civil and military control, in light of the shared use of the airspace by civil and military aircraft alike.

Fragen der Immunität fremder Kriegsschiffe" (1982) 42 Zeitschrift für ausländisches öffentliches Recht und Völkerrecht 295-326 at 323-324.

[21] *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America)*, Merits, Judgment, [1986] ICJ Rep. at §§ 212-214.

[22] The same has been held true for warships whose passage is not innocent, providing the coastal State with the right to request the immediate departure of the violating warship from its territorial waters, under Article 30 of the UNCLOS, a right that the coastal State may seek to enforce even with forcible means as a response to an "incipient armed attack". *See*: Dinstein Y., *War, Aggression and Self-defence*, 4th edition (Cambridge: Cambridge University Press, 2005 at 198.

[23] Article 87 § 1 of the UNCLOS.

[24] Article 58 § 1 of the UNCLOS.

[25] Article 39 of the UNCLOS.

[26] Article 54 of the UNCLOS.

[27] Article 3 (d) of the Chicago Convention.

[28] ICAO Doc. A/38-12 (2013).

The mention by ICAO of a "limited shared resource, the use of which needs to be exercised in such a way so as to safeguard a distinct end goal",[29] i.e. the maintenance of a safe environment for international civil aviation, even through trial and error,[30] is a direct application of adaptive management techniques,[31] mostly used in the environmental sciences.[32] Methods used by civil

[29] Williams B. K. & Johnson F. A., "Adaptive management and the regulation of waterfowl harvests" (1995) 23 Wildlife Society Bulletin 430-436; Bormann B. T., Haynes R. W. & Martin J. R., "Adaptive management of forest ecosystems: Did some rubber hit the road?" (2007) 57 Bioscience 186-191; Allen G. M. & Gould E. M. (Jr.), "Complexity, Wickedness, and Public Forests", (1986) 84 Journal of Forestry 20-23; Ludwig D., Hilborn R. & Walters C., "Uncertainty, resource exploitation, and conservation: Lessons learned from history" (1993) 260 Science 17-36; Lessard G., "An adaptive approach to planning and decision-making" (1998) 40 Landscape and Urban Planning 81-87; Rauscher H. M., "Ecosystem management decision support for federal forests in the United States: A review" (1999) 11 Forest Ecology and Management 173-197; Norton B. G., *Sustainability: A Philosophy of Adaptive Ecosystem Management* (Chicago: University of Chicago Press, 2005).

[30] Regan H. M., Colyvan M. & Burgman M., "A Taxonomy and Treatment of Uncertainty for Ecology and Conservation Biology" (2002) 12 Ecological Applications 618-628; Burgman M., *Risks and Decisions for Conservation and Environmental Management* (Cambridge: Cambridge University Press, 2005); Norton, *ibid.*; Le Treut H., Somerville R., Cubasch U., Ding Y., Mauritzen C., Mokssit A., Peterson T. & Prather M., "Historical Overview of climate change" in Solomon S., Qin D., Manning M., Chen Z., Marquis M., Averyt K. B., Tignor M. & Miller H. L., eds., *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, (Cambridge: Cambridge University Press, 2007); Salafsky N., Margoluis R. & Redford K., Adaptive Management: A Tool for Conservation Practitioners, Biodiversity Support Program, Washington, DC 2001, available online at <www.worldwildlife.org/bsp/> ; Schreiber E. S. G., Bearlin A. R., Nicol S. J. & Todd C. R., "Adaptive Management: A Synthesis of Current Understanding and Effective Application" (2004) 5 Ecological Management and Restoration 177-182.

[31] Holling C. S., ed., *Adaptive Environmental Assessment and Management* (Chichester, UK: Wiley, 1978); Walters C. J. & Hillborn R., "Ecological Optimization and Adaptive Management" (1978) 9 Annual Review of Ecology and Systematics 157-188.

[32] National Research Council, *Adaptive Management for Water Resources Planning*, National Academies Press, Washington, DC 2004; Senge P. M., *The Fifth Discipline: The Art and Practice of the Learning Organization* (New York: Currency Doubleday, 1990); Popper K. R., *The Logic of Scientific Discovery*, 2nd edition (New York: Harper and Row, 1968); Allenby B. R. & Richards D. J., *The Greening of Industrial Ecosystems* (Washington, DC: National Academy Press, 1994); Ashworth M. J., *Feedback Design of Systems with Significant Uncertainty* (Chichester UK: Research Studies Press, 1982); Walters C. J. & Holling C. S., "Large-scale Management Experiments and Learning by Doing" (1990) 71 Ecology 2060-2068; Lee K. N., *Compass and Gyroscope: Integrating Science and Politics for the Environment* (Washington, DC: Island Press, 1993).

air traffic controllers globally abide by this principle,[33] as attested by daily practice and official records of accident investigations.[34] Indeed, air traffic control is not a static process, neither under a microscopic nor under a macroscopic view; rather, it is a procedure which is in constant flux, adjusting through trial and error. Both civil and military air traffic controllers manage a specific environment, the medium of airspace, with a view of preserving it in such a condition, so as to satisfy the needs of increasing numbers of users. They are achieving this through sets of predetermined as well as spontaneous decisions, so as to accommodate the evolving needs of air traffic. ICAO's Consolidated Statement is a reminder of techniques and obligations adopted unilaterally by or imposed upon States as international obligations, following notable aviation accidents which have occurred precisely due to the lack of such coordination.

For instance, the 1958 Clark County, Nevada mid-air collision has been a catalyst in this regard. Having occurred under ideal flight conditions,[35] the Clark County mid-air collision exemplified that adherence to the rules without coordination of all the parties operating in a region can have catastrophic results.[36] The absolute lack of coordination between the local civil aviation authority personnel and the air traffic controllers of the Nellis Air Force Base led to the

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[33] Walters C. J., *Adaptive Management of Renewable Resources* (Caldwell, New Jersey: Blackburn Press, 1986).

[34] *Investigation Report AX001-1-2*, Bundesstelle für Flugunfalluntersuchung (German Federal Bureau of Aircraft Accident Investigation), 02 May 2004, p. 110 etc. Incidentally, one more point of interest with this regards to the Überlingen accident has to do with the decision of the Konstanz court of first instance regarding the unlawfulness of the provision of air navigation services over the territory of Germany by a foreign ANSP located outside the State territory, a precedent which could have implications in the field of coordination of traffic control services between civilian and military users of the airspace, especially if one State has granted ATC authority to its armed forces and is offering to outsource services to third States with lesser technological capabilities. *See*: Katastrophe von Überlingen – Flugunglück beschäftigt Landgericht, *Stuttgarter Zeitung*, 20 April 2008.

[35] *United States v. Sommers et al*., 351 F.2d 354 , United States Court of Appeals Tenth Circuit, 30 September 1965, § 3.

[36] *ICAO Accident Digest*, Circular 59-AN/54 (121-128).

crossing of the flight paths of a United Airlines Douglas DC-7 with 49 individuals on board *en route* to Denver, Colorado with a Sabre fighter jet on a training exercise. Structural problems on both aircrafts involved in the collision, namely a windshield support beam on the Douglas and a metal frame supporting the windshield on the Sabre cockpit did not permit the pilots to notice the other aircraft but seconds before the collision, at which point the aircraft speed did not permit the successful execution of collision evasion manoeuvres.[37] In the aftermath of the collision, and at the insistence of a relevant House of Representatives committee, the Civil Aeronautics Administration was dissolved and replaced by the, at the time, Federal Aviation Agency, now known as the Federal Aviation Administration. The Federal Aviation Act of 1958,[38] which created the new Agency, allowed it total authority over the entirety of American airspace, civil and military alike. This too can be seen as an example of the exercise of adaptive management. For it was not only the previous dysfunctional system that was replaced; rather, the new legislation enabled the exercise of more extensive air traffic control by a single, civil agency, a fact that was unprecedented. Nowadays, such coordination between civil and military aircraft has become the norm, reaffirming the content of Article 3 (d) of the Chicago Convention.

In fact, such is the obligation for coordination, that the introduction of Article 3 *bis* to the Chicago Convention,[39] following the unfortunate events of Korean Air Lines Flight 902 (KAL902) in 1978 and Flight 007 (KAL007) in 1983,[40] can be seen as another instance of adaptive management aiming at further streamlining civil-military air traffic control integration.

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[37] *United States v. Sommers et al*., 351 F.2d 354 , United States Court of Appeals Tenth Circuit, 30 September 1965, § 5.

[38] *Federal Aviation Act*, P. L. 85-726, 72 Stat. 731, Approved 23 August 1958.

[39] Protocol Relating to an Amendment to the Convention on International Civil Aviation [Article 3 bis], 10 May 1984, ICAO Doc. 9436 (entered into force 1 October 1998).

[40] Kido M., "The Korean Airlines Incident on September 1, 1983, and Some Measures Following It" (1996-1997) 62 Journal of Air Law & Commerce 1049-1070 at 1063-1067.

In both these occasions, due to a combination of technical problems and human factors, the Korean Air Lines planes violated Soviet airspace, were intercepted by Soviet fighter jets and forced to land post shooting, in the case of KAL902, or shot down as in the case of KAL007. On both these counts, the interception of what were perceived to be unknown and hostile aircrafts occurred in violation of international standards, a successful justification of military necessity being doubtful. At the same time, the lack of coordination between air traffic controllers across jurisdictions resulted in 2 deaths in the case of KAL902 and 269 deaths in the case of KAL007. In the case of KAL007, it should also be noted that there was insufficient coordination between civil and military radar monitoring personnel and the FAA while the plane was still overflying Alaska, in that the considerable divergence from the original course of the aircraft was noted by both the Kenai Peninsula civilian radar, as well as the King Salmon military radar. Nevertheless, with no notification received in a timely fashion, the crew were unaware and thus unable to rectify what was six times the maximum permissible deviation from course drift, hence maintaining a steady course into restricted Soviet airspace. As such, the KAL accidents, and particularly the KAL007 shooting down, can be seen as examples of adaptive management in air traffic control, since they brought about first, the introduction of a new protocol and corresponding article in the Chicago Convention regarding aircraft interception procedures and second, a revised method of tracking aircraft crossing polar routes and/or routes crossing Alaska.

2. Jurisdiction over military space objects

As opposed to the other navigable domains, when it comes to space law, there is no distinction placed within the text of the Outer Space Treaty or the other space-related treaties with regards to civil and military objects. All treaties refer to space objects, without any sort of qualification attached to the term. As such, the analysis of the provisions on jurisdiction over

space objects, as presented in the previous Chapter, is equally applicable to both civil and military satellites.

The main rule regarding jurisdiction over objects and personnel is that of article VIII of the Outer Space Treaty, whereby "a State party to the Treaty on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body." In this vain, space law is the only field of international law that the State, traditionally the exclusive handler of large-scale military technology, is equally responsible and potentially liable for activities of either military or civil nature, even if the latter are private, rather than public.[41]

What could be perceived as a point of distinction with regards to navigational rights between civil and military space objects is the restriction placed by the Outer Space Treaty with regards to the peaceful purposes and uses of outer space.[42] From the offset of this restriction, it becomes clear that specific types of space objects cannot navigate outer space, or *de minimis* not orbit the Earth;[43] these are space objects equipped with nuclear weapons[44] or weapons of mass destruction.[45] Such restriction is reiterated in the Moon Agreement,[46] as well as a series of

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[41] Article VI of the Outer Space Treaty.

[42] Articles III and IV of the Outer Space Treaty.

[43] Article IV of the Outer Space Treaty.

[44] Haeck L., "Les armes nucléaires dans l'espace et la contribution canadienne à la defense nucléaire" (1989) 14 Annals of Air and Space Law 237-254.

[45] The Hague Declarations of 1899 (IV, 1) and 1907 (XIV) Prohibiting the Discharge of Projectiles and Explosives from Balloons, 29 July 1899 & 18 October 1907, *in* J. B. Scott (ed.) *The Hague Conventions and Declarations of 1899 and 1907*, Oxford University Press, New York 1915, p. 220 (entered into force 4 September 1900 & 27 November 1909); The Hague Declaration (IV, 2) concerning Asphyxiating Gases, 29 July 1899, *in* J. B. Scott (ed.) *The Hague Conventions and Declarations of 1899 and 1907*, Oxford University Press, New York 1915, p. 225 (entered into force 4 September 1900); The Hague Declaration (IV, 3) concerning Expanding Bullets, 29 July 1899, *in* J. B. Scott (ed.) *The Hague Conventions and Declarations of 1899 and 1907*, Oxford University Press, New York 1915, p. 227 (entered into force 4 September 1900); Geneva Protocol for the Prohibition of the Use in War of

General Assembly resolutions.[47] There is an equal prohibition in the establishment of military bases, installations and fortifications, and the conduct of military manoeuvres and weapon testing on the Moon and other celestial bodies.[48] Two assumptions could be derived from this prohibition: first, that such activities could be permissible if done in orbit around the Moon or other celestial bodies; and second, to the extent that they comply with the nuclear weapons and weapons of mass destruction prohibition, they could be permissible even in orbit around the Earth.[49]

The question would however remain, if such navigation would be consistent with the peaceful uses requirement. In turn, this leads to considerations as per the content and context of "peaceful". In this regard, the State practice of the most prolific space-faring nations, the USSR

Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, 17 June 1925, 94 *LNTS* 65 (entered into force 8 February 1928); Protocol on Non-Detectable Fragments of the 1980 Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons, 10 October 1980, 1342 *UNTS* 168 (entered into force 2 December 1983); Protocol on Prohibitions or Restrictions on the Use of Mines, Booby-Traps and Other Devices, 10 October 1980, 1342 *UNTS* 168 (entered into force 2 December 1983); Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons, 10 October 1980, 1342 *UNTS* 171 (entered into force 2 December 1983); Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxic Weapons and on their Destruction, 10 April 1972, 1015 *UNTS* 163 (entered into force 26 March 1975); Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques, 18 May 1977, 1108 *UNTS* 152 (entered into force 5 October 1978).

[46] Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, 18 December 1979, 1363 *UNTS* 3 (entered into force 11 July 1984) [henceforth Moon Agreement].

[47] A/RES/1472 (XIV) (1959), *International Cooperation in the Peaceful Uses of Outer Space*; A/RES/1721 (XVI) (1961), *International Cooperation in the Peaceful Uses of Outer Space*; A/RES/1802 (XVII) (1962), *International Cooperation in the Peaceful Uses of Outer Space*; A/RES/54/67 (1999), *International Cooperation in the Peaceful Uses of Outer Space*.

[48] Article IV of the Outer Space Treaty.

[49] Tronchetti F., "Legal Aspects of the Military Uses of Outer Space" in von der Dunk F. & Tronchetti F., eds, *Handbook of Space Law* (Cheltenham, UK: Edward Elgar Publishing, 2015) 331-381 at 338.

and its successor the Russian Federation, as well as the United States of America, is telling.[50] The interpretation of "peaceful" as non-aggressive[51] is the direct result of this State practice.[52] Supplementing the contextual understanding of peaceful is the direct application of public international law,[53] as per article III of the Outer Space Treaty.

Therefore, emphasis should be given in both *ius ad bellum*[54] and *ius in bello*,[55] and the restrictions found therein, especially with regards to necessity,[56] proportionality,[57] and distinction.[58]

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[50] Vlasic I., "The Legal Aspects of Peaceful and Non-Peaceful Uses of Outer Space" in Jasani B., ed., *Peaceful and Non-Peaceful Uses of Space: Problems of Definition for the Prevention of an Arms Race* (New York: Taylor & Francis, 1991); Vlasic I., "Space Law and the Military Applications of Space Technology" in Jasentuliyana N., ed. *Perspectives on International Law: A Publication on the Occasion of the Fiftieth Anniversary of the United Nations and a Contribution to the Decade of International Law* (London – The Hague – Boston: Kluwer Law Interntional, 1995) 385-410; Mateesco-Matte M., "Des agents très spatiaux: quel régime juridique? Au vingtième anniversaire de l'ère spatiale" (1977) 2 Annals of Air and Space Law 351-374 at 353.

[51] Menter M., "Peaceful Uses of Outer Space and National Security" *Proceedings 25th Colloquium*, (Paris: IISL 1983) 135-143 at 137; Christol C. Q., *The Modern International Law of Outer* Space (New York: Pergamon Press, 1982) at 5; Markoff M. G., "Disarmament and "Peaceful Purposes" Provisions in the 1967 Outer Space Treaty" (1976) 4 Journal of Space Law 3-22 at 6; Goedhuis D., "Some Observations on the Efforts to Prevent a Military Escalation in Outer Space" (1982) 10 Journal of Space Law 13-30 at 16; Jakhu R. S., "Legal Issues Relating to the Global Public Interest in Outer Space" (2006) 32 Journal of Space Law 31-110 at 85. *Contra*: Lachs M., *The Law of Outer Space: An Experiencce in Contemporary Law-Making (Reissued on the Occasion of the 50th Anniversary of the International Institute of Space Law)* (Leiden – Boston: Martinus Nijhoff, 2010) at 98; McMahon J. F., "Legal Aspects of Outer Space, Recent Developments" (1965-1966) 41 British Yearbook of International Law 417-431 at 419-422; Pulantzas N., "The outer Space Treaty" (1967) 20 Revue Hellénique de Droit International 66-83 at 66; Gal G., *Space Law* (Leyden: Sijthoff, 1969) at 164-175; Jessup P. C. & Taubenfeld H. J., *Controls of Outer Space and the Antarctic Analogy* (New York: Columbia University Press, 1959) at 223.

[52] Jankowitsch P., "The Role of the United Nations in Outer Space Law Development: Past Achievements and New Challenges" (1998) 26 Journal of Space Law 101-110 at 103.

[53] Lyall F. & Larsen P. B., *Space Law: A Treatise* (Farnham: Ashgate Publishing Ltd, 2009) at 501; Haeck L., "Aspects juridiques de certaines utilizations militaires de l'espace" (1996) 21-I Annals of Air and Space Law 65-103 at 92; Vasilogeorgi I. M., "Military Uses of Outer Space: Legal Limitations, Contemporary Perspectives" (2014) 39 Journal of Space Law 379-451.

[54] Hague Convention III relating to the Opening of Hostilities, 18 October 1907, <www.yale.edu/lawweb/avalon> (entered into force 26 January 1910); Articles 10, 12, 13 & 15,

Covenant of the League of Nations, 28 June 1919, 225 *CTS* 195 (entered into force 10 January 1920); Waldoc C. H. M., "The Regulation of the Use of Force by Individual States in International Law" (1952) 81 Recueil des Cours 451-517 at 492; Carillo Salcedo J. A., "Reflections on the Hierarchy of Norms in International Law" (1997) 8 European Journal of International Law 583-595 at 588; Bowett D. W., *Self-defence in International Law* (Manchester: Manchester University Press, 1958) at 148; Brownlie I., *International Law and the Use of Force by States* (Oxford: Oxford University Press, 1963) at 362; Khare S., *Use of Force under the UN Charter* (New Delhi: Metropolitain, 1985) at 27-28; Singh J. N., *Use of Force under International Law* (New Delhi: Harnam, 1984) at 212; Dahm G., "Das Verbot der Gewaltanwendung nach Art.2(4) der UNO-Charta und die Selbsthilfe gegenüber Völkerrechtsverletzungen, die keinen bewaffneten Angriff enthalten" (1962) 11 Jahrbuch für Internationales Recht 48-72 at 49; Schindler D., "Die Grenzen des völkerrechtlichen Gewaltverbots" (1986) 26 Berichte der Deutschen Gesellschaft für Völkerrecht 11-47 at 14; Dinstein Y., *War, Aggression and Self-defence*, 4th edition (Cambridge: Cambridge University Press, 2005 at 86; Schachter O., "The Nature and Process of Legal Development in the International Society" in Macdonald R. St. J. & Johnston D. M., eds., *Structure and Process of International Law – Essays in Legal Philosophy, Doctrine and Theory* (The Hague: Martinus Nijhoff, 1983) 745-808 at 756; Brownlie I., "The Principle of Non-Use of Force in Contemporary International Law" in Butler W. E., ed., *The Non-Use of Force in International Law* (Dordrecht: Martinus Nijhoff 1989) 17-27 at 22; Verdross A. & Simma B., *Universelles Völkerrecht*, 3rd edition (Berlin: Duncker & Humblot, 1984) at §470; Cassese A., *International Law in a Divided World* (Oxford: Clarendon Press, 1986) at 230; Hoffmann R., "International Law and the Use of Military Force Against Iraq" (2002) 45 German Yearbook of International Law 9-34 at 30; Skubiszewski K., "Use of Force by States, Collective Security, Law of War and Neutrality" in Sorensen M., ed., *Manual of Public International Law* (London: Macmillan, 1968) 739-854 at 777-778; Randelzhofer A., in Bernhardt R., ed., *Encyclopedia of Public International Law, Vol. 4* (North Holland Publishing Company, 1982) 265-275 at 271;

[55] Convention with Respect to the Laws and Customs of War by Land and its Annex: Regulations Respecting the Laws and Customs of War on Land, 29 July 1899, 187 *CTS* 1898-1899, p. 429 (entered into force 4 September 1900); Convention concerning the Laws and Customs of War on Land and its Annex: Regulations Respecting the Laws and Customs of War on Land, 18 October 1907, (1907) 205 *CTS* 277 (entered into force 26 January 1910); Convention for the Adaptation to Maritime Warfare of the Principles of the Geneva Convention, 18 October 1907, 2 *American Journal of International Law Supplement* 1908, p. 153 (entered into force 26 January 1910); Geneva Convention Relative to the Treatment of Prisoners of War, 12 August 1949, 75 *UNTS* 135 (entered into force 20 October 1950); Geneva Convention Relative to the Protection of Civilian Persons in Time of War, 12 August 1949, 75 *UNTS* 287 (entered into force 20 October 1950); Additional Protocol I to the Geneva Conventions, 8 June 1977, 1125 *UNTS* 3 (entered into force 7 December 1978); Additional Protocol II to the Geneva Conventions, 8 June 1977, 1125 *UNTS* 609 (entered into force 7 December 1978); Henckaerts J. M. & Doswald-Beck L., *Customary International Humanitarian Law, Volume I: Rules* (Cambridge: ICRC, 2005).

[56] *Caroline* case (1837), 29 *British and Foreign State Papers* 1137.

[57] Gray C., *International Law and the Use of Force*, 2nd edition (Oxford: Oxford University Press, 2004) at 124.

Space operations can also provide examples for the application of the adaptive management method, particularly with regards to civil and military payloads integration. It could be argued that such integration has been achieved in outer space, given the high number of military payloads currently in orbit and their coexistence with payloads dedicated to civil uses, not to mention the existence of joint use payloads. Nevertheless, the Kosmos-Iridium accident can serve as an indication of potential operational problems for HASVs, if the contributing human factors were to be replicated. More specifically, the conscientious decision not to perform collision avoidance manoeuvres on the Iridium-33 telecommunications satellite, whose orbital path intersected with that of the defunct Kosmos-2251 military satellite, so as to save on fuel consumption and maintain the expected longevity of the satellite's life, despite warnings of a potential collision,[59] resulted in the creation of over 2,000 pieces of orbital debris of sufficient size to be monitored, as well as numerous smaller pieces. The creation of this orbital debris cloud has exponentially increased the density of orbital objects in LEO, intensifying the need for accurate monitoring and control of space paths. Already, the International Space Station has performed relevant collision avoidance manoeuvres due to an approaching piece generated by the collision. China has reported that its sun-synchronous satellites in LEO have been threatened by the Kosmos-Iridium debris,[60] a valid complaint that can nevertheless be seen as an exercise in irony, given the purposeful on-orbit destruction by China itself of the defunct Feng-Yun 1C meteorological satellite and the corresponding generation of orbital debris. Larger debris pieces

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[58] Bourbonnière M., "Law of Armed Conflict (LOAC) and the neutralisation of satellites or *ius in bello satellitis*" (2004) 9 Journal of Conflict & Security Law 43-69 at 48.

[59] Weeden B., Billiards in Space, *The Space Review*, 23 February 2009, available online at <http://www.thespacereview.com/article/1314/1>.

[60] *China Alert on US-Russian Satellite Collision*, China View (English version), 12 February 2009, available online at <http://news.xinhuanet.com/english/2009-02/12/content_10809710.htm>.

re-entering the atmosphere a mere few days after the collision have caused sonic booms over continental USA, with both National Weather Service and the FAA issuing relevant warnings to residents[61] and airmen[62] alike.

As opposed to air traffic, the current lack of a formalized regime for space traffic control could be interpreted as a lack of obligation to actually perform collision avoidance manoeuvres. This author is of the opinion that Article IX of the Outer Space Treaty provides a sufficient legal obligation to take all necessary steps, including performing of relevant manoeuvres, so as to avoid on-orbit collisions.[63] Whereas the partial provision of space situational awareness services[64] can be utilized to monitor and indicate known collision hazards, such indications are neither vested with the normative cloak of mandatory directions nor are they available to all space faring nations. While the Kosmos-Iridium collision is an example in the negative, i.e. an

[61] *Possible Satellite Debris Falling across the Region*, Public Information Statement of 17 February 2009 issued by the National Weather Service Jackson, Kentucky, which reads: "The National Weather Service in Jackson has received calls this evening from the public concerning possible explosions and/or earthquakes across the area. The Federal Aviation Administration has reported to local law enforcement that these events are being caused by falling satellite debris. These pieces of debris have been causing sonic booms resulting in the vibrations being felt by some residents as well as flashes of light across the sky. The cloud of debris is likely the result of the recent in orbit collision of two satellites on Tuesday February 10th when Kosmos 2251 crashed into Iridium 33."

[62] *NOTAM FDC 9/5902*, issued by the Federal Aviation Administration, which reads: "Special Notice: Effective immediately until further notice. Aircraft are advised that a potential hazard may occur due to reentry of satellite debris into the Earth's atmosphere. Further NOTAMs will be issued if more information becomes available. In the interest of flight safety, it is critical that all pilots/flight crew members report any observed falling space debris to the appropriate ATC facility to include position, altitude, time, and direction of debris observed."

[63] Mineiro M. C., "FY-1C and USA-193 ASAT Intercepts: An Assessment of Legal Obligations under Article IX of the Outer Space Treaty" (2008) 34 Journal of Space Law 321-356.

[64] Kaiser S. A., "Space Situational Awareness, Key to a New Space Security Architecture" in *Proceedings of the Fifty-Second Colloquium on the Law of Outer Space 2009* (Reston, Virginia: American Institute of Aeronautics and Astronautics, 2010) 171-177; Mosteshar S., "Space Situational Awareness: Need, Solutions and Some Consequences" (2012) 62 Zeitschrift für Luft- und Weltraumrecht 719-729.

example of unsuccessful adaptive management, it is nevertheless a testimony of adaptive management and an instance of considerable persuasion towards the need to formalize the provision of space traffic control services, in order to ensure the optimal operation and maintenance of the regulated medium, that is, the navigable domain of outer space.

Chapter Conclusions

It can be argued that despite the differences in the navigable domains, jurisdiction upon military crafts, be they maritime, airborne or spatial, remains at all times exclusively with the flag State. Unlike their civilian counterparts, military crafts enjoy immunity from seizure; at the same time, their movement is much more closely monitored by relevant international law. Longstanding traditions directly stemming from the technological perception of the crafts in question have shaped the freedoms recognized to each navigable domain. Whereas the freedom of maritime navigation has permitted for the formation of a right to innocent passage for State vessels, no such right exists for State aircrafts. Whereas military exercises, including use of real fire and live ammunition, are permissible under specific condition in the high seas and in international airspace, it is highly doubtful that such manoeuvres would be considered anything short of illegal if performed in outer space.

These considerations become all the more important when reflecting upon the potential evolution of HASVs and their subsequent uses, apart from the initially envisioned space tourism. With sufficient technological development, which is premised upon a stable and steady forward progression of the relevant industry, vast capabilities of time-saving and cost-efficient military transportation and mobilization will be unfolded. It should come as no surprise that international law will be called to reassess the minimum standards of distinction, necessity and

proportionality, as it has done upon numerous occasions since at least The Hague Peace Conference.

PART I – CONCLUSIONS

The first part of the Dissertation focused on traditional understandings of jurisdiction, expressed in the forms of territoriality and over the crafts used, namely aircraft and space objects. It identified and comparatively presented jurisdictional patterns that shaped the development of the applicable tools in each of the navigable domains examined. These tools are reflections of territorial and subject matter jurisdiction, designed to monitor and balance the allocation of rights and freedoms recognized to and by States within each domain. The common denominator of the analysis throughout Part I of the present Dissertation is the concept of operation within specific zones, of either activity or authority. Such zones can be equally identified for civilian and military crafts across all of the international navigable domains, as they can be for activities of States vis-à-vis activities of international organizations.

Nevertheless, the emergence of HASVs as a technology defying the known limits of both territorial and subject matter jurisdiction presents unique challenges to international law preconceptions. Dispelling such preconceptions is essential, if we are to place the challenges posed by HASVs accurately within the framework of international law and attempt to give credible and viable solutions. The first such deconstruction concerned the convoluted image created by the lack of definitive delimitation between airspace and outer space. The delimitation issue is erroneously associated with the question of the applicable liability regime, the latter being considered the sole definitive factor for the characterization of HASV flight as a space activity or an aviation activity. Although admittedly the aviation liability regime depends on the definition of State territory, the meddling together of public international law considerations with private international law ones, especially when attempting to allocate jurisdiction in its purest

public international law expression, is a misleading and misguided method of addressing the issue. The schematic representations provided help visualize and solidify the distinctions that need to be drawn as a matter of law, without being side-tracked by artificial or inconsequential debates. The introduction to this first part of the Dissertation indicates that, although traditional understandings of jurisdiction have provided satisfactory results so far, contemporary technological and scientific challenges, in essence a constantly evolving modernity cannot fit squarely into the already carved-out pigeonholes. In that sense, an exercise of regenesis needs to be performed.

Indeed, this presentation of the inherent complexities of each of these jurisdictional zones aimed at extrapolating criteria for the determination of permissible actions, both for the emerging aerospace industry, as well as the international regulatory body that will be called upon to endorse it. Part I essentially suggested a convergence of jurisdictional zones in all of the international navigable domains and repositioned accepted and unchallenged beliefs, through a critical evaluation of legal permissibility and operational functionality. The findings of this Part were informed by legal positivism, and complemented by some interdisciplinary considerations, namely the use of adaptive management criteria with regards to the exponentially growing need for traffic control coordination, both within the airspace, but also within outer space and between them. At the theoretical level, this first combination of legal positivism with the working methodology of a discipline completely different than law constitutes the initial stage setting for the suggestion of a transition from antediluvian notions of jurisdiction towards a more modern approach, based on the notion of functionality and the respect for matters of international interest and importance. Such transition forms the very heart of the analysis of Part II of the present Dissertation.

PART II: DEVELOPMENT AND MODIFICATION OF A REGIME OF FUNCTIONAL JURISDICTION: THE EXERCISE OF SPACE TRAFFIC MANAGEMENT

Introduction: Modification of Norms from Within and from Without

The ideas and arguments in support of the creation of an effective International Space Traffic Control Authority, essentially a regime discussion, constitute the second part of the present Dissertation. The focus is shifted, from traditional understandings of jurisdiction, to a more functional approach, which entails a *prima faciae* unprecedented erosion of State sovereignty. Nevertheless, the analysis of the following pages proves that first, similarly ground-breaking concessions of sovereignty have already occurred, and as a point in fact, have taken place during more turbulent times; and second, that without embracing such choices, the way forward will be lost in the swamp of regulatory stagnation and the stubbornness of maintaining individual interests over global ones, in spite of the relevant provisions of international law. As such, this author seeks to place the present Dissertation firmly within the domain of General International Law, rather than strictly confine it to Space Law literature, arguing that proposed solutions for the regulation of HASVs are nothing less than a case-study of international law seen in context, which could be equally applicable to other areas of international interest.

