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Dispute, when agreement is needed. The impact of discrepancies between national and international space law on current and future industrial endeavours

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I would like to thank my family, friends, and prof. Joanna Połatyńska.

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Glossary of abbreviations

AA - Artemis Accords.

AD - Decree no 2009-643, adopted on 9th of June 2009, relating to authorizations provided according to French Space Operations Act.

ARRA - Agreement on the rescue of astronauts, the return of astronauts and the return of objects launched into outer space, U.N.T.S. 9574, 1968.

CoCoSL I - S. Freeland, R. Jakhu, S. Hobe, F. Tronchetti, Cologne Commentary on Space Law. Volume 1, Wolters Kluwer Deutschland GmbH, Cologne, 2009.

CoCoSL II - S. Freeland, R. Jakhu, S. Hobe, F. Tronchetti, Cologne Commentary on Space Law. Volume 2, Wolters Kluwer Deutschland GmbH, Cologne, 2009.

CoCoSL III - S. Freeland, R. Jakhu, S. Hobe, F. Tronchetti, Cologne Commentary on Space Law. Volume 3, Wolters Kluwer Deutschland GmbH, Cologne, 2009.

COPUOS - Committee on the Peaceful Uses of Outer Space.

CSLA - U.S. Code, Title 51, National and Commercial Space Programs.

FSOA - French Space Operations Act, 2008.

LIAB - Convention on the international liability for damage caused by space objects, U.N.T.S. 13810, 1972.

MOON - Treaty on principles governing the activities of States in the exploration and use of outer space, including the moon and other celestial bodies, U.N.T.S. 8843, 1967.

OST - Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies, U.N.T.S. 8843.

REG - Convention on Registration of Objects Launched Into Outer Space, U.N.T.S. 15020, 1976.

RES 1721 - UNGA Resolution 1721(XVI), International co-operation in the peaceful uses of outer space, 1961.

RES 1802 - UNGA Resolution 1802(XVII), International Co-operation in the Peaceful Uses of Outer Space 1962.

RES 1962 - UNGA Resolution 1962 (XVIII). Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space.

UNCLOS - United Nations Convention on the Law of the Sea, U.N.T.S. 31363, 1982.

UNGA - General Assembly of the United Nations.

VCLT - Vienna Convention on the Law of Treaties, U.N.T.S. 18232, 1969.

Introduction

Every realm within which states or individuals are performing activity develops its own particular set of rules. Such was the case with the law of the sea, air law or even Antarctica. However, the law on outer space operations was put in a unique position. The technical development of the state's capabilities to explore outer space vastly outpaced the political and legal doctrines. In addition, the Cold War was in full swing, making an agreement on how to proceed with the new area of possible conflict all the more difficult. At the same time only two states - namely USA and USSR - were the only ones with any real space fairing capabilities, both however having vastly different political and military interests. This has left the UN and its agencies with a difficult task of drafting regulations at an expedited pace, yet still making sure that they would be ultimately accepted and adopted not only by the USA and USSR, but also in the future by other members of the UN. Ultimately the work performed by the UN and its agencies came into life as corpus iuris spatialis, a set of five treaties that govern states' access, rights, obligations, and responsibilities in outer space. Most importantly, it provided frameworks governing access to outer space, the issue of appropriation of outer space, registration of objects launched into outer space and responsibility for activities performed in outer space. However, the legal regime that was put in place – regardless of how well thought out or negotiated it was – ultimately was being built on an experience of a handful of states, in a time when certain technical possibilities could not have been foreseen, nor addressed. This thesis aims to analyze if and how were the institutions outlined above incorporated into domestic legal regimes of corpus iuris spatialis state parties, as well as whether the institutions on their own remain a valid point of reference for the international community. This goal will be achieved by addressing the practice of the most active space fairing states and - most importantly- respective national legislations incorporating parts of public international law into domestic regimes.

Corpus iuris spatialis provides for a free and unobstructed access to outer space simultaneously excluding any possibility of a state claiming exclusive rights over any part of the outer space. This extends not only to incorporating a part of outer space into state's territory, but also extending its jurisdiction over it, as well as creating circumstances which for all practical intents and purposes exclude the possibility of any other state operations in a given theatre. While seemingly simple to implement and follow, this principle appears to be more and more challenged by the technological developments and its interpretation remains subject to discussions within the doctrine. As space mining and permanent bases on celestial bodies are no longer a theoretical possibility, but became more of a plan of a group of states that signed the Artemis Accords, the practice of states, currently limited to legislative endeavors, is of utmost importance in order to determine how does the international society plan on ensuring effectiveness of rights defined in the mid 20th century, in light of the planned actions of the 21st century.

As much as outer space, including celestial bodies, is devoid of any form of state jurisdiction, the same cannot be said about man made space objects. In order to ensure the effectiveness of rules contained in *corpus iuris spatialis*, state parties had to be equipped with a link between their terrestrial jurisdiction and the space object traversing jurisdiction-free outer space. This link was created in the form of national registration.

Much like maritime law, the outer space regime requires the states to register their space objects – both nationally and internationally – in order to retain jurisdiction over them, as well as facilitate international cooperation. Ultimately, this obligation proves to be exclusively reliant on passing of domestic legislations by *corpus iuris spatialis* state parties. It is the legislative of a state party that has to recognize the existence of international obligation to register a space object, and subsequently adopt measures enabling creation, editing and maintaining of such a domestic registry, as well as compliance with the UN framework. Moreover, as it is being shown by growing state practice, the rudimentary system of registration introduced in the 1970s, fails to address all of the instances and cases of multilateral launches, as well as transfers of ownership of a space object taking place after launching. This dissertation reviews the attempts to alleviate these issues in national and international practice, as well as the possibility of conflicting interpretations of registration provisions between states.

As it has been agreed by the international community, states shall bear responsibility for their activities in outer space, regardless of whether they are being conducted by governmental or non-governmental entities. This includes financial liability for any damage inflicted in the course of outer space exploration. This dissertation attempts to provide a comprehensive breakdown of the existing regulations concerning liability for outer space activities, as well as measures adopted by states to – on one hand – alleviate the financial risk accompanying the space exploration, and on the other provide the industry with necessary guarantees. However, in the context of outer space operations, "responsibility" should not be considered solely within the context of providing a remedy to the damage caused. On the international level, the issue of state responsibility for its activities is referenced by modified rules on attribution of outer space activities conducted within a state's jurisdiction to that state. It is the state under whose jurisdiction the activity is carried out that is internationally responsible for its results and required to ensure its compliance with the relevant provisions of public international law.

On the national level the issue of responsibility is closely tied to the obligation of authorization and continuing supervision over said activities. To ensure compliance with public international law in general, and rules on utilization of the outer space in particular, *corpus iuris spatialis* obligates the states to authorize and supervise continuously any outer space activity that is being performed within their jurisdiction. This can only be achieved by adopting relevant domestic legislation governing the requirements that need to be fulfilled prior to an approval for a space operation in question being granted by a respective authority. These legislations are bound to differ to a greater or lesser extent in terms of their interpretation and incorporation of *corpus iuris spatialis*.

Having aforementioned issues in mind, this thesis attempts to employ dogmatic, comparative and doctrinal approach to assess the level and manner in which public international law and *corpus iuris spatialis* are being introduced into domestic legal regimes, as well as how much uniformity and interoperability there exists as of today. The dogmatic approach was adopted in order to conduct the analysis of international multilateral treaties, in order to determine the contents of *corpus iuris spatialis*. This has been further supplement by doctrinal approach in order to place the once identified norms in a broader context of public international law which accounts for views of international courts and tribunals. Finally, the comparative method was utilized for analysis of each of the discussed national legislations. This made it possible to not only describe the contents of subject matter legislations, but also to identify common elements of international cooperation in outer space as well as potential differences in understanding of rules of public international law between the space fairing nations.

PART ONE.

INTERNATIONAL LAW OF OUTER SPACE

I. Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies.

1. History of codification - early literature

It may be argued that international law concerning outer space began on 15th of October 1957, the day on which USSR launched Sputnik I - first artificial satellite of Earth.¹ However, outer space as such was in scope of doctrine's interest long before humanity achieved this milestone. Before World War I international law doctrine was focused on newly emerging legal issues created by rapid development of airplanes, especially issue of state jurisdiction over airspace above its territory, subsequently giving birth to international air law.²

Emil Laude, Belgian lawyer, was the first one to use the term space law or law of outer space in his 1910 commentary concerning then-current regulations on international air law. He observed that contemporary (or rather: then current) rules on airspace utilization will not be

¹ F. Lyall, P. B. Larsen, *Space Law: A treatise*, Ashgate Publishing Company, Burlington 2009, p. 3.

² This issue was later resolved by article 1 of Convention Relating to the Regulation of Aerial Navigation, signed in Paris on 13th October 1919, stating that states enjoy full and unlimited jurisdiction over airspace above their territory.

sufficient for activities undertaken "in layers of gas not fit for breathing and ether surrounding our planet", and that " a new law will govern new juridical relations".³ In 1926, during conference organized in Moscow, devoted to international air law, V. A. Zarzar, employee of USSR ministry of aviation declared that there is a pressing need for international instruments other than those of international air law and designed to regulate state's actions in outer space, thus following Laude's footsteps. Additionally, he did propose, basing on then-popular "zone theory", that outer space should be excluded from jurisdiction of any state. Five years later, in 1932, Vladimir Mandl published his book concerning space law and legal issues caused by utilization of outer space. As much as this publication is merely 48 pages long, and was published in 500 copies, with every expense being borne by the author himself,⁴ it is astonishing that 25 years before first ever launch of manmade object on to Earth's orbit, Mandl's vision went beyond mere exclusion of state's jurisdiction in relation to outer space, or declaring separate regime of outer space law necessary, and went so far as to discuss potential financial liability of astronauts. Nearly all of his ideas and concepts were later included within corpus iuris spatialis. In the following years international discourse concerning outer space law was preoccupied with attempts at finding a fixed boundary between air and space or - in other words - how far up stretches a jurisdiction of any state. Several concepts were introduced in order to resolve this issue, including that of infinite state jurisdiction, which was motivated by concerns of national security.⁵ Curiously, none of the states in the world at that time possessed the technology necessary to launch any man made object into outer space, let alone such objects of military character.

After World War II has ended, scientific research of outer space became more accessible for the most technologically advanced of nations. Twelve years after the cessation of hostilities USSR launched Sputnik I - first manmade object to be put on Earth's orbit. After another 12 years, on 20th of July, 1969, two members of Apollo 11 crew set foot on the Moon. This unprecedented progress of technological capabilities forced international community to undertake adequate legislative action. In 1946 Arthur C. Clarke, author and futurologist underlined the necessity of an "upper limit" for jurisdiction of states, which would facilitate

³ E.Laude in *Revue Juridique Internationale de Locomotion Arienne*, Paris 1910 quoted by S.E.Doyle, *Origins of International Space Law and the International Institute of Space Law of the International Astronautical Federation*, Univelt Inc., San Diego 2002, p. 1 – 20. It is worth mentioning that the author himself did treat the term "ether" as merely a disguise for the lack of any scientifically valid information on the contents of outer space available at the time of publication.

⁴ F. Lyall, P. B. Larsen, *Space Law...*, op. cit., p. 6. ⁵ *Ibid.*

future utilization and exploration of outer space. In May 1949 Ralph Andrew Smith published an open letter in *Journal of the British Interplanetary Society*, which was intended to be a response to then-current plans of USA to bombard the Moon with nuclear weapons. In an almost prophetic manner, he wrote "I like to point out to the American Government and all other governments, that the Moon is not their property, and will not become so by right of bombardment. It is a common heritage of man [..]".⁶ Similarly to the concepts raised by Mandl, the heritage of mankind and non-appropriation of celestial bodies concepts found their way to the Outer Space Treaty years later.

2. History of codification - UN workings

In the early 1960s UNGA adopted three resolutions - no 1721 (XVI) (hereinafter: RES 1721) of 1961, 1802 (XVII) of 1962 (hereinafter: RES 1802), and 1962 (XVIII) of 1963 (hereinafter: RES 1962)⁷ - crucial to development of *corpus iuris spatialis*. Their texts were finalized under the auspices of the United Nations Office of Outer Space Affairs established in 1958. RES 1721 in its part A, point 1b declares outer space including celestial bodies to be free for research and exploration by any state within limits of international law, and cannot be subject to national appropriation.⁸ RES 1802 reiterates the notion of international law remaining in force in respect to activities in outer space.⁹ The same concept was expressed in point 4 of RES 1962. The concepts of outer space being subject of rights and obligations based on international law, free for exploration by any state and free of any state's claims or jurisdiction was a significant step forward comparing to pre-war and early post-war doctrine, maintaining that outer space - much like airspace - remains within jurisdiction of given state, with only few authors having a different outlook. Furthermore, invoked resolutions contain postulates concerning peaceful utilization of outer space, and of conducting space exploration for the benefit of all mankind. Moreover, RES 1962 in its point 5 touches the subject of state

⁶ The letter in question has been quoted in full by S.E.Doyle, *Origins of International Space Law and the International Institute of Space Law of the International Astronautical Federation*, Univelt Inc., San Diego 2002, p. 19.

⁷ Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, UNGA Resolution 1962(XVIII), 1963.

⁸ International co-operation in the peaceful uses of outer space, UNGA Resolution 1721(XVI), 1961; F. Lyall, P. B. Larsen, *Space Law...*, op. cit., p. 48.

⁹ International Co-operation in the Peaceful Uses of Outer Space, UNGA Resolution 1802(XVII), 1962, Preamble.

responsibility, stipulating that states shall be responsible not only for their own acts but for outer space activities of entities remaining within their jurisdiction, and for ensuring that such activities are being conducted in conformity with international law. Point 8 of the same resolution contains provisions on state liability for damages caused in consequence of its outer space activities, point 9 stipulates that states shall render or necessary help to astronauts who by accident had to land on the territory of a different state than the one that launched the space object. Worth noting is the fact that with each subsequent resolution, wording of aforementioned principles was slightly modified. Whereas RES 1721 "commends" to States adherence to principles contained therein, RES 1802 expresses belief that those principles will be obeyed and outer space activities will be conducted in accordance with international law, and finally RES 1962 outright provides for the states to be guided by them.¹⁰

Law of outer space and its development was also significantly impacted by seemingly unrelated treaties and agreements. Antarctic Treaty, which entered into force on 23rd June 1961, stipulated in its first article that Antarctica shall be used by parties solely for peaceful purposes. Furthermore any kind of military activity in that region has been banned, including weapon testing and conducting any nuclear tests. Article 2 proclaimed freedom of scientific research being conducted in the Antarctic, while article 4 excluded any possibility of territorial claims being made in relation to Antarctica. Similarities extend also to the issues of jurisdiction over personnel and facilities remaining in the Antarctic, with article 8 attributing jurisdiction over facilities and personnel to delegating state. In similar fashion, Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water that entered into force on 10th October 1963, in its article 1 bans conducting of any nuclear weapons tests "in the atmosphere; beyond its limits, including outer space; or under water, including territorial waters or high seas[...]".¹¹ Having this in mind it is clear that three resolutions concerning space law were not introducing completely new concepts, but rather adapted then-current doctrine that emerged in relation to areas of common interest for the entire international community.

Workings preceding adoption of Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies

¹⁰ F. Lyall, P. B. Larsen, *Space Law...*, op. cit., p. 47.

¹¹ Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water, U.N.T.S. 6964, 1963, article 1.

(hereinafter: OST) were surprisingly uneventful. The main motivation behind the operation of UNOOSA's Committee on Peaceful Uses of Outer Space was not purely legal desire to create rules where there were none, but rather a pressing need to provide a framework for the growing number of space operations undertaken by both the USA and USSR.

At the time that OST was being drafted, the overwhelming majority of doctrine and parties involved in creation of the treaty in question shared opinion as to celestial bodies being subject to its provisions. This is hardly surprising taking into account aspirations concerning manned moon landings of both the USA and USSR, with future plans stretching onto other planets of the solar system. However, there were doubts as to extending provisions of future treaty over the vacuum of space itself. USA wished for OST to provide rules only in relation to activities on celestial bodies, which would ultimately limit its scope to missions targeting moon, other planets and their moons, asteroids etc. USSR on the other hand preferred for OST to encompass each and every action undertaken within outer space, regardless of whether they are being conducted on a celestial body or in orbit / vacuum of space. Compromise was reached by means of mutual concessions, USA accepted USSR concept of extending OST provisions over the entirety of outer space, while USSR agreed on American proposition of including provisions within the treaty concerning sharing of scientific data obtained during outer space operations, and free access to each and every part of celestial bodies.¹² Another reason for the uneventful drafting process of OST was the fact that at that time only the USA and USSR had both the technology and sufficient means to conduct any meaningful outer space exploration activities.

However, one of the main tasks that OST was supposed to achieve, was not merely creating a comfortable set of rules meant for space-capable states of late 1960s, but rather to provide for legal framework that would remain useful for future participants in space race and could remain adequate despite humanity rising capacity in regards to utilizing outer space. This issue had an impact on certain treaty provisions,¹³ and led to the unanimous adoption of OST in UNGA resolution 2222 (XXI), and many of its provisions becoming over time parts of customary international law.¹⁴ In order to capture the importance of international

¹² P.G. Dembling, D.M. Arons, *The Evolution of the Outer Space Treaty*, Journal of Air Law and Commerce, vol. 33, 1967, p. 429.

¹³ F. Lyall, P. B. Larsen, Space Law..., op. cit., p. 57.

¹⁴ Ibid.

responsibility/liability issue, as well as due to the character of this dissertation, a brief overview of all provisions of OST will be presented.

3. OST fundamental rules.

Narration included within the OST preamble in reality constitutes a collection of most important principles behind its creation and adoption. It stipulates that it is in the common interest of mankind to explore, research and utilize outer space for peaceful purposes. Such activities "should be carried on for the benefit of all peoples irrespective of the degree of their economic or scientific development"¹⁵ and on the basis of international cooperation. Preamble itself refers also to resolutions 1962 of 1963, and resolution 1884 adopted on 17th of October 1963 concerning the wish of the international community for the capable states to refrain from placing on earth's orbit nuclear weapons and weapons of mass destruction, as well as installing such weaponry on celestial bodies. Taking into account OST preamble contents, three rules seem to crucial for international space law: conformity of outer space activities with entirety of public international law, freedom of usage and exploration of outer space and celestial bodies, and lack national appropriation of any part of outer space or celestial body.

The first of listed principles is reflected in article 1 and 3 of OST, as well as in UNGA resolutions 1721 of 1961 and 1962 of 1963. Second paragraph of article 1 of OST stipulates that outer space activities shall be conducted "*in accordance with international law*", which is later reiterated in article 3 providing "*States Parties to the Treaty shall carry on activities in the exploration and use of outer space, including the moon and other celestial bodies, in accordance with international law, including the Charter of the United Nations [...]". This provision appears to directly relate to article 1a contained in part A of RES 1721, clearly stating that international law, together with UN Charter, is applicable to outer space and activities conducted therein.¹⁶ Also, RES 1962 in its points 2 and 4 stipulates that activities undertaken by states in outer space shall be conducted in accordance with international law and the UN Charter.¹⁷*

¹⁵ OST, preamble.

¹⁶ RES 1721, point 1a.

¹⁷ RES 1962, points 2 & 4.

Second principle, providing freedom of research, use and exploration of outer space was also included in OST article 1 paragraph 2, as well as RES 1721 and 1962. Article 1 of OST stipulates "Outer space, including the moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind". The same concept was voiced by RES 1721 & 1962 providing respectively in part A point 1b and point 4 for freedom of research and exploration of outer space and celestial bodies.¹⁸ Moreover, both OST and aforementioned resolution provide certain guidelines concerning the manner in which usage and exploration of outer space shall be exercised, stating that such space activities shall be conducted "[...]without discrimination of any kind, on a basis of equality[...]"¹⁹, with freedom of access being granted to outer space as well as to celestial bodies for every state. Article 3 of OST adds to the list of requirements concerning outer space activities, by demanding that states shall use and explore outer space "in the interest of maintaining international peace and security and promoting international co-operation and understanding". Provisions similar in scope are contained within RES 1962, with points 1 and 4 stipulating that activities undertaken in outer space are to be conducted in the interest of all mankind and in a manner that promotes and facilitates international peace and cooperation.²⁰ Most importantly however, this principle is not only a treaty provision binding only upon parties to it, but rather - much like the Paris convention of 1919 and Chicago convention of 1944 - provides the right to be enjoyed by every state, regardless of being a party or not to OST.²¹ However, the right to use and explore outer space is not absolute and has to be exercised within treaty limitations contained in OST as well as the entirety of public international law.

The last of mentioned principles concerns introducing a "ban" on national appropriation of outer space itself and celestial bodies, expressed in article 2 of OST as well as RES 1721 and RES 1962. Article 2 stipulates "*Outer space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means*". Similarly, two aforementioned resolutions provide for lack of possibility for outer space and celestial bodies to become subject to national appropriation. However, in order to put this concept into perspective, two remarks have to be made. Firstly,

¹⁸ RES 1721, point 1b, RES 1962 point 4.

¹⁹ OST, art. 1.

²⁰ RES 1962, points 1 & 4.

²¹ F. Lyall, P. B. Larsen, Space Law..., op. cit., p. 60.

the term "outer space" is not defined within OST nor is it described by any of discussed resolutions - one the contrary, OST utilizes as much as four different terms in order to describe cosmos. Apart from "outer space" it uses terms of "celestial bodies", "Moon" (which is a celestial body in itself, however still is referred to in a different way), and "orbit around the earth" in article 4, none of which are defined or described within the treaty, hence providing states with potential room for interpretation. Secondly, parts of doctrine point out that article 2 of OST ban on national appropriation does not preclude private entities from claiming ownership rights over outer space or celestial bodies,²² which - basing on OST alone - could successfully "appropriate" parts of planets, asteroids or even entire orbits around earth. Even though this view was expressed as early as 1969, the discussion itself is still ongoing, with USA and Luxembourg introducing first bills concerning ownership over space resources of private entities. This approach however, creates more questions than it provides answers. Will "privately appropriated" parts of outer space or celestial bodies, or even natural resources gathered from them, become subject to jurisdiction of any state? If so, who will have jurisdiction over them? Does executing scientific research and gathering even a minute amount of cosmic dust fall within the same category as proposed large-scale mining operations?²³ Finally, how does executing jurisdiction over such appropriated parts outer space or resources not fall within national appropriation concept? Many of those questions can be answered by referring to travaux preparatoires of OST itself. Ban on national appropriation introduced in article 2 has to be interpreted as including "all forms of appropriation, conducted by states, their organs and other private and public entities alike".²⁴ Even if such interpretation was to be rejected, mentioned preparatory works clearly indicate that in the process of drafting article 2, no party had the intent to enable circumventing this ban, by enabling appropriation of any part of outer space or celestial bodies by private entities. Finally, such understanding of article 2 causes several issues when interpreting other provisions of OST. By virtue of article 6, states remain responsible for national activities, including those of non-governmental entities, being conducted in line with other provisions of OST. Having that in mind, enabling private entities to appropriate outer space or celestial bodies would cast shadow over other provisions of OST e.g. freedom of access to any part of outer space/celestial bodies for each and every state, regardless of their level of economical or scientific development. Last but not least, such an

²² S.Gorove, Interpreting Article II of the Outer Space Treaty, Fordham Law Review, vol. 37, 1969, p. 351.

²³ Ibid.

²⁴ R.Jakhu, *Legal Issues Relating to the Global Public Interest in Outer Space*, Journal of Space Law, vol. 32 no. 1, 2006, p. 14.

approach would ultimately lead to states transferring more rights to its nationals, than the states itself could legally ever possess. It has to be noted, that freedom of usage and exploration of outer space is limited - primarily - not by limiting provisions of OST but by rights granted by it to the entirety of the international community.

The interpretation of article 2 presented above was being questioned not only from space-mining perspective but also by states territorially remaining on equator. In 1976 Colombia, Ecuador, Indonesia, Congo, Kenya and Democratic Republic of Congo adopted The Declaration Of The First Meeting Of Equatorial Countries (also known as Bogota declaration), in an attempt to create a new international legal regime concerning geo-stationary orbit. Being driven by lack of means to utilize outer space on its own on one hand, and deep lack of trust for the real application of no-discriminatory and free access to outer space principles on the other, those states claimed that geostationary orbit remains a limited natural resource, and as such does not constitute part of outer space at all, rather remaining under exclusive national jurisdiction of rights in respect to outer space, legal claims contained within it were completely baseless. At its root, this declaration remains a reflection of an early post World War II concept of outer space remaining under national jurisdiction of each respective state, a doctrine that was ultimately considered obsolete.

Provisions of article 4 of OST concern potential military utilization of outer space and celestial bodies, containing separate provisions on each respective area. First paragraph prohibits any state from placing any object carrying or equipped with nuclear weapons on celestial bodies or in outer space, regardless of means employed to achieve that result. However, OST does not explicitly prohibit placing in outer space weapons of conventional character. While it may be argued that any sort of militarization of outer space would remain in breach of peaceful use of outer space principle, contained in preamble, article 1 and 3 and article 4 itself. Second paragraph stipulates that the Moon and other celestial bodies shall be used exclusively for peaceful purposes. Moreover, no state can erect fortifications, military bases or installations on the surface of the Moon and other celestial bodies. Similarly, conducting military maneuvers and weapon tests on the surface of the Moon and other purposes on the surface of the moon and other celestial bodies is forbidden. However, military personnel can be used for scientific and other purposes on the surface of the moon and other celestial bodies, as long as such activities remain peaceful,

also states have the right to use "any equipment or facility necessary for peaceful exploration of the moon and other celestial bodies".²⁵ Worth noting is the fact that creation of military bases in outer space as such was not prohibited, nor was conducting of military maneuvers, since limitations in that respect apply solely to celestial bodies (including the Moon). However, taking into account article 3 as well as OST preamble, there is little need for a specific ban on developing military stations and installations in outer space, as it would make impossible achieving one of the primary goals of OST i.e. peaceful cooperation of states in outer space. . ²⁶

Article 5 of OST concerns obligations of state parties towards astronauts, referring at the same time to provisions of RES 1962. Both mentioned resolutions as well as OST oblige state parties to regard astronauts as "envoys of mankind". It has to be mentioned that within corpus iuris spatialis there is no uniform definition of astronaut. OST uses two terms to describe people remaining in outer space - astronaut or personnel, the latter referring to members of the military in article 4. Additionally, several translations of OST use the term "crew" in article 8.²⁷ Despite this, international law does not introduce any sort of distinction regarding the scope of obligations incumbent upon states and owed towards astronauts, regardless of how they are referred to by national or international regimes.²⁸ Article 5 contains three distinct obligations imposed upon state parties. Firstly, each state party "shall render to them all possible assistance in the event of accident, distress, or emergency landing on the territory of another State Party or on the high seas". Two subsequent paragraphs of OST extend the scope of help and assistance that has to be provided for astronauts. Paragraph 2 includes an obligation for every state's astronaut conducting activities in outer space or on celestial bodies, to render all possible assistance to astronauts of other states. Last paragraph deals with potentially harmful or dangerous phenomena discovered by any state party while

²⁵ OST, art. 4.