Before advancing into the elaboration of the arguments supporting the development of a new administration regime in the international navigable domains, it is worth taking some time to reflect upon the means by which international law regimes are either created or modified. This reflection will entail examining instances of actions of both States and international organizations in juxtaposition with one main question: what was the status of international law when the action at hand was undertaken and what modification, if any, was brought about by this undertaking? Where law was created when before it was not present, we are facing normative

modifications from *without*. These normative modifications are almost self-springing, as they were imposed on the existing legal framework externally. On the contrary, were pre-existing legal considerations were modified by the users of international law, or generation of secondary rules was founded on specifically identifiable instruments, so as to suit emerging needs, essentially when a restructuring of existing normativity was performed, we are dealing with modifications from *within*. Both modifications from within and from without seek to alter, most usually with a view of expansion, the jurisdictional spheres of States and international organizations; in the case of the latter, so as to gain authority over matters relating to, but not necessarily within the core of their original capacities.

1. Normative modifications from without

The ability to create international law from a position of complete autonomy, especially when no law on the matter existed before, is reserved by international law only for States.[1] As such, States find themselves in the unique position to be simultaneously actors and law-makers, a position they have used in the past to expand their jurisdiction over territorially-defined areas as well as actions and matters they have interests in. The examples found in the following pages elucidate this assertion.

The most evident jurisdictional expansion is perhaps the one resulting from the Truman Proclamations,[2] which secured the rights of the United States over an extended continental shelf and which gave birth first to the institution of the Continental Shelf, and by subsequent

[1] Schmalenbach K., International Organisations or Institutions, General Aspects, *Max Planck Encyclopedia of Public International Law*, available at < www.opil.ouplaw.com >.

[2] Presidential Proclamation No 2667: Policy of the United States With Respect to the Natural Resources of the Subsoil and Sea Bed of the Continental Shelf, 28 September 1945, 10 *Fed Reg* 12303; Presidential Proclamation No 2668: Policy of the United States with Respect to Coastal Fisheries in Certain Areas of the High Seas, 28 September 1945, 10 *Fed Reg* 12304.

developments, to that of the Exclusive Economic Zone. In particular, the First Truman Proclamation established a criterion of contiguity and reasonableness over the expanse of continental shelf and its subsoil beneath the high seas, where the United States could exercise jurisdiction and control. The example of the United States was soon followed by other States of the American continent;[3] however their claims did not only include the continental shelf and its subsoil, but also the natural resources found in the superjacent waters, particularly the fisheries, over which they claimed complete sovereignty.

The divergent State practice of the late 1940s – early 1950s was initially addressed during the First Conference on the Law of the Sea (UNCLOS I), where the Convention on the Continental Shelf[4] was negotiated and subsequently adopted. The rules therein contained recognize sovereign rights to the (currently more than 50) State Parties over the continental shelf adjacent to the territory of the State, up to a depth of 200m or up to such a depth that the exploitation of natural resources was technologically feasible.[5] In 1969 the International Court of Justice provided a different reading of the legal regime relating to the continental shelf, by placing the focus anew on the element of contiguity. The Court specifically noted the extension of jurisdiction of States over the continental shelf, in the form of sovereign rights, which existed *ipso facto* and *ab initio*, as an inherent right.[6]

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[3] The Argentine Republic's Presidential Declaration Proclaiming Sovereignty over the Epicontinental Sea and the Continental Shelf, 9 October 1946, 41 *American Journal of International Law Supplement* 1947, p. 11; Chilean Presidential Declaration Concerning Continental Shelf, 23 June 1947, *El Mercurio*, Santiago de Chile, 29 June 1947; Peruvian Presidential Decree No 781 concerning the Submerged Continental or Insular Shelf, 1 August 1947, 107 *El Peruano Diario Oficial* No 1983 (1947).

[4] Convention on the Continental Shelf, 29 April 1958, 499 *UNTS* 311 (entered into force 10 June 1964).

[5] *Ibid*., Article 1.

[6] *North Sea Continental Shelf Cases*, Federal Republic of Germany v. Denmark / Federal Republic of Germany v. the Netherlands, ICJ Reports 1969, p. 22.

During the UNCLOS III the formulation of the Continental Shelf was finalized, at least from a law-making perspective. Described in detail in Part VI of the Law of the Sea Convention,[7] States now have recognized sovereign rights over the continental shelf adjacent to their territory, either on the basis of contiguity, whereby the continental shelf is considered to be the natural prolongation of the submerged territory of the State until the outer point of its continental margin, thus adhering to a geographical element;[8] alternatively, States may exercise such sovereign rights in an area of up to 200nm from the coastal baselines, where available and permissible,[9] in which case the continental shelf could potentially coincide with the EEZ.

This potential coincidence has created in the past some ambiguities as to the governing legal regime of these maritime expanses. The cases of the "Mar Patrimonial" are strong indicators of such confusion, especially given the complete sovereignty claims of some Latin American States over the whole 200nm of the zone.[10] While there is little doubt that the Evensen group played indeed a pivotal role in the formulation of the EEZ regime during the UNCLOS III negotiations,[11] it can be argued that ever since the adoption of the UNCLOS claims to territorial seas of 200nm or more are unsustainable. In fact, the International Court of Justice has clarified that while there is a strong link between the two notions of continental shelf and EEZ, the former

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[7] United Nations Convention on the Law of the Sea, 10 October 1982, 1833 *UNTS* 396 (entered into force 16 November 1994) [henceforth UNCLOS].

[8] Article 76 §§ 1, 3 of the UNCLOS.

[9] Suarez S. V., *The Outer Limits of the Continental Shelf – Legal Aspects of their Establishment* (Berlin: Springer, 2008).

[10] Morales P. I., "El Mar Patrimonial. La Nueva Thesis de los Paises Latinoamericanos" (1973) 1 Revista de la Escuela Superior de las FF. AA. C. at 83; Nelson L. D. M., "The Patrimonial Sea" (1973) 49 International and Comparative Law Quarterly 668-686; Szekely A., "Mexico's Unilateral Claim to a 200-Mile Exclusive Economic Zone: Its International Significance" (1977) 4 Ocean Development and International Law Journal 195-211; Vargas Carreńo E., "Mar Territorial y Mar Patrimonial" (1973) 1 Revista Uruguaya de Derecho International 67-82.

[11] Vargas J. A., *Mexico and the Law of the Sea: Contributions and Compromises* (The Hague: Martinus Nijhoff, 2011) at 130.

has not been absorbed by the latter.[12] The potential common boundaries do not alter the different legal status of the shelf and subsoil versus the water column, nor do they expound the fact that the continental shelf exists *ipso facto*,[13] while the EEZ is only created after an *ad hoc* declaration.

Another seminal jurisdictional expansion can be identified, for example, in the Caroline incident.[14] During the 1837 rebellion against the British rule in Canada, Canadian and American insurgents occupied the Caroline and used it to transfer men and munition on Navy Island, further intending to attack the Canadian mainland. The British managed to destroy the Caroline while it was harboured in an American port on 29 December 1837, killing two people in the process. When faced with the American protests of territorial sovereignty violation, the British claimed, among others, that they acted under the doctrines of self-defence and self-preservation.

Whereas before the Caroline self-defence was only permissible in case of present armed attack within the territory of the defending State, post-Caroline States are permitted to respond in an anticipatory manner in instances of imminent armed attack, even outside their borders. In fact, the conditions to be met were specified by the American Secretary of State at the time, and remain to this day: a State must demonstrate that its need of self-defence is "instant, overwhelming, leaving no choice of means and no moment for deliberation",[15] while at the same time the act of self-defence must be proportionate to the necessity claimed.[16] At the time of its

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[12] *Case Concerning the Continental Shelf (Libyan Arab Jamahiriya v. Malta)*, Judgment, [1985] ICJ Rep. at 33.

[13] Article 77 § 3 of the UNCLOS.

[14] Jennings R. Y., "The Caroline and McLeod cases" (1938) 32 American Journal of International Law 82-99.

[15] Correspondence between Great Britain and the United States, respecting the Arrest and Imprisonment of Mr. McLeod, for the Destruction of the Steamboat Caroline (March, April 1841), 29 *British and Foreign State Papers* 1840-41, p. 1137.

[16] *Border and Transborder Armed Actions case (Nicaragua v. Costa Rica / Nicaragua v. Honduras), Jurisdiction of the Court and Admissibility of the Application, Judgment, [1988] ICJ Rep*.

occasion, the Caroline incident was an anomaly; it is precisely due to this characteristic of it being an anomaly that the Caroline is in fact a normative modification from without. It swiftly acquired legal characteristics, brought about a modification of the legal regime by giving birth to a completely new rule corresponding to an occasion that was not foreseen prior to the action undertaken, and transformed into one of the most core situations where the wrongfulness of an act may be precluded.[17] The unilateral activity of a State to engage beyond the framework dictated by law at the time was accepted by the international community, as seen in the relevant diplomatic exchanges,[18] and therefore with the communal consent obtained legitimacy and in itself normativity.

Most recently, the Caroline doctrine has been applied in an attempt to justify anticipatory self-defence, notably in the case of Iraq in 2003,[19] whereby claims of anticipatory self-defence advanced by the US Government failed to either live up to the Caroline standard or modify it.[20]

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[17] Article 25, UN Doc. A/RES/56/83 (2001), Articles on the Responsibility of States for Internationally Wrongful Acts (with commentaries) [henceforth ASR].

[18] Correspondence between Great Britain and the United States, respecting the Destruction of the Steamboat Caroline (July, August 1842), 30 *British and Foreign State Papers* 1841-42, p. 193; Correspondence between Great Britain and the United States, respecting the Arrest and Imprisonment of Mr. McLeod, for the Destruction of the Steamboat Caroline (March, April 1841), 29 *British and Foreign State Papers* 1840-41, p. 1126.

[19] Greenwood C., "International Law and the Pre-Emptive Use of Force: Afghanistan, Al-Qaeda, and Iraq" (2003) 4 San Diego International Law Journal 7-36 at 17.

[20] Wouters J. & Ruys T., "The Legality of Anticipatory Military Action after 9/11: The Slippery Sloppe of Self-Defense" (2006) 59 Studia Diplomatica 45-67; Cheng B., "Pre-emptive or Similar Type of Self-Defense in the Territory of Foreign States" (2012) 12 Chinese Journal of International Law 1-8; Reisman W. M. & Armstrong A., "Claims to Pre-Emptive Uses of Force: Some Trends and Projections and Their Implications for World Order" in Schmitt M., ed., *International Law and Armed Conflict: Exploring the Faultlines – Essays in Honour of Yoram Dinstein* (LeidenL Nijhoff, 2007) 79-112.; O' Connell M. E., "Defending the Law against Preemptive Force" in Fischer-Lescano A., ed., *Frieden in Freiheit – Festschrift für Michael Bothe zum 70. Geburtstag* (Baden-Baden: Nomos, 2008) 237-248; Murphy S. D., "The Doctrine of Preemptive Self-Defense" (2005) 50 Villanova Law Review 699-748; Ramirez J. A., "Anticipatory Self-Defense or Unlawful Unilateralism?" (2003-2004) 34 California Western International Law Journal 1-27; Martinez L., "September 11th, Iraq and the Doctrine of

However, it is also identified in the foundations of another attempted normative modification leading to a jurisdictional expansion, the declaration of Air Defence Identification Zones.

An Air Defence Identification Zone (ADIZ)[21] can be defined as an area of airspace primarily over the high seas or the EEZ of the coastal State, where said State requires all traversing aircraft to readily identify themselves in the interest of national security. It should be noted that there is no internationally acceptable definition of an ADIZ, since the declaration and establishment of such a zone is a unilateral act of a State and there is still no amendment to the Chicago Convention so as to include relevant provisions.

Historically, the first such zones were established by the United States and Canada (CADIZ), in the midst of the Cold War. To date, there is a number of States which have declared an ADIZ, either permanently or temporarily, including France, Indonesia, Sri Lanka, India, Japan, Pakistan, Norway, the United Kingdom, Australia, South Korea, Taiwan and most lately China. With regards to the latter, there has been significant uproar from other States, which, in conjunction with the tension between China and Japan, Viet Nam and the Philippines over the sovereignty of the Diaoyu/Senkaku and other disputed islands,[22] claim to not recognize the

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Anticipatory Self-Defense" (2003-2004) 72 UMKC Law Review 123-192; Kelly M. J., "Time Warp to 1945 – Resurrection of the Reprisal and Anticipatory Self-Defense Doctrines in International Law" (2003-2004) 13 Journal of Transnational Law and Policy 1-40; Cohan J. A., "The Bush Doctrine and the Emerging Norm of Anticipatory Defense in Customary International Law" (2003) 15 Pace International Law Review 283-357.

[21] Roach A., Air Defence Identification Zones, *in Max Planck Encyclopedia of Public International Law*, §1, available at <opil.ouplaw.com>.

[22] Zhang F., Should Beijing Establish an Air Defese Identification Zone over the South China Sea?, *Foreign Policy* 4 June 2015, available online at < http://foreignpolicy.com/2015/06/04/should-beijing-establish-an-air-defense-identification-zone-over-the-south-china-sea/ >; Clover C., China Raises Prospect of South China Sea Air Defence Zone, *The Financial Times* 27 May 2015, available online at < www.ft.com/intl/cms/s/0/bd40ff7a-0447-11e5-a5c3-00144feabdc0.html#axzz3n1hZjyFI >; Almond R., Mande of Heaven: An ADIZ in the South China Sea, *The Diplomat* 20 July 2015, available online at < http://thediplomat.com/2015/07/mandate-of-heaven-an-adiz-in-the-south-china-sea/ >; Parameswaran P.,

declared, in the case of the East China Sea, and the soon-to-be-declared, in the case of the South China Sea, ADIZ and have already dispatched military aircraft to the area under dispute.[23]

As previously mentioned, international air law does not make any mention of the notion of an ADIZ, in a way similar to the institution of a contiguous zone in the UNCLOS.[24] The only justification basis that could be provided as to why the creation of such a zone does not contravene international law is Article 11 of the Chicago Convention, where it is stipulated that a State can establish rules and regulations as per the entry to and departure from its territory of aircraft engaged in international civil air navigation. In essence an ADIZ mandates that an aircraft can readily provide identification, location and be subjected to the control of the proclaiming State, prior to its entry in that State's airspace. From this point of view, one could claim that the establishment of an ADIZ is perfectly acceptable in international law. Furthermore, one could additionally back up this argument by emphasizing the primarily military aspect of an ADIZ, that is, the establishment of the ADIZ for reasons of national security, self-defence and self-preservation in the form of an early warning system.[25] There are two points that could be made with regards to the above that, in this author's opinion, question the legitimacy of establishing an ADIZ.

China Should Not Declare New South China Sea ADIZ: Top Chinese Expert, *The Diplomat* 22 July 2015, available online at < http://thediplomat.com/2015/07/china-should-not-create-new-south-china-sea-adiz-top-chinese-expert/>.

[23] Abeyratne R., The Brouhaha about China's ADIZ, *The Sri Lankan Guardian*, 5 December 2013, available online at < http://www.srilankaguardian.org/2013/12/the-brouhaha-about-chinas-adiz.html >; Wong E., China Says It Could Set Up Air Defense Zone in South China Sea, *The New York Times* 31 May 2015, available online at < www.nytimes.com/2015/06/01/world/asia/china-says-it-could-set-up-air-defense-zone-in-south-china-sea.html?_r=0>.

[24] Article 33 of the UNCLOS.

[25] Murchison J. T., *The Contiguous Air Space Zone in International Law* (Ottawa: Department of National Defence, 1957) at 1-3.

First, while indeed Article 11 of the Chicago Convention makes provisions for the respect of national laws by aircraft entering or exiting the national airspace of a State, Article 12 establishes that the airspace over the high seas is governed by the rules of the Convention. This means that it is only ICAO that has authority over the international airspace and who delegates the responsibility of exercising Air Navigation and Air Traffic Control services to its contracting States, under the process analysed in Part I- Chapter 1 A above. While it is made clear that there are no sovereign claims posed by the creation of an ADIZ,[26] the proclaiming State is nevertheless extending its jurisdiction beyond its national airspace borders, and could potentially be infringing upon the delegated jurisdiction of another State under ICAO processes for the FIR control of a specific area. Dogmatic as it may seem, and perhaps not necessary allowing for some of the military considerations of our times, international law still maintains that *expressio unius est exclusio alterius*.[27] Where ICAO has exclusive jurisdiction, which it chooses to delegate for practical reasons only to its Member States, any other overlapping controls and checkpoints that are established unilaterally cannot be accepted as a lawful practice.

On the other hand, the arguments concerning the exercise of self-defence or self-preservation, or even that of military necessity are ill-founded in law. As explained on the grounds of the Caroline, self-defence can only be anticipatory in case of an imminent armed attack. The lack of an express and present danger of such gravity is apparent in the case of the ADIZ. Whereas arguments had been made in that line during the Cold War era,[28] the conditions of prevailing tension and potential nuclear destruction of that period are no more. Additionally, the very claim

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[26] Abeyratne R. I. R., "In Search of a Theoretical Justification for Air Defence Identification Zones" (2012) 5 Journal of Transportation Security 87-94 at 89.

[27] *Arbitration between Petroleum Development (Trucial Coast) Ltd and Sheikh of Abu Dhabi* (1951), 47 *American Journal of International Law* 1953, p. 156.

[28] Murchison, *supra* note 25.

that an ADIZ is established under conditions of necessity presupposes the unlawfulness of such establishment. For necessity, as previously explained, is a circumstance precluding wrongfulness: the act undertaken would have to be wrongful, so as to employ the doctrine; otherwise it would not even fall within its normative framework. Furthermore, inasmuch as the threat of another super power with nuclear capacities was real, thus creating a condition of necessity, international law requires that the State claiming necessity has not contributed in its creation.[29] It can hardly be argued that in a constant nuclear arms race, either super power did not contribute to the necessity claimed by the other.

It could be equally argued that the establishment of an ADIZ has attained international customary law status, since there was no contesting of such zones. However, the practice is not wide-spread enough among the States engaging in international civil aviation and there are numerous declarations of States protesting the creation or expansion of a pre-existing ADIZ. As such, an aircraft traversing the airspace falling within the proclaimed ADIZ of a State, which has no intention of entering the airspace of that State, should be legitimately able to ignore the calls for identification and only comply with the directions and procedures of the competent ANS/ATC authority. It could equally be the case that failing voluntary identification the aircraft would most probably be identified, but not engaged or shot down, by an intercepting aircraft,[30] in accordance with Article *3 bis* of the Chicago Convention and its Annex 2. Whereas this author is of the opinion that declarations of establishment of an ADIZ should be treated as violations of international law, the lack of widespread international practice coupled with the lack of uniform

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[29] *Case Concerning the Gabčíkovo-Nagymaros Project (Hungary v. Slovakia)*, Judgment, [1997] ICJ Rep. at § 57.

[30] Poulantzas N. M., *The Right of Hot Pursuit in International Law*, 2nd ed (The Hague: Martinus Nijhoff, 2002) at 339-352.

objections where such practice has taken place make for a murky image, which can only be determinatively clarified if and whenever an international Court adjudicates on the issue.

In summary, modifications from without are possible when States act in a law-making fashion in the context of a legal lacuna. The affirmative action of other actors in the international arena is necessary for the legal modification from without to take effect, as is evidenced by the Truman Proclamations and the Caroline incident. Nevertheless, it should be noted that where modifications from without were attempted but were not accepted by the international community (as is the example of the ADIZ for the majority of States), then the State action introducing the modification is nothing short of a violation of international law.

2. Normative modifications from within

As previously mentioned, modifications from within occur when there is an established legal regime, which subsequently becomes the object of modification attempts by either States or international organizations, in order to achieve the expansion of their respective jurisdictional footprint. The primary tool used to bring about such modifications is the concept of diversified interpretation of the existing rules. Two clarifications need to be made upfront: first, as far as international organizations are concerned, any kind of normative modification they attempt to bring about is by default a modification from within, in that it stems, at the very least, from the constitutive instrument which provides the international organization at hand with its distinct legal personality.[31] The legal instrument being an indispensable requirement for the existence of an international organization, and conforming to the "principle of specialty" with regards to their

[31] *Advisory Opinion on Reparation for Injuries Suffered in the Service of the United Nations*, ICJ Reports 1949, at p. 185; Article 2, UN Doc. A/CN.4/L.778, UN Doc. A/66/10, *International Law Commission Draft Articles on the Responsibility of International Organizations, adopted by the Drafting Committee in 2011 (Final Outcome)*.

functioning,[32] there is no possibility of an international organization creating rules by unilateral acts in legal vacuum, as can States.[33] And second, that when it comes to modification attempts initiated by both States and international organizations, the main point of focus centers on whether or not the interpretation given to the norm in question is permissible under international law, an assessment that can be made both at the theoretical level, but also and most importantly

[32] *Legality of Use by a State of Nuclear Weapons in Armed Conflict*, Advisory Opinion, [1996] ICJ Rep. at § 25; Article 1 of the UN Charter; Article III, Agreement Establishing the World Trade Organization, 15 April 1994, 1867 *UNTS* 3 (entered into force 1 January 1995); Article I, Constitution of the Food and Agriculture Organization of the United Nations (as amended), 16 October 1945, 145 BSP 910, CTS 1945/32, 40 AJIL Supp. 76 (entered into force 16 October 1945); Article 2, Constitution of the World Health Organization, 22 July 1946, 14 *UNTS* 185 (entered into force 7 April 1948); Article 1, Constitution of the International Organization for Migration, 19 October 1953, 207 *UNTS* 189 (entered into force 30 November 1954); Article 2, Treaty Establishing the European Atomic Energy Community, 25 March 1957, 294 *UNTS* 167 (entered into force 1 January 1958); Article 1 § 1, Constitution of the International Labour Organization (as amended), 28 June 1919, 15 UNTS 40 (entered into force 10 January 1920); Article 1, Statute of the Council of Europe, 5 May 1949, ETS No 001 (entered into force 3 August 1949).

[33] It is, however, possible that the competences given to an international organization can be supplemented by subsequent acts of States, like the conclusion of relevant international treaties, or the amendment of their constitutional text, according to designated procedures. While the amendment procedure can be cumbersome and time consuming, especially so if it concerns an organization of almost universal membership, the possibility of gaining authority via supplementary conferral of powers is likely more easy to achieve. For instance, this is the exact method by which ICAO was granted authority to regulate all aviation matters related to the environment and specifically greenhouse gas emissions, through the Kyoto Protocol. Article 2 § 2, Kyoto Protocol to the United Nations Framework Convention on Climate Change, 11 December 1997, 37 *ILM* 22 (1998) (entered into force 16 February 2005) [henceforth Kyoto Protocol]. It should be further noted that ICAO has also extended its own jurisdiction on matters that were not explicitly within the scope of the Chicago Convention. The promulgation of Annexes 16 and 17 are characteristic examples. However, even these cases do not deviate from the principle of the mandate given in the constitutive instrument, as they can be encompassed by the provision of article 49 (k) of the Chicago Convention. Likewise, governmental powers belonging to the core of Statehood, such as the safeguarding of the unity, sovereignty and independence were transferred through international accords and organization resolutions in the case of Cambodia to the United Nations for its transition period after the Cambodian conflicts. *See*: Article 3, Agreement on a Comprehensive Political Settlement of the Cambodia Conflict, 23 October 1991, (1992) 31 *ILM* 183; Agreement concerning the Sovereignty, Independence, Territorial Integrity and Inviolability, Neutrality and National Unity of Cambodia, 23 October 1991, (1992) 31 *ILM* 200; S/RES/745 (1992), Cambodia.

by taking stock of the corresponding reactions of the international community, expressed either by States independently or in a coordinated fashion within different *fora*.

a. States and normative modifications from within

When it comes to modifications initiated by States, the most prominent such example concerns the territorial application of international human rights instruments. Traditionally, international instruments are applicable within the territorial borders of the Contracting States; that is, they create legal effects only where the State has territorial jurisdiction. This is in line with the traditional treaty interpretation principle crystalized in Article 29 of the Vienna Convention on the Law of Treaties,[34] whereby a treaty is binding upon a State for the totality of its territory, unless differently specified in the treaty itself. This is necessary because States can only be bound by international instruments by expressing their consent to that end, thereby no obligations may arise in the territory of a third State by a treaty it is not party to.[35]

Nevertheless, the interpretation of the very term "jurisdiction" has become the very bone of contention in interpreting human rights treaties. By the application of a broader interpretative framework, the judicial and quasi-judicial human rights organs of different instruments have extended the application of obligation to their State Parties to areas outside their traditional territorial jurisdiction. The criterion used is authority and control, either over persons or over territories of third States. It is noteworthy that the same criterion has been applied in domestic cases as well.[36]

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[34] Vienna Convention on the Law of Treaties, 23 May 1969, 1155 *UNTS* 331 (entered into force 27 January 1980) [henceforth VCLT].

[35] Article 34 of the VCLT.

[36] USA: *Alejandre v. Cuba*, 996 F. Supp. 1239 (S. D FL9. 1997).

In this respect, cases of arrests and detentions in the territory of a third State by organs[37] of a contracting State to the human rights instrument have been deemed to fall within the jurisdiction of the contracting State, since the person in question was under the authority and control of its organs.[38] Similar considerations have been made by the European Court of Human Rights in instances of law enforcement operations or abductions of people in the territory of third States.[39] Authority and control over the territory of a third State, in the context of a military occupation, whether belligerent or peaceful, can also make a State liable for human rights violations, as its jurisdiction is considered extended over the occupied territory and population.[40] This effect can be achieved by establishing a link between the local administration and the State whose jurisdiction is applied, whether because said local administration can only survive and function because of the support provided by the violating State[41] or, in case of separatist movements, because the State is recognizing the authority of the insurgents whereas the international community does not.[42]

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[37] Articles 4-11 of the ASR.

[38] ECtHR: *Ocalan v. Turkey* (12 May 2005); *Fredda v. Italy* (7 October 1980).

Inter-American Commission on Human Rights: *Coard v. USA*, Case 10.951, Report Nº 109/99, OEA/Ser.L/V/II.106 Doc. 3 rev. at 1283 (1999).

UN HRC: Communication No R 12/52, López Burgos v Uruguay (29 July 1981), GAOR 36th Session Supp. 40, 176.

[39] ECtHR: *Hess v United Kingdom* (28 may 1975) §§72-73; *X and Y v Switzerland* (3 October 1978); *Drozd and Janousek v France and Spain* (26 June 1992) §§ 91, 96.

[40] UN HRC: *Concluding Observations on Croatia* (28 December 1992), UN Doc CCPR/C/79/Add. 15, §§ 7, 10; *Concluding Observations on Israel* (18 August 1998), UN Doc CCPR/C/79/Add.93, § 10.

ECtHR: *Cyprus v Turkey* (1978) §151; *Chrysostomos and Papachrysostomou v. Turkey* (4 March 1991) §26.

[41] ECtHR: *Loizidou v. Turkey* [Preliminary Objections] §62; *Loizidou v. Turkey* (18 December 1996) §52;

[42] ECtHR: *Ilaşcu and Others v. Moldova and the Russian Federation, Romania Intervening* (8 July 2004).

It would therefore appear that there is a well-established norm that human rights instruments can have extra-territorial application, which is considered as extension of the jurisdiction of their State Parties. Nevertheless, even this conclusion has not been uncontested, and in fact, by one of the very organs that helped reach it. In its notorious *Banković* case,[43] the European Court of Human Rights was faced with the question of the responsibility of several NATO States for the deaths and injuries resulting from the bombing of a building in the territory of the former Federal Republic of Yugoslavia (FRY) during the NATO airstrikes. Whereas the Court would normally interpret the term "jurisdiction" found in Article 1 of the European Convention on Human Rights as explained in the paragraphs above, in this particular case it chose to take a more dogmatic stance, thus giving the term the context of traditional territorial jurisdiction. The Court recognized only two cases of exceptional,[44] extraterritorial application of the Treaty. First, in the case of a military occupation, through the activities of the agents of the respondent State that would have to be exercising all or some of the public powers normally associated with the local Government.[45] And second, in the cases that are recognized as exceptional extraterritorial applications of jurisdiction by treaty or international customary law, such as the activities of consular staff, of vessels bearing the flag of the contracting State etc.[46] Since in this particular case the Court could not identify either of the two exceptions as being applicable, it determined that the Convention was only producing legal effects strictly within the territories of the

[43] ECtHR: *Banković and others v. Belgium, the Czech Republic, Denmark, France, Germany, Greece, Hungary, Iceland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Spain, Turkey and the United Kingdom* (12 December 2001) [henceforth the *Banković* case].

[44] Ryngaert C., "Clarifying the Extraterritorial Application of the European Convention on Human Rights" (2012) 28 Merkourios – Utrecht Journal of International and European Law 57-60 at 59.

[45] *Banković* case, § 71.

[46] *Banković* case, § 73.

respondent States and not within that of the FRY. Paragraph 80 of the Court's decision is particularly enlightening:

"...the Convention is a multi-lateral treaty operating, subject to Article 56 of the Convention, in an essentially regional context and notably in the legal space (*espace juridique*) of the Contracting states. The FRY clearly does not fall within this legal space. The Convention was not designed to be applied throughout the world, even in respect of the conduct of Contracting States. Accordingly, the desirability of avoiding a gap or vacuum in human rights' protection has so far been relied on by the Court in favour of establishing jurisdiction only when the territory in question was one that, but for the specific circumstances, would normally be covered by the Convention."

The mention to the "*espace juridique*" made by the Court has drawn great attention,[47] for it created uncertainties over the geographical application of the Convention. Subsequent jurisprudence of the Court seemed to indicate that such a creation was to exclude the application of the Convention for acts of the Parties in the territories of non-Parties.[48] However, the Court yet again seemed to draw away from this position and return to its original interpretation of the term "jurisdiction", with a series of post-*Banković* cases.[49] This pendulous movement of the Court has provided fertile ground for severe criticism of the *Banković* reasoning, as it appears that the Court wanted to wash its hands off a sensitive case of highly political nature.[50]

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[47] Wilde R., "The "Legal Space" or "Espace Juridique" of the European Convention on Human Rights: Is It Relevant to Extraterritorial State Action?" (2005) 10 European Human Rights Law Review 115-124.

[48] ECtHR: *Al-Skeini and others v. The United Kingdom* (7 July 2011).

[49] ECtHR: *Issa and others v. Turkey* (16 November 2004) ; *Ocalan v. Turkey* (12 May 2005) ; *Hirsi Jamaa and others v. Italy* (23 February 2012) ; *Behrami and Behrami v. France / Saramati v. France* (2 May 2007).

[50] Loucaides L., "Determining the Extra-territorial Effect of the European Convention: Facts, Jurisprudence and the Banković Case" (2006) 11 European Human Rights Law Review 391-407 at 400.