²⁶ R.Jakhu, *Legal Issues* ..., op. cit. p. 14; See also C.Q. Christol, *International Liability for Damage Caused by Space Objects*, The American Journal of International Law, vol.74, no. 2, 1980, p. 346.

 $^{2^{\}overline{7}}$ E.g. Polish and Russian translations of the treaty utilizing terms "załoga" and "экипаж" both translating to "crew".

²⁸ An exception to this concept was enshrined in a "technical agreement" between USA and USSR, covering the Soyuz-Apollo program, which provided for the crew of one of the vehicles being subject to command of the commander of the host vehicle in which they were residing at the time. For more information see *Summary of results of a Meeting Between Representatives of the U.S. National Aeronautics and Space Administration (NASA) and the U.S.S.R. Academy of Sciences (the Academy) on the Question of Developing Compatible Systems for the <i>Rendezvous and Docking of Manned Spacecraft and Space Stations of the U.S.A. and the U.S.S.R.*, part B point 6, available at https://www.jaxa.jp/library/space_law/chapter_2/2-2-3_e.html (accessed: 25.05.2023).

conducting its outer space activities. In such a case, if phenomena in question "*could constitute a danger to the life or health of astronauts*", the state party that discovered it is obliged to inform other State Parties to the treaty or Secretary-General of the UN. In fashion similar to article 4, also discussed provisions were included in subsequent parts of *corpus iuris spatialis*, namely Agreement on the rescue of astronauts, the return of astronauts and the return of objects launched into outer space of 22nd April 1968²⁹ (hereinafter: ARRA).

4. OST provisions concerning state responsibility and liability.

From the international liability/responsibility of states for activities in outer space standpoint, provisions contained within articles 6 & 7 of OST are crucial. Few initial remarks have to be made prior to conducting more detailed analysis. Firstly, despite both articles dealing with international consequences of state actions in outer space, both concern different aspects of it. While article 6 is focused on responsibility for internationally wrongful acts, article 7 deals with the issue of financial liability, without elaborating on whether the damage in question has been caused by an internationally wrongful act or not. While this division is perfectly clear when working with the English text of the treaty, it may become a source for misinterpretation when reading the same provisions in different translations. E.g. the Polish text of article 6 utilizes the term "international responsibility" for both articles 6 and 7, French introduces terms "international responsibility" and "responsibility from international standpoint". This, however, remains merely a technicality, as both article 6 & 7 only serve the purpose of providing necessary details concerning responsibility of states, rather than serving as a basis for it (which can be found in article 3, providing for the entirety of international law being applicable to outer space and activities within).

Article 6 stipulates that states shall bear international responsibility for their activities in outer space. At the same time, it imposes a set of obligations on state parties concerning such activities, including obligations related to outer space endeavors undertaken by non-governmental entities. Firstly, the state has to ensure that actions undertaken in outer space remain in conformity with rules of OST, regardless of whether it is conducted or initiated by the state itself, governmental or non-governmental entity.³⁰ Furthermore, such activity has to

²⁹ Agreement on the rescue of astronauts, the return of astronauts and the return of objects launched into outer space, U.N.T.S. 9574, 1968

³⁰ A. Wasilkowski, *Działalność kosmiczna w świetle prawa międzynarodowego*, Wrocław–Warszawa–Kraków, 1991, p. 43.

be authorized by the state in question and remain subject to continuing supervision. In fact, requirements of authorizations and continuing supervision are effectively tools employed in order maintain conformity of activities undertaken by non-governmental entities with OST provisions and public international law as such. The statement on state's responsibility for its actions contained in article 6 does not by itself constitute a novum within the concept of state responsibility, as it was present in PIL doctrine for quite some time in 1967, and would constitute merely a consequence of then-current jurisprudence, together with three mentioned UNGA resolutions. However, similarly to point 9 of RES 1962 of 1963, article 6 of OST shapes state responsibility in a way specific to outer space itself and operations undertaken within its boundaries. Most importantly, it introduces certain modifications considering attributability of acts undertaken in outer space - taking its rules into account, states are responsible not only for its own actions or acts of their organs, but for activities of non-governmental entities as well. This results in significant change being introduced to previously discussed catalog containing acts of state organs, entities exercising governmental authority, acts of delegated organs, and entities of groups of them while not being organs on their own still act under its control and according to its instructions. This amendment results in significant extension of general rules of attributability, for as long as activity undertaken within state's jurisdiction can be described as state activity, attributability and potential responsibility will follow, regardless of character of the entity conducting it, or whether it does or does not exercise any sort of governmental authority. Article 6 contains provisions concerning responsibility of international intergovernmental organizations - responsibility for such activities, and for their conformity with rules laid out in OST is incumbent upon both the organization in question, state parties that are members of such international intergovernmental organization. Aforementioned rules create a single, coherent rule, establishing the state as primary and - to certain extent - default entity that will bear international responsibility for space activity, regardless of who physically carried it.³¹ Moreover, according to certain authors, this rule has attained the status of customary international law.³² It is clear that such regulation had one primary goal in mind that is to force the states to supervise activities that are being undertaken in outer space, due to the high risk attached to such endeavors. Having that in mind, parts of doctrine voice certain

³¹ R.Jakhu, Legal Issues..., op. cit., p. 14.

³² V.Kopal, Treaty on principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, Yearbook of Air and Space Law, Montreal 1968, p. 473-474.

doubts as to possible differences between technical capabilities of launching objects into outer space, and technical know-how necessary to supervise such activities and ensure their safety.³³

Article 7 of OST, as was already indicated, concerns the issue of state liability for damages caused in consequence of outer space activities, and paves way for future treaty devoted specifically to that issue, namely LIAB. This points to the two-fold function of the article 7. Not only does it serve on its own as a basis for liability of a state party, but it also introduces the concept of liability itself to all future parts of what we know today as *corpus iuris spatialis*.

As it has been indicated, liability of a state for damage caused by the operation of a given space object will occur regardless of the conformity of subject-matter space activity with public international law, favoring diversification of the nature of liability based on where the damage has been inflicted.

Damage has to be inflicted by a space object or its component part, that had been launched into outer space, Moon or other celestial body. Liability will be borne by the state that launches or procures the launching of the space object in question, or from whose territory or facility such space object was launched. If aforementioned prerequisites have been fulfilled, the state in question will become internationally liable for damages incurred.

During the drafting process of article 7, several concepts and ideas concerning the shape of future legislation were presented, with the final version utilizing the term international liability, proposed by USSR representatives.³⁴ USA representatives preferred the term "absolute liability" with additional provision exonerating the state if the damage was a result of "omission due to gross negligence or bad will" on part of the damaged state.³⁵ The "absolute liability" term was also favored by majority of non-space faring states involved in the drafting process.³⁶ Finally the USSR proposal was adopted, with the rationale being the existence of significant doubts over the actual nature and character of the absolute liability concept.

³³F. Lyall, P. B. Larsen, *Space Law...*, op. cit., p. 66.

³⁴ C.Q.Christol, International Liability...., op. cit., p. 354.

³⁵ Ibid.

³⁶ R.Jakhu, *Legal Issues...*, op. cit., p.14; Similar outlook is presented by P.G.Dembling, D.M. Arons, *The Evolution...*, op. cit., p. 422 – it is pointed out that similar remarks were made by India delegation, pointing that the utilization of the word "international" in favor of "absolute" will lead to undesirable limitation of the scope of responsibility, and as such is unacceptable.

Moreover - as indicated by the Australian delegate - introducing absolute liability would require introduction of its classification and certain limitations in order to achieve a just result.³⁷ Regardless of aforementioned disputes and differences in approach to the issue of state liability present during the OST drafting process, article 7 covers only damages of physical character, with potentially harmful activities such as signal jamming, creation of space debris or other forms of natural environment contamination being entirely left out of its scope.³⁸ This is partly being caused by lack of definition of the term "damage", leaving lawyers and scholars alike in need to reconstruct the motive and rationale behind article 7 a contrario to other provisions of OST. When analyzing OST as a whole, one cannot escape the conclusion that too broad interpretation of damages to be covered by article 7 would ultimately undermine the raison *d'etre* of several other provisions. Jamming of radio signals and communications is a blatant violation of article 1 of OST, environmental and space debris issue appears to be covered by provisions of article 9, all of which can either cause or contribute to the damage suffered. Finally, basing on article 6, states have the duty to ascertain that national activities in outer space - regardless of the public or private character of the entity actually conducting them remain in conformity with both OST and public international law as such. Taking this into account, there appears to be no need for article 7 to encompass such activities within its scope.

In essence, both articles 6 & 7 are not introducing entirely new concepts of state responsibility or liability, but rather implementing minor modifications that are motivated - much in spirit of already discussed state liability draft articles - by specific conditions of outer space endeavors. By extending the list of entities whose actions can be attributed to the state, and clearly indicating the basis for state liability, OST does significantly improve safety and transparency of human space exploration.

5. OST - remaining provisions.

Article 8 concerns issues of jurisdiction over space objects, and obligation to return space objects that were recovered by states other than the launching state. It stipulates that the state on whose register the space object is carried, retains jurisdiction and control over it and its crew even if the object in question remains in outer space or on a celestial body. The same

³⁷ P.G. Dembling, D.M. Arons, *The Evolution*..., op. cit., p. 439.

³⁸ C.Q.Christol, *International...*, op. cit., p. 354.

principle is applied towards ownership of a given space object, with the launching state retaining ownership not only over space objects and their component parts launched into outer space, but also those that landed on celestial bodies or were constructed there. This also applies to space objects returning to Earth. In consequence, state parties are obliged to return space objects and their component parts to state of registration, should such object or part be discovered within its territory. Launching state in such a case shall provide data sufficient for its identification, upon request of the state on whose territory such an object was discovered.

While articles 5 & 8 deal with return of astronauts and space objects to earth respectively, the same notions were already present in RES 1721. Part B of said resolution calls upon the states that launch space objects, to promptly furnish necessary information to UN COPUOS via SG of UN in order to be included in the public registry. Such public registry shall be maintained by SG, however the states themselves were not obliged to introduce or maintain national registers of space objects. This poses several issues when interpreting article 8 of OST alone - with no legally binding requirement for states to maintain national registries, and no clear indication in article 8 as to whether registration on the basis of RES 1721 is sufficient for maintaining jurisdiction over the space object, it is difficult to assess whether a launching state with no national registry of space object at all still retains jurisdiction over its space objects. This issue will be subject to more detailed analysis in the subsequent parts of this dissertation.

Articles 9 to 12 of OST contain provisions relating to the manner in which space activities are to be conducted. Article 9 stipulates that state parties, when conducting outer space activities, shall be guided by principles of cooperation and mutual help, taking into account corresponding interests of other state parties. Space activities shall be performed in such a way as to avoid harmful contamination both outer space and celestial bodies, as well as cause adverse effects in Earth's environment by introduction of extra-terrestrial matter. Moreover, if a state party does conduct an activity or experiment has the reason to believe that it may cause such adverse changes and contamination, it is obliged to undertake means necessary in order to avoid it. The same logic is being applied to potential harmful interference that activity of one state can cause to activities of other states. States are obliged to undertake appropriate international consultations before commencing such activity. Also, states believing they can be affected by such activities can request such consultations to commence. Article 10 obliges the states to "consider on a basis of equality" requests made by other state parties to observe the flight and operation of launched space objects. As is pointed out by the last sentence

of article 10, details of such observation shall be negotiated and agreed upon by interested parties. The duty to inform the UN SG as well as the international and scientific community on "the nature, conduct, locations and results of such activities" is included in article 11. Furthermore OST obliges UN SG to take measures in order to immediately and swiftly disseminate such information. Article 12 stipulates that all forms of stations, devices, equipment and space vehicles that remain in outer space shall be "open" to representatives of other state parties, on the basis of reciprocity. Such representatives should give sufficient notice of their planned visit in order to conduct necessary consultations aiming at ascertaining safety of such visit and unobstructed operation of the space object in question. In this respect, article 12 closely resembles article VII of the Antarctic treaty.³⁹ Article 13 stipulates that provisions of OST are effective regardless of whether the space activity in question is conducted by one or more than one party to OST, including activities undertaken within an international organization's framework. In case of space activity being conducted by an international intergovernmental organization, all doubts and issues arising or relating to it shall be resolved by state parties to OST and such organization, or one or more of its members who is a state party to OST.

³⁹ The Antarctic Treaty, U.N.T.S. 5778.

II. Agreement Governing the Activities of States on the Moon and Other Celestial Bodies.

When discussing provisions of OST, one has to take note of Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (hereinafter MOON). This agreement, opened for signature on 18 December 1979, came into force 5 years later, on 11 July 1984. Up to this point, only 16 states signed the treaty, with merely 7 ratifications present, none of which belong to leaders of space exploration, such as the USA, Russian Federation, China or Japan, with France and India only obtaining the status of signatories. Article 1 of Moon Treaty stipulates that its provisions apply to each and every celestial body - excluding Earth. Point 2 of article 1 extends provisions applying to the Moon to its orbits and trajectories around it as well. Point 3 of the same article excludes from its scope extraterrestrial objects that did reach Earth's surface in natural manner (such as asteroids). Article 2 of Moon treaty – in fashion similar to article 3 of OST – reiterates the concept of the entirety of the rules of public international law being applicable to activities conducted in outer space. Articles 3 & 4 of Moon Treaty provide for peaceful use and exploration of outer space, and obligate parties to it to perform their activities according to principles of mutual assistance and cooperation. Additionally, article 4 of Moon Treaty, in its point 1, refers to the Moon as "province of all mankind". The same term was used in OST's article 1, that referred to entire outer space as "province of all mankind". Regardless of wording issues, the intentions of parties drafting the Moon Treaty is rather unclear. OST remains perfectly applicable to the Moon, including its province of all mankind provisions. Similar conclusions can be made in regards to article 8 of Moon Treaty, concerning the right of state parties to "land their space objects from the moon and launch them from the moon",⁴⁰ together with their crews and all necessary equipment and infrastructure.⁴¹ Firstly, such right flows entirety of OST, secondly, when Moon Treaty came into force, mankind did already witness first human landing on the Moon, which took place without any sort of objection from any member of international community, thus at least providing tacit agreement to such conduct, not to mention the possibility of it becoming a rule

⁴⁰ MOON, art. 8.2a.

⁴¹ MOON, art. 8.2b.

ultimately customary in nature. Analogous argument can be made in connection with provisions of article 6 of Moon Treaty, allowing for collecting samples of the Moon itself.

Provisions of the Moon Treaty maintain a focus on preserving Moon's natural environment. Article 7 obliges state parties to conduct their research and exploration activities in such a way as to avoid disruption of the Moon by matter from other celestial bodies. A possibility to create "international scientific preserves" concerning areas of high relevance for scientific research. Article 11 continues environmental narrative by excluding the possibility to nationally appropriate any of its parts by public or private entities. As can be deduced, then current scientific doctrine had a major impact on aforementioned regulations, preoccupied with the concept of manned missions. However, as time went by and international interest and will to spend money and resources on such missions dwindled, these regulations attained more of a theoretical status.

In contrast, surprisingly little attention was given to the issue of international responsibility and liability of state parties for activities performed in outer space. Article 14 adopts virtually the same approach as article 6 of OST, providing for attribution of private entities conduct to the state and requiring authorization and continuing supervision of such activities. Point 2 deals with the concept of state liability, merely referring to provisions of OST with addition of possible agreements being concluded on a case by case basis.

As can be observed, lack of the wider adoption of the Moon Treaty was partly caused by the fact that its provisions remain vastly similar to those present in OST. It has to be noted that while OST had a significant impact on international practice, by providing a concrete solution to issues like jurisdiction of outer space and general rules of conduct for states, it was in itself filling a legal void. Moon Treaty could not obviously offer such features.

III. Liability Convention

1. Codification history

Committee on Peaceful Uses of Outer Space was created on 13th of December 1958 with main purpose of "assessing the level of international cooperation in peaceful exploration of outer space and devising appropriate solutions to be adopted under auspices of UN in order to promote research and disseminating information on outer space, as well as studies of relevant legal problems of outer space exploration".⁴² In 1959 COPUOS declared that the issue of state responsibility for activities in outer space is of crucial importance for future development of both space law and space industry. On 9th of July 1962 USA presented to COPUOS a "Draft proposal on liability for space vehicle accidents" thus initiating a process that would ultimately lead to creation of Convention on the international liability for damage caused by space objects (hereinafter: LIAB), finally adopted after 10 long years of negotiations. Works on the future treaty concerning state liability for outer space activities were greatly impacted not only by shifting political and scientific landscape accompanying negotiations, but by adoption of OST and ARRA. Both of those regulations contained provisions concerning liability and responsibility attached to outer space activities. Prolonging negotiations within COPUOS was met with criticism from UNGA, which on numerous occasions called on the committee to conduct their work at a somewhat quicker pace. Proposals submitted by the USA in the 1960s had four main points in common. Firstly, future agreement should not contain provisions providing for fault as necessary prerequisite for determining state liability. Secondly, such an agreement should contain guidelines on establishing the actual amount of damages and due remuneration. Thirdly, such a treaty shall explicitly exclude the requirement of prior exhaustion of other (including local) remedies. Lastly, such agreement shall provide for a timeframe within which negotiations regarding state's liability should be conducted, and include provisions on appointing impartial commissions as possible aid to the parties. Aforementioned issues were

⁴² Committee on the Peaceful Uses of Outer Space, <u>https://www.unoosa.org/oosa/en/ourwork/copuos/index.html</u> (accessed: 20.01.2023).

the toughest to tackle during the negotiations, especially the second one, dealing with guidelines on damage assessment. On 29th of November 1971, UNGA adopted resolution 2777 (XXVI) containing LIAB which subsequently entered into force on 1st of September 1972.

Adoption of LIAB had a critical impact on creating a unified system of international space law. In reality the OST of 1967 serves as a basis for LIAB provisions, offering necessary legal and doctrinal background.⁴³ It has to be noted that in the late 1960s and early 1970s humankind witnessed a giant leap in space oriented technology. Manned space flights, which were making headlines in the early 1960s, became a thing of the past by mid 1970s. In 1969 crew of Apollo 11 became the first humans to successfully visit another celestial body, with manned orbital space stations and unmanned probe missions researching Moon, Mars, Venus and planets beyond the asteroid belt soon to follow. Moreover, at the same time humankind started developing programs of satellite communications. This intensification of outer space activity of states required as clear and precise treaty regime as possible. Main concerns of the international community revolved around the possibility of space objects getting past Earth's atmosphere and ultimately crashing on its surface, which combined with ever growing scope of outer space endeavors exercised pressure on parties involved in drafting of LIAB.

2. Preamble and definitions.

The Preamble of LIAB shares some of the language and provisions that can be found in other parts of *corpus iuris spatialis*. It declares that further use and exploration of outer space constitute a common interest of mankind, which was further reinforced by direct reference being made to OST as a whole. Moreover, it is stated that regardless of means adopted to maintain safety and security of outer space operations, they may still cause damage both on the surface of the Earth and to other space objects, which triggers the need to adopt effective means aimed at assessing liability and providing swift compensation. In its last paragraph the preamble voices belief that clear regulation of aforementioned issues will have a positive impact on international cooperation in regards to outer space activities. It has to be noted that from the internal structure of LIAB two main fields of interest can be identified - firstly the issue of liability as such with article 2 to 7, 12 and 21 devoted only to it, and secondly the issue of maintaining effectiveness of treaty provisions.

⁴³ A. Wasilkowski, *Działalność...*, op. cit., p. 45.

Article 1 of LIAB contains a "dictionary" of terms later utilized in the convention. It defines terms of damage, launching, launching state and space object. Damage was defined as "loss of life, personal injury or other impairment of health; or loss of or damage to property of States of persons, natural or juridical, or property of international intergovernmental organizations". As it was pointed out "No other larger definition of damage exists in any international instrument. This definition, comprehensive as it is, was reached as a result of extending the concept in all possible ways".⁴⁴ Unlike OST, LIAB does elaborate on the concept of damage, whereas OST merely used this term in article 7 dealing with state liability, offering no further insight into the case, with doctrine subsequently stating that its scope covers only damages of physical character. Therefore, adding terms of loss of life, personal injury or other impairment of health, and - as stated by doctrine - inclusions of lucrum cessans⁴⁵ is a significant extension of damage types that can lead to a state becoming liable. Moreover, parts of doctrine point out that LIAB enables states to pursue damages of moral character on behalf of its nationals.⁴⁶ as well direct and indirect damages.⁴⁷

However, the content of articles 1 and 12 lead to a dispute within doctrine regarding scope of possible compensation. Article 12 stipulates that compensation, which is owed by launching state, will be determined in accordance with rules of public international law, principles of justice and equity, in order to achieve "*such reparation in respect of the damage as will restore the person, natural or juridical, State or international organization [...] to the condition which would have existed if the damage had not occurred"*. This provision, if interpreted alone, allows for compensation for virtually any kind of damages, including costs incurred in attempting to avoid the space object accident.⁴⁸ Some authors indicated however, that article 1 excludes the possibility of covering such damages, and broadening interpretation of the damage concept.⁴⁹ To sum up, the definition contained in article 1 does not provide an

⁴⁴ Verbatim Record of the Seventy-Second Meeting, Statement of Canada, UN Doc A/AC.105/PV.72, 1969.

⁴⁵ K.Wiewiórowska, *Odpowiedzialność państwa związana z wykorzystaniem przestrzeni kosmicznej*, Odpowiedzialność państwa w prawie międzynarodowym, [red. Renata Sonnenfeld], Warszawa 1980, p. 232.

 ⁴⁶ J.Rajski, Odpowiedzialność międzynarodowa za szkody wyrządzone przez obiekty kosmiczne, Warszawa, 1974, p. 77-78.
⁴⁷ R.J.Lee, The Convention on International Liability for Damage caused by space objects and the domestic

⁴⁷ R.J.Lee, *The Convention on International Liability for Damage caused by space objects and the domestic regulatory responses to its implications*, Proceedings of the United Nations/Republic of Korea Workshop on Space Law: United Nations Treaties on Outer Space: Actions at the National Level, Daejeon, 2003, p. 9.

⁴⁸ J. A. Burke, Convention on International Liability for Damage Caused by Space Objects: Definition and Determination of Damages After the Cosmos 954 Incident, Fordham International Law Journal, vol. 8, Issue 2, p. 264.

⁴⁹ Ibid.

adequate answer to questions concerning coverage of each and every single damage, and has to be confronted each time with provisions contained in article 12, in order to take ultimate aim of compensation into account. Taking aforementioned issues into account it seems that the concept of "layered" approach is the most suitable, as stated by Carl Q. Christol. In his article, Carl Q. Christol voices and opinion according to which direct damages are unquestionably within the scope of LIAB, moral damages consisting of pain and psychological distress are considered to be within the scope of LIAB, and indirect damages can arise in specific circumstances and has to be resolved on a case by case basis.⁵⁰ Points B & C of article 1 concern the process of launching space objects into outer space. While point B attempts to define the sole concept of "launching" by clarifying that even attempted launching will fall within the scope of the present treaty, point C is more concerned with the status of the states that perform launches of space objects. As is stipulated, a state shall be considered a launching state, if it launches or procures the launch of a space object, or if the launch itself takes place from its territory or facility. This however created certain issues when trying to fit private or international activities into the framework of aforementioned launching state definition, especially if the launch itself takes place either from high seas or from other areas outside jurisdiction of any state, or if the launch itself is procured by consortium composed of many private entities. With multiple states involved, only states on whose territory or from whose facility space object in question is launched can be safely described as "launching states", with the launching or procuring concepts becoming the more blurry the more entities are involved. ⁵¹ This issue, seemingly unsolvable on the basis of LIAB alone, can become clearer once we take OST provisions into account. OST in its article 6 stipulated that as far as outer space activity is concerned, acts of non-governmental entities can involve international responsibility of the states under whose jurisdiction they remain. Moreover, OST obliges such states to supervise such activities and issue any relevant authorizations. Therefore, joint application of OST and LIAB calls for joint and several responsibility of all states whose private entities, that is entities remaining under their jurisdiction, are parties to the consortium launching the space object in question.⁵² Similar problems in interpretation are encountered when trying to establish the content of space launch procurement. Taking the already presented analysis of "launching" it is only logical to assume that "procuring the launch" has to consist of different state activity

⁵⁰ C.Q.Christol, International Liability..., op. cit., p.370.

⁵¹ Such activity was supposed to be conducted by Sea Launch, which caused a doctrine-wide discussion on the nature of launching state concept.

⁵² R.J.Lee, *The Convention*..., op. cit., p. 14.

than the one amounting to "launching". Willian Wirin points out that "procuring the launch" requires control over the launch itself, or the object itself in outer space.⁵³ The last element defined in article 1 of LIAB is space object, which was not precisely defined, with a mention being made that space object includes its component parts and launching vehicle.

3. Absolute and fault based liability.

As was pointed out, article 2 to 7, 12 and 21 concern the issue of state liability for damages caused by space objects. It has to be noted, that the choice of the liability regime causes subsequent analysis to be performed from the point of damage being caused as a consequence of injurious activity that does not violate international law. As much as LIAB does refer to the state responsibility concept at times, it does not change the overall outlook and purpose of the treaty in question.

Article 2 of LIAB introduced an absolute liability regime - or as indicated by parts of doctrine - nearly absolute liability regime. It stipulates that a state that launches or procures the launching of a space object shall be absolutely liable for damages caused, if the damage was inflicted on the surface of the Earth or to aircraft in flight. Article 3 on the other hand provides for fault-based liability regime, shall the damage be inflicted "elsewhere than on the surface of the earth to a space object of one launching State or to persons or property on board such a space object by a space object of another launching State". Consequently, it deals with occurrences of damage being caused - for example - by collision of two space objects both belonging to different states. Should such an event take place, a state will be liable only if the damage in question took place due to the fault of the state or persons for which it was responsible. In this respect LIAB extends notions already present within article 7 of OST. As much as the concept of liability remains the same, LIAB distinguishes between areas where damage took place, and provides for the specific type of liability connected with it. In case of article 2, states are liable for damage which was inflicted on the surface of the Earth or to aircraft in flight, in an absolute way. Absolute liability of a state, in contrast to risk based liability, is defined as liability not only for facts and events that caused the damage but also for

⁵³ W. B. Wirin, *Practical Implications of Launching State – Appropriate State Definitions*, Colloquium on the Law of Outer Space, vol. 37, Jerusalem, 1994, p. 109.

*force majeure*⁵⁴, for which no exonerating events exist. It has to be noted that article 6 point 2 merges both state liability and responsibility concepts.⁵⁵ Article 2 plays an important role within LIAB internal structure - not only does it concern state liability concept, it serves as a basis for nearly absolute liability of a state and one of the bases for absolute liability. It also lists - albeit indirectly - prerequisites of such liability. Apart from existence of damage, flowing for general rules of public international law as well as jurisprudence, it includes requirement of damage being caused by a space object of one state party, and taking place either on the surface of the earth or to aircraft in flight.

Article 3 of LIAB - as was indicated - concerns liability for damage that was inflicted in outer space to one space object by another space object, belonging or tied to another state. Liability provided for in article 3 is of fault-based kind, which is most probably the only occurrence of fault as a prerequisite of state responsibility/liability in the entirety of international law. In essence, given state will be liable for damages caused under article 3, whenever damage caused by a space object took place "due to its fault or the fault of persons for whom it is responsible". The term "persons for whom it is responsible" can raise certain doubts, as it was not specified for which persons state will bear liability. It is however difficult to imagine any situation covered under article 3 which would include activity of a person that the state will not remain liable for, especially given that the state in question would still be responsible under article 6 of OST for lack of continuing supervision, thus opening the way to compensation claim on part of the injured state.