Unfortunate political considerations aside, the return of the Court to its usual interpretation of the term "jurisdiction" signifies a universally accepted jurisdictional expansion of the obligations and duties of States. This was reiterated by other judicial or quasi-judicial organs, which insist on the criterion of authority and control over people and/or territories when deciding on cases of human rights violation beyond the territorial boarders of their State parties.[51]

On a different front, the institution of the EEZ has also provided fertile grounds for attempts at jurisdictional expansions through diversified interpretation of the UNCLOS. Often characterized as the "constitution of the oceans",[52] the UNCLOS distinguishes itself from other treaties on the basis of the "all or nothing package" it presents to States, which are not allowed to deviate from its provisions by making relevant reservations and exceptions.[53] This characteristic is however at the root of a number of declarations and statements made on the basis of Article 310 of the UNCLOS.[54] It is equally the generating factor of multiple attempts of creative interpretation of the Convention, with a view of expanding the jurisdiction of States, either unilaterally or at a regional level, in areas otherwise unregulated by the Convention.

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[51] IACtHR: *Detainees in Guantánamo Bay, Cuba* (Decision on Request for Precautionary Measures) (13 March 2002) 41 *ILM* 532, p. 533.

IACmHR: *Report on Terrorism and Human Rights* (22 October 2002), OEA/SerL/V/II.116 Doc. 5 Rev. 1 Corr. (2002), § 44.

UN HRC: *General Comment No. 31 (80) on Article 2 of the Covenant: The Nature of the General Legal Obligation Imposed on States Parties to the Covenant* (29 March 2004), GAOR 59th Session Supp. 40 vol. 1, p. 175; *Concluding Observations on Germany* (5 May 2004), UN Doc CCPR/CO/80/DEU.

[52] UN, *The Law of the Sea: Official Text of the UNCLOS*, London 1983, p. xxxiii.

[53] Article 309 of the UNCLOS.

[54] Nelson D., "Declarations, Statements and Disguised Reservations with Respect to the Convention on the Law of the Sea" (2001) 50 International and Comparative Law Quarterly 767-786.

This "permissible regionalism"[55] is the direct result of the permeation of the UNCLOS with urging the States to cooperate in matters of regional interest, the only caveat being that whatever solutions they come up with may not contravene the object and purpose of the UNCLOS itself.[56] And it is this very point that makes specific attempts at jurisdictional expansions noteworthy. For instance, the EEZ is specifically directed at providing the coastal State with a set of rights relating to the exploration, exploitation, preservation and management of the natural resources in the zone, including in the waters, seabed and sub-soil thereof, which the coastal State must fulfil with due regard for the interests of third States.[57] However, a number of States have begun creating, either collectively or unilaterally, special kinds of marine protected areas within their respective EEZs, which may not necessarily fall within the ambit of the UNCLOS. The designation of such marine protected areas is done with a view of environmental protection, being greatly influenced by other rules of international law, either conventional or customary.[58] Instruments such as the Convention on Biodiversity,[59] the MARPOL[60] or even the Rio Declaration[61] have been utilized to systemically interpret[62] the UNCLOS and create an integrated set of rules for the protection of the marine environment, above and beyond the constraints

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[55] Boyle A., "Further Development of the Law of the Sea Convention: Mechanisms for Change" (2005) 54 International and Comparative Law Quarterly 563-584 at567.

[56] Article 311 § 3 of the UNCLOS.

[57] Article 56 of the UNCLOS.

[58] *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, [1996] ICJ Rep. at § 29.

[59] Convention on Biological Diversity, 5 June 1992, 1760 *UNTS* 79 (entered into force 29 December 1993).

[60] International Convention for the Prevention of Pollution from Ships, 2 November 1973, 1340 *UNTS* 184 (entered into force 2 October 1983) [henceforth MARPOL].

[61] Declaration on Environment and Development, The United Nations Conference on Environment and Development (UNCED), Rio, 3-14 June 1992, UN Doc. A/CONF.151/5/Rev.1 [henceforth Rio Declaration].

[62] Article 31 § 1 (c) of the VCLT.

placed by the UNCLOS itself. It could be even argued that such is the level of integration[63] achieved that these rules are now part and parcel of the UNCLOS itself, having modified the originally accepted interpretation of its clauses through universal consensus.[64]

While there is little doubt that instruments such as treaties or even the development of subsequent customary law can be used for the systemic interpretation methodology envisioned in Article 31 § 3 (c) of the VCLT,[65] the use of soft law materials, such as the previously mentioned Rio Declaration, presents more theoretical challenges. In the quest for interpretative evolution of treaties, rather than going through the process of amending them or even drafting them anew, soft law could become a method of changing the agreed meaning of terms by being considered a reflection of general principles on specific issues. International jurisprudence,[66] including that of the International Court of Justice,[67] has engaged in such dialogue and has found that indeed soft law can be reflecting general principles and in turn, if deemed to be interstitial norms,[68] be used to interpret provisions of treaties in such a way, so as to even modify them. Nevertheless, whatever modification needs to be still in tandem with the object and purpose of treaty in question, since the goal of this whole exercise is the organic evolution of the treaty and not

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[63] UN/CBD, *Study of the Relationship between the CBD and UNCLOS with Regard to the Deep Seabed*, (2004) Doc. UNEP/CBD/SBTrA/8/INF.

[64] Boyle A., "Further Development of the 1982 Convention on the Law of the Sea: Mechanisms for Change" in Freestone D., Barnes R. & Ong D., eds., *The Law of the Sea, Progress and Prospects* (Oxford: Oxford University Press, 2006) 40-62 at 46.

[65] *OSPAR Arbitration*, Ireland v. the United Kingdom, PCA 2003, §§ 101-105.

[66] *Southern Bluefin Tuna Cases (Provisonal Measures)*, Australia and New Zealand v. Japan, (1999) ITLOS Nos 3 and 4, §§ 77-9.

[67] *Case Concerning the Gabčíkovo-Nagymaros Project (Hungary v. Slovakia)*, Judgment, [1997] ICJ Rep. at § 140.

[68] Lowe A. V., "Sustainable Development and Unsustainable arguments" in Boyle A. & Freestone D., eds, *International law and sustainable development: past achievements and future challenges*, (Oxford: Oxford University Press, 1999) 19-37 at 31.

interpretative revolution.[69] In the words of Judge Bedjaoui: "'Interprétation' n'est pas 'substitution'. A un texte négocié et agrée d'un texte tout autre, ni négocié, ni convenu. Sans qu'il faille renoncer à 'l'interprétation évolutive' qui peut être utile et même nécessaire dans hypothèses très limitées, il convient de dire qu'elle ne peut pas être appliquée automatiquement à n'importe quelle affaire".[70]

In any event, the diversified interpretation of a treaty on behalf of States has proven to be a viable option for the expansion of their jurisdiction, especially in areas of technical subjects. By reading their conventional obligation through the lenses of subsequent treaties, custom or even soft law materials, States are engaging in what could be characterised as a creeping expansion of their jurisdiction,[71] an option that States will seek to explore more and more in the future.

b. International organizations and normative modifications from within

As far as international organizations are concerned, we can discern three broader categories of modifications from within leading to jurisdictional expansions. First, jurisdictional aspects gained through the implied powers theory; second, expansions arising out of the diversified interpretation of core terms of the treaty; And lastly, expansions relating to the modification of the jurisdiction of the organs of an organization *inter se*, or of the balance of powers of different organizations *intra se*.

Turning to the first category, it can be directly observed that international organizations possess certain powers directly relating to the exercise of their functions, which are nevertheless

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[69] Boyle (2005), *supra* note 64 at 584.

[70] *Case Concerning the Gabčíkovo-Nagymaros Project (Hungary v. Slovakia)*, Judgment, [1997] ICJ Rep., Separate Opinion of Judge Bedjaoui, at § 12.

[71] Franckx E., "The 200-mile Limit: Between Creeping Jurisdiction and Creeping Common Heritage?" (2005) 48 German Yearbook of International Law 117-149 at 125.

not expressly written in their constitution.[72] A direct transplant of the constitutional traditions of federal States,[73] the implied powers doctrine allows for the supplementing of the express powers of an organization. Nevertheless, this power supplement cannot reach the full level of *Kompetenz-Kompetenz*, as it is directly rooted to the strict framework in which the organization operates.[74] Whether the breadth of an organization's implied powers is measured narrowly by its explicit powers[75] or more broadly by its functions and purpose,[76] it has been true that States may often object to the jurisdictional expansions of the organizations attempted in either fashion, although international jurisprudence does not seem so keen on always distinguishing the two.[77]

Alternatively, international organizations can expand their scope by modifying the interpretation of core terms of their constitutive instruments. For such an evolutionary interpretation to be acceptable, proof of strong, supporting State practice is required. It would be most usually obtained through the voting procedure of relevant resolutions, which are in turn used as the expansive interpretative basis. For instance, the existence of peacekeeping operations

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[72] *Advisory Opinion on Reparation for Injuries Suffered in the Service of the United Nations*, ICJ Reports 1949, at p. 182.

[73] *Jurisdiction of the European Commission of the Danube between Galatz and Braila* (1927), Advisory Opinion, PCIJ Series B No. 14 at 64.

[74] *Legality of Use by a State of Nuclear Weapons in Armed Conflict*, Advisory Opinion, [1996] ICJ Rep. at § 25.

[75] *Competence of the International Labour Organisation to Examine Proposals for the Organisation and Development of Methods of Agricultural Production* (1922), Advisory Opinion, PCIJ Series B No 3 at 49, 57.

[76] *Advisory Opinion on Reparation for Injuries Suffered in the Service of the United Nations*, ICJ Reports 1949, at p. 182.

[77] *Advisory Opinion on the Effect of Awards of Compensation Made by the United Nations Administrative Tribunal*, ICJ Reports 1994, p. 47; *Certain Expenses of the United Nations (Article 17, paragraph 2 of the Charter)*, Advisory Opinion, [1962] ICJ Rep. at 151; ECJ, *Case 22/70 Commission of the European Communities v Council of the European Communities (ERTA Case)*, (1971) ECR 263.

of the United Nations came about from the creative interpretation of article 43 of the Charter,[78] and falls somewhere between actions under Chapter VI and Chapter VII thereof, based on the requirements of host State consent, impartiality and rights to use force limited only in self-defence of the peacekeepers.[79] Similarly, the expansion of the Security Council's authority over issues such as environmental problems, health crises, mass migration flows, political oppression, severe economic injustice, was the direct result of the adoption of the "Agenda for Peace",[80] whereby all of the aforementioned issues were introduced as potential threats to the peace and security and were hence brought under the Security Council purview.

The third available option is the modification of the *inter se* and *intra se* jurisdiction of the organs of international organizations. The "Uniting for Peace" Resolution[81] of the UN General Assembly is a seminal example of *intra se* organ jurisdiction modification. The resolution authorized the General Assembly to intervene in a situation of armed conflict, in particular the Korean crisis, essentially bypassing the Security Council, which was deemed to have sole authority over actions of collective security. Through the authentic interpretation of articles 10, 11, 14 and 24 § 1, it was concluded that the Security Council only has primary responsibility over threats of international peace and security and in case of its inaction towards fulfilment of

[78] Report to the General Assembly in Pursuance of General Assembly Resolution 1123 (XI) on Israeli Withdrawal, UN Doc A/3512, GAOR 11th Session, Annexes, Vol II, Part Two, A, § 5 (b).

[79] A/RES/1001(ES-I), *United Nations General Assembly Resolution 1001 (ES-I) on Establishment of a United Nations Emergency Force (UNEF)*; S/RES/169 (1961), *United Nations Security Council Resolution 169 (1961) on an arms embargo against the Congo*.

[80] UN Doc A/47/277 (1992), *An Agenda For Peace: Preventive Diplomacy, Peacemaking and Peace-Keeping – Report of the Secretary General Pursuant to the Statement Adopted by the Summit Meeting of the Security Council on 31 January 1992*.

[81] A/RES/377 (V) (1950), *Uniting for Peace*.

said responsibility, the General Assembly can take up the mantle of ordering coercive measures[82] based on its general competence over all matters Charter,[83] with a view of ensuring the respect of the fundamental goals of the Charter.[84] Such parallel exercise of authority has since become the norm[85] and has been considered consistent with international law.[86]

Within the context of *inter se* modifications, negative instances are also possible. The refusal of the International Court of Justice to judicially review the Security Council resolutions regarding the Lockerbie disaster is indicative. The opportunity for such judicial review was provided after the terrorist attack on Pan Am flight 103, which crashed in Lockerbie, Scotland. The United States and the United Kingdom sought to coerce the extradition of the Libyan suspects, despite Libya's stated intention to prosecute them domestically, as per its relevant conventional rights.[87] The issuance of two Security Council resolutions[88] under Chapter VII, the second after judicial proceedings had already began before the ICJ, was at the very heart of the dispute. Two observations need to be made at this stage. First, as previously mentioned, the ICJ refrained from the judicial review of the Security Council Resolutions, on the basis of the

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[82] Hailbronner K. & Klein E., "Article 10" in Simma B., ed., *The Charter of the United Nations* (München: Beck, 2002) 257-275 at 264-265.

[83] Nolte B., "Uniting for Peace" in Wolfrum R., ed., *United Nations: Law, Policies and Practice, vol. 2, Revised English edition*, (Dordrecht: Nijhoff, 1995) 1341-1348 at 1344.

[84] Stein E. & Morrissey R. C., "Uniting for Peace Resolution", in Wolfrum R., ed., *Encyclopedia of International Law, Vol. 5* (Oxford: Oxford University Press, 2012) pp. 379-382 at 380.

[85] *Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory*, Advisory Opinion, [2004] ICJ Rep at §§ 27-28.

[86] *Certain Expenses of the United Nations (Article 17, paragraph 2 of the Charter)*, Advisory Opinion, [1962] ICJ Rep. at 164.

[87] Convention for the Suppression of Unlawful Acts against the Safety of Civil Aviation, 23 September 1971, 974 *UNTS* 177 (entered into force 26 January 1973).

[88] S/RES/731 (1992), *On the Destruction of Pan American Flight 103 and Union des transports aériens Flights 772*; S/RES/748 (1992), *On Sanctions Against the Libyan Arab Jamahiriya*.

supremacy of Charter obligations under articles 103 and 25 thereof.[89] Second, while the ICJ performed a negative modification, the Security Council in fact positively modified the relationship between the two UN primary organs. By encroaching[90] on issues at the time under review by the Court, the Security Council extended its jurisdiction over what was essentially a legal dispute, at a stage when arguably it had no right to intervene.[91]

In an *intra se* modification, the European Court of Justice took a different approach than the ICJ. While simultaneously declaring, or rather, reaffirming its distinct legal personality and its juridical independence the EU redefined its jurisdiction by extending it in such a way, so as to effectively review a Chapter VII Resolution of the UN Security Council.[92] The opportunity presented itself with the judicial review of Council Regulation EC 467/2001,[93] and its follow-ups, which brought Security Council Resolution 1333[94] as periodically amended, into the internal European order. Complaints were made by Mr. Kadi and the Al-Barakaat Foundation on the

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[89] *Questions of Interpretation and Application of the 1971 Montreal Convention arising from the Aerial Incident at Lockerbie (Libyan Arab Jamahiriya v. United Kingdom)*, Request for the Indication of Provisional Measures, Order, [1992] ICJ Rep. at §§ 39-41; *Questions of Interpretation and Application of the 1971 Montreal Convention arising from the Aerial Incident at Lockerbie (Libyan Arab Jamahiriya v. United States of America)*, Request for the Indication of Provisional Measures, Order, [1992] ICJ Rep. at §§ 42-44.

[90] *Questions of Interpretation and Application of the 1971 Montreal Convention arising from the Aerial Incident at Lockerbie (Libyan Arab Jamahiriya v. United Kingdom)*, Request for the Indication of Provisional Measures, Order, [1992] ICJ Rep., Dissenting Opinion of Judge Bedjaoui, at § 16.

[91] *Questions of Interpretation and Application of the 1971 Montreal Convention arising from the Aerial Incident at Lockerbie (Libyan Arab Jamahiriya v. United Kingdom)*, Request for the Indication of Provisional Measures, Order, [1992] ICJ Rep., Dissenting Opinion of Judge Weeramantry, at § 61.

[92] *Case C–402/05 P and C–415/05 P, Kadi and Al Barakaat International Foundation v. Council and Commission*, [2008] ECR I–635, § 316.

[93] *Council Regulation prohibiting the export of certain goods and services to Afghanistan, strengthening the flight ban and extending the freeze of funds and other financial resources in respect of the Taliban of Afghanistan, and repealing Regulation (EC) No 337/2000* (Council of the European Union) 467/2001/EC, [2001] OJ L67/1.

[94] S/RES/1333 (2000), *Measures against the Taliban*.

violation of fundamental human rights, as direct derivatives of the application of the European Regulations, i.e. the right to judicial review, the right to be heard, the right to property and the principle of proportionality. The cases were brought before the ECJ,[95] which concluded that it had to ensure the lawfulness of all Community acts in the light of the fundamental rights forming an integral part of the general principles of Community law.[96] In finding patent violations of the rights to be heard, the right to judicial remedy and the right to property,[97] the Court ordered the annulment of the Regulation,[98] providing a three month grace period for the Council to rectify the situation and take other, justified measures if necessary.[99] The normative outcome of the Kadi decision was the recognition of implied powers and the ability to employ a "teleological approach upholding the so-called *effet utile* which aims at the most effective application of Community law",[100] or any kind of law upon which the international organization is based upon, if transposed to the general context.

c. The role of ius cogens regarding normative modifications from within

Last but not least, it should be noted that diversified interpretation of rights and obligations falling within the regulatory scope of a (bilateral) legal instrument may also be required as a result of the subsequent development of a norm of *ius cogens*, which nullifies in whole or in part

[95] *Kadi v Council of the European Union and Commission of the European Communities*, Judgment, Action for Annulment, Appeal, Case C-402/05 P, [2008] ECR I-6351.

[96] *Ibid*., § 326.

[97] *Ibid*., §§ 336-337, 345-353

[98] *Ibid*., §§ 354-372.

[99] *Ibid*., §§ 372-376.

[100] Reinisch A., "Introductory Note to Court of First Instance of the European Communities: Yassin Abdullah Kadi v. Council of the European Union and Commission of the European Communities" (2006) 45 ILM 77-80 at 77.

provisions of the treaty, depending on their severability.[101] As such, international Courts have had the opportunity, mostly through the means of *obiter dicta*, to confirm that *ius cogens superveniens* is indeed a factor that leads to modification of norms from within,[102] as it directly affects the application of rules and agreements adopted long before the development of the contrary peremptory norm.[103]

Part II Introductory Conclusions

In sum, the creation and/or maintenance of an international law regime is the direct bi-product of normative modifications, performed by both States and international organizations. The examples provided prove that unilateral modifying actions of States can gain international recognition with the explicit agreement of other States, or at least with their tacit consent. Where such consent is missing, or where attempts at first instance expansions are contravening other norms of international law, then the expansion in unsuccessful, at least from a legal perspective. Without disregarding the political value and consequences of the attempted action, States should be able to disregard, if not outright protest such occurrences. When States and international organizations engage in the diversified interpretation of pre-existing norms, then their actions are measured against the yardstick of interpretative principles of international law. In this light, the evolution of the terminology used in an international instrument, as a result of technical, financial or scientific progress, can create new obligations for international law subjects, provided that there is sufficient and consistent supporting State practice.

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[101] Article 64 of the VCLT.

[102] *Aloeboetoe v. Suriname*, Inter-American Court of Human Rights (1993) 116 *ILR* 278; *The United States of America vs. Alfried Krupp, et al. case*, US Military Tribunal at Nuremberg, 31 July 1948, 15 *ILR* 626-627.

[103] Kolb R., *Peremptory International Law* – Jus Cogens: *A General Inventory* (Oxford, UK & Portland, Oregon: Hart Publishing, 2015) at 60-61.

The aforementioned findings directly inform the proposals and suggestions presented in the following three chapters, which address a host of proposed and attempted normative modifications, from within and from without, in an effort to establish the most competent entity to exercise space traffic control management. Economic and political theories are also used, in a complementary fashion, in this effort.

Chapter 1 addresses the issue of erosion of State sovereignty, by underlining instances where such erosion has indeed taken place and contrasting them to fallacious claims of sovereignty erosion, particularly in the navigable domain of outer space. Based on this discussion, the possibility of extending the jurisdictional domain of an international organization founded upon the very notion of sovereignty into a domain, where sovereignty in the context of territoriality is lacking, i.e. ICAO, is also critically examined. The critical assessment of the compatibility with international law of adopting this alternative is performed under the prism of a treaty interpretation analysis.

Chapter 2 seeks to explore if other alternatives for space traffic management, based on independent initiatives of States or through an informal network of coordinated actions of a select group of States, can fare better against the tests of international law. The spotlight is turned to providers of space situational awareness services, as proponents of the closest service resembling space traffic management currently in existence. The analysis progresses by defining the limits of their usual *modus operandi* as empirically proven and by examining whether their concentrated efforts may lawfully amount to a viable, cosmopolitan system of benevolent, albeit membership-restricted governance.

The culminating idea of this Dissertation is presented in Chapter 3, where the theoretical and normative framework of the proposed International Space Traffic Control Authority, the better

suited approach to addressing the regulatory challenges posed by the emergence of HASVs in this author's opinion, is analysed. Through the establishment of topological and jurisdictional limitations in the mandate of the proposed ISTCA, attention is drawn to the transition from competing and contested individual interest to a globalized notion of institutional autonomy, through international cooperative mechanisms.

CHAPTER 1: THE EROSION OF STATE SOVEREIGNTY: AFFIRMATION AND FALLACY AND ITS RELEVANCE FOR OUTER SPACE

Chapter Introduction

The introduction to the second half of this Dissertation set the groundwork for understanding how regimes of international law are being created or creatively modified, from the very actors they apply to, States and international organizations. The general tendencies observed, i.e. the possibility to modify the legal regime both from within and from without, are specifically put to the test in this Chapter, where the idea of functional jurisdiction is initially introduced. Beginning with an analysis regarding the different avenues of eroding traditionally understood State sovereignty, the focus is then shifted towards the notions of globalization and interdependent State actions. Predicated upon those, particularly as far as the administration of issues of global reach is concerned, the idea that diminished but concentrated sovereignties may produce better results in such global governance scenarios takes effect through the critical examination of international organizations contending to bring (portions of) outer space activities under their jurisdictional umbrella. As such, this Chapter explores the suggestion that jurisdiction over HASVs at the international level should be allocated to ICAO. The author addresses different elements of this suggestion, primarily by utilizing traditional treaty interpretation tools as applicable to the regimes in question, namely international air law and international space law. The findings of this Chapter will inform the outcome of whether the proposed modification of State approaches to functional jurisdiction should be undertaken by an opportunistic spirit of convenience, or rather, if it is to achieve the optimal results for the intended purpose of safely managing traffic into, out of and through airspace and outer space for all users of these domains,

said modification should be performed with a firm grasp of numerous interwoven normative principles and criteria, potentially even beyond the realms of air and space law.

1. Erosion of State Sovereignty

a. Consensual and non-consensual allocation of powers: ius cogens, international organizations and the issue of interdependency

The proliferation of treaties and other international instruments and cooperative arrangements in today's globalized world has intensified academic discussions on the subject of interdependence[1] and its effect on traditional understandings of State sovereignty. As a notion infused with normative plasticity, sovereignty has been the "go to" answer of States for different kinds of situations.[2] The intensive globalization process currently experienced, while arguably not touching upon the understanding of sovereignty as a form of formal control,[3] poses the question of the degree of delegation of self-governance capacity, potentially at the expense of domestic democratic principles.[4]

If the fundamental basis of self-governance is consent, then indeed, there are a number of examples as to delegations of authority, express or indirect, that dilute such consent, while creating binding obligations on States. The foremost such dilution of consent originates from the concept of *ius cogens*,[5] which, coupled with the requirement to respect obligations *erga omnes*,[6]

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[1] Waltz K. N., *Theory of International Politics* (Reading, MA: Addison-Wesley, 1979) at 139-143.

[2] Krasner S. D., *Sovereignty: Organized Hypocrisy* (Princeton, New Jersey: Princeton University Press, 1999) at 3.

[3] Raustiala K., "Sovereignty and Multilateralism" (2000) 1 Chicago Journal of International Law 401-419 at 402.

[4] Trimble P. R., "Globalization, International Institutions, and the Erosion of National Sovereignty and Democracy (review of Thomas M. Franck, Fairness in International Law and Institutions (Oxford 1995))" (1996-1997) 95 Michigan Law Review 1944-1969 at 1948.

[5] Article 53 of the VCLT.

separates itself from the traditional, consensual creation of customary law and binds even those States that have not contributed to its creation. Similarly, resolutions of the Security Council, especially if adopted under Chapter VII of the Charter, form another dilution of State consent.[7] The creation of the two specialized international criminal court tribunals, through Chapter VII resolutions are perhaps the most vivid example of a situation when the very administration of justice, traditionally within the *domain réservé* of a State, becomes an out-width imposed reality.[8] In fact, and perhaps more so than the concept of *ius cogens*, the development of which is not an easy process, one could argue that Chapter VII of the Charter is the true proponent of global governance and corresponding sovereignty erosion, affecting all States under its power and elevating the permanent five in a competitively privileged position.[9] While of regional significance, the evolution of the European Union and the accrual of power by Brussels institutions is yet another example of sovereignty erosion, extending to the spheres of foreign policy, fiscal and financial independence etc. All these examples emphasize how global modes of regulation differ less obviously from competences traditionally belonging to domestic law.[10]

The explanation provided as to why such delegation has even been accommodated has to do with the changed international society of the 20th and 21st century, the problems it faces and the expected solutions thereto, vis-à-vis those faced at the inception of the Westphalian

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[6] *Barcelona Traction, Light and Power Company, Limited*, Belgium v. Spain, Second Phase, *ICJ Reports 1970*, §§33, 34, 91.

[7] Article 103 of the UN Charter.

[8] S/RES/955 (1994), *Establishment of an International Criminal Tribunal for Rwanda and adoption of the Statute of the Tribunal*; S/RES/827 (1993), *Establishment of the International Tribunal for Prosecution of Persons Responsible for Serious Violations of International Humanitarian Law Committed in the Territory of the Former Yugoslavia since 1991*.

[9] Tomuschat C., "International Law: Ensuring the Survival of Mankind on the Eve of a New Century: General Course on Public International Law" (2001) 281 Recueil des Cours 13-438 at 173.

[10] Mégret F., Globalization, *Max Planck Encyclopedia of Public International Law*, available online at <www.opil.ouplaw.com>, § 39.

understanding of State sovereignty.[11] Interdependence then is seen, not only as the only means to provide globalized solutions, but also as another aspect of the very core of sovereignty, sovereign equality.[12]

However, can we truly speak about erosion, or is it perhaps better to see this increased multilateralism as the very realization and justification of the modern existence of States, as a transformation of sovereignty? In the words of Chayes and Handler Chayes: "sovereignty no longer consists in the freedom of states to act independently, in their perceived self-interest, but in membership in good standing in the regimes that make up the substance of international life. To be a player, a State must submit to the pressures that international regulations impose. [...]Sovereignty, in the end, is status – the vindication of the State's existence as a member of the international system".[13]

Across a range of areas, States have indeed surrendered elements of their sovereign power to international organisations in the belief that this may prove a more effective method of achieving aims no longer adequately attainable by themselves alone.[14] Such allocation reflects the basic premise of international law that sovereignty derives from international law; it is subject to it and can be modified in tandem with it.[15] The very element that makes it absolute, the existence of the

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[11] Ruggie J. G., "International Regimes, Transactions, and Change: Embedded Liberalism in the Postwar Economic Order" in Krasner S. D., ed., *International Regimes* (Ithaca, NY: Cornell University Press, 1983) 195-232 at 201.

[12] Westlake J., *International Law, vol. 1, Peace*, 2nd edition (Cambridge: Cambridge University Press, 1910) at 321.

[13] Chayes A. & Handler Chayes A., *New Sovereignty* (Cambridge, MA: Harvard University Press, 1995) at 27.

[14] Shaw M. N., "Territorial Administration by Non-Territorial Sovereigns" in Broude T. & Shany Y., eds., *The Shifting Allocation of Authority in International Law – Considering Sovereignty, Supremacy and Subsidiarity: Essays in honour of Professor Ruth Lapidoth* (Oxford & Portland, Oregon: Hart Publishing, 2008) 369-415 at 372.

[15] *Ibid.*, at p. 371.

State, is what erodes the most demanding and potentially greedy of its characteristics, the desire to impose one's will over the others. State sovereignty is as strong as it is weak, recognizing in itself the source of its strength and the limitations thereto, and these limitations have long ago been accepted as such.[16]

b. Relevance with domestic legal order – The prevalence of international law issue

The necessary corollary to the issue of sovereignty erosion is the examination of the relationship between international and domestic law, particularly in view of the criticism that States are forfeiting portions of their self-governance ability. An analysis of the long-standing debate of the early and mid-twentieth century over the dualist or monism approach to the relationship of international and domestic law is, in the words of Sir Gerald Fitzmaurice, "strictly beside the point".[17] Concessions made by both sides of the debate to account for new trends and challenges have made the distinction practically moot.[18] Nevertheless, contemporary theoretical approaches[19] to the issue underline the insistence of international courts and tribunals to consider domestic laws brought before them as facts, rather than sources of law they can apply. This diminished standing of domestic law before international law is further verified, not only by the existence of *ius cogens*, but also by the concept of international responsibility for actions violating the rights of the international community as a whole.[20] The right of third States to

[16] Jennings R. & Watts A., *Oppenheim's International Law, Volume I*, Ninth edition (London & New York: Longman, 1996) at 29.

[17] Fitzmaurice G., "The General Principles of International Law Considered from the Standpoint of the Rule of Law" (1975) 92 Recueil des Cours 1-227 at 71.

[18] Dupuy P.-M., International Law and Domestic (Municipal) Law, *Max Planck Encyclopedia of Public International Law*, available online at < www.opil.ouplaw.com >, § 130.

[19] Santulli C., *Le statut international de l'ordre juridique étatique* (Paris: Pedone, 2001).

[20] Article 48 § 1 of the ASR.

request the cessation of the wrongful activity, its non-repetition, and various forms of reparations[21] proves that while States maintain a level of autonomous action, such action must adhere to internationally imposed and accepted norms. Similarly, the concept of universal jurisdiction,[22] which is enforceable even if a particular action is not criminally prosecuted within a State, equally proves that domestic law yields before the requirements of the international legal order.

Undoubtedly, the prolific increase of international obligations of States has had a corresponding impact on the outmost boundaries of national jurisdiction. However, in order to regulate matters of international global interest, "any entity should have what Kant calls *Willkur*, or the ability to be a 'law unto oneself'.[23]"[24] The restricted ability of States to express and exercise *Willkur* leads to the conclusion that only international organizations expressing the normative will of the international community can be counted upon to address global concerns capable of falling *de minimis* within the scope of Article 48 of the ASR, if not under the umbrella of *ius cogens*.

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[21] Iovane M., "E possibile codificare la responsabilità dello stato per violazione delle norme internazionali di importanza fondamentale?" in Spinedi M., Gianelli A. & Alaimo M. L., eds., *La Codificazione della responsabilità internazionale degli Stati alla prova dei fatti* (Milano: Giuffrè, 2006) 342-384.

[22] Cassese A, "Is the Bell Tolling for Universality?: A Plan for a Sensible Notion of Universal Jurisdiction" (2003) 1 Journal of International Criminal Justice 589-595.

[23] Kant I., *The Grounding for the Metaphysics of Morals* (Indianapolis: Hackett, 1981) at 38.

[24] Brown G. W., "The Idea of Autonomy: Accountability, Self-determinism and what Normative Claims about Institutional Autonomy in Global Governance Should Mean" in Collins R. & White N. D., eds., *International Organizations and the Idea of Autonomy: Institutional Independence in the International Legal Order* (London and New York: Routledge, 2011) 104-119 at 113.

This originally Kantian[25] understanding of the law is based precisely on the "global, or globally aspirational, quality of the relevant law [...] first, in its planetary comprehensiveness of coverage and, secondly, in a claim to normative gravity that is adequate to that planetary ambition. The emphasis is upon planetary-level peak institutions with strong legislative or executive capacity as the key instruments of their ambition."[26]

This last point is crucial in determining which international organization is the most appropriate to assume jurisdiction over the provision of space traffic control. The degree of the organization's normative gravity is directly relating to the suitability of its constitutive document to incorporate in its scope the activity in question. The answer to this question can only be provided on the basis of a treaty interpretation analysis, in light of ICAO's emergence as a contender for this jurisdictional extension.

2. Treaty Interpretation Analysis: The question of the appropriateness of ICAO for HASVs' regulation

The question as to which regime should govern a HASV is not entirely new. As previously mentioned, it has been first broached when the Space Shuttle was being developed. At that time, the Shuttle was the only vehicle used that exhibited both aircraft and space craft qualities. Its uniqueness made its classification as either an enigma, due to the clear conflict between air law and space law provisions. To this end, Gorove's argument that in case of such conflict the more recent international agreement applicable to the States parties would be controlling is telling.[27] A seemingly convenient solution for addressing the jurisdictional challenges posed by the

[25] Kant I., *Perpetual Peace: A Philosophical Essay (1795)*, translated by Trueblood B. F. (Princeton, New Jersey: American Peace Society, Princeton University Press, 1897) at 85-135.

[26] Walker N., *Intimations of Global Law* (Cambridge: Cambridge University Press, 2015) at 59.

[27] Gorove S., "Legal Aspects of the Space Shuttle" (1978) 27 Zeitschrift für Luft- und Weltraumrecht 196-205 at 199.

emergence of HASVs is for ICAO to extend its authority over such crafts. The following paragraphs address, through presentation and critique, different proposals as to how ICAO could accomplish such a jurisdictional extension and whether such an outcome would be permissible under international law.

The proposal of simply amending the definitions of "aircraft", "airport", "(international) flight", "airworthiness", etc., found in the Annexes of the Chicago Convention,[28] so as to cover HASVs, would be a reactive exercise on paper, that could very well create as many issues as the ones it aims to solve. From a technical stand-point, a rushed change in the definitions, as a result of the exigency to respond to technological developments, while well-intending, can have severe impacts in the applicability of tested and tried Standards and Recommended Practices (SARPs) across the aviation industry, and ultimately endanger international civil aviation, as well the nascent sub-industry of HASVs.

From a legal stand-point, it should be reminded that the Annexes to the Chicago Convention are amended by a relevant decision of the ICAO Council, after a lengthy process of deliberation. Nevertheless, and while the Council indeed remains the governing body of the Organization, any amendments to the Annexes approved would not act as an instantaneous panacea, for a series of reasons. First, the Council is a body of thirty six States, who only receive mandates from the Assembly of the ICAO Member States every triennium to start working on and finally approving any changes on the Annexes and other ICAO documents. Their decisions are not independent of the will of the collective, and while the Council usually works based on consensus, strong oppositions or inconclusive views among the States represented on the Council can lead to the

[28] Dempsey P. S. & Mineiro M. C., "ICAO's Legal Authority to Regulate Aerospace Vehicles" in Pelton J. N. & Jakhu R. S., eds., *Space Safety Regulations and Standards* (Oxford & Burlington, MA: Elsevier, 2011) 245-256 at 251.

temporary tabling of an issue, with a view of seeking further negotiations among States in between Council sessions.

a. Intertemporal Law Analysis and Application: Definitional Issues

Furthermore, any change to the definitions, even if it is the result of technical deliberations, must still be in keeping with the fundamental, customary rules on treaty interpretation. While the VCLT itself does not directly apply to the interpretation of the Chicago Convention, as a result of its temporal scope,[29] the rules relating to the interpretation of terms based on their ordinary meaning,[30] being of recognized customary nature,[31] most certainly do. As such, the meaning attributed to the term "aviation" by States to this date is that of an activity of transportation exclusively via the medium of airspace, national and/or international. The broadening of the ordinary meaning of the term "aviation", directly or indirectly through a definitional change within the Annexes, so as to include activities happening in or designated for outer space, wholly or partially, contravenes the interpretative rules of international law.

Considerations of intertemporal law are of particular value with regards to this issue. Intertemporal law signifies the application of present day interpretation to the language of a treaty concluded in the distant past. The application of this doctrine consists of a delicate balancing act, between permissible interpretation and impermissible retroactivity of subsequent rights and obligations.[32] The initial reaction of international judiciaries was to seek refuge in the

[29] Article 4 of the VCLT.

[30] Article 31 § 1 of the VCLT.

[31] *Interpretation of the Convention of 1919 concerning Employment of Women during the Night* (1932), Advisory Opinion, PCIJ Series A/B No. 50; *Territorial Dispute (Libyan Arab Jamahiriya v. Chad)*, Judgment, [1994] ICJ Rep.

[32] *Mavrommatis Jerusalem Concessions (Greece v. United Kingdom)* (1925), Judgment, Merits, PCIJ Series A. No. 5.

doctrine of contemporaneity, that is seek to apply the law as it was at the very inception of the legal relation that is under dispute before them.[33] Nevertheless, after the seminal *Palmas Arbitration*, the concept of intertemporal law emerged as the yardstick by which to judge disputes created by the extensive passing of time between creation and frustration of legal right. In the words of Arbitrator Huber, "a distinction must be made between the creation of rights and the existence of rights. The same principle which subjects the acts creative of a right to the law in force at the time the right arises, demands that the existence of the right, in other words its continued manifestation, shall follow the conditions required by the evolution of law".[34] The cohesive application of intertemporal law to treaty interpretation[35] can be thus useful for the present analysis, regarding the understanding of aviation.

State practice[36] further supports this conclusion: the differentiation between flight and space flight suggests that States perceive these activities to not be the same, and thus receptive of the same legal treatment. The qualification of flight when in conjunction with outer space activities as "space flight" is not just a hortatory linguistic convenience. It denotes specific legal expectations from the part of the States, and in particular the States most relevant in the activity in question.[37] The point is artlessly proven by the classification selection made for the Space Shuttle, arguably the very first HASV. Because it engaged in space flight, rather than just

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[33] *Award regarding the Boundary between the Colony of British Guiana and the United States of Venezuela*, Venezuela v Great Britain, (1899) 92 *BFSP* 160, at p. 415; *Grisbådarna Case*, Norway v Sweden, Award, ICGJ 404 (PCA 1909), at p. 416; *North Atlantic Coast Fisheries Case*, Great Britain v United States, Award, ICGJ 403 (PCA 1910), at p. 432.

[34] *Island of Palmas Case*, Netherlands v United States of America, (1928) 2 RIAA 829, at p. 845.

[35] *Case concerning Rights of Nationals of the United States of America in Morocco (France v United States of America)*, Judgment, [1952] ICJ Rep.; *Case concerning Right of Passage over Indian Territory (Portugal v India)*, Judgment, Merits, [1960] ICJ Rep.; *Aegean Sea Continental Shelf Case (Greece v Turkey)*, Jurisdiction of the Court, Judgment, [1978] ICJ Rep.

[36] Article 31 § 3 (b) of the VCLT.

[37] *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, [1996] ICJ Rep. at § 70.

conventional flight, the Space Shuttle was classified and registered as a space object.[38] Further proof of the differentiated legal treatment associated between flight and space flight is derived by the handling of the Shuttle accidents. Incidents such as the Challenger disaster would have been handled under the framework of an aircraft accident investigation, pursuant to relevant ICAO Standards,[39] had the Challenger been considered an aircraft. Nevertheless, not only was Annex 13 inapplicable to the case of the Challenger, but a special presidential commission was formed to investigate any shortcomings of NASA in the organization of the agency and the selection of manufacturers for the Shuttle program,[40] rather than simply assigning the investigation to the FAA.

Contrary to its previous practice, the accident of Virgin Galactic's SpaceShipTwo on 31 October 2014 is currently being handled by the National Transportation Safety Board. This may well be the case, because the company only holds an experimental permit for test flights from the FAA, rather than a full commercial launch license, its pertinent application being still under review. It should be noted that the FAA is hesitant as to qualify HASVs as space objects and bring them under the scope of exclusively space regulations,[41] despite the Shuttle precedent.

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[38] Diederiks-Verschoor I. H. P., "The Legal Aspects of the Space Shuttle" (1976) 1 Annals of Air and Space Law 197-204.

[39] Annex 13 to the Chicago Convention.

[40] Report of the Presidential Commission on the Space Shuttle Challenger Accident (Rogers Commission), 6 June 1986, available online at <http://history.nasa.gov/rogersrep/genindex.htm>.

[41] Nield G. C., "A New Way to Look at Things" in Jakhu R. S. & Chen W., eds., *Regulation of Emerging Modes of Aerospace Transportation* (Montreal: McGill Centre for Research in Air and Space Law, 2014) 19-28; *see* also FAA, Commercial Space Data - Active Licenses, available online at < www.faa.gov/about/office_org/headquarters_offices/ast/launch_data/current_licenses/>, last retrieved on 9 January 2017, whereby the only reusable commercial space vehicle listed is the SpaceX Dragon, with a launch license expiration date set at 31 December 2015. It should be noted that the Virgin Galactic SpaceShipTwo was given a test launch license on 29 July 2016 for a two year period, with the express restriction to transporting only "non-deployed scientific, experimental, or inert payloads", and not to transporting passengers on suborbital flights. For more information, *see* Foust J., Virgin Galactic

While there may be multiple financial and policy reasons behind this reluctance, particularly relating to safeguarding a dominant market position and the ability to be the leader in technical know-how export for the USA,[42] an argument of clean hands[43] could potentially be made for this change of conduct, which has severe implications for the uniform development of the aerospace industry.

Second, any change to the Annexes would not immediately result in a change to the text of the Chicago Convention itself. As per article 94 of the Chicago Convention, amendments can only take place if "approved by a two-thirds vote of the Assembly and shall then come into force in respect of States which have ratified such amendment when ratified by the number of contracting States specified by the Assembly. The number so specified shall not be less than two thirds of the total number of contracting States".[44] In practical terms, this would mean that a positive vote of 128 State Parties with regards to changing the scope of the Chicago Convention to include activities pertaining to the operation of HASVs would have to be secured in a future Assembly of the ICAO Member States. Such a prospect does not seem likely to come to fruition

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Receives FAA License for SpaceShipTwo Tests, *Space News*, 2 August 2016, available online at <spacenews.com/virgin-galactic-receives-faa-license-for-spaceshiptwo-tests/#sthash.hDLEXTFe.dpuf>.

[42] Nield, *ibid*.; Leader C., US Commercial Space Transportation Regulatory Approach, Presentation for the ICAO – UNOOSA Aerospace Symposium, Montreal, 18 March 2015, available online at <www.icao.int/Meetings/SPACE2015/Pages/Presentations.aspx>.

[43] *The Diversion of Water from the Meuse (Netherlands v Belgium)* (1937), Judgment, PCIJ Series A/B, No. 70 at 25; It should be noted that the FAA has issued Commercial Astronaut Wings for the two test pilots of the now retired SpaceShipOne, which would make for a strong case of it being considered a space object, as evidenced in the FAA, Commercial Space Data - Active Licenses, available online at < www.faa.gov/about/office_org/headquarters_offices/ast/launch_data/current_licenses/>. However, whereas the then operator of SpaceShipOne, Scaled Composites, had received a license to conduct powered test flights for suborbital flights, the vehicle itself received an aircraft registration number (N328KF), and most specifically that of a glider, as this is how it operates when unpowered during the reentry process. *See* FAA Aircraft Registry information, available online at < http://registry.faa.gov/aircraftinquiry/NNum_Results.aspx?NNumbertxt=N328KF>.

[44] Article 94 (a) of the Chicago Convention.

any time soon, it was not discussed during the latest ICAO Assembly session of 2016, and there is no indication as of yet on whether it will make it into the 2019 Assembly draft agenda.

b. The question of the mandate and cascading conflict possibilities

Additionally, as per Article 3 of the Chicago Convention, the Convention applies only to international civil aviation. It does not cover State aircraft, a category which comprises of aircraft used primarily by the armed forces of a State or other governmental agencies.[45] Therefore ICAO's subject matter authority extends only over the aircraft included in the very scope of its constitutive document, i.e. civil aircraft. On principle and in principle ICAO is prohibited from creating Standards and Recommended Practices (SARPs) or taking any other action relating to the operations of State aircraft, unless the latter endanger international civil aviation.

On the other hand, the Outer Space Treaty is applicable to all space objects. In fact, and based on the provisions of Article VI of the Outer Space Treaty, the obligation of States to maintain jurisdiction and control over their space objects and to bear responsibility for them, is the very element that makes any space object a State space object. This is as true for military satellites, as it is for civil telecommunication satellites, weather satellites, and Earth monitoring satellites used for a wide range of scientific purposes, as well as the International Space Station, Rosetta and the Hubble. Whether their launch was the result of public or private means, each and every one of these space objects falls, at all times, under the exclusive jurisdiction and control of a State. Each and every one of these space objects remains in perpetuity the property of a State[46] and attaches to the latter international responsibility, including and going beyond the object's life cycle.

[45] See *supra* Part I, Chapter 3.

[46] Article VIII of the Outer Space Treaty.

Without a drastic amendment to the Outer Space Treaty, all space objects will be State space objects.

Herein lays the crux of the argument. If the scope of the Chicago Convention were to be extended so as to allow ICAO to exercise jurisdiction over HASVs, or even other space objects as some voices suggest, then that extension would necessarily have to include State crafts, going against the very letter of the Chicago Convention. It would be *de minimis* contradictory to allow ICAO to exercise such authority over crafts operating within a domain outside ICAO's *raison d'être*, when doing so within its traditional domain of airspace is not currently an option.

In fact, the proposal of extending ICAO's jurisdiction in outer space with a view of encompassing all space activities up to the geostationary and geosynchronous orbit (GEO) is flawed in its basis and contravenes accepted and crystalized rules of treaty interpretation. The main argument behind this suggested extension is that various space activities can have a direct application and effect on international civil aviation. The most prominent examples are the integration of suborbital activities into the airspace used by traditional aviation; the use of the Global Navigation Satellite System (GNSS) by aircraft; the use of satellite telecommunications by aircraft; remote sensing and satellite-based earth monitoring used for search and rescue operations, etc. These activities are possible thanks to different space applications, hosted in Low Earth Orbit (LEO) and GEO.

Nevertheless, the association, intentional or incidental, of said activities with international civil aviation is an insufficient and certainly a non-exclusive bond to justify ICAO gaining authority thereupon. For, assuming that such a claim could be made by ICAO, there would be nothing to prevent other international organizations from staking similar claims. More precisely, the International Maritime Organization (IMO) would be a prime candidate to contest any such

extension or at least be considered for co-jurisdiction. To the extent that ICAO could merit from the contributions of space applications to international civil aviation, the use of the very same applications in international navigation could create a case for the IMO as well. This is even more so the case, given the historic precedent of use in navigation before aviation. The only variation between these two potentially opposing claims would be that of integration. While it is true that the airspace will be much more severely affected by suborbital flights, the percentage of space missions that have, to date, ended with a sea landing, hence requiring restrictions on international navigation, could be equally considered as an example of quasi-integration. Such consideration would thus level the position of the IMO vis-à-vis that of ICAO.

Similarly, other international organizations could lay analogous claims, to the extent that different space applications could be utilized in some aspect of the fulfilment of their subject matter jurisdiction: the International Atomic Energy Agency (IAEA) as far as compliance regarding de-nuclearization and monitoring is concerned; the World Intellectual Property Organization (WIPO) concerning information transmitted via satellite; many other treaty monitoring bodies that can assess compliance via satellite applications; and naturally, the International Telecommunications Union (ITU), which is responsible for all frequency allocations relating to the aforementioned activities.

Such a prospect of cascading, conflicting and most likely mutually exclusive claims cannot be used as the sole basis for the extension of the authority of any international organization beyond the subject matter originally attributed to it. A coordinating exercise would be required if all claims were to be assessed and addressed at the same time, the likelihood of success thereof being highly questionable.

c. Considerations of Ius Cogens

Furthermore, as a matter of law, the suggested extension of ICAO's jurisdiction is not only equally impermissible, but also a matter of legal impossibility. Unlike the further elaboration of obligations directly deriving from the Chicago Convention, in the form of Annexes approved and adopted by the ICAO Council, the issue of ICAO expanding its authority to cover matters relating to outer space cannot be dealt with in the same manner.

The exigency of sovereignty as translated into territoriality, upon which the entire ICAO construction is founded,[47] directly clashes with the corresponding lack thereof in outer space.[48] The eradication of the dichotomy surrounding the question of sovereignty would require such a radical transformation of ICAO that, were such a process ever to be concluded, a whole new organization would have emerged. And herein lays the heart of the problem: ICAO was created with the essence of State sovereignty permeating its entire structure and *modus operandi*. Its mandate is defined by State sovereignty. Its exclusive authority over international airspace is not an independent, self-existing power, similar to that of States; rather, it was the result of a collective allocation agreement, reflected in article 12 of the Chicago Convention. This collective decision of the contracting States, not having attained the status of a peremptory norm, can only be revoked, altered or nullified with the termination, replacement or *de profundis* amendment of the Chicago Convention. And while following the Nicaragua *dictum* about the parallel evolution of conventional and customary rules of international law[49] would still result in recognizing ICAO's jurisdiction over the international airspace as an international custom, the threshold of

[47] Article 1 of the Chicago Convention, read in conjunction with Article 12 thereof, with regards to the "territorial" jurisdiction of ICAO as a direct byproduct of State territorial jurisdiction.

[48] Article II of the Outer Space Treaty.

[49] *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America)*, Merits, Judgment, [1986] ICJ Rep. at § 179; Lang C., *L'affaire Nicaragua / États-Unis devant la Cour International de Justice* (Paris: LGDL, 1990) at 123.

ius cogens would still be unattainable and the aforementioned custom would still be subject to change.

On the contrary, the lack of State sovereignty, i.e. territoriality, in outer space can be seen as the product of a collective decision on permanent abstention, perhaps the ultimate form of sovereignty erosion. The result of this decision is the creation of perhaps the first, and to this date only, peremptory rule of international law created instantly[50] and accepted as such by the States most engaged in space activities.[51]

In keeping with the parallel evolution dictum, a potential termination, denunciation, amendment or otherwise alteration of the Outer Space Treaty would not affect the survival of this peremptory norm. Being of *iure cogens* nature, only the emergence of a rule of equal legal value[52] would be able to affect the current status of outer space as a domain permanently outside the sovereignty of any one State. This approach is also consistent with the intertemporal law considerations analysed above, whereby the peremptory character of the Outer Space Treaty provision would obstruct[53] the application of intertemporal law towards the direction of consolidation with aviation, assuming that such a consolidating interpretation was attempted. The phrasing of Judges Shi and Koroma in their joint declaration of 26 February 2007 further elucidates this point: "even though a treaty when concluded did not conflict any rule of *ius*

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[50] Cheng B., United Nations Resolutions on Outer Space: "Instant" International Customary Law?, 5 *Indian Journal of International Law* 1965, pp. 23-48.

[51] *Nuclear Weapons Advisory Opinion*, *supra* note 37 at § 70.

[52] Article 53 of the VCLT.

[53] *Case concerning the Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Bosnia and Herzegovina v Serbia and Montenegro)*, Judgment, [2007] ICJ Rep., Joint Declaration of Judges Shi and Koroma, dated 26 February 2007, at § 2.

cogens, it will become void if there subsequently emerges a new rule of *ius cogens* with which it is in conflict".[54]

The necessary corollary of this argument is that, even if the contracting States of the Outer Space Treaty wished to amend the conventional text, the rule would survive despite and in spite of this decision. It should be emphasized that the subsequent practice of States, as well as other treaties concluded in relation to the treaty's subject matter, as articulated in the VCLT,[55] cannot be factored into this discussion, for a series of reasons: primarily because the peremptory nature of the sovereignty abstention cannot be interpreted in light of such provisions. Second, the very requirement of the systemic interpretation is the conclusion of treaties with relevant subject matters, identified as such and in a manner of forward temporal progression.[56] Verification of such a relation of interdependence arises from the study of mainly the preamble clauses of the instrument in question,[57] provided that they are sufficiently precise to allow for such an exercise.[58] Nothing in the preamble of the Outer Space Treaty provides a link to the Chicago Convention. The reverse being naturally impossible due to temporal constraints, it can be safely deduced that it would only be the Chicago Convention whose interpretation would be modified in view of the Outer Space Treaty, had a link existed, and not the other way around. Further, given the temporal scope of the VCLT itself and the nature of the systemic interpretation

[54] *Ibid.*

[55] Article 31 § 3 (a), (b) of the VCLT.

[56] Article 31 § 2 (a), (b) of the VCLT.

[57] Article 31 § 2 of the VCLT.

[58] *Application of the Convention of 1902 Governing the Guardianship of Infants (Netherlands v Sweden)*, Judgment, Merits, [1958] ICJ Rep. at 67; *Import Prohibition of Certain Shrimp and Shrimp Products*, India and others v United States, Report of the Appellate Body, WT/DS58/AB/R, (1999) 38 *ILM* 118, §§ 129-130, 153.

provision, it is doubtful that such an interpretation would be permissible in the first place under current international law.

As such, and in keeping with the principle of legal certainty recognized in the *ex iniuria non ius oritur* dictum, interpretations of the pertinent conventions in an impermissible manner or actions based thereupon cannot have a valid effect and must rather be treated as violations of law.

It should be further clarified that any discussion as to the future of any international instrument can only take place *inter partes*. This is a direct requirement of customary international law, as codified in article 34 of the VCLT. The essential consequence of this provision applied to the question at hand is that the only body with the competence to decide upon the potential amendment or termination of the Outer Space Treaty is none other than the assembly of the States parties to the Outer Space Treaty.

Admittedly, all States parties to the Outer Space Treaty are also States parties to the Chicago Convention. However, this partial tautology does not authorise the ICAO Assembly to become a forum for addressing amendments to the Outer Space Treaty or to rights and obligations of States arising from it. States non-parties cannot enter the conventional relation in any way that would affect the agreed upon rights and obligations of the States parties. To do so would be a breach of the *pacta tertiis nec nocent nec prosunt* principle,[59] and should thus be rejected by international law. This would be even more so the case if any such attempt were to originate from ICAO Council initiatives to amend the Chicago Convention Annexes.

In any event and as previously analysed, the lack of sovereignty in outer space is a peremptory rule of international law, which cannot suffer the imposition of a pre-made system

[59] Vukas B, Treaties, Third Party Effect, *Max Planck Encyclopedia of Public International Law*, available online at <www.opil.ouplaw.com>, § 2.

founded upon the exact antipodal principle. International jurisprudence supports this assertion. Not only are such intransgressible principles of international customary law[60] to be respected by all States, regardless of whether or not said States have ratified international instruments that contain them,[61] but also such principles are not to be derogated by either the Member States or the bodies of the UN.[62] Therefore, the proclamation of the ICTY that the UN Security Council is not *legibus solutus*,[63] "i.e. totally free to act on its unfettered political discretion",[64] but rather that it has to respect norms falling within the scope of Article 53 of the VCLT, is equally applicable with regards to ICAO and the question of territorial sovereignty or lack thereof in outer space.

Chapter Conclusions

From the foregoing, it can be deduced that a potential extension of ICAO's jurisdiction to cover issues relating to the operation of HASVs would not be in conformity with international law. The extension permissibility criteria extrapolated in previous pages of this Dissertation do not allow for similar considerations in the case of ICAO. In fact, if ICAO was to extend its jurisdiction over HASVs, either through the Annexes or even a proposed amendment to the Chicago Convention, without taking into consideration the provisions of the Outer Space Treaty, then, and to the best of this author's knowledge, this would be the first occasion that an

[60] *Nuclear Weapons Advisory Opinion*, *supra* note 37, § 79.

[61] *Ibid*.

[62] European Union Court of First Instance, *Yassin Abdullah Kadi v Council and Commission*, Case T-315/01, 21 September 2005, available at <http://europa.eu.int>, § 231.

[63] ICTY, *Prosecutor v. Dusko Tadić*, Decision on the Defence Motion for Interlocutory Appeal on Jurisdiction, ICTY Appeals Chamber, 2 October 1995, Case No. IT-94-1-AR72.

[64] Reinisch A., "Introductory Note to Court of First Instance of the European Communities: Yassin Abdullah Kadi v. Council of the European Union and Commission of the European Communities" (2006) 45 ILM 77-80 at 78.

international organization would extend its jurisdiction to a physical domain besides the one specifically identified in its constitutive instrument. Such an extension would be considerably different from that of the ITU, which at all times was mandated to handle radio frequencies and whose Constitution was amended to accommodate its involvement in outer space activities. However, an amendment to the Chicago Convention is not the most popular option from those suggested for ICAO to take over commercial space, preference being shown for solutions moving down the slippery slope of technocracy and the application of value free, purely scientific/technological fixes,[65] which, in this author's opinion, is wrong from primarily a legal, and secondarily a methodological perspective.

Additionally, the unfairness and disservice done to ICAO by suggesting it take jurisdiction over matters relating to outer space is equally noted. Such propositions are jeopardising ICAO's success in its role, which is directly derived from its constitutional document.[66] As analysed just above, intense and *de profundis* amendments of the Chicago Convention would be necessary, so as to satisfy the peremptory requirements of the Outer Space Treaty. This prospect would shake the system foundations and endanger ICAO's primary responsibility, i.e. the safety of international civil aviation. The irony of this outcome is inescapable.

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[65] Lacey H., *Is Science Value Free?* (London: Routledge, 1999); Cornwell J., *Hitler's Scientists: Science, War and the Devil's Pact* (London: Penguin, 2003).

[66] Andresen S. & Skaerseth J. B., "Can International Environmental Secretariats Promote Effective Cooperation?" in *Proceedings of United Nations University's International Conference on Synergies and Co-ordination between Multilateral Environmental Agreements, Tokyo 14-16 July 1999*, 2; Mouritzen H., *The International Civil Service: A Study of Bureaucracy* (Dartmouth: Aldershot, 1990); Sandford R., "International Environmental Treaty Secretariats: Stage-Hands or Actors?" in Bergesen H. O. & Parmann G., eds., *Green Globe Yearbook of International Co-operation on Environment and Development* (Oxford: Oxford University Press, 1994) 17-29; Yi-Chong X. & Weller P., *The Governance of World Trade. International Civil Servants and the GATT/WTO* (Cheltenham, UK: Edward Elgar, 2004).

While it is well understood that technological progress will eventually have impacts on aviation as the most efficient mode of transportation, it will not render it unfashionable or, even worse, obsolete in the (near) future. The international experience in the domain of the sea, especially considering the many aviation references to be found in the UNCLOS, attests to this assertion. Therefore, maintaining a healthy understanding of the underlying legal principles and needs of the industries in question can elucidate viable legal options and alleviate significant stress from Secretariats wrongfully put into survival mode.[67]

[67] For the role of Secretariats in international law-making, *see*: Bauer S., Busch P. O. & Siebenhüner B., "Treaty Secretariats in Global Environmental Governance" in Biermann F., Siebenhüner B. & Schreyögg A., eds., *International Organizations in Global Environmental Governance* (Oxford and New York: Routledge, 2009) 174-191 at 174; Mazower M., *Governing the World: The History of an Idea* (London: Penguin Books, 2013) at 144-145. With regards to the issue of creeping mission extension, leading to creeping jurisdictional expansions, also through the influencing of political decisions of States, *see*: Ostrower G. B., *The League of Nations: From 1919-1929* (Garden City Park, New York: Avery, 1996) at 96-98; Biermand F. & Bauer S., Managers of Global Governance. Assessing and Explaining the Influence of International Bureaucracies, *in* Global Governance Project, *Global Governance Working Paper Series No. 15*, Amsterdam, Berlin, Oldenburg and Potsdam 2005.

CHAPTER 2: THE (IM)POSSIBLE EVOLUTION OF SPACE SITUATIONAL AWARENESS INTO AN ALTERNATIVE MEANS TO REGULATE SPACE TRAFFIC: UNILATERAL AND COORDINATED ACTIONS

Chapter Introduction

In the previous sub-chapter, the practicable and legal impermissibility of extending ICAO's jurisdiction into outer space, through the adoption of a specialized Annex to the Chicago Convention or through a full scale amendment thereof, was analyzed and established. The conclusion drawn is that, as with any other international organization and if we are to abide by the rule of law, ICAO must remain within the strict confines of its given mandate and the corresponding interpretation thereof, namely the regulation of international civil aviation, as established through the acts of its Member States throughout the seven decades of its existence, at least 5 of which have coincided with the venture of Humankind into outer space.

Nevertheless, exclusion of ICAO as a possible and viable forum to regulate and administer space traffic, particularly that associated with the upcoming flights of HASVs, does not answer the pertinent question: who should do it and under what authority? An alternative option that could be tentatively explored and possibly proposed is that of the creation of a Space Situational Awareness Network, bringing together the National Space Agencies of various space faring States or other, private organizations with space situational awareness capabilities. With regards to that alternative and its viability as determined by international law, the following issues need to and will be examined in turn within the next pages:

First, a working, if not binding, definition of what is space situational awareness needs to be provided; second, the current working methodology of space situational awareness providers will be examined, be they National Agencies or private companies with relevant capacity; third, the

author will discuss the possibility of transfiguring space situational awareness into actual space traffic management. This discussion will be achieved through the examination of potential outcomes of two possible sub-options, with fairly parallel and equivalent legal and operational qualifications: the first option being the provision of space traffic management directions, in lieu of space situational awareness, from a National Space Agency, to national and third State users of outer space; essentially, it is a discussion concerning the possibility of exercising prescriptive jurisdiction with definite extraterritorial effects in the interest of the common interest by States having close, but not exclusive, ties to the situation under regulation.[1] The possible second option is the creation of a Network of Space Situational Awareness capable organizations and entities, which would collectively regulate and administer space traffic. These two options find themselves in conceptual succession, as the lawfulness of a major host of Network activities is predicated upon the lawfulness of corresponding unilateral acts of States, and given the existence of a legal framework regulating outer space, both would constitute attempts at normative modifications from within the law, leading to corresponding jurisdictional expansions in line with the universality principle.[2] Upon completion of this discussion, the conclusion of whether the creation and operation of such a Network is desirable, let alone permissible under international law, will be determined.

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[1] Ryngaert C., *Unilateral Jurisdiction and Global Values* (The Hague: Eleven International Publishing, 2015) at 10.