Practical possibility of proving that a state is at fault, as is pointed out by doctrine, whenever liability is based on article 3, we will be dealing with at least two space objects launched by two different states, hence one can assume that injured state will have the capacity and information necessary to establish fault of another state. ⁵⁶ Another issue may arise when a fully functional space object is hit by space debris such as no longer operational space objects, its fragments or other pieces of man-made equipment. It can be argued that a space object does not lose its status simply by becoming no longer operational, leading to an attempt to establish

⁵⁴ T.Gadkowski, Odpowiedzialność międzynarodowa państwa za szkodę jądrową, Poznań, 1989, p. 123; I.H.Ph. Diedriks-Verschoor, V.Kopal, An introduction to space law. Third revised edition, Alphen aan den Rinn, 2008, p. 39

⁵⁵ A. Wasilkowski, *Działalność*..., op. cit., p. 64.

⁵⁶ .Szlawski, *Prawo międzynarodowe a zagrożenia wynikające z działalności kosmicznej*, Wiedza Prawnicza, vol. 3, 2009, p. 35.

fault on part of a state responsible for launching such a space object, that later has effectively become a space debris on the basis of article 3 provisions. This approach introduces two problems. Firstly, it may be impossible to identify a given piece of space debris as belonging to a specific space mission or being created by operation of a given space object, taking into account the fact that space debris greatly varies in size, starting with fragments as small as 0,1mm². Secondly, there are significant doubts as to the sheer possibility of declaring a state at fault for creating a particular piece of space debris during space activity that took place 30, 40 or 50 years ago. Regardless of whether negligence is and to what extent covered by provisions of article 3, some of the space debris still orbiting Earth were made at a time when no international rules - be it treaty or customary based - existed concerning liability of states in general, much less on space debris specifically. Taking this into account, damages caused by collisions with space debris may never be compensated based on the current regime.⁵⁷ To sum up the analysis of article 3, it is important to note that similarly to article 2, it provides for a series of prerequisites that once fulfilled will ultimately lead to an obligation to compensate the incumbent on state at fault. By adopting a fault based liability regime, article 3 effectively raises the threshold for state liability to arise, requiring more than mere occurrence of damage itself, as it is with state liability as discussed in the ILC draft.

Article 12 of LIAB remains in strict connection with articles 2 and 3, affecting the manner in which compensation amount shall be established. It stipulates that compensation |which the launching State shall be liable to pay shall be determined in accordance with international law and the principles of justice and equity, in order to provide such reparation in respect of the damage as will restore the person, natural or juridical, State or international organization on whose behalf the claim is presented to the condition which would have existed if the damage had not occurred". Principle of justice and equity was adopted as a result of compromise, taking into account the dispute taking place over the regime applicable to properly establish the amount due for compensation. In its essence the dispute concerned the question of whether for establishing the scope of damage domestic rules of injuring or injured state shall be taken into account.⁵⁸ Subsequently the principles of justice and equity were supplemented by *restitutio in integrum* provision.

⁵⁷ F. Lyall, P. B. Larsen, Space Law..., op. cit., p. 109.

⁵⁸ C.Q.Christol, *International Liability*..., op. cit., p.358.

Regardless of the duty to compensate inflicted damage, incumbent upon launching states, the sole fact of damage occurring can in certain circumstances give rise to obligations incumbent upon every state party, regardless of their involvement in injurious activity in question. Article 12 of LIAB provides that in situations in which a damage caused by a space object that has been suffered by a state "presents a large-scale danger to human life or seriously interferes with the living condition of the population or the functioning of vital centers", the injured state can request help. In case such a request is made, all state parties to LIAB, especially the one/ones remaining as launching state/s are obliged to "examine the possibility of rendering appropriate and rapid assistance" to the state that had suffered the damage.

4. Several liability

Articles 4 & 5 describe circumstances in which states will be jointly and severally liable for damages caused by launched space objects. The core rule is included within article 5 point 1 of LIAB, stipulating that in cases of a space object being launched jointly by two or more state parties, they shall be severally liable for any damage caused by operation of such space object. A state will be regarded as taking part in joint launching also if the object was only launched from its territory or facility. Point 2 of article 5 lays out a series of rules concerning recourse claims. As much as it is allowed for the states to conclude agreements concerning mutual waivers of liability or providing for a specific of its calculation, they will remain without merit of injured third-party state. A slightly different approach was adopted in article 4, concentrating on collisions between space objects, remaining under jurisdiction of two different states, which occurred in outer space and subsequently caused damage to a third party. In case of such an event taking place, states whose objects caused the damage by colliding with each other, will be jointly and severally liable. However, the specific rules governing their liability have been greatly diversified. If the damage suffered by a third party took place on the surface of the Earth or was inflicted to aircraft in flight, the states whose space objects caused the damage to occur will be absolutely liable for it. In the event that damage resulting from such collision is being inflicted solely in outer space, to a space object of a third unrelated party, aforementioned two states will be held liable only if the damage itself took place due to their fault.
In other words, article 4 covers incidents consisting of collisions between space objects A and B, belonging to different states, and subsequently causing damage to state C/space object of state C. In those circumstances, states A and B will be jointly and severally liable to compensate damage induced. As article 4 point 2 stipulates, that burden of compensation shall be divided between liable states to a degree corresponding with their level of fault. If such an assessment is impossible to make, they should be held liable in equal parts. This does not preclude or hinder the ability of the injured state to seek compensation, in its entirety of part, from whichever liable state. As is pointed out by doctrine, joint and several liability contained within LIAB does bear resemblance to Rome Convention of 1952 On Damage Caused By Foreign Aircraft To Third Parties On The Surface.

5. Exonerating circumstances.

LIAB does introduce certain possibilities for states to relieve themselves from liability for damages caused by space object operation. Article 6 point 1 deals with the possibility to avoid absolute liability regime by a state. By clear reference to contents of article 2, article 6 point 1 will only be applicable to damages being caused by space objects on the surface of the earth or to aircraft in flight. Two separate possibilities were listed in article 6 point 1 - gross negligence on part of injured state or its willful action or omission. Liability will be waived to a degree that the damage was caused by circumstances listed above. Point 2 of article 6, as was already mentioned, makes it impossible for a state to relieve itself from liability under article 2, in cases of damage - regardless of any exonerating circumstances - occurred due to violation of public international law.

Different way of evading possible liability claims is contained in article 7, which excludes the possibility of a state being held liable, if the damage is inflicted to two distinct categories of entities. Firstly, provisions of LIAB are not applicable towards nationals of launching state, secondly, they are also not applicable to "[f]oreign nationals during such time as they are participating in the operation of that space object from the time of its launching or at any stage thereafter until its descent", and when such foreigners are remaining - on the basis of invitation - "in the immediate vicinity of a planned launching or recovery area as the result

of an invitation by that launching State".⁵⁹ As such, these provisions constitute a reference to *volenti non fit iniuria* principle, stemming from legal principle dating back to ancient Rome.

6. Dispute resolution.

As was indicated, the final text of OST does not contain any specific provisions concerning resolution of disputes that may arise between contracting parties during exploration of outer space. Coming into force of LIAB brought a significant breakthrough in this respect, as it contains a framework that can be adopted on a voluntary basis by the state parties.

As much as the issue of dispute resolution between states is derivative in nature to the concept of state responsibility, LIAB does refer to it in its preamble.⁶⁰ Paradoxically the need for a common mechanism that would provide for a standardized dispute resolution template was in itself a root cause for many disputes during the drafting process. Propositions made by states from beyond the iron curtain were seemingly irreconcilable with drafts submitted by remaining parties. To be precise, drafts proposed by Belgium and USA contained general provisions that decisions reached by commissions appointed for the purpose of settling subject matter disputes, will be binding for parties.⁶¹ The Hungarian draft on the other hand, while agreeing as to the need for a case by case appointed commission, was silent in respect to the binding force of its decisions.⁶² With binding force of commission's decisions remaining the contested point, drafting parties achieved a compromise, by agreeing that states that remain subject of given proceedings shall jointly agree on the binding force of decisions in question. In the final text of LIAB, dispute resolution is included in articles 8 to 22.

Article 8 contains a catalog of entities that can put forward a claim for compensation of damage. Point 1 enumerates - obviously - state that suffered the damage, or whose national (natural or juridical) did suffer such damage. In cases where the state of nationality does not put forward claims in question, it is possible for the state on whose territory such damage was inflicted to "any natural or juridical person" to advance such a claim.⁶³ In cases none of the

⁵⁹ LIAB, art. 7.

⁶⁰ G.M.Goh, Dispute Settlement In International Space Law, Leiden/Boston, 2007, p. 32.

⁶¹ USA: Proposal - convention concerning liability for damage caused by the launching of objects into outer space, Un. Doc. A/AC.105/C.2/L.19, 1967.

⁶² G.M.Goh, *Dispute*..., op. cit., p. 32.

⁶³ LIAB, art.8.2.

above mentioned states demands compensation, states whose permanent residents were injured can file such a claim.⁶⁴ Claim mentioned in article 8 is being communicated to the launching state by diplomatic channels. Article 9 of LIAB points out that in cases of launching and injured states not maintaining diplomatic relationships, the injured state can request another state party to present his claims to launching state or "otherwise represent its interests under this Convention". Claim in question can be presented via UN SG, providing that launching and injured states are members of UN.

Presenting a claim under rules of LIAB is not conditioned on prior exhaustion of local remedies, specifically "any local remedies which may be available to a claimant state or to natural or juridical persons it represents".⁶⁵ Similarly, none of provisions of LIAB can be interpreted as barring a state party or entities who it represents from pursuing its claims "in the courts or administrative tribunals or agencies of a launching State".⁶⁶ However, pursuing such a claim before state organs of the launching state prevents the claimant state from pursuing the claim under provisions of LIAB or other international agreement binding upon launching state at the same time. Hence, claimant state has a choice of means it can adopt in order to obtain due compensation, however it cannot pursue the same claim at the same claim on the basis of LIAB and other possible grounds.

LIAB unifies deadlines applicable for parties to present their claims. Point 1 of article 10 stipulates that injured states have one year, beginning from "the date of the occurrence of the damage or the identification of the launching state which is liable".⁶⁷ Second point of article 10 provides further details by pointing out that in cases of injured state not knowing about the damage occurring, or not being able to determine launching state, it can present its claim no later than one year from the day it learned about the relevant facts, however it cannot happen later than one year after "the date on which the state could reasonably be expected to have learned of the facts thought the exercise of due diligence". Unfortunately, due to the character of outer space activities, the full scope of damage suffered may not be known or possible to assess immediately - in such case one year deadline mentioned above is still in force, however the claimant state may amend its claims within one year of fully assessing the damage in

⁶⁴ LIAB, art.8.3.

⁶⁵ LIAB, art.11.1.

⁶⁶ LIAB, art.11.2.

⁶⁷ LIAB, art.10.3.

question. In absence of mutual agreements as to the form of compensation, it has to be paid in currency of claimant state, or - solely upon request of claimant state - in currency of liable state.⁶⁸ As it is being pointed out in doctrine, the default option for monetary compensation has a positive effect on the swiftness of the whole process.

Above mentioned regulation deals with the issue of compensation by diplomatic means. Taking into account the scope of possible damages, such means can prove itself unsatisfactory. Article 14 of LIAB enables the states, in cases of their claim presented in accordance with article 9 being left unsatisfied within one year, to appoint a commission on request of either of the parties, whose goal is assessment of presented requests. The same has been reiterated in article 18, where it is provided that the commission decides on the validity of the claim, and amount of compensation due. Subsequent articles of LIAB focus on issues concerning the manner in which such a commission shall operate. According to LIAB, the commission shall be composed of 3 members, one of whom shall be appointed by the claimant state, one by launching state, with the remaining member selected jointly by both parties to the dispute.⁶⁹ Members shall be elected within two months from the moment of making the request for commission to be appointed. Taking into account the nature of current outer space activities of states, situations in which only one state will have the status of launching state or injured state, can be rare. Even when analyzing space shuttle missions, it can be argued that the group of states potentially liable will comprise "both the states who have registered the space object, as well as states that utilize said object to launch their own satellites. states who paid for performing the experiment in question during the flights and states whose governmental and non-governmental entities utilized the experimental containers".⁷⁰ Since in any given dispute there can be more than one launching/injured state, article 17 of LIAB points out that regardless of the number of states involved on either of the parties, the number of commission members will not exceed 3. In such cases, states involved shall jointly appoint a member of commission for each side of the dispute. Third member of the commission shall be appointed in analogous manner. In case of one or more places within the commission becoming vacant, the same rules as in initial appointment shall apply.⁷¹

⁶⁸ LIAB, art. 13.

⁶⁹ LIAB, art. 15.1.

⁷⁰ A. Wasilkowski, *Działalność*..., op. cit., p. 107.

⁷¹ LIAB, art.16.2.

Commission operates under guidance of its chairman, parties involved in current dispute shall appoint him no later than four months from the day that request for establishing a commission was made. In case that four months deadline passes without appointing the chairman, each of the parties can request UN SG to appoint the chairman during subsequent two months. As stipulated in article 16 point 1, in the event that one of the parties fails to appoint a member of the commission, at the request of the other party, the chairman can act as a one-person commission.

The Commission appointed in such a way, following article 16 point 3, establishes by itself the manner of its operation, place in which it will be seated as well as other administrative issues. Point 5 of the same article provides that - apart from a situation where the commission is composed solely of a single chairman - all decisions shall be adopted by majority vote.