[2] The principle of universal jurisdiction has been primarily established and used for addressing international crimes, as defined in conventional and customary international law. It inherently possesses a negative normative approach, a punitive aspect. *See*: Zimmermann A., "Violations of Fundamental Norms of International Law and the Exercise of Universal Jurisdiction in Criminal Matters" in Tomushat C. & Thouvenin J. –M., eds., *The Fundamental Rules of the International Legal Order:* Jus Cogens *and Obligations* Erga Omnes (Leiden & Boston: Martinus Nijhoff, 2006) 335-354 at 351. The reverse aspect forms the central focus of this Dissertation, i.e. a regulatory, administrative approach to the universality principle.

1. A Working Definition Space Situational Awareness

As has already been mentioned in the overall Introduction, contemporary life is heavily-dependent upon the viability of the present space infrastructure, as space assets are now being used in wide range of activities, including but not limited to, telecommunications, Earth and weather monitoring, satellite navigation scientific research, military operations etc. Such is the importance of these space-based assets that States feel compeled to keep a watchful eye upon them, in order to safeguard the essential interests of their citizens that would be otherwise irreparably harmed. This anxiety was transformed into what is now known as "Space Situational Awareness".

Space Situational Awareness is not a term found in any of the international instruments forming the *corpus iuris spatialis*. As such, there is not an internationally agreed-upon definition that can serve as the foundation for the assumption of legally binding obligations. Rather, it is a term used at large by different players in the space industry, including national space agencies, space engineers, launch and satellite service providers, national militaries etc., each of which operates with a different understanding of the term.

For instance, the European Space Agency defines Space Situational Awareness as the ability to "autonomously detect, predict and assess the risk to life and property due to man-made space debris objects, re-entries, in-orbit explosions and release events, in-orbit collisions, disruption of missions and satellite-based service capabilities, potential impacts of Near-Earth Objects (NEOs), and the effects of space weather phenomena on space- and ground-based infrastructure".[3] Similarly, in the USA, the Joint Space Operations Center (JSpOC) of the US Air

[3] *See* European Space Agency (ESA) website at <www.esa.int/Our_Activities/Operations/Space_Situational_Awareness/About_SSA>. The European

Force has been given the broad task to keep track of object movement in outer space, whether manmade or not, and detect and react to possible threats to US space assets.[4] Another definition, this time drawn from the space civic community, is the one proposed by the Space Foundation, according to which Space Situational Awareness as "the ability to view, understand and predict the physical location of natural and manmade objects in orbit around the Earth, with the objective of avoiding collisions".[5]

It becomes evident from the examples supplied above that Space Situational Awareness concerns both civil and military space operators. When undertaken by national space agencies or space-related services, such as specialized task units within the armed forces, the focus is placed on the tracking and identification of threats to space assets of domestic interest, potentially with authority to take reaction measures. The range of what measures can be taken depends on the mandate and the technological capacities[6] available to the Space Situational Awareness service

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Space Situational Awareness program operates under the allocation of relevant authority by the ESA Member States to ESA, and is based on a "system of cooperation with European national and regional authorities, including ministries of defence, national space agencies and national research establishments, particularly those with existing ground- and space-based sensors".

[4] Gruss M. U.S. Plans $6 Billion Investment in Space Situational Awareness, *Space News* 19 October 2015, available online at < http://spacenews.com/planned-u-s-investment-in-space-awareness-is-6-billion-gao-says/>. According to this report, US Space Situational Awareness "infrastructure, consist[s] of some 375 sensors and systems owned by the military, civil agencies and the intelligence community. These include eight dedicated sensors, two of which are in space: the Space Based Space Surveillance Block 10 pathfinder satellite and the quasi-classified Advanced Technology Risk Reduction satellite launched by the Missile Defense Agency but transferred to Air Force Space Command in 2011".

[5] *See* Space Foundation website at <www.spacefoundation.org/programs/public-policy-and-government-affairs/introduction-space-activities/space-situational>.

[6] Technological capacities vary from among providers and mostly deal with the network of radars, sensors and satellite infrastructure used for objects tracking and monitoring. A key differentiating factor is the minimum size of trackable objects. The smaller the object the Space Situational Awareness provider is able to detect, the stronger its capacities are and the larger the number of objects monitored and range of activities ordered or warnings issued. As mentioned by Gruss, *supra* note 4, the JSpOC, acting unofficially as a space traffic controller, issued some 617,000 orbital collision warnings within 2014, as a result of the extensive space situational network at its disposal. It is not specified if recipients of these

provider, and would be most comprehensive when such provider engages is civil and military space assets and space activities coordination.

For the purposes of this Dissertation, a slightly modified version of the definition provided above by the Space Foundation seems most in order. As such, our working definition would provide that "Space Situational Awareness is the ability to monitor, track and predict the physical location and size of natural and manmade objects found in Earth orbit, or traversing orbits where manmade space assets are situated, or moving above the highest echelons of the Earth's atmosphere, as well as of other natural phenomena occurring in outer space which could affect any of the aforementioned activities, with the objective of avoiding collisions or harmful interferences to the usual operations of various space assets".

2. Current Space Situational Awareness Operations: Providers and Authorisation

Despite its substantial importance, Space Situational Awareness is currently the province of a disproportionally small number of means of surveillance monitored by a limited number of experts, the majority of whom are employed by or cooperating with the USAF JSpOC. As such, JSpOC has emerged as the global leader in the field, having compiled a list of approximately 10,000 space objects in orbit, including space debris and defunct space assets, which are under their surveillance. Nevertheless, such surveillance is neither continuous nor uniform, making this extensive catalogue inherently latent and a cause of uncertainty for space operators.[7] This is even more so the case for Space Situational Awareness providers whose analysts use statistical and

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warnings were non-American space asset operators. For a comprehensive analysis of the importance of advanced technological capacities for Space Situational Awareness, in particular as applicable to ESA, *see*: Bobrinky N. & Del Monte L., "The Space Situational Awareness Program of the European Space Agency" (2010) 48 Cosmic Research 392-398 at 393-394.

[7] Abbot R. I. & Wallace T. P., "Decision Support in Space Situtational Awareness" (2007) 16 Lincoln Laboratory Lab 297-335 at 297.

empirical observation data to predict the orbital paths of different space objects and deliver collision projection models and corresponding risk assessments and suggestions.

As previously mentioned, the most competent Space Situational Awareness providers would be those capable of coordination and control of both civil and military space assets. In this case, the analysed data and prediction models can provide sufficiently early warning for potential collisions, allowing the space operator to plan an effective manoeuvre strategy and risk mitigation techniques, thus prolonging the estimated satellite life and projected revenue generated by the space operation at hand.[8] However, when such analysis is undertaken by private companies, who do not have any kind of authority over the space assets in question but only consultative powers and who only receive aggregate data on space assets' orbital positions and monitoring for analysis and prediction of future locating of space assets, the situation becomes more complicated. Additionally, due to the lack of accurate monitoring capabilities of deep space, i.e. the Geostationary Orbit, prediction models of potential collisions in the GEO belt, where high-value space assets are situated,[9] are even harder. It should be noted that the GEO is an orbit of considerable space traffic, where satellites are "regularly launched into this belt, older satellites are retired, and others have prematurely died and are left to drift through the active satellite population".[10] Amidst all this activity, it is not impossible to lose track of a GEO satellite, which may require additional resources to be allocated so as to rectify the situation. It is understood that the creation of a Space Situational Awareness system with full-fledged and up-to-date technological capacity is of an absolutely prohibitive cost for any single State, potentially even as a cooperative effort.

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[8] *Ibid*., pp. 298.

[9] For the procedure used for the allocation of GEO slots to different States and uses of the radio frequency spectrum, see Part I of the present Dissertation.

[10] Abbot & Wallace, *supra* note 7 at 299.

Space Situational Awareness through aggregate data analysis is not a fail-proof process. It is the combined outcome of "orbit determination and maintenance techniques, which consists of four distinct stages: (1) tracking data, (2) force models, (3) an estimation theory that ties these components together to continually update the orbit state vector and propagate it into the future, (4) and error analysis".[11] Additionally, whereas hardware and software technology has by and large developed and new projection models[12] and analysis methods are available, they remain largely underutilized, even by the most SSA-capable States.[13] In practical terms, this means that most space asset operators are left in the dark with regard to objects in close proximity to their own, are not given accurate information on potential risks or are unable to properly estimate such risks and make sound and informed decisions with regards to their space assets.

The most characteristic such example is the previously mentioned Iridium-Kosmos collision.[14] In this particular instance, space situational awareness analysis had calculated a low, but still existing collision risk with the defunct Kosmos satellite. Whereas the telecommunications company Iridium was advised of that collision risk, the company's own analysts and decision-makers determined that the probability of collision was sufficiently low and that the odds of the collision being avoided were significantly in the company's favour. It is

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[11] *Ibid*., at p. 300.

[12] Hussein I. I., DeMars K. J., Erwin R. S. et al., An AEGIS-FISST Integrated Detection and Tracking Approach to Space Situational Awareness, *in 15th International Conference on Information Fusion (FUSION) 2012*, IEEE 2012, pp. 2065-2072, available online at < http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=6290554>.

[13] Weeden B., Cefola P. & Sankaran J., Global Space Situational Awareness Sensors, *in 2010 Advanced Maui Optical and Space Surveillance Conference*, Maui, Hawaii 2010, pp. 1-10, at p. 2, available online at <https://www.researchgate.net/profile/Brian_Weeden/publication/228787139_Global_Space_Situational_Awareness_Sensors/links/55267a050cf2628d5afdfe8b.pdf>.

[14] Weeden B., Billiards in Space, *The Space Review*, 23 February 2009, available online at <www.thespacereview.com/article/1314/1>.

not specified whether the company knew that the object in the potential collision course was a defunct satellite, or whether this knowledge was obtained *post factum*. As such, Iridium determined that the necessary collision avoidance manoeuvre that the satellite was technically equipped to perform would cause a significant depletion of the satellite battery, which would in turn reduce its estimated lifespan. Having perceived the collision odds as disproportionately low compared to the loss of revenue from the reduced life cycle of the satellite, Iridium was not moved and the collision eventually took place. It should be noted that throughout this scenario, the Space Situational Awareness analysts that had notified Iridium of the possible collision had no other means of action at their disposal, save perhaps but to notify the USA, as the appropriate launching State, of the situation and the possibility of a responsibility and liability factor at their hands. Even in that scenario though, it is unclear if the US authorities had sufficient time to compel Iridium to move the satellite, presumably under a domestically prescribed due administrative process.

3. A movement forward? From Space Situational Awareness to Real Traffic Management

The subsequent issue towards which our attention needs to be turned is whether a space situational awareness provider, be it either a National Agency or a private entity, can be transformed into an actual space traffic regulator and administrator. Fundamental elements of such a transformation are not only the actual operational capacities of each such provider (of which the author cannot have a complete and full overview), but most importantly, and possibly more directly within the overall scope of the present Dissertation, the requirements and restrictions placed by international law in the exercise of such capacities.

Examined in turn, as they are within a relationship of logical succession, the next pages cover the requirements and restrictions placed upon States in their independent regulation and administration of space traffic, before moving towards any further requirements and restrictions placed upon coordinated acts of States within the context of a Space Traffic Network.

a. Unilateral Acts of States with regards to Space Traffic Management

A clarification must be made upfront, before delving further into our analysis. The notion of "Space traffic" as used in the present chapter encompasses all space objects, and in particular HASVs for the purposes of the present Dissertation, operating at any given time in outer space, regardless of State of registry. As such, the associated discussion of regulation and management is conceptually wider than a simple question of navigational rights of a single State and its space objects as applicable in outer space, namely freedom of access and use. Rather, it is more a discussion of conflict of rights, whereby multiple qualitatively same freedoms could potentially clash.

There is little doubt that States are perfectly within their rights to regulate the movement of space objects found within their national registry through outer space; in fact, they are obligated under international law to do so, under Article VI of the Outer Space Treaty. The crux of the argument is whether they can extend their jurisdiction and regulate the movement of third State space objects in a similar way. The answer to this question is only in the negative. Unless a State is considered an appropriate Launching State,[15] no other State may exercise any kind of jurisdiction over its space objects. To do so would be a direct violation of international law, namely Articles I (freedoms of outer space), II (non-appropriation of outer space, since

[15] This characterization derives from a combined reading of Article VI of the Outer Space Treaty, along with Article I of the Liability Convention and/or Article I of the Registration Convention.

exercising any kind of jurisdiction would assume some form of territorial right), VI (jurisdiction and control of space objects) and possibly VIII (perpetual ownership of space objects) of the Outer Space Treaty.

This much holds true, *a fortiori*, for private companies who may have the capacity to provide space situational awareness services. Indeed, as has already been demonstrated, notifications issued by said providers are only of a consultative nature, especially if addressed to States other than that of their proper place of incorporation. It remains at all times a State's prerogative whether to comply with suggestions of a space situational awareness provider, as, at the end of the day, it is always the Launching State that bears international responsibility[16] and/or liability[17] for any accident caused by its space objects.

In practical terms, and if we were to examine a slightly modified Iridium-Kosmos collision scenario, so as to fit the context of this Dissertation, a space situational awareness provider of State A cannot exercise any kind of authority, so as to force a HASV of State B to move in a specific way within the vacuum of outer space, even if by its movements it is endangering the operation of a HASV (or space object) of State A, let alone of State C. The only permissible authoritative action in this scenario is to order, where possible, an adjustment in the course of the State A HASV (or other space object). Notifications towards States B and C, while welcome and possibly even a manifestation of international cooperation in outer space, as per Article IX of the Outer Space Treaty, should neither be considered authoritative nor *ab initio* mandatory, as depending on the scenario at hand, there may not be sufficient time to issue the necessary adjustment orders corresponding to them.

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[16] Article VI of the Outer Space Treaty.

[17] Article VII of the Outer Space Treaty, and the provisions of the Liability Convention where and as applicable.

Assuming however that individual States performed actions of cosmopolitan jurisdiction, there are no guarantees regarding the non-eventuality of potentially overlapping, or worse, conflicting orders.[18] For instance if, in the previously elaborated scenario, State A actually engaged in the issuance of a traffic management order towards the HASV of State B, there is nothing to preclude State D, which is also unilaterally acting as a space traffic manager, from issuing a conflicting order. The endangerment of the safety of the HASV, as well as other space assets in its vicinity, is obvious, and in the event of an accident, issues of accountability as well as exacerbation[19] of the space environment "tragedy of the commons"[20] would become centre-stage. So would the non-intervention concerns in what is at heart an egalitarian structure of principles,[21] this time as applicable to the sovereign freedom of States to freely use, explore and exploit outer space without distinctions or impediments, by being guaranteed and exclusively

[18] Ryngaert, *supra* note 1 at 27.

[19] *See* also: Caney S., *Justice Without Borders: A Global Political Theory* (Oxford: Oxford University Press, 2005) at 175, where he argues that insistence on self-regulation by States is at the core of the exacerbation of collective action problems of global importance.

[20] For the development of the "tragedy of the commons", see the seminal analysis of Hardin, whereby he examines negative externalities of the unregulated usual outcomes of independently taken decisions of stakeholders with regards to the use of a common resource, partially disproving the "invisible hand" positive outcomes of Adam Smith. As such, individually rational behaviours, when taken collectively, can lead to irrational results. Hardin G., "The Tragedy of the Commons" (1968) 162 Science 1243-1248; Whitehead A. N., *Science and the Modern World* (New York: Mentor, 1948) at 17; Smith A., *The Wealth of Nations*, (New York: Modern Library, 1937) at 423. Outer space is also demonstrating elements of the tragedy of the commons, due to the independently sound and permissible actions of States in outer space, stemming from the Outer Space Treaty freedoms, but collectively irrational use of the shared navigable domain, through the creation of exponentially growing numbers of in orbit space objects, including space debris. For more information on this issue and its impact on day-to-day space activities, *see*: Kessler D. J & Cour-Palais B. G., "Collision Frequency of Artificial Satellites: The Creation of a Debris Belt" (1978) 83 Journal of Geophysical Research 2637-2646; Liou J.-C. & Johnson N. L., "Risks in Space from Orbiting Debris" (2006) 311 Science 340-341; Kessler D. J., "Sources of Orbital Debris and the Projected Environment for Future Spacecraft" (1981) 16 Journal of Spacecraft 357-360.

[21] Wallerstein I. M., *European Universalism: The Rhetoric of Power* (New York: The New Press, 2006) at 28.

mandated to supervise their own space assets.[22] Such a bypassing of existing institutional and jurisdictional solutions is not permissible under international law, which is still and above all a consent-based system.[23]

b. Coordinated Acts of States within a Context of a Space Traffic Network

The subsequent question thus is: where unilateral acts of States are not permissible under international law, and more specifically, where the exercise of Space Traffic Management cannot be undertaken by States acting independently and in-discriminatively towards HASVs (or other space objects) of third States, is it possible that coordinated actions of a group of States may be treated differently in international law?

It could be argued that coordinated, but essentially still unilateral acts of States operating within the context of an informal network could prove beneficial for the furtherance of global interests, by creating sufficient momentum and bringing attention to the issue at hand, so as to expedite the adoption of an appropriate, multilateral, international solution.[24] This pressure would presumably be felt more intensely by opponents[25] of global governance solutions,[26] as these directly conflict with their narrowly-defined, domestic interests[27] or upset their consequence-free exploitation of positive externalities generated by the acts of others. It is not clear however if the same results would be achieved when the only States that could form some

[22] Articles VI and VIII of the Outer Space Treaty.

[23] Ryngaert, *supra* note 1 at 29.

[24] Ryngaert, *supra* note 1 at 31.

[25] Fuller R. B., *Critical Path* (London: Hutchison, 1983) at 217.

[26] For an analysis of "global governance" as a *terminus technicus*, *see:* Reisman M. W., "The Quest for World Order and Human Dignity in the Twenty-First Century: Constitutive Process and Individual Commitment" (2012) 351 Recueil des cours pp. 9-382 at 234.

[27] Benvenisti E., "Sovereigns as Trustees of Humanity: On the Accountability of States to Foreign Stakeholders", (2013) 107 American Journal of International Law 295-333 at 326.

kind of informal network with the intention to exercise cosmopolitan jurisdiction for the benefit of others are exactly those States that are opposing global solutions by barricading themselves behind their independent national interests.

However, even if such coordinated unilateral actions were to be considered acceptable as the necessary means to protect shared values[28] of the international community,[29] or even a global commons,[30] the lack of binding effect on non-participating States and of enforceability cannot be used for an accurate invocation of international responsibility[31] of these non-participants, in the event of adverse situations. In the initial version of our modified Iridium-Kosmos scenario, replacing State A as the unilaterally acting space traffic management provider with Space Situational Awareness Network of coordinated actions of States A, D and M, would still produce the same results with regards to navigational orders issued towards a HASV registered under non Network participant State B. The level of technological development and corresponding capacities of the Network, presumably of considerable heft given the industry under discussion, is irrelevant for the vesting with legitimacy of its actions, which despite possibly being *de lege artes*[32] would nevertheless remain legally indifferent, if not outright unlawful.

Indeed, even if the Network in our example was composed by technologically and financially less adept States, the normative outcome would not change. The noted tendency in the international law and relations arena is, however, that initiatives similar to the one described in

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[28] Pierik R. & Werner W., "Can Cosmopolitanism Survive Institutionalization?" in Pierik R. & Werner W., eds., *Cosmopolitanism in Context: Perspectives from International Law and Political Theory* (Cambridge: Cambridge University Press, 2010) 277-289 at 286.

[29] Addis A., "Community and Jurisdictional Authority" in Handl G., Zekoll J. & Zumbansen P., eds., *Beyond Territoriality: Transnational Legal Authority in an Age of Globalization* (Leiden & Boston: Martinus Nijhoff Publishers, 2012) 13-33 at 20.

[30] Hardin, *supra* note 20 at 1248.

[31] Ryngaert, *supra* note 1 at 43.

[32] Ryngaert, *supra* note 1 at 49.

the example above are most commonly undertaken by developed States, even under a notion of obligations imposed upon them internationally.[33] This tendency brings with it an undercurrent of instinctual mistrust and recoiling from the other members of the international community,[34] who are usually more sensitive towards perceived attempts of normative imperialism,[35] rather than being convinced of the possibly benign intensions of their stronger counterparts. An assessment of how genuinely oriented towards the promotion of global, rather than arbitrary domestic interests,[36] such intensions are, can be concluded upon considering whether the global interests in question form the subject matter of internationally binding safeguarding obligations,[37] leading to a governance understanding of 'unilateral normative power for Humanity's sake'.[38]

It should be further noted that, given the high costs associated with the provision of Space Situational Awareness services as analysed above, it is doubtful that such services would be provided by the suggested Network *ex gratia* for long (if ever at all), as this would place an undue burden on the public administration and budget of the Network member States.[39] On the

[33] Coombes K., "Universal Jurisdiction: A Means to End Impunity or a Threat to Friendly International Relations" (2011) 43 George Washington International Law Review 419-466 at 457.

[34] Krisch N., "The Decay of Consent: International Law in the Age of Global Public Goods" (2014) 108 American Journal of International Law 1-40 at 31.

[35] Raustiala K., *Does the Constitutions Follow the Flag? The Evolution of Extraterritoriality in American Law* (Oxford: Oxford University Press, 2009) at 224.

[36] Colangelo A. J., "A Unified Approach to Extraterritoriality" (2011) 97 Virginia Law Review 1019-1109 at 1107.

[37] Ryngaert, *supra* note 1 at 55.

[38] Howse R. & Teitel R., "Does Humanity-Law Require (or Imply) a Progressive Theory of History? (and Other Questions for Martti Koskenniemi)" (2013) 27 Temple International & Comparative Law Journal 377-397 at 396.

[39] The concept of "offer and consideration" is not foreign in international law, even in issues of common interest. In fact, as Stoll notes "the legal framework of international trade offers rich insights into the ideas of reciprocity and common interest. It appears to be driven by pure self-interest, where States act like accountants and seek any possible advantage in the sense of a strict *quid pro quo*". Stoll P. -T., "The World Trade Organization as a Club: Rethinking Reciprocity and Common Interest" in Fastenrath U.,

other hand, it is equally doubtful that third States that may be recipients of Space Situational Awareness data, aggregate or analyzed, will be keen on paying for receiving such information, especially if done so unilaterally by the Network members. Unlike what is currently applicable to transportation by air, where air navigation fees are part and parcel of (bilateral) air transport agreements, i.e. fees are paid by the airlines incorporated in the territories of the contracting States as a result of a consent-based system, the unilateral imposition of space traffic management fees, aiming at recovering expenses performed by the Network for the provision of services, would be in direct conflict with Article I of the Outer Space Treaty, as it would place an undue monetary burden on the common interests and rights of States vis-à-vis the outer space freedoms, possibly at the exclusion of the financially weaker.[40] With no legitimate cost-recovery mechanism available and no consent granted by other States for its operation, any such Network would only be able to provide services and issue traffic management directives exclusively with regards to HASVs and generally space assets of its own member States, but not regarding those of third States. Any attempt in the opposite would be in violation of international law, and in particular of norms which have attained the status of *ius cogens*.[41]

Geiger R., Khan D.-E., Paulus A., von Schorlemer S. & Vedder C., eds, *From Bilateralism to Community Interest, Essays in Honour of Judge Bruno Simma* (Oxford & New York: Oxford University Press, 2011) 172-183 at 172. In an economic analysis of law approach, perhaps with a strong dose of *Realpolitik* considerations, Guzman observes that "States will only cooperate when doing so increases their own payoffs". Guzman A. T., *How International Law Works: A Rational Choice Theory* (Oxford: Oxford University Press, 2008) at 17.

[40] *Ibid*., p. 174, where Stoll provides a Simma inspired understanding of 'community interest' i.e. "a consensus according to which respect for certain fundamental values is not to be left to the free disposition of States individually or *inter se* but it is recognized and sanctioned by international law as a matter of concern to all States". *See*: Simma B., Reciprocity, *in Max Planck Encyclopedia of Public International Law*, available online at < www.opil.ouplaw.com>, §6.

[41] For the analysis regarding the *ius cogens* nature of the outer space freedoms as read together with the non-appropriation principle refer to Part I, Chapter 2 of this Dissertation. These conclusions being

Chapter Conclusions

This Chapter presented and critically analysed an alternative solution to the issue of space traffic administration, following the rejection of ICAO as an appropriate forum. It concentrated on Space Situational Awareness as understood by the most prominent space faring States and space operators and examined the way Space Situational Awareness methodology is utilized for current space operations. With these findings in mind, two possible scenarios were explored in turn: first, independent acts of States performed in a Space Situational Awareness provider capacity; and second, coordinated acts of States in the same vain performed within the context of an informal, coordinated Network of activities.

In conclusion, it may be argued that the international community should welcome unilateral acts of States, either individual or perhaps through informal networks of coordination, which take upon themselves the role of promoting global interests, even by investing their own resources to the cause without (sufficient) consideration. However, this argument is more policy-oriented rather than legal, and demonstrates a normative "should be" rather than a normative "is".[42] International law, reverting to its Westphalian origins, still emphatically requires the consent of the States involved in any activity at hand, especially in the cases of normative modifications from within.

The potential creation of a Space Situational Awareness Network of coordinated unilateral activities of States with relevant technological capacities, would in fact constitute a normative modification from within. It would require the consent of States, and in this particular case of all

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informed by a positivist approach to international law, the remarks of Ryngaert, *supra* note 1 at 61 regarding customary law crystallization are *a fortiori* applicable here.

[42] Ryngaert, *supra* note 1 at 59.

States, in keeping with the all-inclusive spirit[43] of the Outer Space Treaty, to be vested with international legitimacy. It is doubtful if such consent will be given in this particular context, as the exercise of unilateral jurisdiction in outer space over space objects of third States directly conflicts with crystalized norms, some of which have attained *ius cogens* status. As such, it is the contention of this author that the creation of a Network of States with Space Situational Awareness capacities is not a viable alternative for the governance of space traffic management as it does not present strong tethers to the *lex lata* of outer space and should thus be rejected.

It therefore appears that a different, international approach is necessary for addressing the tragedy of the commons in outer space, at least with regards to traffic administration. As Bryde suggests "the core of a new conception of international law appropriate for the challenges of the 21st century is the acceptance of a common interest of Mankind that transcends the sum of State interests".[44] In fact, Bryde goes so far as to suggest that for issues recognized as of paramount global significance "all actors of international law [should be] obliged to pursue a global policy programme".[45] This would also be in line with Judge Gonthier's words, whereby "human activity in a society is determined and framed by its governance. Law is the ordering of and an

[43] Since the Outer Space Treaty guarantees access to the benefits of space use, exploration and exploitation equally for all States, and not just the States Parties thereto, without placing any other qualification, States have equal normative interests in the domain of outer space, regardless of the number of space assets carried within their registries found in orbit. Unlike other areas of interest to international law, whereby discovering a link with the activity under examination gives increased interest to the State(s) acting unilaterally, thus potentially recognizing them as rightful administrators of cosmopolitan jurisdiction (see Ryngaert, *supra* note 1 at 90), in outer space *all* States have the exact same nexus of interest, just out of the mere existence of outer space and themselves.

[44] Bryde B. O., "Transnational Democracy" in Fastenrath U., Geiger R., Khan D.-E., Paulus A., von Schorlemer S. & Vedder C., eds, *From Bilateralism to Community Interest, Essays in Honour of Judge Bruno Simma* (Oxford & New York: Oxford University Press, 2011) 211-223 at 212.

[45] *Ibid*., at p. 213.

instrument of governance".[46] As such, we need law to address the boundaries of those societal systems of human activity that can be identified within the outer space context, such as economy, technology and science, in a way that transcends the strict boundaries of States and places them beyond the exclusive control of the national law-maker.[47] The identification of the appropriate legal solution and the delimitation of its foundational boundaries form the subject of the next Chapter.

[46] Gonthier C. J. D., "Sustainable Development and the Law" (2005) 1 The McGill International Journal of Sustainable Development Law and Policy 11-18 at 11-12.

[47] Luhmann N., "Die Weltgesellschaft" (1971) 57 Archiv für Rechts- und Sozialphilosophie 1-35; Bryde, *supra* note 43 at 214.

CHAPTER 3: AN INTERNATIONAL SPACE TRAFFIC CONTROL AUTHORITY: INNER AND OUTER LIMITS OF JURISDICTION

Chapter Introduction

It has already been established that ICAO is an inappropriate forum to regulate HASVs and that States are not allowed to authoritatively administer space traffic of space objects, including HASVs, other than their own, either acting independently or within the context of a coordination network. As it therefore becomes evident that a brand new international, intergovernmental organization is necessary, it will be required therefore to set a mandate for this new function.[1] In fact, this new, highly technical international organization should be expected to operate under a mandate fulfilling two distinct fanctions, those of space traffic administrator and of developer of international rules and regulations: first, it should be granted authority to exercise effective space traffic control and provide space traffic navigation services for the hybrid aerospace vehicles. And second, it would have to develop and supervise the application of pertinent safety standards for the HASVs.[2] By fulfilling both of these functions, the proposed organization would safeguard

[1] Filho J. M., "Which Institutions for Space Traffic Management?" (2002) 18 Space Policy 179-182 at 180.

[2] Whereas international organizations most usually only act under a single function, namely that of an international regulatory body, as is the case with most existing intergovernmental organizations, such as ICAO discussed previously, there are examples of international organizations or organs thereof performing more than just the function of being a discussion forum for their Member States. Such organizations possess mandates, provided by their Member States in their constitutive instruments, allowing for a multi-tiered discharge of their functions. It could be argued that when such is the case, and a combination of political/regulatory and executive/administrative functions are granted to an international organization, we may be faced with an element of "hybridity". The most prominent such example is none other than the UN Security Council. Indeed, when acting under its Chapter VII capacity, the Security Council is acting as both an international regulator/law-maker, whose decisions are binding upon the UN Member States pursuant to Article 103 of the UN Charter, but also as the international executive/administrator, under whose command collective security and other measures are taken, implemented and monitored. This much holds true for both forceful and non-forceful measures, such as

the safe and orderly intersection and integration of three distinct activities: air transportation as currently performed by aircraft, space exploration and exploitation as currently performed by orbiting space objects, and space transportation as expected to be performed by HASVs. As such, two limitations will be discussed in this chapter. First, the topological limits of the mandate

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the authorization to coallitions of "able and willing" to intervene in cases of conflict for the maintenance of international peace and security, the dispatch of peacekeeping forces in areas where it has been so deemed necessary, or even most recently, the creation, update and review of the so called "black-lists" for the prevention of funding international terrorism and the setting up of international or special criminal tribunals. Under all these circumstances, the Security Council as a principal organ of the United Nations is simultaneously acting as both the law-maker and the administrator of subject matters falling within the scope of its mandate, namely the maintenance of international peace and security, and in manner that takes precedence, if not exclusivity, over any other arrangements of the Member States. *See* indicatively relevant Security Council Resolutions: S/RES/661 (1990), *The Situation between Iraq and Kuwait*; S/RES/665 (1990), *The Situation between Iraq and Kuwait*; S/RES/808 (1993), *International Criminal Tribunal for the former Yugoslavia (ICTY)*; S/RES/955 (1994), *Establishment of the International Criminal Tribunal for Rwanda (ICTR) and adoption of the Statute of the Tribunal*; S/RES/1244 (1999), *Kosovo*; S/RES/1373 (2001), *Threats to international peace and security caused by terrorist acts*; S/RES/1757 (2007), *Middle East – Establishment of a Special Tribunal for Lebanon*; S/RES/1996 (2011), *Reports of the Secretary-General on the Sudan – Establishment of the United Nations Mission in the Republic of South Sudan (UNMISS)*. It should be particularly noted that S/RES/1244 (1999) on Kosovo provides the mandate for the establishment of the United Nations Interim Administration Mission in Kosovo, the duties of which are found in §9 and include, among others, such administrative duties as "ensuring public safety and order" and "conducting border monitoring duties as required".

Similarly, the European Union, which has been recognized as an international organization following the entry into force of the Lisbon Treaty on 1 December 2009 (Treaty of Lisbon amending the Treaty on European Union and the Treaty establishing the European Community, 13 December 2007, [2007] OJ C 306 (entered into force 1 December 2009) [henceforth Lisbon Treaty]), and its organs are also acting under a multi-tiered functions mandate, operating under the principles of conferral (Article 3*b* §1 of the Lisbon Treaty, first sentence, with regards to competences), and subsidiarity and proportionality (Article 3*b* §1 of the Lisbon Treaty, second sentence, with regards to use of the conferred competences). As such, the EU can act as both legislator and administrator of subject matters conferred to its jurisdiction, with the Member States having an obligation to take appropriate measure necessary to "ensure fulfilment of the obligations arising out of the Treaties or resulting from the acts of the institutions of the Union" (Article 3*a* §3 of the Lisbon Treaty). For more information on the "Community method" *see infra* footnote 119. In the same vein, and pursuant to Article 19 §1 of the Lisbon Treaty, the CEU has declared its exclusive jurisdiction on the issue of the interpretation of EU law and the compatibility of any other obligations the EU Member States have with it, at the exclusion of other international organizations and/or organs. *See* indicatively ECJ Case 314/85 *Foto-Frost v Hauptzollamt Lübeck-Ost.*, [1987] ECR 4200.

See also infra, pp. 203 *et seq*.

of this international regulatory body, the very "territorial" scope of its jurisdiction (outer limits). And second, the limitations to be placed, if any, in the ability of this international regulatory body to exercise actual traffic control, vis-à-vis the concept of State sovereignty and its core position in the law of international organizations as it currently stands (inner limits).

1. The Domain and the Activity: The Outer Limits of Jurisdiction of the International Space Traffic Control Authority

As we are moving closer towards the establishment of routinized space transportation, as well as industrial and other space habitats, the re-examination of sovereignty and sovereign rights in outer space is much needed.[3] In particular, the distinction between abolition of sovereignty that is tantamount to non-appropriation on the one hand[4] and the exercise of sovereign rights over space objects, as mandated by the Outer Space Treaty,[5] on the other needs to be clarified, in view of the proposed functions of the International Space Traffic Control Authority.

a. Space transportation as a field receptive of international regulation

As Klabbers points out, international organizations are not by default "the harbingers of international happiness, embodying a fortuitous combination of our dreams of 'legislative reason' and the idea that everything international is wonderful precisely because it is international".[6] Nevertheless, in matters of international significance, the solution of a governing

[3] Gorove S., "Sovereignty and the Law of Outer Space Re-Examined" (1977) 2 Annals of Air and Space Law 311-322.

[4] Adams T. R., "The Outer Space Treaty: An Interpretation in Light of the No-Sovereignty Provision" (1968) 9 Harvard International Law Journal 140-157.

[5] Articles VI and VIII of the Outer Space Treaty.

[6] Klabbers J., "The Life and Times of the Law of International Organizations" (2001) 70 Nordic Journal of International Law 287-317 at 288.

international organization has at all times been considered as the most viable option. The creation of the International Labour Organization, for instance, was explained under the concept that "labour itself is an international force. Scarcely any nation at the present time provides from its own population all the labour forces of which it is in need. More or less permanent migrations of labourers from country to country take place at all times. The supply of labour therefore is international in scope and calls for international control".[7]

In much the same reasoning, transportation between States, and even more so, between two different navigable domains, is also international in scope and calls for international control. Therefore, the affirmation of the need of law to precede man into space emerges once again.[8] And this emergence comes contrary to the misconception that the nascent aerospace industry is primarily addressed to the daredevils, visionaries and adventurers;[9] while their existence is undoubtedly useful and necessary to bring about technological and other developments, using them as an excuse to reject international regulation generating legal certainty, in the same fashion as with adventure travelling,[10] is not a viable option. On the contrary, private, non-State actors should be recognized as having an increasingly important role in providing incentives for normative progress. As per Benedek this is not necessarily "an erosion of the State,[11] but rather complements the policy of the State which is usually focused on national interest while non-State

[7] Reinsch P. S., "International Administrative Law and National Sovereignty" (1909) 3 American Journal of International Law 1-45 at 4.

[8] Haley A. G., "Space Age Presents Immediate Legal Problems" (1959) 1 Proceedings of the Colloquium on the Law of Outer Space 5.

[9] Hughes T. R. & Rosenberg E., "Space Travel Law (and Politics): The Evolution of the Commercial Space Launch Amendments Act of 2004" (2005) 31 Journal of Space Law 1-80 at 46.

[10] Knutson T., "What is "Informed Consent" for Space-Flight Participants in the Soon-to-Launch Space Tourism Industry?" (2007) 33 Journal of Space Law 105-122 at 109.

[11] Benedek W., "Auswirkungender Globalisierung auf die Staatlichkeit Folgen für die Menschenrechte und Staatlichkeit" (2007) 1 Zeitschrift für Menschenrechte 21-38 at 21.

actors usually represent either public interests or business interests thus reflecting international realities".[12]

This rift with regards to the utilization of space innovators as incentives for normative progress becomes apparent when considering the diverging views of primarily American and European regulators and industry representatives: while the former wish to refrain from any sort of regulation discussion, the latter are insisting on the value of a regulatory framework.[13] The discussion seems side tracked by the developments in the field of civil aviation, were stringent regulations are currently in place. The impasse reached is yet another demonstration of how independent jurisdictional claims over matters of global interest, where severability of ownership over said interests is not permissible, are leading to reduced global welfare.[14] However, between non-regulation or the prospect of eventual industry self-regulation on the one hand, and the prospect of absolute regulatory rigidity on the other, there must be a point where both sides can agree that not so onerous or burdensome regulations allowing the flowering of the aerospace industry can be accepted.[15]

This median level of regulation[16] can be achieved through the cooperation of States in the form of an International Space Traffic Control Authority. International space law, as it currently

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[12] Benedek W., "Multi-Stakeholderism in the Development of International Law" in Fastenrath U., Geiger R., Khan D.-E., Paulus A., von Schorlemer S. & Vedder C., eds, *From Bilateralism to Community Interest, Essays in Honour of Judge Bruno Simma*, (Oxford – New York: Oxford University Press, 2011) 201-210 at 202.

[13] Presentations of ICAO/UNOOSA Aerospace Symposium, Montreal 18-20 March 2015, available online at < www.icao.int/meetings/space2015/Pages/default.aspx>.

[14] Kontorovich E., "Inefficiency of Universal Jurisdiction" (2008) 60 University of Illinois Law Review 389-418395.

[15] Scott R. W. (Jr), "Policy/Legal Framework for Space Tourism Regulation" (2000) 28 Journal of Space Law 1-11 at 4.

[16] The exact determination of this median level of regulation can be achieved by using the Ostrom criteria regarding development and implementation of regulations that satisfactorily address the tragedy of

stands, justifies that both the domain and the particular activity be placed under the functional, jurisdictional control of the Authority, for a series of reasons. Whereas the analysis of the subsequent pages focuses primarily on HASVs, the arguments, legal and otherwise, articulated therein are equally applicable to traditional space objects. Should States ever wish to incorporate

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the commons. Her hypothesis about open access regimes where users are individually appropriating a common-pool resource, due to the lack of monitoring resources, is particularly fitting for outer space. Ostrom defined a common-pool resource as "a natural or man-made resource from which it is difficult to exclude or limit users once the resource is provided, and one person's consumption of resource units makes those units unavailable to others"; indeed, this definition can be applicable to outer space, in the sense that exclusion of users is impermissible under space law and the use of orbital slots and associated frequencies by a State prevent use of others. The differentiating factor with regards to space is the impossibility of appropriation, in the same way that removal of units from fisheries actually denotes ownership over the units removed, whereas use of an orbital slot does not and cannot (which also justifies the non-application of the "tragedy of the anti-commons" analysis). Through her experiments Ostrom came up with four different kinds of regulation that seem to satisfactorily address the tragedy of the commons. She maintained that boundary rules can affect the conduct of users of a commons: the stricter and the more exclusive the access to the common-pool resource, the greater the interest of the user to maintain in good standing with his peers and the chances of the sustainable use of the commons. Similarly, the imposition of authority rules regarding the resource, potentially in combination with boundary rules, can help safeguard it. Alternatively, the adoption of payoff and position rules, including the possibility of fining for the misuse of the resource, the loss of appropriation rights to the resource and even incarceration, have been found to be effective in reducing or redirecting appropriations. The last set of rules acts complementarily to the previous three and consists of rules regarding changes in information, scope and aggregation. Ostrom contended that the application of a sole set of rules is not likely to improve performance with regards to resource appropriation; however, the combined application of sets, especially boundary and authority, each including considerable variations, make for a marked difference. Her findings inform the proposed creation of the International Space Traffic Control Authority, particularly with regards to the combination of regulatory sets.

See: Ostrom E., "Coping with Tragedies of the Commons" (1999) Annual Review of Political Sciences 493-535 at 495, 497 (regarding common-pool resource definition and lack of monitoring mechanism), pp. 511-519 (regarding the elaboration of the sets of regulation criteria); Arnold J. E. M., *Managing Forests as Common Property*, UN Food and Agriculture Organization, Rome 1998, Forestry Paper No. 136; Arnold J. E. M. & Stewart W. C., *Common Property Resource Management in India*, Oxford Forestry Institute, Oxford 1991, Tropical Forestry Paper No. 241991. For the "tragedy of the anti-commons" *see*: Heller M. A., "The Tragedy of the Anticommons: Property in the Transition from Marx to Markets" (1997-1998) 111 Harvard Law Review 621-688; Dagan H. & Heller M. A., "The Liberal Commons" (2001) 110 Yale Law Journal 549-623; Coase R. H., "The Problem of Social Cost" (1960) 3 Journal of Law and Economics 1-23; Chang Y., "Tenancy in "Anticommons"? A Theoretical and Empirical Analysis of Co-Ownership" (2012) 4 Journal of Legal Analysis 515-553.

them within the ambit of the proposed International Space Traffic Control Authority's jurisdiction would only be a question of permissible, evolutionary interpretation of and/or of State practice subsequent to the international agreement establishing the proposed Authority.

In a true application of the functionalist approach, Gorove suggested that if a HASV has "the primary purpose of operating as an aircraft engaged in earth-bound transportation and only incidentally reaches the fringes of outer space, air law should be applicable to it".[17] He went on to state that rules of the road relevant to space should be expected to be complied with during that incidental venture into outer space.[18] Both of these pronouncements also hold true if applied in the reverse. If a HASV has the primary purpose of operating within outer space and only utilizes airspace in the process of reaching outer space, then space law should be applicable to it. Similarly, the rules of the road relevant to airspace should be expected to be complied with during the temporary transit through the airspace, keeping in mind however the potential exceptions applicable to State craft.

"It would seem that international institutions and the legal and extra-legal tenets that they are meant to promote, are being increasingly questioned by States who claim that these institutions do not represent their self-interest and in fact threaten their ability to be autonomous self-directed entities."[19] The proposed International Space Traffic Control Authority can also help States fulfil their conventional obligation to ensure that the legitimate rights of other States in outer space are not infringed by acts or omission relating to the operation of a HASV and/or its personnel and

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[17] Gorove S., "Aerospace Object – Legal and Policy Issues for Air and Space Law" (1997) 25 Journal of Space Law 101-112 at 106.

[18] *Ibid.*

[19] Brown G. W., "The Idea of Autonomy: Accountability, Self-determinism and what Normative Claims about Institutional Autonomy in Global Governance Should Mean" in Collins R. & White N. D., eds., *International Organizations and the Idea of Autonomy: Institutional Independence in the International Legal Order* (London and New York: Routledge, 2011) 104-119 at 107.

passengers. The International Space Traffic Control Authority can be the intermediary and collective supervisor guiding the flight paths of HASVs. Its authority would not extent to the craft itself, thus abiding with the obligation to refrain from interfering with the control of the mission;[20] on the contrary, the authority it is vested with is with regards to the domain, exercised in the name of the collective of States. In this light, indications of pathways to be used do not prevent the State from exercising control over the HASV, in case the latter is classified as a space object, because the actual handling of the vehicle will at all times be supervised by or remain in the hands of the appropriate State. Such indications can be perceived as "rules of the road determining movements that may be relatively safe as regards one another", and being "mutually advantageous" should be easily accepted by all, as was also the case in the early years of aviation.[21]

In fact, provisions of the Outer Space Treaty itself demonstrate in the most patent fashion that space transportation is indeed inherently receptive of international regulation. More specifically, Article IX of Outer Space Treaty demands that States undertake international consultations, either of their own initiative or following the request of a third State, with regards to space activities that might harmfully interfere with those of other space faring nations, in violation of the rights and freedoms accorded to them by the Treaty. As already explained in Part I of this Dissertation, constant orbital movement is the *conditio sine qua non* of any space activity or experiment undertaken to the present. Movement is, in fact, a matter of inevitability when in outer space. Even for activities like the ones envisioned for the first stage of space transportation, what is perceived as static hovering in outer space is not an accurate reflection of the planned

[20] Catalano Sgrosso G., "Legal Status, Rights and Obligations of the Crew in Space" (1998) 26 Journal of Space Law 163-186 at 179.

[21] Grafton Wilson G., "International Law of Air Navigation" (1932) 26 American Society of International Law Proceedings 207-212 at 208.

operation of HASVs. Movement in outer space, however temporarily minimal, is and will be involved. As such, the international consultations of Article IX of the Outer Space Treaty incorporate in their scope the regulation of movement through outer space, verifying that international space transportation is indeed receptive of international regulation. Granted, for the movement control of Article IX to be allocated to the proposed International Space Traffic Control Authority, a permanent case of potentially harmful interference with the rights and freedoms of other States would have to be made. While it seems farfetched that such interference could occur during the initial stage of operation of the space transportation industry, odds of a HASV getting dangerously close to the launch trajectory of a traditional space object cannot be outright excluded, especially if HASV and space object belong to different States, and given the current lack of formalized incoming, transiting and outgoing space traffic control. If these conditions are left unchanged, the situation is only bound to aggravate, as the improvements in space transportation technology will soon allow for more frequent, more massive and higher altitude movement, potentially but not exclusively through LEO and MEO. This being the case, the flight paths of HASVs and traditional space objects will intersect at an increased rate, the intensification of potentially harmful interference with space activities of third States as a result of collisions or radio frequency interference being directly proportionate thereto.

The anticipated augmentation in volume of the lattice of space flight paths can breathe new life in Article X of Outer Space Treaty, whereby States can observe the flights of space objects of other States. More specifically, Article X demands that States consider on a basis of equality to accommodate requests by other States to observe the flight of their space objects. The exact modalities for the granting of such permission are to be decided by joint agreement between the

States involved.[22] This fact alone equally proves that space transportation is inherently international in nature, and hence, receptive of international regulation. Whereas the observing State has no right to affect the flight path or overall operation of the space craft which falls within the scope of the observation agreement, imposing a duty upon States to consider and accept such observation requests signifies that space flights are a matter of international interest.

The agreement establishing the proposed International Space Traffic Control Authority can, in fact, satisfy all requirements of Article X of the Outer Space Treaty for the granting of observation rights to the member States. There is nothing in the wording of Article X of the Outer Space Treaty to preclude the conclusion of a multilateral agreement, nor is there any counter-indication towards providing a blanket authorization of observation for a specific kind of craft, such as the HASVs in the present analysis. In fact, both the "nature of such an opportunity for observation" and "the conditions under which it could be afforded"[23] can be utilized as the very foundation for the calling of the necessary international conference on the establishment of the International Space Traffic Control Authority advocated for in the present Dissertation. The condition of equality can be easily addressed on the premise of the participation of States in this new international organization. Given that the proposed International Space Traffic Control Authority would be created within and operate under the framework of the Outer Space Treaty, equality in observation would be equivalent to the equality of States before the law; the test to be employed would be one of sovereign equality, and not necessarily reciprocity, even though the latter would be achieved *de facto* through the operation of the Authority. To the extent that any State participates in the Authority, it shall have the opportunity to observe the flight paths of HASVs of third States; even if the State in question does not yet partake in this particular

[22] Article X § 2 of the Outer Space Treaty.

[23] *Ibid.*

technology, observation of this kind would still be in keeping with the letter and spirit of the Outer Space Treaty, and Article X in particular, which bases any awarded observation rights to the principle of international cooperation among States in the use and exploration of outer space.

In any event, a permissible analogy, as per the understanding of Manfred Lachs,[24] can be drawn with other modes of international transportation. Considering that both international navigation and international civil aviation form the core of international law regimes, both featuring international regulatory bodies, there is no convincing reason to treat international space transportation differently or to occlude the creation of a similar regulatory body for international space transportation. The argument of 'had the States wanted for one, it would have already been established' has already been defeated in previous pages of the present Dissertation, through the demonstration that combined epistemology converges towards the establishment of the proposed International Space Traffic Control Authority as a legally permissible, economically rational and methodologically sustainable solution. This argument further falls, when reflecting upon the history of international navigation and international civil aviation, the rights and freedoms recognized, and the corresponding practice of States. Centuries, if not millennia, of international navigation experience were not enough to obstruct the establishment of the International Maritime Organization as late as 1982,[25] upon adoption of the UNCLOS. International civil aviation had already experienced the beginning of the record-setting era and the baptism of World War I, before the establishment of the International Commission on Air

[24] Lachs M., *The Law of Outer Space: An Experience in Contemporary Law-Making* (Leiden: Sijthoff, 1972) at 15.

[25] It should be noted that the predecessor of the IMO, the Inter-Governmental Maritime Consultative Organization (IMCO), was established by treaty in 1948 and was operational from 1958 to 1982, when the adoption of the UNCLOS changed transformed it to the current structure. Convention on the International Maritime Organization, 6 March 1948, 289 *UNTS* 3 (as amended, 1276 *UNTS* 468) (entered into force 17 March 1958).

Navigation, let alone that of ICAO, on paper in 1944 and in practice in 1947. The almost fifty years since the adoption of the Outer Space Treaty should not be seen as an insurmountable obstacle towards placing international space transportation under the regulatory authority of a corresponding international organization.

b. Coordination requirements with respect to the ICAO and ITU Mandates

As previously stipulated, the proposed International Space Traffic Control Authority's jurisdiction would extend only to the navigable domain of outer space and, at least initially or unless otherwise agreed, only to the operation of HASVs while in outer space. This double restriction restrains the operational liberties of the proposed Authority, the successful function of which presupposes an effective coordination scheme between the Authority and ICAO on the one hand, and the Authority and the ITU on the other. Both the legal and functional parameters associated with each of these instances will be analysed in turn.

i) Coordination with ICAO

The major point with regards to the need to coordinate the jurisdiction of the proposed International Space Traffic Control Authority with that of ICAO has to do with identifying the potential points of jurisdictional conflict[26] and devising an effective scheme of traffic de-confliction. As analysed in previous pages of the present Dissertation, the functional approach to responding to the air space – outer space boundary delimitation debate places emphasis on the purpose of the operation of the craft in question or alternatively on its technological

[26] van Fenema P., "Legal Aspects of Launch Services and Space Transportation" in von der Dunk F. & Tronchetti F., eds., *Handbook of Space Law*, (Cheltenham, UK: Edward Elgar Publishing, 2015) 382-455 at 413.

characteristics. For the present analysis, attention should be drawn to the technical characteristics of HASVs, and more specifically to the point where the switch from orbiting craft to (glider) aircraft occurs.[27] This switch so happens to coincide with the points in time when the flight of the HASVs obtains the element of internationality, as articulated in the Introduction to Part I of the present Dissertation.

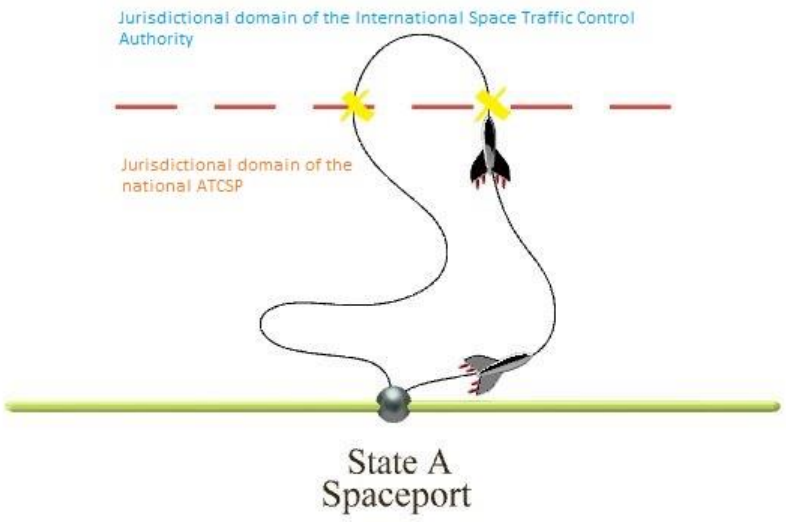
As such, the schematic representation of the potential points of jurisdictional conflict, for each potential type of HASV flight, is as follows:

For HASV flights whose point of origin and point of destination are found within the jurisdiction of a single State, the proposed International Space Traffic Control Authority will need to coordinate with the local Air Traffic Control Service Provider (ATCSP), who should notify the Authority about the technical characteristics of the flight, such as the time and location of entry into outer space by the HASV in question. The Authority, in turn, would need to similarly notify the local ATCSP about the time and location of exit from outer space by the

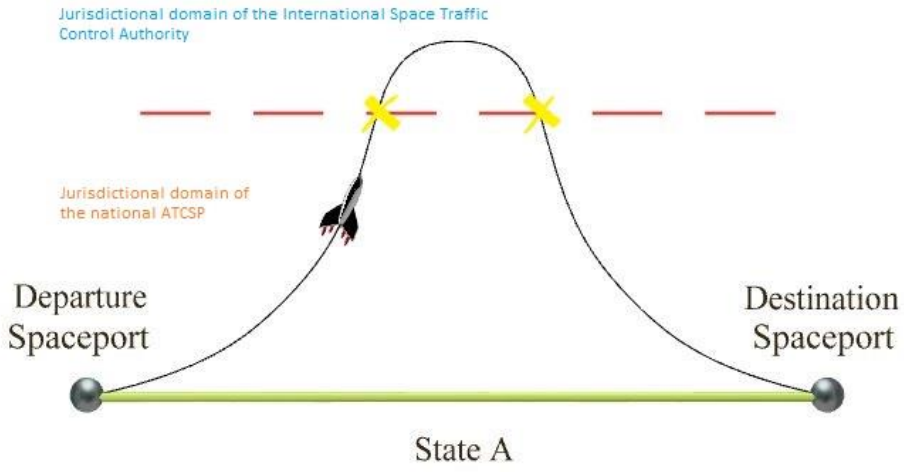
[27] As Vereshchetin notes, particularly regarding two-stage launch HASVs "two different regimes will have to be applied to such aerospace systems during two different phases off their flight. From the moment the entire system takes off, until the moment the aerospace plane is air-launched, it should be regarded as aircraft. Accordingly, domestic and international air traffic regulations will apply to the entire system, as well as to the people on board, be they aviation personnel, astronauts or passengers. After the aerospace plane is launched, the 'carrier plane', which would remain in airspace, would still be within the domain of air law, while the aerospace plane, bound to orbit, would be regulated by space law at every stage thereafter until it lands on Earth". Vereshchetin V. S., "Next Steps in International Space Law" in Jasentuliyana N., ed. *Perspectives on International Law: A Publication on the Occasion of the Fiftieth Anniversary of the United Nations and a Contribution to the Decade of International Law* (London – The Hague – Boston: Kluwer Law Interntional, 1995) 463-478 at 470. Applying what is essentially a functional approach (although originally referred to as "allocative theory"), Christol also agrees that "enormous benefits can be derived through the application, in suitable circumstances, of either the air or space law regime". Christol C. Q., "The Aerospace Plane, its Legal and Political Future" (1993) 9 Space Policy 35-43 at 42-43. The analysis found in the following pages applies equally to two-phase launch HASVs, but also single-phase launch HASVs, taking into account that air traffic rules would be applicable upon the re-entry of the HASV in the atmosphere. The issue of liability vis-à-vis personnel and passengers is not discussed here, as it is not pertinent to jurisdiction allocation for traffic management (*see* Introduction to Part I of this Dissertation).

HASV in question, so that the ATCSP could resume control and guide the HASV to its point destination. Since both points of departure and destination are located within the jurisdiction of a single State, it can be presumed that said State has authorised both exit and re-entry of the HASV within its territory.

For HASV flights to and from the same point of departure and destination, the graphic depiction of the transfer of jurisdiction between the Authority and the national ATCSP is the following:



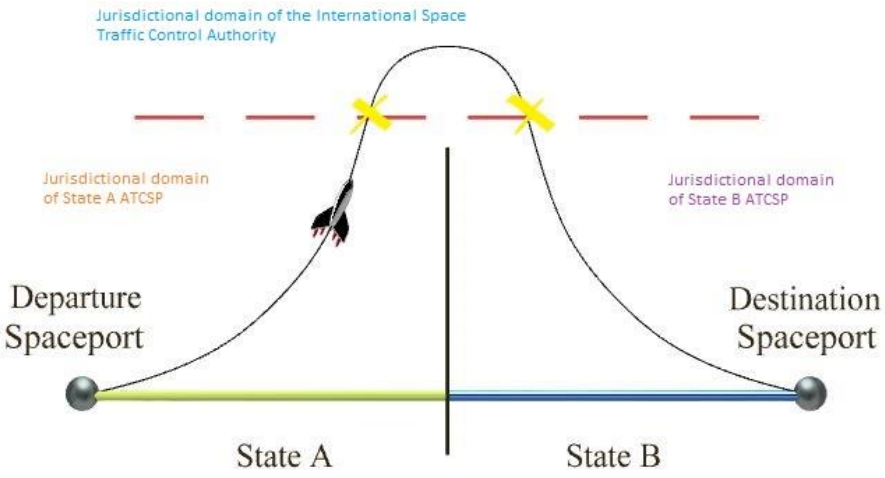
For HASV flights to and from different points of departure and destination within a single national jurisdiction, the graphic depiction of the transfer of jurisdiction between the Authority and the national ATCSP is the following:



The coordination process described just above becomes more complicated when the points of departure and destination are located within two different States. In such cases, the ATCSP monitoring the ascend of the HASV should provide all necessary technical notifications to the International Space Traffic Control Authority, indicating at the same time that the end point of the HASV flight in question lays within a third State. Thus, before the descend and re-entry process begins, the International Space Traffic Control Authority would need to have contacted the third State in a timely fashion so as to provide the local ATCSP with the technical information regarding the approaching HASV flight, at which point the authorities of the third State may deny entry to the HASV in question or ask for further clarifications. This particular kind of coordination is essential, not only because an unaccepted, or even unauthorized, entry from above could disrupt the normal operations of or worse endanger international civil aviation in the third State; it is crucial also because in the event of a denied entry request, the Authority would have to take all necessary measures to guide the HASV in question towards the next

available point of landing, coordinating with local ATCSPs, while at the same time notifying the State on whose registry the HASV is carried. Such diversion in the original flight path could have severe implications for the safety of passengers and crew, and could potentially trigger the international responsibility of States with regards to the issue of unintended landing, as discussed in following pages of the present Dissertation. In keeping with lessons learned from the world of civil aviation, traffic management cannot be handled as a predetermined set of decisions, even though securing permissions beforehand might to some extent facilitate the whole process. Whereas initial agreements may be in place, the daily operational realities of traffic control demonstrate that 'on-the-spot' decisions need to be taken, to account for unforeseen factors. The same would apply in the case of international space traffic control, where verification of conditions allowing for re-entry, such as considerations of conditions on the ground, current space and Earth weather, traffic congestion at the given time, etc, need to be factored in and potentially readjusted as close to the time of re-entry as possible, to ensure the safety of the HASV and its crew and passengers.[28]

[28] See analysis on traffic control and coordination of civil and military activities with regards to traffic control as a form of adaptive management, in Part I, Chapter 3 of the present Dissertation.



ii) Coordination with the ITU

With regards to the ITU, reasons for coordination are not so readily distinguishable. Nevertheless, as per the arguments in support of the international regulation of space transportation on the basis of Article IX of the Outer Space Treaty, the projected accelerated activity in outer space, especially in highly congested zones, such as the LEO, could lead to radio frequency jumbling and, as a consequence, to potentially harmful interference with the activities of other space faring States, in violation of both the Outer Space Treaty and the ITU Constitution.

The radio frequency spectrum is a limited natural resource, the management of which has been placed under the scope of the ITU. "In general, spectrum is a limited resource because only one entity can use the frequencies within a slice of spectrum at any one time in the same

geographical area".[29] For this purpose, the ITU has allotted specific radio frequencies to specific activities, in order to rationalize and effectively maximize the utilization of the spectrum. Use of different bandwidths ensures that each piece of data is transmitted through different frequencies, without interruption. Problems arise when different pieces of data are transmitted through radio waves utilizing the exact same frequency, since they cause interference and ultimately the degradation or even the cancellation of the transmitted information.[30]

Currently, satellite systems are allocated specific portions of the radio frequency spectrum for the fulfilment of their operational purpose. This allocation is made by the ITU and licensed by each State the satellite system serves. HASVs would need the same dual authorisation, and most probably with a view of using global spectrum,[31] due to the particular range of their activity.

The proposed International Space Traffic Control Authority would need to coordinate with the ITU, at least in the development and maintenance of space flight paths for HASVs, in order to avoid congestion of the allocated spectrum and potentially harmful interference with the other authorized licensed space activities of space faring States. The need for such coordination will become all the more apparent as HASVs begin to operate in higher altitudes and for purposes other than space tourism. Data transmitted by HASVs would need to be in considerably different frequencies than those of *in situ* functioning satellites, so as to safeguard the operation of both and avoid frequency jamming, even if unintentional.

Attention needs to be paid to the concurrent use of the spectrum by more than one user, so as to minimize the possibility of signal degradation. In a scenario where the use of HASVs has

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[29] Moore R. M. III, "Business-Driven Negotiations for Satellite System Coordination: Reforming the International Telecommunication Union to Increase Commercially Oriented Negotiations over Scarce Frequency Spectrum" (1999-2000) 65 Journal of Air Law and Commerce 51-76 at 56.

[30] *Ibid*.

[31] Gordon G. D. & Morgan W. L., *Principles of Communications Satellites* (Wiley, 1993) at 89.

become as popular as aviation is at present, differentiating between signals transmitted by each operating craft could literally mean the difference between life and death for passengers and crew. Further, given the particularities of the space environment, an accident in outer space owed to frequency confusion, depending on the altitude of occurrence, could have equally catastrophic results as an ASAT test or an inter-satellite collision.

While some of these considerations might be premature, given the current state of development of the aerospace industry, regulatory forethought is necessary to prevent accidents and ensure legal certainty for the sustainable operations of HASVs. Changes in the operational design of HASVs, as a result of an agreement between the ITU and the proposed International Space Traffic Control Authority at a time after the Authority's creation, would have considerable financial, if not also technical, repercussions for the aerospace industry.