If such a commission - regardless of its composition of member count - presents its ruling or decision as soon as possible, according to article 19 point 3. Such decisions will be binding on the state parties - as already mentioned when discussing the draft process of this part of LIAB - only if such state parties wish for them to be binding. Decisions and rulings of such commission shall be made public, disseminated to each party and UN SG. LIAB provides also for a one year deadline for commission operation, which can be extended shall the need arise.⁷² The decision to extend its operation is entirely within discretion of the commission. As much as LIAB does not provide a list of possible reasons for extension of aforementioned one year period, doctrine points out that the most important one will be the need to reach a mutually acceptable outcome of the commission's workings.⁷³ Moreover, LIAB does require that commissions do act in accordance with article 12.⁷⁴ This provision serves to underline the importance of justice and equity principles when assessing the amount of due compensation. LIAB also provides a default solution for bearing costs of commissions operations, stating that each of involved states - in absence of other agreement - shall take equal part in such expenses.⁷⁵

⁷² LIAB, art. 19.4.

⁷³ G.M.Goh, *Dispute*..., op. cit., p. 35.

⁷⁴ LIAB, art. 19.1.

⁷⁵ LIAB, art. 20.

7. Final provisions

Article 22 of LIAB deals with the legal situation of international intergovernmental organizations. All of LIAB's provisions are applicable to them, with exception being made for article 24 and 27 dealing with the manner of accession and withdrawal from LIAB of states. Organizations in question, in order to be covered and subject of rights and obligations stemming from LIAB, need to present a declaration of acceptance of its rules, with the majority of its members remaining parties to LIAB and OST. As much as this can be regarded as merely a technicality, it still underlines the importance of international space law as a whole by directly referencing OST, as well as the framework character of this regime. Points 3 and 4 of article 22 modify the way in which liability will be borne by such international organizations, as well as rules concerning compensation claims. According to point 3, shall an international organization be liable for damage, it is jointly liable for it with its members. However, member state liability in such a case has a subsidiary character, as the claim in question can be presented to members only after such claim was first presented to the international organization, with no compensation being paid out in the period of six months. Claims concerning damages being done to international organizations by space objects can be only pursued by its members that are state parties to LIAB, not by the organizations as such.

Articles 23 to 28 deal with purely technical issues, dealing with adoption of LIAB by state, withdrawal and entry of LIAB into force. As LIAB was open for signature on 29 march 1972 and entered into force on September 1st the same year - following article 24 point 3 LIAB shall enter into force after being ratified by five states. According to article 24 point 2 depositary states are USA, USSR (currently Russian Federation) and Great Britain. Each of the parties may propose amendments to LIAB (art. 25), which will enter into force for the state accepting such amendments after the majority of the state accepts such a request. For remaining parties, the amendment will enter into force on the day of their acceptance. LIAB - similarly to OST - is open for signature for every and all states (art 14 point 1) and its provisions "shall not affect other international agreements in force in so far as relations between the states parties to such agreements are concerned".⁷⁶ Point 2 of article 23 explicitly states that contents of LIAB do not preclude the possibility for states to enter into agreements serving to confirm,

⁷⁶ LIAB, art. 23.1.

supplement or extend its provisions. Withdrawal from the convention cannot occur sooner than one year after adopting it by withdrawing party. It becomes valid one year after delivering notification to depositaries (art 27).

Main goal of LIAB was creating clear and uniform rules on liability that shall be borne by states in connection with their outer space activities, and space objects utilized. This aim was achieved, with LIAB being the only existing legal regime containing - for example - true absolute liability of a state. However, LIAB was drafted partly out of fear of tragic consequences of accidents involving space objects, a fear that proved itself to be - at a time - a bit far-fetched. The most famous instance of using its provisions is a tragic event involving the Cosmos 954 satellite that crashed in the territory of Canada. However, even in that case, LIAB remained one of several legal instruments employed by the USSR and Canada in order to resolve claims at hand. Another example of LIAB being treated as a possible source for obligation to compensate was entry of Skylab into earth's atmosphere on 11th July 1979.⁷⁷ However due to lack of any monetary loss present, no compensation was requested by Australia, as the event took place east of Perth. Despite space objects frequently entering earth's atmosphere, their potential to cause damage on the surface of the earth was greatly exaggerated by drafting parties.

⁷⁷ F. Lyall, P. B. Larsen, *Space Law...*, op. cit., p.117.

IV. Convention on Registration of Objects LaunchedInto Outer Space

Registration of space objects enables quick identification of a possibly liable party in case of damage being caused by a its space object, thus significantly affecting transparency of outer space activities as a whole. Traditionally for *corpus iuris spatialis* Convention on Registration of Objects Launched Into Outer Space⁷⁸ (hereinafter: REG) finds its roots in OST. While article 8 of OST stipulates that state parties who did include a given space object in its register retain jurisdiction and control over it even in outer space. OST does not offer any further explanation on the registration issue, specifically article 8 cannot be interpreted as requiring the states to create and maintain national registers of space objects. This has changed with adoption of REG on 14th January 1975.

Ties of REG with the rest of the *corpus iuris spatialis* system are present in the preamble of REG, where references to OST and LIAB are made. Amongst aims of REG creation of a central international registry of space objects by UN SG is listed, together with facilitating identification of individual space objects.

In a manner similar to previously discussed regulations, Article 1 contains definitions of terms used later in the treaty. The term launching state remained unchanged from LIAB. Point 2 of article 1 offers one addition to definition of space object, namely that component parts of space object, launching vehicle and component parts thereof shall share the same status as space object itself. By declaring the apparatus used to place objects in outer space as space objects themselves, a certain degree of uniformity was achieved by contracting parties. Also it provided solutions to some disputes present within doctrine relating to the nature of launching devices themselves. Point 3 of article defines the term of state of registry as launching state that has included a given space object on its registry in accordance with article II of REG. The same rule shall apply to international intergovernmental organizations by virtue of REG's article 7.

⁷⁸ Convention on Registration of Objects Launched Into Outer Space, U.N.T.S. 15020, 1976.

Point 1 of Article 2 places two basic obligation on state parties. Firstly, they are obliged to create registries of launched space objects and informing UN SG of its creation. Secondly, space object launched into outer space by given state, shall be included in such created and maintained registry by means of making suitable entry. Point 2 points out that in case that more than one state will have the status of launching state, the launching states shall jointly determine which one will include given object on its registry with due regard being given to article 8 of OST. According to point 3 the content of such registry and manner in which it shall be maintained is left to discretion of given state party. According to article 3 UN SG will ensure free and unrestricted access to information contained within register maintained by him.

Article 4 lists information that have to be included in register maintained by UN SG. Each state that enters a space object into this register shall furnish information containing the name of the launching state or states, appropriate designator of the space object or its registration number, date and territory or location of launch, basic orbital parameters and general function of the space object. This information shall be later updated shall the need arise. State parties shall also inform UN SG about space object previously communicated and launched into outer space that no longer remain on earth's orbit/outer space.

Article 6 concerns the issue of lack of ability to identify space objects despite utilization of means given to that end by REG. It is also the only article of REG directly referencing the issue of damages being caused by space objects as well as state responsibility/liability. In case a space object causes damage to state party or its nationals, or in case that space objects is of hazardous or deleterious nature, injured state can - on its own or via UN SG - turn to/request other state parties that possess appropriate means of observation and tracking of space object to provide it with information necessary to identification of such space object. States possessing such means and abilities shall render all necessary support in identification of such space objects on just and reasonable conditions. REG provides possibility for additional agreements being concluded to this end.

As much as REG does not contain detailed provisions on states responsibility on its own, the role it plays in *corpus iuris spatialis* and its impact on responsibility and liability can hardly be overestimated. In a very short and concise way it provides a framework for registration of space objects greatly affecting not only transparency of outer space activities, but also providing a way to identify space object responsible for causing damage, thus enabling its easier compensation.

In orbit ownership transfer of space objects

Although the registration system introduced in the *corpus iuris spatialis* can appear as rather straightforward, it is not flawless in its application. One of the biggest challenges for the registration of space objects, is correctly resolving situations when more than one state can be treated as a launching state. However, a case like this can easily become even more complicated, when the multitude of states involved or connected to a single space object, does not stem from its launch itself, but rather from an in-orbit transfer of such a satellite from one state to another. Both issues will be discussed in turn.

REG provides for a possibility of a space object having more than one state that could qualify as a launching state, basing on the definition contained in REG. Such was the case with Palapa B2R, a particularly unlucky satellite, which – due to technical malfunctions, had to be deorbited during one of the space shuttle missions, and relaunched. Its second launch was performed on April 1990 from US territory, by McDonnel Douglas, a US-based company. Subsequently, the craft has been registered with the UN in 1992, again by the USA. However, the entity that was "procuring" the launch was Indonesian state-owned corporation, Permutal. Moreover, the space craft has been handed over to Permutal shortly after its registration. However, Indonesia did register it, nor did it include it into its national registry.

State and business practice in regards to the second issue indicated, i.e. in orbit transfer of ownership, can be just as contradictory. In 1997 a telecommunication satellite, Agila II, has been launched from the territory of People's Republic of China.⁷⁹ This has subsequently been transferred in orbit to Mabuhay Philippines Satellite Corporation, and registered with UN by Philippines. In 2009 the owner of Agila II has been acquired by ABS, a Bermuda company.⁸⁰

⁷⁹ Registration data on an object launched into space by the Philippines, UN Doc. A/AC.105/INF.409

⁸⁰ F. von der Dunk, *Transfer of Ownership in Orbit: From Fiction t om Fiction to Problem*, in M. Hoffman, A. Loukakis, Ownership of Satellites: 4th Luxembourg Workshop on Space and Satellite Communication Law, Baden Baden, 2017, p. 41.

However, this fact had no impact on the registration of Agila II, as the fact of the satellite changing hands has not been communicated to the UN, with the UN Register still featuring Philippines as the state of registration.

The two examples above show a trend of registrations being initially quite successful after the launch, with the interest in upkeeping the correct data in the UN Register quickly diminishing. However, as much as one may be tempted to perceive this as a simple lack of compliance on part of the state parties to REG, the legal circumstances are somewhat more nuanced. Firstly, it has to be noted that the UN has not one but two distinct registration frameworks for space objects, one maintained on the basis of REG, the other on the basis of RES 1721. While both instruments require states – in a binding or non-binding – manner to provide information on objects that are being launched into outer space, none of them explicitly provides for either an outright obligation, or even a suggestion that registration of a space object ownership of which has been transferred in-orbit has to be updated. Moreover, depending on the interpretation of some of the provisions, re-registration of already communicated space objects may not be possible.

RES 1721 in its part B "*Calls upon States launching objects into orbit or beyond to furnish information promptly to the Committee on the Peaceful Uses of Outer Space, through the Secretary-General, for the registration of launchings*". The register in question is to be maintained by the Secretary General,⁸¹ with the COPUOS supporting Secretary General in maintaining communications with the launching states. REG builds upon this concept by introducing a more detailed definition of the launching state as well as incorporating some provisions aimed at tackling the issues that may arise when more than one state may be valid to register the space object in the UN register.

Majority of the registration issues connected to the in orbit transfer of space objects, stem from the way in which the concept of launching state has been defined in both RES 1721 and REG. According to the part of RES 1721 quoted above, one can argue that only the state that has physically launched the space object is valid and empowered to conduct the registration process, as the resolution clearly provides for a state that launches the object, not the state that operates said object in outer space. However, such an approach may be regarded as overly

⁸¹ RES 1721, part B, p. 2.

conservative, and too reliant on the linguistic analysis of the resolution, rather than taking into account its object and purpose. REG, on the other hand, utilizes the "standard" definition of the launching state derived from remaining parts of *corpus iuris spatialis*, already analyzed above. In short, only state with a substantial enough connection to the launch of the space object, can perform its UN registration. Such connection takes place either when the launch is conducted from the territory of given state, or its facilities, or the launch is itself conducted or procured by the state. However, REG falls short of providing a comprehensive and complete solution for launches with a more nuanced structure of participants. This is particularly in cases of purchase of a spot on a launch vehicle by a non-governmental entity, and in orbit sale of a space object.

Even though the circumstances of both situations presented above are different, they refer to the same issue, that is, what are the limits to consider a state as "launching" the object or "procuring" such launch. In turn, this brings us – again – to article 6 of OST and the attribution of outer space activities to the states exercising jurisdiction over them. As it has been discussed, depending on how strict of an interpretation of the term "national activities in outer space" will we adopt, the results may differ. However the practice, albeit not entirely consistent, appears to favor the approach of any outer space activity that is being conducted within the jurisdiction of a state party, is to be considered as national activity thus triggering the obligations stemming from REG. Such was the case with already mentioned Agila II, which has been registered in the UN register by the Philippines, even though its creation and launch as been entirely an endeavor of a private company.

However, a somewhat different issues arise when the transfer of the space object in question is not linked to the launch itself, i.e. when the ownership of the satellite is being transferred without plans for such transfer being in place at the moment of the launch. In such a case the "buying" state did not "launch" the space object as such, nor can it be regarded as "procuring" the launch, as the state in question has not been involved in said launch in any way.

Finally, a strict reading of REG or RES 1721 provisions appears to exclude the possibility for a re-registration of a space object. Both RES 1721 and REG provide for a single act of registration, according to RES 1721 performed by the state that has launched the object, or in the case of REG, by the launching state. As a form of acknowledgment of the possibility

of a single space object being launched by more than a single state, REG includes a possibility for states participating in a joint launch, to decide who will register the space object.⁸² However, such an agreement has to take into account contents of article 8 of OST, i.e. national registration of the space object. However, the provision discussed above still does not clearly provide for overwriting an already existing registration, and even if it could be regarded as such, it would provide such an opportunity solely for launching states of space object in question, thus looping in to the beginning of the discussion.