2. Relation with States: The Inner Limits of Jurisdiction of the International Space Traffic Control Authority

One of the difficulties to be faced by the proposed International Space Traffic Control Authority is the observed reluctance of States to engage in formalization[32] of international relations and corresponding obligations,[33] through the drafting of treaties, as is especially the case in the field of space law.[34] Recent State practice shows that treaties are relegated to the level of *ultimum refugium*, a solution of the very last resort[35] when no other option of informal,

[32] Pauwelyn J., Wessel R. A. & Wouters J., "When Structures Become Shackles: Stagnation and Dynamics in International Lawmaking" (2014) 25 European Journal of International Law 733-765.

[33] Krisch N., "The Decay of Consent: International Law in the Age of Global Public Goods" (2014) 108 American Journal of International Law 1-40.

[34] Israel B., Treaty Stasis – Agora: The End of Treaties?, *American Journal of International Law Unbound*, 8 May 2014, available online at <www.asil.org/blogs/treaty-stasis-agora-end-treaties>.

[35] Aust A., *Modern Treaty Law and Practice* (Cambridge: Cambridge University Press, 2000) at 26.

transnational cooperation is available.[36] In that regard, the proposition of Canada is telling: "if a matter is of routine or technical nature, or appears to fall entirely within the existing mandate and responsibility of a department or agency, and if it does not contain substantive matter which should be legally binding in public international law, it is often preferable to deal with the matter through the use of a non-legally binding instrument".[37] Examples of issues handled in the framework of a more informal arrangement[38] include antitrust,[39] combatting terrorism[40], environmental concerns,[41] non-proliferation of weapons of mass destruction[42] and financial regulation,[43] to name a few.

Nevertheless, in subject matters where an internationally binding solution is needed,[44] as is the regulation of traffic into, through and out of outer space, any regulation should be the product

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[36] Benvenisti E., "'Coalitions of the Willing' and the Evolution of Informal International Law" in Calliess C., Nolte G. & Stoll P. T., eds., *Coalitions of the Willing – Avantgarde or Threat?*, (Heymann, 2007) 1-26 at 1.

[37] Canada Treaty Information, *Policy on Tabling of Treaties in Parliament, Annex C*, 2011, available online at <www.treaty-accord.gc.ca/procedures.aspx>.

[38] Slaughter A. M., *A New World Order* (Princeton, New Jersey: Princeton University Press, 2004).

[39] Fox E. M., "International Antitrust and the Doha Dome" (2002-2003) 43 Virginia Journal of International Law 911-932; Guzman A. T., "International Antitrust and the WTO: The Lesson from Intellectual Property" (2002-2003) 43 Virginia Journal of International Law 933-958.

[40] Bussutil J. J., "The Bonn Declaration on International Terrorism: A Non-Binding International Agreement on Aircraft Hijacking" (1982) 31 International and Comparative Law Quarterly 474-487.

[41] Raustiala K., "The Architecture of International Cooperation: Transgovernmental Networks and the Future of International Law" (2002-2003) 43 Virginia Journal of International Law 1-92 at 43.

[42] Schmidt F., "Report, NPT Export Controls and the Zangger Committee" (2000) 7 Nonproliferation Review 136-145; Angelova A. A., "Compelling Compliance with International Regimes: China and the Missile Technology Control Regime", (1999-2000) 38 Columbia Journal of Transnational Law 419-450.

[43] Brummer C., *Soft Law and the Global Financial System: Rule Making in the 21st Century* (Cambridge: Cambridge University Press, 2012).

[44] This is particularly so the case for conventions adopted "for purely humanitarian and civilizing purpose[s]" such as the safeguarding common interests of States, where no individual claims may be laid. The Outer Space Treaty is one such convention, and the common interest at hand is safety of space transportation, where indeed no singe State has superior or individual claims over others. *See*: *Reservations to the Convention of Genocide*, Advisory Opinion, [1959] ICJ Rep. at 23; Stein E., "Bruno

of a formalized cooperative institution, as is the proposed International Space Traffic Control Authority. As such, the discussion with regards to the inner jurisdictional limits of the International Space Traffic Control Authority needs to be situated within the framework of global administrative law,[45] the law of international public authority[46] or international administrative law.[47] Simultaneously, and keeping in mind that international organizations are also subjects of international law,[48] it is this author's contention that this discussion can elucidate a new aspect of the issue of the accountability of international organizations for violations of fundamental rights.[49] In particular, whereas the current academic discourse revolves around the classic issue of non-violation of fundamental human rights from international organizations,[50] the same considerations could be extended to the non-violation of fundamental rights of States, which can be identified through the examination of core international law instruments and

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Simma, The Positivist?" in Fastenrath U., Geiger R., Khan D.-E., Paulus A., von Schorlemer S. & Vedder C., eds, *From Bilateralism to Community Interest, Essays in Honour of Judge Bruno Simma* (Oxford & New York: Oxford University Press, 2011) 19-31 at 24.

[45] Kingsbury B., Krisch N. & Stewart R. B., "The Emergence of Global Administrative Law" (2004-2005) 68 Law and Contemporary Problems 15-62 at 28; della Cananea G., "Beyond the State: The Europeanization and Globalization of Procedural Administrative Law" (2003) 9 European Public Law 563-578 at 565-566.

[46] von Bogdandy A., "General Principles of International Public Authority, Sketching a Research Field" (2008) 9 German Law Journal 1909-1938.

[47] Schmidt-Aßmann E., "The Internationalization of Administrative Relations as a Challenge for Administrative Law Scholarship" (2008) 9 German Law Journal 2061-2080.

[48] *Interpretation of the Agreement of 25 March 1951 between the WHO and Egypt*, Advisory Opinion, [1980] ICJ Rep. at § 37; *Conditions of Admission of a State to Membership in the United Nations (Article 4 of the Charter)*, Advisory Opinion, [1948] ICJ Rep. at 64; Ryngaert C. & Buchanan H., "Member State Responsibility for the Acts of International Organizations" (2011) 7 Utrecht Law Review 131-146 at 135.

[49] Reinisch A., "Developing a Human Rights Accountability of the UN Security Council" (2001) 95 American Journal of International Law 851-872.

[50] Ryngaert C., "The European Court of Human Rights' Approach to the Responsibility of Member States in Connection with Acts of International Organizations" (2011) 60 International & Comparative Law Quarterly 997-1016; Reinisch A., "Securing the Accountability of International Organizations" (2001) 7 Global Governance 131-149.

norms.[51] Judge Bedjaoui affirms that such is the impact of technological progress on the formation of international norms that, besides prompting normative creation "it can also, in certain cases, reveal the limits of recourse to classical legal principles and prompt us to devise innovative legal principles to manage the new situation it creates. [...] Thus, the formulation of choice of appropriate rules to govern space is determined in part by the technological changes themselves".[52]

The proposed International Space Traffic Control Authority literally and figuratively represents the move from the domestic to the international.[53] As such, the individual concerns about administration of justice and protection of proper interests and rights that are bound to be expressed require the establishment and adherence to a set of administrative rules, even despite the perceived futility of perfection-seeking in international law.[54]

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[51] Doehring K., "Unlawful Resolutions of the Security Council and Their Legal Consequences" (1997) 1 Max Planck Yearbook of United Nations Law 91-109; Cahin G., *La coutume internationale et les organisations internationals: l'incidence de la dimension institutionelle sur le processus coutumier* (Paris : Pedone, 2001); Corten O., "La participation du Conseil de sécurité à l'élaboration, à la cristallisation ou à la consolidation de règles coutumières" (2004) 37 Revue belge de droit international 552-567; Reinisch A., "Value Conflicts within the United Nations Security Council" (2009) 14 Austrian Review of International and European Law 41-60 at 55-57.

[52] Bedjaoui M., "Classicism and Revolution in the Elaboration of the Principles and Rules of Space Law" in Jasentuliyana N., ed., *Perspectives on International Law: A Publication on the Occasion of the Fiftieth Anniversary of the United Nations and a Contribution to the Decade of International Law* (London – The Hague – Boston: Kluwer Law Interntional, 1995) 441-462 at 446.

[53] Benvenisti E., *The Law of Global Governance* (Pocketbooks of the Hague Academy of International Law, 2014) at 85.

[54] Shapiro M, The Institutionalization of European Administrative Space, Centre for Culture, Organization and Policy, Working Paper No. 2000-09, 2000, pp. 1-47, at p. 5, available online at <www.irle.berkeley.edu/culture/papers/Shapiro.pdf>.

a. International Space Traffic Control Authority Foundations within the Outer Space Treaty

Seedlings of such administrative rules, as well as the foundational basis for the creation of the International Space Traffic Control Authority can be located in the Outer Space Treaty itself, which imposes obligations of cooperation, due diligence, information providing, gathering and dissemination, among others. It should be noted that cooperation in and of itself, is normatively neutral; it is the ends to which we cooperate that can be normatively judged.[55] State practice subsequent to the adoption of the Outer Space Treaty, which can be used as a means of authentically interpreting the conventional text,[56] supports the notion that cooperation mechanisms have been developed among the State Parties. The conclusion of the remaining four space treaties can be seen as the embodiment of cooperation mechanisms on specifically defined issues.[57] Such specific embodiments however do not detract from the possibility and legal viability of creating a cooperative international organization of broader interest, based on the

[55] Avant D. D., Finnemore M. & Sell S. K., "Conclusion: Authority, Legitimacy, and Accountability in Global Politics" in Avant D. D., Finnemore M. & Sell S. K., eds., *Who Governs the Globe?* (Cambridge: Cambridge University Press, 2010) 356-370 at 365.

[56] Article 31 § 3 of the VCLT.

[57] In the same vein, the conclusion of the Intergovernmental Agreements regarding the International Space Station further supports the argument that States have actually negotiated, created and operated under international cooperative regimes, in this particular instance extremely detailed and structured, for protracted periods of time and despite Earth-bound political tensions. *See*: Agreement Among the Government of the United States of America, Governments of Member States of the European Space Agency, the Government of Japan, and the Government of Canada on Cooperation in the Detailed Design, Development, Operation, and Utilization of the Permanently Manned Civil Space Station, 29 September 1988, *Space Law – Basic Legal Documents* D.II.4.2; Agreement Among the Government of Canada, Governments of Member States of the European Space Agency, the Government of Japan, the Government of the Russian Federation, and the Government of the United States of America Concerning Cooperation on the Civil International Space Station, 29 January 1998, *US TIAS* 12927 (entered into force 27 March 2001).

provisions of the Outer Space Treaty.[58] On the contrary, they serve as proof that such cooperation can indeed be effectuated. The fact that such organization is not expressly mentioned or has not yet been created does not imply that its creation is impossible; it may have simply not been necessary or politically advantageous at the time of the Outer Space Treaty negotiations. However, the maturing conditions of the space industry,[59] as well as the drastically changed political environment, even in the face of recent adversity, can now sustain discussions relating to the establishment of an organization,[60] such as the proposed International Space Traffic Control Authority, which does not frustrate the Outer Space Treaty provisions and their elaboration in the *corpus iuris spatialis* and the corresponding rights of States.

Therefore, from a theoretical and normative perspective, it is possible to argue that the Outer Space Treaty is, in fact, equivalent to a framework agreement.[61] Indeed, the Outer Space Treaty exhibits all elements found in the definition of a framework agreement, as provided by Matz-Lück: "a legally binding treaty of international law that establishes broad commitments for its parties and a general system of governance, while leaving more detailed rules and the setting of specific targets either to subsequent agreements between the parties, usually referred to as

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[58] Indeed, as Vereshchetin notes: "It is to the credit of the international community that, from the very beginning of the space age, it has formulated, primarily through the UN, new rules of law to govern new developments in space technology. Thus, as space science advances yet further, space law should evolve with it". Vereshchetin, *supra* note 27 at 463.

[59] This assessment is also compatible with an economic analysis of international law approach, whereby "States do not concern themselves with the welfare of other States […] [they] will only cooperate when doing so increases their own payoffs". Guzman A. T., *How International Law Works: A Rational Choice Theory* (Oxford: Oxford University Press, 2008) at 17. Indeed, cooperation within the context of the proposed ISTCA is bound to provide multiple financial benefits to States, directly through fees collected for the authorization of space transportation activities and indirectly through the cascading benefits of the anticipated boom in transportation technology.

[60] Vereshchetin, *supra* note 27 at 471, concurs that "a number of supplementary provisions may have to be imposed by way of international agreements".

[61] Aust A., *Modern Treaty Law and Practice*, Cambridge University Press, Cambridge 2000, p. 97.

protocols, or to national legislation".[62] The Outer Space Treaty creates the basic framework of rights and obligations of States vis-à-vis their space activities, be they public or private,[63] which is further specified and supplemented by the remaining four international space treaties. The national space legislation[64] of different States parties to the Outer Space Treaty has been created so as to implement the specific provisions of the Outer Space Treaty and to safeguard respect of the corresponding rights of other States. The direct reference to domestic regulatory tools with regards to the performance of obligations arising out of the Outer Space Treaty is yet another proof of its framework character: article VI specifically imposes the obligation of States to authorize national space activities. Authorization necessarily implies some kind of license, which can only be produced pursuant to a domestic legal instrument. Similarly, article VIII of the Outer Space Treaty attaches the obligation of States to exercise jurisdiction and control over space objects carried on their registry. Further specifications as to the nature, content, deadlines for inclusion etc., to such a registry are both a matter of domestic legislation, but also the very subject matter of the Registration Convention.

Indirect references to supplementary, implementation documents are not uncommon in international law. The environmental provisions of the UNCLOS are a prime example. While the conclusion of further international agreements for straddling and migratory fish stocks[65] was the

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[62] Matz-Lück N., Framework Agreements, *Max Planck Encyclopedia of Public International Law*, available online at <www.opil.ouplaw.com>, § 1.

[63] Article VI of the Outer Space Treaty.

[64] von der Dunk F. G., ed., *National Space Legislation in Europe: Issues of Authorisation of Private Space Activities in the Light of Developments in European Space Cooperation* (Leiden – Boston: Martinus Nijhoff Publishers, 2011).

[65] United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, 4 August 1995, 2167 *UNTS* 3 (entered into force 11 December 2001).

option elected by States, the Convention itself does not make any reference to the need to conclude such agreements. Rather, emphasis is placed on international or regional cooperative mechanisms, for further coordination and standard-setting efforts. This is also the elected working methodology for maritime search and rescue,[66] whereby the Hamburg Convention mandates the cooperative delimitation of search and rescue regions through regional cooperative organisations. In this light, the repeated references to international cooperation[67] among States in the Outer Space Treaty satisfy this requirement for its characterisation as a framework treaty.

Pointers towards the mother convention in the subsequent conventions equally suffice as verifications of the existence of a framework, and as such, should be taken into consideration for interpretation purposes.[68] The retroactive change in the typology of a convention, from a stand-alone document to the framework's foundation, is nothing short of an empirical re-evaluation based on the framework's evolution. As a result, conventions that are not or were not initially intended as framework instruments can actually attain such a theoretical veneer.[69] The recalling of the Outer Space Treaty in all subsequent space treaties proves that the Rescue and Return Agreement, the Registration Convention, the Liability Convention and the Moon Agreement are in fact specifications of the contractual obligations born by the States Parties to the Outer Space Treaty. Whereas the Outer Space Treaty provides the basis for international regulation and cooperation with regards to its subject matter, the lattice of the subsequent instruments provides details as per the implementation of the particular obligations. While the notion of jurisdiction

[66] International Convention on Maritime Search and Rescue, 27 April 1979, 1405 *UNTS* 97 (entered into force 22 June 1985) [henceforth Hamburg Convention].

[67] Articles I § 3, III, IV § 2, IX, X, XI of the Outer Space Treaty.

[68] Article 31 § 2 (a) of the VCLT.

[69] *See* indicatively the framework of the 1973 Convention on the Prevention of Pollution from Ships, 1341 UNTS 3.

emanates from the principles of territoriality, sovereign equality and non-interference,[70] the placement of these principles, albeit modified or restricted,[71] into the Outer Space Treaty and the subsequent space treaties has already addressed the need for the innovative legal control necessary for the presence of man in space.[72]

The fact that none of the aforementioned instruments bear the word "framework" in their title is irrelevant. Normatively speaking, the framework character can be derived from the content and context of the treaty provisions, regardless of the political decision to actually include the notion of "framework" in the treaty title. This understanding is also in line with Article 2 § 1 (a) of the VCLT, whereby the particular title of an instrument does not alter its normative nature. Paradoxically though, political considerations, particularly those relating to competing interests over the subject matter of the instrument under discussion, actually favour the establishment of a framework instrument, which can be broad and flexible enough to be all-encompassing, rather that exhaustively detailed and strict. This is even more so the case with regards to instruments addressing issues of an inherently technological and/or scientific nature, whereby a broad initial framework can accommodate further developments in the field and/or industry through the adoption of subsequent agreements, protocols or national legislation, as opposed to a strictly identified conventional framework that would require amendments. The competing interests of the Cold War era and the constantly evolving nature of space and space-related technology substantiate the assertion that the Outer Space Treaty is indeed a framework convention.

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[70] Csafabi I. A., *The Concept of State Jurisdiction in International Space Law* (The Hague: Nijhoff, 1971) at 3.

[71] Articles I, II and IX of the Outer Space Treaty.

[72] Blount P. J., "Jurisdiction in Outer Space: Challenges of Private Individuals in Space" (2007) 33 Journal of Space Law 299-340 at 301.

From this perspective, the measure of development and success of a framework system is directly proportionate to the commitment for success demonstrated by the States Parties. This clear application of the voluntarist approach is as equally true for environmental treaties – the UN Framework Convention on Climate Change and the Kyoto Protocol being typical examples thereof – as it is for the Outer Space Treaty. While the first decade of the framework's creation was manifestly successful, given that the four subsequent space treaties were concluded in rapid succession of one another, the lack of further treaty-making with regards to space law has been perceived as a failure. However, to the extent that the framework is functional and functioning, the will and commitment of the States Parties towards its success should not be questioned. Rather, it should be expected that, as present and pressing needs led to the conclusion of the instruments that specified the general obligations of the Outer Space Treaty in the past, currently present and pressing legal and technological needs will mobilize States towards creating the next instrument to further specify the framework.[73] And even if *realpolitik* renders this assessment unduly optimistic, the positive aspect of dealing with potentially thorny issues, such as the establishment of an international regulatory body, in the context of a framework convention is that the broader regulatory framework will survive and produce legal effects,[74] despite a potential failure to agree on specific details.

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[73] Ryngaert C., *Unilateral Jurisdiction and Global Values* (The Hague: Eleven International Publishing, 2015) at 103, where he discusses this phenomenon under the theory of "second image reversed".

[74] This is primarily a case of "textual understanding [which] depends on previous knowledge, fore-understanding, and the 'horizon' (Verständishorizont) of the recipient. [...] Essentially, the 'horizon' comprises the cultural imprint, the idea of man and vies of the world and, thus, conceptions of a reasonable legal order". The horizon being expanded in the case-study at hand is that of the notion of "cooperation" as found in framework treaties, to account for the creation of more technical and detailed rules as by-products of such expansion. *See*: Gadamer H.G., *Wahrheit und Methode: Grundzüge einer Philosophischen Hermeneutik*, 3rd ed, (Tübingen: Mohr Siebeck, 1972) at 250-290; Fastenrath U., "A Political Theory of Law: Escaping the Aporia of the Debate on the Validity of Legal Argument in Public

b. Standard Setting Examples for the International Space Traffic Control Authority: A Case of Partial Defragmentation of International Law

In fact, the creation of an organization such as the International Space Traffic Control Authority would actually help address the regulatory responses to an ever-changing technological environment. In Jasentuliyana's words: "… just as in the case of international civil aviation, space technology is rapidly and continuously changing. It would be highly impractical to convene diplomatic conferences every time regulations required updating. This could be achieved competently and quickly by way of space annexes. The annexes could update technical progress on continual basis, as opposed to amendments to existing legal instruments or the creation of new instruments, which could take years".[75]

At the same time, the creation of the International Space Traffic Control Authority is the most complete embodiment of the principle of international cooperation found in the Outer Space Treaty. "Cooperation as a principle and as an obligation that is promoted by an institutional structure is at the heart of modern international regulatory systems".[76] Indeed, the proposed International Space Traffic Control Authority cannot only be founded as a direct materialization of the obligation of cooperation of States found in the Outer Space Treaty, but also as an obligation arising out the UN Charter itself.[77] It thus obtains greater *gravitas*,[78] for it is an

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International Law" in Fastenrath U., Geiger R., Khan D.-E., Paulus A., von Schorlemer S. & Vedder C., eds, *From Bilateralism to Community Interest, Essays in Honour of Judge Bruno Simma*, (Oxford & New York: Oxford University Press, 2011) 58-78 at 65.

[75] Jasentuliyana N., "Celebrating Fifty Years of the Chicago Convention Twenty-Five Years after the Moon Landing: Lessons for Space Law" (1994) 19-II Annals of Air & Space Law 429-450 at 438.

[76] Matz-Lück N., "Framework Conventions as a Regulatory Tool" (2009) 1 Göttingen Journal of International Law 439-458 at 444.

[77] An analogy with the World Trade Organization can be drawn in this regard, whose "historical roots can be found in Article 55 of the UN Charter and can be seen as a cornerstone of the Charter's perception of the relevance of economic and social conditions for world peace". Stoll P. -T., The World Trade

obligation encompassing all 193 Member States of the UN, as they are all bound by the same obligation of conduct enshrined in Article 56 of the UN Charter to take steps in fostering "higher standards of living, full employment, and conditions of economic and social progress and development". This assertion reflects the indispensable role of the UN Charter within the broader scope of international space law, which "represents a triumph of the classical principles, which give way only in the face of the material impossibility of transposing them to the specific conditions of space".[79] As the analysis with regards to military jurisdiction over space objects proved,[80] general legal principles, such as the ones concerning the prohibition of use of force, or as in this particular instance cooperation for the promotion of social welfare and progress, can be directly transposed to outer space, without being considered *impedimenta*.

The benefit of operating within the context of a framework convention is that States Parties can continuously maintain a vision of the whole picture, rather than focusing on piecemeal aspects thereof. The probability of shortcomings due to a very narrow, albeit timely solution to a particular problem,[81] are significantly minimized when discussing framework conventions.

Organization as a Club: Rethinking Reciprocity and Common Interest, *in* Fastenrath U., Geiger R., Khan D.-E., Paulus A., von Schorlemer S. & Vedder C. (eds), *From Bilateralism to Community Interest, Essays in Honour of Judge Bruno Simma*, Oxford University Press, Oxford New York 2011, pp. 172-183, at p. 173.

[78] Allott P., "The Emerging Universal Legal System" (2001) 3 International Law Forum 12-17 at 16; Peters A., "Are We Moving towards Constitutionalization of the World Community?" in Cassese A., ed., *Realizing Utopia – The Future of International Law* (Oxford: Oxford University Press, 2012) 118-135; Dunoff J. & Trachtman J. P., *Ruling the world? Constitutionalism, International law and global governance* (Cambridge: Cambridge University Press, 2009) at xi; Fassbender B., ""We the Peoples of the United Nations": Constituent Power and Constitutional Form in International Law" in Loughlin M. & Walker N., eds., *The Paradox of Constitutionalism: Constituent Power and Constitutional Form*, (Oxford and New York: Oxford University Press, 2007) 269-290 at 282.

[79] Bedjaoui, *supra* note 52 at 447.

[80] See Part I, Chapter 3 of this Dissertation.

[81] Cameron P. D., "Nuclear Safety after Chernobyl: The Role of International Law" (1988) 1 Leiden Journal of International Law 121-135; Convention on Early Notification of a Nuclear Accident, 26

Concurrently, preference for a framework (convention) approach can counterbalance the negative effects of overspecialization through independent treaties; in other words, it can emerge as the theoretical background against which the issue of fragmentation of international law can possibly be solved.

As the International Law Commission noted in its relevant report, "This is the background to the concern about fragmentation of international law: the rise of specialized rules and rule-systems that have no clear relationship to each other. Answers to legal questions become dependent on whom you ask, what rule system is your focus on".[82] Whereas a certain degree of fragmentation is anticipated, and potentially even desirable from a pedagogical stand-point, it is the disparities between different regimes, *inter* and *intra se*, that become excessively problematic, particularly if their scope is to administer a global good over which States have traditionally exercised their national regulatory discretion. In such occasions, contradictory or non-coordinating rules and regulations will literally place States between a rock and a hard place,[83] on the one hand, and create an environment of international regulatory reluctance or, even worse, stagnation, on the other. The only reasonable[84] escape from this metaphorical Prisoner's Dilemma is to find recourse in universal normative bridges, i.e. norms of *ius cogens*, international customary rules and general principles of law. Where the existence of said

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September 1986, 25 *ILM* 1370 (entered into force 27 October 1986); Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency, 26 September 1986, 25 *ILM* 1377 (entered into force 26 February 1987).

[82] UN Doc A/CN.4/L.682, A/61/10, 400, *Fragmentation of International Law: Difficulties Arising from the Diversification and Expansion of International Law - Report of the Study Group of the International Law Commission*, Rapporteur: Martti Koskenniemi, § 483.

[83] Vasilogeorgi I. M., "27 against the World: The EU ETS as Discord's Apple within ICAO" (2012) 65 Revue Héllenique du Droit International 531-551 at 550.

[84] Ryngaert C., *Jurisdiction in International Law*, second edition (Oxford: Oxford University Press, 2015) at 152.

normative bridges is ambiguous, the regulatory intervention of an international court or tribunal can liberate the international law-making process, by transforming ambiguity into crystalized international law.[85]

In its *Gabčíkovo-Nagymaros* decision,[86] the International Court of Justice drew attention to "joint regimes" and the "concept of a common utilization of shared water resources". Given the lack of such terminology in relevant international instruments binding upon both Hungary and Slovakia, namely the bilateral agreement on the Project and the Watercourses Framework Convention,[87] the wording of the decision makes possible a regulatory leap towards the recognition of an obligation of States to tolerate restrictions on their national discretion, a certain amount of "meddling by other participants and/or institutional bodies in their own affairs"[88] in order to advance collective goals. This trend has since been sustained in international jurisprudence, with national interests being made to yield before those of the collective.[89] State practice also supports the assertion that States "by reason of geographic proximity and common

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[85] Benvenisti E., "Customary International Law as a Judicial Tool for Promoting Efficiency" in Benvenisti E. & Hirsch M., eds., *The Impact of International Law on International Cooperation: Theoretical Perspectives* (Cambridge: Cambridge University Press, 2004) 85-116 at 86.

[86] *Case Concerning the Gabčíkovo-Nagymaros Project (Hungary v. Slovakia)*, Judgment, [1997] ICJ Rep. at § 147.

[87] Convention on the Law of the Non-Navigational Uses of International Watercourses, 21 May 1997, 36 *ILM* 700 (entered into force 17 August 2014).

[88] Ryngaert C., "The Humanization of International Law. Reflection on Theodor Meron's Hague Lecture" (2007) 1 Human Rights & International Legal Discourse 425-441 at 435.

[89] ITLOS: *The Juno Trader case*, St. Vincent and the Grenadines v. Guinea-Bissau, Prompt Release Order of 1 December 2004, ITLOS Reports 2004, Joint Separate Opinion of Judges Mensah and Wolfrum, § 12; *ibid*., Separate Opinion of Judge Ndiaye, §§ 24-26; WTO: *Korea – Measures Affecting Imports of Fresh, Chilled and Frozen Beef*, WTO Appellate Body Report of 11 December 2000, WT/DS161/AB/R, § 164; *United States – Measures Affecting the Cross-border Supply of Gambling and Betting Services*, WTO Appellate Body Report of 7 April 2005, WT/DS285/AB/R, § 306; *China – Measures Related to the Exportation of Various Raw Materials*, WTO Panel Report of 22 February 2012, WT/DS394/R.

challenges, agree to some level of coordination – notwithstanding the potential for competition".[90] For example, the Antarctic amply showcases how "peace and collective interests can be served through the implementation of the international rule of law".[91] If such an assertion is valid for instruments that are silent on issues of common use and utilization, then it goes without saying that national regulatory discretion should be limited when the concepts of cooperation, coordination and common use and utilization permeate the relevant international instrument, as is the case with the Outer Space Treaty.

In this light, the proposed International Space Traffic Control Authority can be the missing intermediary towards solving conflicts arising out of first, the incompatible rules of air law and space law, especially as identified in previous pages of the present Dissertation, and second, towards streamlining the coordination mandated by the Outer Space Treaty Framework, as elaborated through the subsequent four space treaties.

Nevertheless, being the embodiment and mediator of State coordination, brings about the question of the degree of autonomy to be enjoyed by the proposed International Space Traffic Control Authority. And it is precisely this question, the degree of autonomy, that will determine both the success of any future actions by the Authority, as well as the normative foundations upon which its object and purpose may be realized.

If the autonomy issue were to be broken down in smaller segments, the first question to be asked would be: why is autonomy a requirement? "On the one hand, international organizations are seen to deserve autonomy, for they tame the otherwise unbridled and self-interested

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[90] Crawford J., *Responsibility, Fraternity and Sustainability in International Law*, Inaugural Gonthier Memorial Lecture, Montreal, 22 May 2015, pp. 1-26, at pp. 9-10 (on file with the author).

[91] Lavrov S. & Gahr Støre J., Canada, take note: Here's how to resolve maritime disputes, *Globe and Mail*, 21 September 2010, available online at <www.theglobeandmail.com/globe-debate/canada-take-note-heres-how-to-resolve-maritime-disputes/article4326372/>.

behaviour of States and necessarily pursue a lofty goal. On the other hand, they seem to deserve autonomy because they are not that different from States with whom they share a common appetite for self-preservation and privacy. This contradiction between the objectives sought under the banner of each type of autonomy, however, confirms the need for the distinction made […] between autonomy as political independence and autonomy as institutional independence. It simultaneously reflects the hybrid character of the actors to which autonomy is supposed to benefit. Created by sovereign States from which they receive their powers, inextricably dependent on their member States to function properly, whilst at the same time being a full member of, and acting within the international arena for the satisfaction of their interests and the achievement of their political projects, international organizations are composite and heterogeneous creatures."[92] And this assumption also translates to the normativity accorded to such international organizations, which is also exhibiting elements of hybridity. As Walker mentions "the higher, potentially global level of normativity remains a vital component, even if its adequacy depends upon and is a product of its 'fit' with the local levels of normativity".[93]

This last point, in turn, brings about the question of what is the nature of the relationship between States as members to an organization and States as independent international actors, which antagonize restrictions to their jurisdiction and/or discretion by said international organisation. As d'Aspremont mentions, "the independence enjoyed by the organization when it takes measures in the interest of the international community touches upon the relation of the organization with States acting in their capacity as fellow members of the international

[92] d'Aspremont J., "The Multifaceted Concept of the Autonomy of International Organizations and International Legal Discourse" in Collins R. & White N. D., eds., *International Organizations and the Idea of Autonomy: Institutional Independence in the International Legal Order* (London and New York: Routledge, 2011) 63-86 at 78-79.