At the same time, state practice appears to be much more result-oriented and flexible than doctrinal consideration. Of particular importance is the case of the Spot-7 satellite, later renamed to Azersky. On 30th of June, 2014, the satellite itself has been launched from territory of India by Airbus Defense and Space Ltd., a French private company. In November 2015, it has been entered into UN register as Spot-7, indicating that it is being registered by France.⁸³ However, nearly a year before the satellite got registered by France, it has been sold to Azerbaijan's Azercosmos space agency.⁸⁴ This lead to a rather unexpected outcome, with Azerbaijan, regardless of registration done France, also registered the same satellite.⁸⁵ The Azeri notification, even though it predates the one performed by France, reached UNOOSA after it – on 7th of December 2015, whereas the French notification was registered on 26th of November 2015. Moreover, since Azerbaijan is not a party to REG, its notification was done within the framework set out by RES 1721. The situation got resolved in 2017, after France notified UN that "The SPOT 7 satellite, initially registered by France in 2016, was transferred to and registered by Azerbaijan in December 2016 and was therefore removed from the French National Register".⁸⁶ The reason why the French "deregistration" notification mentions the vear 2016 as the year of initial registration, instead of 2015 - as provided in both cited documents - remains unclear, but apparently was not inaccurate to the point of bothering any of the parties involved. Thus, the Spot-7/Azersky constitutes an example of a successful reregistration of a space object, after its sale in-orbit.

⁸² REG, art. 2.2.

⁸³ Note verbale dated 3 November 2015 from the Permanent Mission of France to the United Nations (Vienna) addressed to the Secretary-General, UN Doc., ST/SG/SER.E/756.

⁸⁴ Airbus sells in orbit SPOT-7 imaging satellite to Azerbaijan, Space News, 2014, available at: <u>https://spacenews.com/42840airbus-sells-in-orbit-spot-7-imaging-satellite-to-azerbaijan/</u> (accessed: 30.06.2023).

⁸⁵ Note verbale dated 19 October 2015 from the Permanent Mission of Azerbaijan to the United Nations addressed to the Secretary-General, UN Doc., A/AC.105/INF/428.

⁸⁶ Note verbale dated 27 March 2017 from the Permanent Mission of France to the United Nations (Vienna) addressed to the Secretary-General, UN Doc., ST/SG/SER.E/797.

It would appear that even though the re-registration approach is not doctrinally correct, or even wasn't directly included in the REG, allowing it proves to be the only reliable way to safeguard registration of a given space object in UN registration. It also helps to avoid situations in which the state of registration featured in the UN register is not the state on whose domestic registry the space object is included. This is especially important if the issues of states actually having jurisdiction over the space object due to it being included in theirs national registry, and registering the object in UN being different states is to be alleviated.

PART TWO. SUBSEQUENT PRACTICE.

As it has been presented above, *corpus iuris spatialis* provides the states with a rudimentary set of rules aimed at ensuring peaceful cooperation in exploring and utilizing outer space. It is then up to the states to introduce domestic legislations and policies, to ensure the compliance of national activities with the agreed upon treaty-based regime. This is why it is of paramount importance, to review the conduct of space fairing states that remain parties to *corpus iuris spatialis*, in order to analyze how the provisions of treaties governing outer space activities were adopted on a per-country basis. This, in turn, will allow to determine whether the current state of national practice in conducting outer space activities has amounted to a standardized model of outer space cooperation and exploration.

I. USA

While considering the cutting edge technology regulations, legal regimes tend to be reactive rather than proactive, responding to issues already present, rather than trying to anticipate potential problems. This appears to apply throughout the drafting process of the entire corpus iuris spatialis, where drafting parties did mention on numerous occasions lack of necessity for more detailed provision, due to the unknown future scientific and technical developments. Domestic regulations of the United States did follow the same pattern, introducing positive legislation in order to address problems and issues that have been already identified. However, USA space legislation, unlike corpus iuris spatialis, does not have a single instrument that can be regarded as a primary set of rules, instead relying on a multitude of legislations each addressing a different aspect of outer space activities.⁸⁷ As such, its development can be divided into three distinct stages. Firstly, already existing prerogatives of respective agencies had to be analyzed in order to establish whether their scope covered and/or coincided with private space activities. Secondly, building on that experience a single point of contact for entrepreneurs was established, in order to facilitate and streamline the process of obtaining approvals and/or consents, that have been identified in the previous step. Lastly, basing on these experiences, Commercial Space Launch Act⁸⁸ (hereinafter: CSLA) was

 ⁸⁷ E. J. Hermida, *Legal Basis for National Space Legislation*, Space Regulations Library, Montreal, 2003, p. 79.
⁸⁸ U.S. Code, Title 51, National and Commercial Space Programs, 51 U.S. Code § 10101 – 71302, available at https://www.law.cornell.edu/uscode/text/51 (accessed: 24.06.2023).

introduced that would provide a leaner and more comprehensive set of rules covering private space operations, that would include and provide procedures tailored for emerging industry.

1. Pre-CSLA era

The first ever private attempt at deploying a functional space launch system took place in 1982 with Space Services Inc. of America testing Percheron and Conestoga launching systems. This endeavor did constitute a massive undertaking as both the technology as well as legal framework were still in development. At that time a single domestic legislation that would have been devoted to issues of private space launches simply did not exist. This led to multiple agencies having potential jurisdiction over subject-matter launch, and required SSI to inquire every potentially interested agency whether indeed any part of planned test launches fell within their jurisdiction.

In consequence SSI test launch was not only innovative in technical terms of private enterprise's first attempt to enter into the domain up to that point reserved for states, but also constituted a challenge from the legal perspective. With no single comprehensive source of domestic legislation governing space launches, SSI had to cooperate with the Federal Aviation Administration (hereinafter: FAA), Department of State, National Aeronautics and Space Administration, Department of Defense, Coast Guard, Federal Communication Commission and North American Aerospace Defense Command, in order to ensure full legal compliance of its operations.

Out of all listed agencies Federal Aviation Administration remained one of the few, whose prerogatives did cover supervision over rocket launches planned by SSI. Following provisions of the 1958 Federal Aviation Act, the Secretary of Transportation may issue, through FAA, relevant regulations on "the prevention of collision[s] between aircraft [...] and airborne objects."⁸⁹ This de facto enabled the FAA to introduce regulations that encompass rocket launches, which could be interpreted as being applicable to SSI's Percheron and Connestoga launches, as the FAA – in U.S. Code of Federal Regulations, Title 14 (hereinafter:

⁸⁹ A. D. Webber, *Launching the Rocket Industry in the United States: Domestic Regulation of Private Expendable Launch Vehicles*, Journal of Air Law & Commerce, issue 1, 1984, p. 3.

14 CFR)⁹⁰ defines a rocket as "an aircraft propelled by ejected expanding gases generated in the engine from self-contained propellants and not dependent on the intake of outside substances. It includes any part which becomes separated during the operation.".⁹¹ Operation of an unmanned rocket requires a notification to be issued to the nearest FAA Air Traffic Control center between 24 and 48 hours before the launch. This notification has to identify persons conducting the launch, number of operated rockets, their size, maximum altitude etc.⁹² Additionally, the same regulation provides that no one shall operate an unmanned rocket:

- i. in a manner that creates a collision hazard with other aircraft;
- ii. in controlled air space;
- iii. within five miles of the boundary of any airport;
- iv. at any altitude where clouds or obscuring phenomena of more than five-tenths coverage prevails;
- v. at any altitude where the horizontal visibility is less than five miles;
- vi. into any cloud formation;
- vii. within 1,500 feet of any person or property that is not associated with the operation;
- viii. between sunset and sunrise.

However it remains unclear whether FAA regulations were intended to cover private launches of Expendable Launch Vehicles. Senate Committee⁹³ hinted that FAA jurisdiction should encompass a possibly broad spectrum of aircrafts. At the same time the FAA did explicitly exempt Space Transportation System from its jurisdiction and declared it as not covered by FAA Act in its understanding of the difference between aircraft and spacecraft.⁹⁴ This discussion seemed to be fueled by the assumption that FAA regulations relating to rockets did primarily apply to devices used by amateurs, and although SSI activity could be interpreted as falling within the same category, it was not clear whether the FAA had actual jurisdiction over it. Finally, the FAA established that only FAR 101.21 to 25 would be applicable, which

⁹⁰ U.S. Code of Federal Regulations, Title 14, Aeronautics and Space, 14 CFR § 1-1399, available at <u>https://www.ecfr.gov/current/title-14</u> (accessed: 24.06.2023).

⁹¹ 14 CFR § 1.1.

⁹² 14 CFR § 101.25.

⁹³ A. D. Webber, *Launching*..., op. cit. p. 9.

⁹⁴ G. J. Mossinghoff, G. P. Sloup, *Legal Issues Inherent in Space Shuttle Operations*, Journal of Space Law, 1978, p. 65.

encompass requirements listed above, as well as duties to notify and not cause any hazard to 3rd parties.

This placed SSI and FAA in a difficult position. On the one hand, FAA not only did historically oppose extending its jurisdiction on *de facto* space objects, it did not have any rules and policies ready to accommodate this type of aircraft registration and air-worthiness. At the same time, SSI test launches would undoubtedly enter "controlled airspace", that is they would reach an altitude of over 14 500 feet. This would amount to breaching one of limitations that are being imposed by the FAA on such type of activity. As a result, FAA indicated that in order to operate in accordance with what little rules were in place, SSI would have to obtain either a waiver or an exemption from FAA's regulations.⁹⁵ While both would grant SSI with clearance for launch, waivers and exemptions granted by the FAA vary greatly in their scope.

Waiver constitutes a one-time permission for a test flight to be conducted from previously specified launch facility. Exemption on the other hand, provides that a given type of activity is not covered by FAA regulations. The necessity to obtain an exemption was also indicated by FAA, should the rocket fly into controlled airspace or leave US territory.⁹⁶

In case of Percheron Launch, SSI, after contacting "*every agency and department that it perceived might have an interest in the launch*"⁹⁷ was finally required to obtain sign-off from the FAA and FCC, as well as make necessary arrangement with the US Navy so that the vehicle can be tracked once launched. Due to a shorter review period, SSI requested a waiver from FAA regulations concerning flights in controlled airspace and within five miles of the boundary of the airport. Application provided included a flight plan and a request for a two day launch window. The waiver, issued merely two weeks after the application, provided for a number of conditions - operator of the launch vehicle was responsible for ensuring that no 3rd party aerial vehicles were within 9 mile radius of launch site, time for conducting the test launch was limited to "between fifteen minutes after sunrise and 10 am" and operator was to maintain direct communication with local air traffic control center. FAA retained the right to cancel or change any part of the waiver shall the conditions of launch change, or should it be required to

⁹⁵ A. D. Webber, Launching..., op. cit. p. 12.

⁹⁶ Ibid.

⁹⁷ A. D. Webber, *Launching*..., op. cit. p. 23.

ensure public safety. However, the Percheron test flight *per se* never took place, as the rocket exploded during one of the engine tests.

SSI did not stop after failing to launch Percheron. The company decided to move on with testing of the next expendable launch vehicle - the Conestoga rocket. Named after famous wagon that helped pioneers from eastern states to colonize the west,⁹⁸ the device itself was ultimately the first private expendable launch system. However history has shown that its impact went far beyond being simply "the first", as it did help develop current domestic space legislation of the USA.

Conestoga launch did vary in few crucial points from the initial Percheron test. First of all, unlike Percheron, Conestoga was not a completely in-house built device, as it did utilize a minuteman missile engine for propulsion. This part was sourced from NASA, thus triggering additional administrative work regarding the transaction itself. As the test flight plan provided for Conestoga leaving the area of US territorial waters, it was also subject to Department of State jurisdiction and rules of Arms Export Control Act.⁹⁹ At the same time, the fact that part of the Conestoga flight path was taking place ultimately above ocean and past US territorial waters, SSI had to cooperate with US Navy, NORAD, Department of Defense and Coast Guard. This, together with a much more complicated process of approval on part of the FAA caused the entire procedure to span over six months and incur around 250 000 USD in legal costs and administrative fees alone.

Unlike the planned launch of Percheron, in case of Conestoga, SSI aimed at obtaining an exemption from FAA regulation rather than a waiver. This can be perceived as being in line with previous FAA statements, indicating that any activity other than incidental one-time testing should be subject to exemption rather than a waiver.¹⁰⁰ SSI filed for FAA exemption on March 16, 1982, with the FAA delivering its decision 6 months later - on September 1 of the

⁹⁸ Albeit iconic and extremely useful, Conestoga wagons were too heavy for crossing the vast prairies of the Midwest, hence the majority of settlers used other, more lightweight types of carriages. As for its space fairiness out of the two mentioned conestogas, conestoga the wagon unlike conestoga the rocket could not reach altitudes necessary for it to be of any interest space-transportation wise. Consequently, it remained entirely outside of scope of FAA, FCC and NORAD jurisdictions. However, what it lacked in aerodynamics, it made up for in load capacity, being able to haul as much as 5.4 metric tons - nearly eleven times more than conestoga the rocket.

⁹⁹ U.S. Code, Title 22, Chapter 37, Arms Export Control, 22 U.S. Code § 2771 - 2781, available at <u>https://www.govinfo.gov/app/details/USCODE-2021-title22/USCODE-2021-title22-chap39-subchapIII-sec2778</u> (accessed: 24.06.2023).

¹⁰⁰ A. D. Webber, *Launching*..., op. cit., p. 11.

same year. In its petition SSI did indicated both the launching Conestoga expendable launch vehicle as well as the launch site itself. It also included a projected flight path that did not intersect or cross any "permanent human habitations".¹⁰¹ SSI also had included information on planned precautions, including medical emergency and firefighting crews and equipment. Finally, SSI requested exemption from regulation FAR 101.C, pointing out that it does not concern the kind of activity procured by SSI, especially given the disproportion in scope between planned commercial utilization of Conestoga and amateur rocket launches, as well as the amount of precautionary measures adopted.