[93] Walker N., *Intimations of Global Law* (Cambridge: Cambridge University Press, 2015) at 134.

community whose interests are at stake."[94] It is this author's contention that the measure of autonomy of the suggested International Space Traffic Control Authority, both in a positive iteration of what functions it is allowed to perform, as well as a negative iteration of what State actions it should not tolerate, is none other than the rule of law. For as Blum points out, "in its simplest iteration, 'rule of law' means that international law should guide the conduct of States: it is the final arbiter of the exercise of power and States must comply with its provisions".[95] The question as to why States should participate and comply with the *dicta* of the ISTCA is a matter of distinction, between *subjective* reciprocity which "is also the motivation for entering into an obligation, and *objective* reciprocity as an observation of factual behaviour independent of the motivation of the parties".[96] Therefore, in assessing the relationship of the ISTCA with States and the balance of powers between them, it is important to perceive that "in principle, a treaty establishing an international organization transfers the reciprocal relationship between States members to a more general reciprocity between membership in the institution, on the one hand, and institutional protection by the institution, on the other".[97]

In essence, and as explained in previous pages of this Chapter regarding the de-confliction of applicable traffic regulation sets, we are discussing the power of the independent ISTCA "to act, in accordance with the constituent treaty, *directly within the jurisdiction* of all member States

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[94] d'Aspremont, *supra* note 92 at 71.

[95] Blum G., "Bilateralism, Multilateralism, and the Architecture of International Law" (2008) 49 Harvard International Law Journal 323-380 at 331-332.

[96] Paulus A., "Reciprocity Revisited", in Fastenrath U., Geiger R., Khan D.-E., Paulus A., von Schorlemer S. & Vedder C., eds, *From Bilateralism to Community Interest, Essays in Honour of Judge Bruno Simma* (Oxford & New York: Oxford University Press, 2011) 113-137 at 117.

[97] *Ibid.*, p. 121.

without interference by national governments or authorities and with direct legal effect".[98] This element of partial supranationality[99] defines the level of autonomy and the jurisdiction of the ISTCA. In this particular context, 'jurisdiction' should not only be understood with regards to territory, but in keeping with and borrowing from the whole institution of extraterritoriality, it should be now understood as a sphere wherein States exercise jurisdiction, including the jurisdiction over space objects as articulated in Article VI of the Outer Space Treaty. Therefore, the ISTCA would obtain at least some elements of supranationality, which would distinguish it from more classic international organizations.[100] Something similar has already taken place within a Law of the Sea context, whereby the establishment of the International Seabed Authority under Articles 156 *et seq* of the UNCLOS has conferred upon it the authority to "take decisions which bind member States, and create rights and obligations for natural and legal persons within the member States' domestic jurisdictions".[101] The input of States in the decision-making process of the ISBA results in an "asymmetrical, but also (arguably) atypical distribution of supranational features"[102], which can be used as a valid precedent with regards to the creation of an international organization with similar features and jurisdiction focusing on the management of an area beyond the jurisdiction of any single State. Other examples of supranational jurisdictional features include the Security Council extending its authority by

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[98] Mosler H., "Supra-national Judicial Decisions and National Courts" (1980-1981) 4 Hastings International & Comparative Law Review 425 at 435.

[99] Schroeder W & Müller A. Th., "Elements of Supranationality in the Law of International Organizations", in Fastenrath U., Geiger R., Khan D.-E., Paulus A., von Schorlemer S. & Vedder C., eds, *From Bilateralism to Community Interest, Essays in Honour of Judge Bruno Simma* (Oxford & New York: Oxford University Press, 2011) 358-378 at 365.

[100] Schroeder & Müller, *ibid.*, at p. 372 note that "organizations with non-political, technical mandates offered themselves as being privileged laboratories for cultivating supranational features".

[101] *Ibid.*, p. 373.

[102] *Ibid.*, p. 373.

imposing obligations directly upon individuals, rather than traditionally States, as per the authoritative acceptance of the International Court of Justice.[103] This last development has been perceived as having "pushed the door wide open for the development of a genuinely supranational feature with the UN system".[104]

Some paradigmatic examples of restrictions of national discretion of States in favour of advancing global goals through the institutional autonomy of the proposed International Space Traffic Control Authority, as is the safe and orderly transit of HASVs into, out of and through outer space, are discussed below.

As previously mentioned, obscurity seems to surround the question of whether a right of innocent passage or transit through the airspace of third States exists with regards to space objects and whether in fact it has arisen out of international custom. The source of this obscurity, as has been suggested,[105] is the misunderstanding of lack of protesting the falling of space objects in the territory of third States, when a complete burning in the atmosphere is not achieved. While said falls of defunct objects have been tolerated, there's no indication that such tolerance is the product of customary law and not of the conventional protections afforded by the relevant liability provisions of space law instruments.[106] The point of transition of jurisdiction between the International Space Traffic Control Authority and national Air Navigation Service Providers (ANSPs) could possibly provide a solution to the issue of innocent passage of a space

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[103] *Accordance with International Law of the Unilateral Declaration of Independence in Respect of Kosovo*, Advisory Opinion, [2010] ICJ Rep. at §§ 109, 116-117.

[104] Schroeder & Müller, *supra* note 99 at 375.

[105] Terekhov A. D., "Passage of Space Objects through Foreign Airspace: International Custom?" (1997) 25 Journal of Space Law 1-16 at 14-15.

[106] Article VII of the Outer Space Treaty; Article 2 of the Liability Convention.

object through the airspace of a third State.[107] Under specified conditions, the issuance of notification by the International Space Traffic Control Authority towards the national Air Traffic Control Authority of an inbound HASV could be equivalent to requesting approval for said transit, making the issue of innocence moot.

Considerations regarding the re-entry process of HASVs should take into account the coordination mechanisms envisioned in the Rescue Agreement,[108] especially in the case of unintended landing.[109] In this light, actions taken by the space traffic controller will need to be assessed versus the standards of intention, which includes cases of landing due to an accident, distress or emergency.[110] The standard can be formulated in the terms of whether or not a landing would have occurred if said accident, distress or emergency had not existed and answering the question in the negative would at all times afford the necessary protections and trigger the coordination mechanisms of the Rescue Agreement, even if the landing site was selected intentionally,[111] the potential selection being made or condoned by the International Space

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[107] Terekhov A. D., *supra* note 105; Haanappel P. P. C., "The Aerospace Plane: Analogies with Other Modes of Transportation" (1990) 32 Proceedings of the Colloquium on the Law of Outer Space 342; Kopal V., "Some Considerations on the Legal Status of Aerospace Systems" (1994) 22 Journal of Space Law 57-74 at 64; Cheng B., "The Legal Regime of Airspace and Outer Space: The Boundary Problem. Functionalism versus Spatialism: The Major Premises" (1980) 5 Annals of Air and Space Law 323-361 at 357; Lachs M., "Freedom of the Air – The Way to Outer Space" in Masson-Zwan T. L. & Mendes de Leon P. M. J., eds., *Air and Space Law: De Lege Ferenda. Essays in Honour of Henri A. Wassenbergh* (Dordrecht: Martinus Nijhoff, 1992) 241-246 at 244; Masson-Zwan T. L., "The Aerospace Plane: An Object at the Cross-roads between Air and Space Law" in Masson-Zwan T. L. & Mendes de Leon P. M. J., eds., *Air and Space Law: De Lege Ferenda. Essays in Honour of Henri A. Wassenbergh* (Dordrecht: Martinus Nijhoff, 1992) 247-262.

[108] Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, 22 April 1968, 672 *UNTS* 119 (entered into force 3 December 1968) [hereinafter Rescue Agreement].

[109] Article 2 of the Rescue Agreement.

[110] Gorove S., "International Protection of Astronauts and Space Objects" (1971) 20 DePaul Law Review 597-617 at 601.

[111] *Ibid.*

Traffic Control Authority. The role of the International Space Traffic Control Authority can become even more important, in case of landing in an area beyond the jurisdiction of a State, whereby it will be called upon to perform an impartial determination of what is "possible" and "necessary" assistance by the State charged to provide it.[112] In this regard, its function can be considered similar to that of the Commission on the Limits of the Continental Shelf or the Technology and Economic Assessment Panel of the Montreal Protocol on the Protection of the Ozone Layer,[113] making it another example of "an independent scientific or technical body serving in an international legal and political environment"[114].[115]

It therefore becomes clear that there is both a normative framework for the proposed International Space Traffic Control Authority upon which implementation of its decision-making and standard-setting can be achieved, as well as sufficient examples of practice to indicate acceptance of such jurisdictional concessions by States. "Intergovernmental organizations may choose a normative approach to implementation. In this case they put forward substantive arguments favouring a certain international policy. In particular, when intergovernmental organizations enjoy considerable authority and legitimacy regarding the policy issue at stake, they may convince actors within member States that implementation is the appropriate thing to

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[112] *Ibid.*, at p. 602.

[113] Montreal Protocol on Protection of the Ozone Layer, 16 September 1987, 1522 *UNTS* 28 (entered into force 1 January 1989).

[114] McDorman T. L., "The Role of the Commission on the Limits of the Continental Shelf: A Technical Body in a Political World" (2002) 17 International Journal of Marine & Coastal Law 301-324; Rothwell D. R. & Stephens T., *The International Law of the Sea* (Oxford: Hart, 2010) at 111-117; Kunoy B., "The Terms of Reference of the Commission on the Limits of the Continental Shelf: A Creeping Legal Mandate" (2012) 25 Leiden Journal of International Law 109-130.

[115] Crawford (Gonthier), *supra* note 90 at 14.

do. The IAEA for instance is particularly authoritative on the peaceful use of atomic energy."[116] The European Union is perhaps the most apt example of the fluidity between several tiers of authority and the interconnectedness between institutions and actors within political and regulatory decision-making processes,[117] which transcend State-centrism and structure formalization.[118] Whether application of the so-called "Community method", cultivated within the EU as the institutional path to political agreement over previously conflicting interests, can be beneficial in the case of the International Space Traffic Control Authority remains a matter of interpretation.[119] What the European Union has managed to prove though, is that territorial exclusivity can be successfully replaced by functional boundaries, thus delocalizing national interests.[120] And this achievement has an almost Kantian feeling to it, in the sense that the

[116] Reinalda B. & Verbeek B., "Policy Autonomy of Intergovernmental Organizations: A Challenge to International Relations Theory?" in Collins R. & White N. D., eds., *International Organizations and the Idea of Autonomy: Institutional Independence in the International Legal Order* (London and New York: Routledge, 2011) 87-103 at 98.

[117] Wunderlich J. U., "European Integration, Global Governance and International Relations" in Wunderlich J. U. & Bailey D. J., eds., *The European Union and Global Governance, A Handbook* (London & New York: Routledge, 2011) 48-55 at 50; Rosenau J. N., "Strong Demand, Huge Supply: Governance in the Emerging Epoch" in Bache I. & Flinders M., eds., *Multilevel Governance* (Oxford: Oxford University Press, 2004) 31-48; Marks G., Hooghe L. & Blank K., "European Integration from the 1980s: State-centric versus Multi-level Governance" (1996) 34 Journal of Common Market Studies 341-378; Jessop B., "Multi-level Governance and Multi-level Metagovernance" in Bache I. & Flinders M., eds., *Multilevel Governance* (Oxford: Oxford University Press, 2004) 49-74; Hooghe L. & Marks G., *Multi-level Governance and European Integration* (Oxford: Rowman and Littlefield, 2001).

[118] Wunderlich J. U., *Regionalism, Globalisation and International Order – Europe and South East Asia* (Aldershot: Ashgate, 2007) at 12.

[119] Spence D., "The European Commission: How the European Commission Constructed European Union Governance Policy and how it Attempts to Exploit it" in Wunderlich J. U. & Bailey D. J., eds., *The European Union and Global Governance, A Handbook* (London & New York: Routledge, 2011) 59-78 at 60.

[120] Adler-Nissen R., "Late Sovereign Diplomacy" (2009) 4 Hague Journal of Diplomacy 121-141.

grouping together of States in a formation of accommodation through law mirrors the grouping together of individual human beings under one legitimate ruler.[121]

Chapter Conclusions

The creation of the proposed International Space Traffic Control Authority is likely to be met with scepticism as to why States would choose to relinquish their unrestricted space freedoms, as enshrined in the Outer Space Treaty, essentially eroding to some extent their sovereign rights, in favour of an international organization. This scepticism becomes even more pronounced considering that outer space harbours some of the most vital interests of States, besides being essential for the military prowess of many States.[122] Hence, relinquishing the care of said interests[123] and giving up part of their military capabilities[124] are likely to be sources of resistance on the part of States. It is the author's contention that this is the exact same argument as to why States should comply with international law at all in the first place, whose roots can be found in the Kelsinian theory about the validity of international law as a whole.[125] In the words of Goldsmith and Posner "international law does not pull States toward compliance contrary to

[121] Barroso J. M., Leading by Example: The EU and Global Governance, Speech of 12 May 2009, available online at < http://eu-un.europa.eu/articles/fr/article_8708_fr.htm >.

[122] Waldrop E. S., "Integration of Military and Civilian Space Assets: Legal and National Security Implications" (2004) 55 Air Force Law Review 157-231; Rathgeber W. & Remuss N. L., "Space Security: A Formative Role and a Principled Identity for Europe", ESPI Report, January 2009.

[123] Bull H., *The Anarchical Society: A Study of Order in World Politics*, 3rd edition (Houndmills: Palgrave, 2002) at 252.

[124] Angell R. C., *The Quest for World Order* (Michigan: University of Michigan Press, 1979) at 6.

[125] Kelsen H., "Théorie générale de droit international public: problèmes choisis" (1932) 42 Recueil des Cours Académie de Droit International de la Haye 121-351 at 124-137; Guggenheim P., "What is positive international law?" in Lipsky G., ed., *Law and Politics in the World Community, Essays on Hans Kelsen's Pure Theory and Related Problems of International Law* (Berkeley: University of California Press, 1953) 15-30; d' Aspremont J., *Formalism and the Sources of International Law – A theory of Ascertainment of Legal Rules* (Oxford: Oxford University Press, 2011) at 215.

their interests and the possibilities for what international law can achieve are limited by the configurations of Sate interests and the distribution of State power".[126] States need to realize that it is in their best, collective interest to create an international regulatory body that can safeguard everyone's rights and freedoms in outer space, by having corresponding decision-making, if not direct law-making ability. The cost-benefit analysis and interpretation of law, in relation with solving the tragedy of the commons in outer space, leaves no other option, radical as it may be.[127] Such an assertion is not the product of idealism; on the contrary, it is based on the same *realpolitik* attitude that pushes for the negation of accepting global administration, for fear of losing privileges, as opposed to the strength gained by the pooling of sovereignty.[128]

A further benefit from the creation of the proposed International Space Traffic Control Authority is that of institution-dependent reputation-building. It is no secret that States can use their reputation to achieve, under the normative optic, the realization of their principles and under the instrumentalist optic, their self-interested objectives.[129] The prospect of a long-lasting legacy and the cooperative and timely solution of seemingly unrelated issues, which can serve as an allure for broader cooperation in the future, makes participation in international organizations worthwhile, as it affects the long-term regulation and consolidation of interests.[130]

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[126] Goldsmith J. L. & Posner E. A., *The Limits of International Law* (New York: Oxford University Press, 2005) at 13.

[127] Posner E. A., "Introduction" in Posner E. A., ed., *Economics of Public International Law* (Northampton, Massachusetts: Edward Elgar Publishing, 2010) at x.

[128] Sanson M., *International Law and Global Governance* (London: Cameron May, 2008) at 323.

[129] Keohane R. O., "International Relations and International Law: Two Optics" (1997) 38 Harvard International Law Journal 487-502 at 500.

[130] Martin L. L., "Heterogeneity, Linkage and Common Problems" in Keohane R. O. & Ostrom E., eds., *Local Commons and Global Interdependence: Heterogeneity and Cooperation in Two Domains* (London: Sage Publications, 1994) 71-91.

A cooperative effort of States towards the creation of the International Space Traffic Control Authority, with jurisdictional liberties such as the ones described afore, would signify in the most potent fashion the maturity of States for a gradual transition towards global law and real global governance. It would not constitute a diminishment of sovereignty,[131] but rather a clear exercise thereof through the entry of States into a new treaty relation.[132] For international organizations such transition would signify the arrival of their freedom from the "magical oscillation between 'actor' and 'forum'".[133] It should be made clear that "global law responds first and foremost to an existing register of *law*. In the first place, in its assumption of a framework of double normativity and its contribution to that framework, global law invariably acts upon existing transnationally expansive forms of law. Each and every species of global law seeks to contain or overcome forces of legal disunity or difference",[134] and the regulatory product of the proposed International Space Traffic Control Authority is not an exception. Such discord-solving, unifying qualities have altered current perceptions of legal imaginary, transforming what were once locally limited understandings into global imaginaries[135] of planetary horizons.

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[131] Alvarez J. E., "State Sovereignty Is Not Withering Away: A Few Lessons for the Future" in Cassese A., ed., *Realizing Utopia – The Future of International Law* (Oxford: Oxford University Press, 2012) 26-37 at 30.

[132] *Case of the S.S. "Wimbledon" (Great Britain, France, Italy, Japan, Poland (intervening) v. Germany)* (1923), Judgment, PCIJ Series A No 1 at 25.

[133] Reinisch A., "Editorial: How Necessary is Necessity for International Organizations?" (2006) 3 International Organizations Law Review 177-183 at 180.

[134] Walker N., *Intimations of Global Law* (Cambridge: Cambridge University Press, 2015) at 146.

[135] Steger M., *The Rise of the Global Imaginary: Political Ideologies from the French Revolution to the Global War on Terror* (Oxford: Oxford University Press, 2008).

PART II – CONCLUSIONS

Part II of the present Dissertation advances from the position that there is a normative conflict in matters relating to the administration of traffic control in outer space, emanating from two "equally classical and fundamental principles, the principles of sovereignty and of freedom, [which] are both considered valid".[1] However, the activities of influential non-State actors[2] are often leading the developments in cutting edge technology, such as HASVs, setting up industry-wide standards and disrupting pre-conceived operational and legal notions. These principles were at the core of all regulatory alternatives proposed, analysed and suggested in the previous pages as a response to the second, entrepreneur-lead phase[3] of the space era. They included the possibility of ICAO expanding its jurisdictional scope to encompass the operational aspects of HASVs; the alternative of States acting unilaterally as space traffic control regulators, either independently or within the context of informal networks of coordination; and lastly, within the context of a specialized international organization dedicated to the administration and regulation of space traffic control. The rejection of the first two alternatives and support for the third was premised on the concept of normative modifications from within or from without the law, keeping in mind the positivist understanding of international law as a consent-based system.

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[1] Bedjaoui M., "Classicism and Revolution in the Elaboration of the Principles and Rules of Space Law" in Jasentuliyana N., ed., *Perspectives on International Law: A Publication on the Occasion of the Fiftieth Anniversary of the United Nations and a Contribution to the Decade of International Law* (London – The Hague – Boston: Kluwer Law Interntional, 1995) 441-462 at 451.

[2] Ryngaert C. & Noortmann M., "New Actors in Global Governance and International Human Rights Law" (2005) 4 Human Rights & International Legal Discourse 5-14 at 6.

[3] Held D., McGrew A., Goldblatt D. & Perraton J., *Global Transformations: Politics, Economics and Culture* (Stanford: Stanford University Press, 1999) at 10; Young O. R., ed., *Global Governance: Drawing Insights from the Environmental Experience* (Cambridge, Massachusetts: MIT Press, 1997).

The second half of this Dissertation suggests that the achievement of functional jurisdiction can be realized only if traditional understandings of jurisdiction are revisited and interpreted through a lens of modern positivism, itself the product of comparative epistemology and interdisciplinarity. Arguments to support this conclusion have been drawn not only from the realm of law, but also from that of economics, politics and international relations, as well as the environmental sciences which informed considerations previously analysed and used as building blocks for the arguments presented in this Part. A schematic representation of the relation among these theories could be that of their kaleidoscopic consideration, which unifies them in a novel fashion that accentuates their common elements.[4] The academic convergence of these disciplines and corresponding theories towards a single conclusion proves the nature of functionality as the objectively singular acceptable solution for contemporary problems, where traditional responses are found lacking.

The proposed solution of the adoption of a new international instrument within the framework of the Outer Space Treaty regarding the regulation and administration of space traffic control, through the establishment of a corresponding International Space Traffic Control Authority emerges as the optimal solution for dealing with the 'tragedy of the commons' in outer space. Further, it flows organically from the very nature of space law, which in Lachs's view is "a telling testimony of the vitality of law in relations among States".[5] The proposed ISTCA is the embodiment of the principle of international cooperation which infuses the Outer Space Treaty but finds no material manifestation in the international arena, and which is also present in other

[4] For the concept of kaleidoscopic views of international law, also see the announced General Course of the 2017 Hague Academy of International Law Summer Courses, entitled "*Establishing Norms in a Kaleidoscopic World*", to be delivered by Professor E. Brown Weiss.

[5] Lachs M., "Foreword" in Jasentuliyana N. & Lee R. S. K., eds., *Manual on Space Law (vol. I)* (Dobbs Ferry, NY: Oceana Publications, 1979) at xii.

sources of international law. As such, it establishment may be for space law an opportunity to adjust "some of its provisions [that] may be inaccurate, [and] some [that] may constitute the mere scaffolding of the law of tomorrow".[6] It constitutes a rational choice for States that stand to gain more from the cascading benefits of the advancement of space transportation technology in an environment made safer by the application of the rule of law, rather than an environment constantly aggravated by individual interests. Whereas it is proposed that the ISTCA be vested with considerable elements of supranational administrative powers, the vital interests of the States with regards to their HASVs and space assets in general are the shapers of the exact mandate and functions of the international regulatory body, so as to ensure the highest possible degree of legitimacy[7] and compliance[8] with its decisions concerning a high-stakes environment.[9] In this mostly black and white vista, legitimacy can be cast into the role of the corrective power of attempts at manipulating legality through the State practice of powerful States,[10] which was one of the most prominent reasons for the rejection of the Network alternative. At the same time,

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[6] *Ibid.*

[7] Suchman M. C., "Managing Legitimacy: Strategic and Institutional Approaches" (1995) 20 Academy of Management Review 571-610 at 574; Held D. & Koening-Archibugi M., eds., *Global Governance and Public Accountability*, (Oxford: Blackwell, 2005); Franck T. M., *The Power of Legitimacy Among Nations* (Oxford: Oxford University Press, 1990) at 52; Delbrück J., "Exercising Public Authority Beyond the State" (2003) 10 Indiana Journal of Global Legal Studies 29-43 at 32; Beetham D., "Legitimacy" in Craig E., ed., *Routledge Encyclopedia of Philosophy* (London: Routledge, 1998).

[8] Breitmeier H., *The Legitimacy of International Regimes* (Surrey: Ashgate, 2008) at 99; Paulus A., "Whether Universal Values can Prevail over Bilateralism and Reciprocity" in Cassese A., ed., *Realizing Utopia – The Future of International Law* (Oxford: Oxford University Press, 2012) 89-104 at 103; Farrell H. & Knight J., "Trust, Institutions and Institutional Change: Industrial Districts and the Social Capital Hypothesis" (2003) 31 Politics and Society 537-566 at 541-542.

[9] Popovski V. & Turner N., "Conclusion: Legitimacy as Complement and Corrective to Legality" in Falk R., Juergensmeyer M. & Popovski V., eds., *Legality and Legitimacy in Global Affairs* (New York: Oxford University Press, 2012) 439-450 at 439.

[10] Goldsmith J. L. & Posner E. A., *The Limits of International Law* (New York: Oxford University Press, 2005) at 23-78.

the very nature of the transportation envisioned demands that the issue of interdependency[11] among pertinent international organizations be taken into consideration so as to ensure maximum efficiency,[12] as was the case with the ICAO and ITU mandates. With this understanding in mind, the issue of legitimacy for all three alternatives was directly linked with that of legalization, i.e. the particular set of characteristics that institutions may possess, defined along the three dimensions of obligation, precision and delegation.[13] This linkage is of particular importance, as it speaks of the rules that will eventually be produced by the organization, be they primary or secondary.[14]

Whereas the role of the State remains central in the framing of the mandate and jurisdiction of the proposed ISTCA, we could now speak of "an evolving order marked by increasingly far-reaching and complex forms of international cooperation that erode State sovereignty and reallocate on a global scale the sites and sources of political authority".[15] Loaded as this conclusion may seem to be, the creation of the proposed ISTCA constitutes, in this author's opinion, "a reaffirmation of the claim that peaceful cooperation is possible only if all States submit to a universal rule of law".[16]

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[11] Keohane R. O., *After Hegemony: Cooperation and Discord in the World Political Economy* (Princeton, New Jersey: Princeton University Press, 1984).

[12] Weiss T. G., What's Wrong with the United Nations and How to Fix It?, 2nd edition (Cambridge: Polity Press, 2012); Barnett M. & Finnemore M., *Rules for the World: International Organizations in Global Politics* (Ithaca New York: Cornell University Press, 2004).

[13] Abbott K. W., Keohanve R. O., Moravcsik A., Slaughter A. M. & Snidal D., "The Concept of Legalization" (2000) 54 International Organization 401-419 at 401.

[14] Hart H. L. A., *The Concept of Law* (Oxford: Oxford University Press, 1961) at 79.

[15] Ikenberry G. J., "The Three Faces of Liberal Institutionalism" in Alexandroff A. S & Cooper A. F., eds., *Rising States, Rising Institutions – Challenges for Global Governance* (Baltimore: The Centre for International Governance Innovation, Brookings Institution Press, 2010) 17-47 at 18.

[16] Lachs, *supra* note 5 at xii.

EPILOGUE – GENERAL CONCLUSIONS

The emergence of new modes of aerospace transportation is making the international space law stewards confront the struggle of legal innovation and history. Similar to poets, the time has come for carefully selected terms, doctrinal formations and legal constructions to be both inspiring and constraining.[1] A critical combination of the best qualities of the liberal approach to international law-making and the regimented regulatory formation of international civil aviation can result in the formulation of a successful legal innovation bearing vestiges of both appropriate imitation and creativity. While this Dissertation lays no claim to creating a pandectist's utopia, there is little doubt that rational law is necessary to ensure the predictability essential for entrepreneurial decisions about investment and sustainable industry growth.[2] As such, influencing a proactive attitude by States towards reaching an international agreement creating a space regulatory body could lead from simple lip service to the rule of law to its actual implementation and progressive development.

"States have incentives to cooperate, because they seek to maximize absolute gains" and "through institutions solve collective action problems that one State alone cannot solve".[3] By creating and sustaining such international organizations, States are actually able to safeguard their long-term self-interests, in a coordinated, rational and cost-effective manner, in direct

[1] Bloom H., *The Anxiety of Influence: A Theory of Poetry* (Oxford: Oxford University Press, 1997).

[2] Abel R. L., "The Globalization of Public Interest Law" (2008) 13 UCLA Journal of International Law and Foreign Affairs 295-306 at 300.

[3] Karns M. P. & Mingst K. A., *International Organizations: The Politics and Processes of Global Governance*, Second edition (Lynne Rienner Publishers, 2009) at 38.

application of a Prisoner's Dilemma scenario.[4] Realist considerations relating to the apportionment and relativity of gains,[5] which are more prevalent in security matters,[6] will be assessed against the neo-liberal approach of maximizing absolute gains,[7] which befits economic matters more. This is particularly the case for international organizations dealing with subject matters of both an economic and security-driven nature. In such circumstances, it may be upon the rationalist theory to bridge the gap between neo-liberalism and neo-realism, through the understanding that participation in such international organizations is nothing less than "rational, negotiated responses to the problems international actors face".[8] Such participation, as transpose to States,[9] can be understood as the equivalent of what McNair had referred to as a civic obligation to cosmopolitanism.[10]

In his recent address to the McGill Graduating Law Class of 2015, Martti Koskenniemi identified law as the science that caters to the happiness of the society, the flourishing of the human community. He mentioned that the role of international law is to cure the world, to repair its soul. Taking these pronouncements as true, then it is arguable that aerospace law is responsible for society's happiness through the shrinking of distances and the unification of the

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[4] Grieco J. M., "Anarch and the Limits of Cooperation: A Realist Critique of the Newest Liberal Institutionalism" in Baldwin D. A., ed., *Neorealism and Neoliberalism: The Contemporary Debate*, (New York: Columbia University Press, 1993) 116-140 at 122.

[5] Waltz K. N., *Theory of International Politics* (Reading, MA: Addison-Wesley, 1979) at 105.

[6] Lipson C., "International Cooperation in Economic and Security Affairs" (1984) 37 World Politics 1-23 at 15-18.

[7] Stein A., "Coordination and Collaboration: Regimes in an Anarchic World" (1982) 36 International Organization 299-324 at 318.

[8] Koremenos B., Lipson C. & Snidal D., "The Rational Design of International Institutions" (2001) 55 International Organization 761-799 at 768.

[9] Crawford J., Responsibility, Fraternity and Sustainability in International Law, Inaugural Gonthier Memorial Lecture, Montreal, 22 May 2015, pp. 1-26, at p. 4 (on file with the author).

[10] McNair A., "International Law in Practice" (1946) 32 GST 154 at 165.

world. It is an enabler of progress, trade, cultural exchanges and new discoveries. The development of new technologies in the field of international transportation will challenge the law into adaptation. But these challenges will not and should not affect the nature of aerospace law as an enabler.

It is this author's opinion that international aerospace law should find itself at the spearhead of relevant developments in the field of commercial spaceflight, fostering and promoting them, while at the same time ensuring their compliance with the characteristic elements of each navigational domain they find themselves operating in. It would be oxymoron, at the very least, to verify the Marxist notion of the epiphenomenal nature of law with regards to an industry promulgated and surviving thanks to the most prominent of capitalist moguls.

The present Dissertation is aiming at helping to ensure the quintessential role of law as an enabler of progress and societal happiness. As per Koskenniemi's advice, it is a reflection of an ideal future, even if, upon occasion, it is in contrast with present practices. Its originality and meaningful contribution towards a revolution of the relevant discipline will be judged by others. And in this context, revolution should not be understood in the Shakespearean sense of taking "arms against a sea of troubles, and by opposing, end them";[11] for the issue at hand, i.e. responding to the challenges of science and technology,[12] is such that a permanent solution is by default unattainable, though no less worth trying for.[13] Perhaps the intended revolution is one

[11] Shakespeare W., *Hamlet*, Act III, Scene I, p. 3.

[12] As Bedjaoui suggests, it is "this determining factor, arising from the particular nature of the physical conditions, thus constitutes a basis for the differentiation of principles, distinguishing classicism from revolution". Bedjaoui M., "Classicism and Revolution in the Elaboration of the Principles and Rules of Space Law" in Jasentuliyana N., ed., *Perspectives on International Law: A Publication on the Occasion of the Fiftieth Anniversary of the United Nations and a Contribution to the Decade of International Law* (London – The Hague – Boston: Kluwer Law Interntional, 1995) 441-462 at 448.

[13] Ryngaert C., *Unilateral Jurisdiction and Global Values* (The Hague: Eleven International Publishing, 2015) at 21.

that relates to the reshaping of State volition towards understanding and embracing adaptation within the confines of international law, and in turn understanding and embracing international law as the safeguard of Humanity[14] and its collective intellectual, technological and scientific achievements.

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[14] Kant I., *Perpetual Peace: A Philosophical Essay (1795)*, translated by Trueblood B. F. (Princeton, New Jersey: American Peace Society, Princeton University Press, 1897).

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