Regardless of that FAA subsequently went on to publish notice and summary of said petition twice in the federal register, in order to give ample ability to comment by the public on proposed activity.¹⁰² In the second notice, published on July 26 FAA included a list of requirements that would be necessary to ascertain required safety level.¹⁰³ Finally FAA did grant only partial exemption from rules contained it FAR 101.C. The agency granted exemption from the rule banning operation of a rocket in controlled airspace and within 5 miles of an airport. However the request to relieve SSI of the duty to observe remaining provisions of FAR 101.C was dismissed, as they amounted to "clear weather environment", and as such could not be alternatively safeguarded.¹⁰⁴ Moreover FAA obliged SSI to maintain at least 100 million USD of insurance coverage, enter into an arrangement with a nearby airport in order to ensure that it will be closed during the launch. SSI also had to maintain direct contact with Houston Air Traffic Control Center as well as ensure that launch will be terminated, canceled or otherwise delayed should it "jeopardize safety of persons and property".¹⁰⁵

A comparably long procedure took place regarding export control executed by the Department of State. Curiously, in the beginning it was not quite clear whether Conestoga launch would fall within DoS jurisdiction at all. Nevertheless, on 15th of April 1982 SSI submitted a letter to the office of Munitions Control of the DoS, seeking approval for Conestoga "export", i.e. launching it beyond the territorial waters of the USA. Subsequent activity of the Department of State can be regarded as incoherent to a certain degree. After SSI submitted the

¹⁰¹ A. D. Webber, *Launching*..., op. cit. p. 11.

¹⁰² Ibid.

¹⁰³ Those include establishing of restricted area so that the rocket launch is isolated from other air traffic; when vehicle operation would be terminated; notices to airmen and mariner as well as establishing communication lines with local air traffic control.

¹⁰⁴ A. D. Webber, *Launching*..., op. cit. p. 30.

¹⁰⁵ Ibid.

letter to the office of Munitions Control, said office forwarded information in question to federal agencies it deemed as potentially interested in subject-matter issue. On 25th of August 1982 DoS issued a written statement to SSI, indicating that it does not foresee any reasons to object the launch. However, the requested approval was not granted by that date, nor any consensus whether the export permit/license was indeed necessary was reached, due to the office of Munitions Control not receiving all input from queried agencies. Finally, the export permit was granted by DoS, on 7th of September 1982, just one day before planned launch.

Pursuant to provisions of the Arms Export Control Act, the Department of State placed some conditions concerning the issued permit. First and foremost, this permit concerned only this one particular launch of Conestoga, with subsequent launches still requiring separate approvals. This remained in sharp contrast with proceedings before the FAA, where SSI successfully requested an exemption from certain rules, which remained in force for future activities. Permit was also granted with "the understanding that SSI had agreed to comply with the various safety requirements imposed on the launch by NASA and the FAA."¹⁰⁶ Moreover, DoS "understood" that SSI has at least 100,000,000 USD of insurance coverage for damage caused by launch activities. Lastly, DoS explicitly required SSI to indemnify the US Government for any expenses and/or damages that might arise in connection with subjectmatter launch, including those provided for in public international law. Additionally, to DoS permit, SSI did obtain temporary permit from the FCC in order to cover radio communication with Conestoga, as well as - albeit informally - cooperate with Department of Defense and NORAD.¹⁰⁷

SSI was not the only company attempting to come up with a private expendable launch vehicle system in the early 80s. Starstruck Inc., a company devoted to development of hybrid rockets to be used in its ELV systems, faced nearly the same issues. Its example is however of great importance, since Starstruck Inc. opted for a different manner of launching of space objects, and encountered certain changes in legislation when conducting its activities..

It has to be noted that while SSI conducted its launch activities from the territory of the USA, Starstruck design provided for launches being conducted from sea platforms, much like

¹⁰⁶ A. D. Webber, *Launching*..., op. cit. p. 41.

¹⁰⁷ A. D. Webber, *Launching*..., op. cit. p. 32.

today's SpaceX. This technicality caused a switch in agencies that had jurisdiction over Starstruck's endeavor. Since the launch was to be conducted outside of USA territory, the Department of State rather than FAA was the agency with the most "interest" in the launch, as FAA has no jurisdiction over activities conducted outside of US territory. This led to Starstruck not having to obtain FAA's waiver or exemption from its rules, which left the industry, again, at a loss of any clear path as to who is actually responsible for overseeing such activity. In the case of Starstruck it was the Department of Defense who "stood up" to the challenge.

Effectively Starstruck was required to obtain two licenses. Firstly, much like SSI, for Dolphin and subsequent launches, a license for utilization of radio frequency was required by FCC.¹⁰⁸ Secondly, the company was required to obtain export license for purposes of transporting the launch device from US territory onto launching pad beyond USA's territorial waters. Such an export license was granted by the Department of State (DoS). As it is pointed out in then-current literature, it was the DoS that served the coordinating role on federal part when it came to granting necessary approval. Via its prerogatives, DoS aimed to achieve and ultimately did achieve the same scope of provided information as it was the case with SSI and approvals granted by FAA. In fact DoS did refer the information obtained to the FAA, NASA and DoD, thus ensuring that planned launch was not a threat to public safety and security. Lastly, DoS did require Starstruck to obtain insurance indemnifying the state for any damage caused.

However, between the first and the second launch attempt by Starstruck, a change in legislation occurred. This is due to the executive order no 12465 (hereinafter: EO) adopted on February 24, 1984 by President Ronald Reagan. By its means, the president has designated the Department of Transportation (hereinafter: DoT) as the federal agency leading the facilitation process of conducting commercial ELV activities, as well as encouraging such activity. As FAA is a part of DoT, this change allowed federal government to develop domestic space legislation in a way that enable capitalizing on already gathered experience, as FAA played a major role in SSI's Percheron and Conestoga launches, as well as cooperated with DoS during first launch attempt undertaken by Starstruck.

¹⁰⁸ A. D. Webber, *Launching*..., op. cit. p. 41.

EO provided, however, for each of the agencies to keep their regulatory powers. While it did correspond with "coordinating" aim of EO, it left the DoT with no real and tangible regulatory power over outer space activities.¹⁰⁹

Pursuant to EO, Secretary of Transportation established within its office and "*Office of Commercial Space Transportation*" (OCST). Its main objective was coordination of multiagency communication in order to eliminate duplicate requirements and information requests that would be directed towards entities pursuing launch approvals. OCST was also responsible for ensuring that specification of data required by each interested agency was delivered and known by all interested parties in advance. Furthermore EO moved issuing of Arms Export Licenses from DoS to DoT as a temporary measure, which was an important step taking into account centralization of administrative activities. OCST also facilitated access to government-owned launch sites, as well as laid foundations for future private launch site legislation.¹¹⁰

Starstruck's experience with newly created single point of contact was brief, as the company did not require issuing a brand new license and approval, but merely rescheduling previously planned launch attempt. This led to much quicker and seamless transition of approval activities. As it was described during Space Commercialization hearings, OCST helped to "streamlin[e] the Federal approval process", and assisted Starstruck also on local level, taking on some of the burden of communicating with Material Transport Bureau and Coast Guard.¹¹¹

In essence, OCST's approval process consisted of two stages - the launch and the mission approval. During the launch approval stage, it was required that the applicant demonstrated capability sufficient for safe conduct of launch in question. As for mission approval, the applicant was required to disclose information on the nature of payload being launched, place it will be launched from, and other information necessary for OCST to establish whether the launch remains safe from national security and foreign affairs perspective.¹¹² License was subsequently issued if both of the indicated tests were passed successfully. It has

¹⁰⁹ V. Kayser, *Launching Space Objects: Issues of Liability and Future Prospects*, Kluwer Academic Publishers, Dordrecht, 2001, p. 89.

¹¹⁰ E.J. Steptoe, *United States Government Licensing of Commercial Space Activities by Private Enterprise*, Documents on Outer Space Law, no. 7, 1985, p. 195.

¹¹¹ V. Kayser, *Launching*..., op. cit., p. 83.

¹¹² V. Kayser, Launching..., op. cit., p. 90.

to be noted that described licenses were issued on a case by case basis, as there has been a dispute between DoT and DoD as to the safety aspect of issuing a license covering multiple launches at that stage of industry's development.

However, Starstruck's endeavors disclosed some of the flaws of the legal regime on private outer space activities in the USA. The company was effectively twice forced to blaze new trails when it goes to ELV operation. Firstly, due to the fact of launching Dolphin from high seas rather than US territory, secondly due to a new presidential order that attempted to regulate otherwise wild-west-like legal landscape of crisscrossing obligations and jurisdictions. At that time it was obvious that while the USA does possess the technical - albeit limited capacity to conduct and offer private space object launch services, it does not necessarily possess the legal infrastructure required for this industry to flourish. The interdependency of those two fields, and mutual necessity for further development laid down foundations for what would later become CSLA.

Taking into account the sheer volume of legal and procedural obstacles and the pioneer character of the endeavor, one can remark that both SSI and Starstruck were too preoccupied with whether they were capable of launching a rocket in physical terms, that both companies forgot to ask themselves, will it be feasible in then-current legal reality. It is obvious that Percheron and Conestoga launches were first and foremost legal achievements, having a much bigger impact on policy-making than on the industry as such. However, despite the very prototype-esque nature of legal and administrative proceedings, aforementioned activities presented legislative and executive branches with invaluable experience as to what administrative solutions to adopt in order to enable the industry to grow.

2. The CSLA era

Introduction of CSLA in 1984 can be regarded as an evolution of previously applied measures aimed at facilitating operations of private entities in outer space. It regulates the issues of liability for damages caused in the course of conducting outer space activities, as well as provides for a more comprehensive process of licensing of private launches. Parts of CSLA were amended twice since its introduction. The first amendment took place in 1988, and introduced a harmonized framework of liability for damages and what type of insurance is

required. In 2004 further changes were introduced, covering experimental permit, passengercarrying launches and commercial license provisions. Having in mind the scope of this work, CSLA will be described and analyzed in its current state that encompasses all of the amendments. This will be achieved by presenting its provisions on a per issue basis, covering governing bodies, continuing supervision over such activities as well as issues of liability for given space activity.

2.1 Authorization & supervision

USA's framework of outer space regulations is based on dispersion of responsibilities throughout many governmental agencies and administrative bodies. This in turn impacts the way obligation to authorize and supervise private outer space activities is being fulfilled by the Unites States. In essence, the American framework provides for three distinct types of activities (launching and reentry, communication and remote sensing), each engaging a different part of the federal government.

Launching and reentry activities in CSLA were codified and built upon previous experiences of both private enterprises and administration. Section 4 of CSLA contains a set of definitions that are being utilized in subsequent provisions as well as in regulations whose drafting was delegated to relevant departments of the federal administration. The concept of "launch", "launch property", "launch services", "launch site" and "launch vehicle" are subject to points 2 - 6 respectively. In an unsurprising manner, launch is defined as an activity destined: "to place, or attempt to place, a launch vehicle and payload, if any, in a suborbital trajectory, in Earth orbit in outer space, or otherwise in outer space".¹¹³

Therefore, CSLA does provide some regulation concerning suborbital flights, and delegates oversight over such launches to the same entities as the launches that are reaching orbit or going further into deep space. Also CSLA does not differentiate between a launch that was actually conducted or an attempted one, putting more weight on the type of endeavor at hand rather than the physical characteristics of the endeavor.

¹¹³ CSLA, § 50902.7.

Launch property was defined in a broader way than launch vehicle, as it does encompass both the vehicle that will ultimately be subject to a launch, but also propellants, component parts of launch vehicles and "other physical items constructed for or used in the launch preparation or launch of a launch vehicle."¹¹⁴ It is important to note that point 3 should be read together with the contents of the definition of "payload", contained in section 4 point 7 of CSLA. This is due to "subcomponents of the launch vehicle specifically designed or adapted for" payload being treated as a part of payload, rather than being qualified under "component part of launch vehicle". The launch vehicle itself was described in a rather laconic manner, being legally defined as "any vehicle constructed for the purpose of operating in, or placing a payload in outer space and any suborbital rocket".¹¹⁵ A broad meaning was assigned to the term of "launch services", which encompasses not only launch as described in point 2 (i.e. including attempted launch), but all activities that are "involved in the preparation of a launch vehicle and its payload for launch and the conduct of a launch".¹¹⁶

Due to plethora of possibilities, and - as was already shown in the 1980s, and proven by the development of science - great variety of objects and places can be regarded as payloads¹¹⁷ and launch sites, the term payload was described as any object that is being undertaken by a person to be placed in outer space, while utilizing a launch vehicle. As previously mentioned, this definition incorporates any subcomponents of the launch vehicle that are either specifically designed or adapted for this payload, as payload. A launch site, in the meaning given by CSLA, constitutes any "location on Earth from which a launch takes place, as defined in any license issued or transferred by the Secretary under this Act, and includes all facilities located on a launch site which are necessary to conduct a launch".¹¹⁸ It is worth noting, that this definition does not limit, nor requires the launch site to be located within the territory of the USA or its territorial waters.¹¹⁹ This is especially important in the current day and age, with activities of SpaceX conducting its launches from sea platforms being one of the most important means of "outer space delivery" in 2021.

¹¹⁴ CSLA, § 50902.8.

¹¹⁵ CSLA, § 50902.11.

¹¹⁶ CSLA, § 50902.7c.

¹¹⁷ A prime example of this would be launching by SpaceX a car in February of 2018, treating this as a ballistic payload, for testing purposes.

¹¹⁸ CSLA, § 50902.10.

¹¹⁹ This is an example of what can be described as "evolution by practice", taking into account previously invoked attempted launch of Dolphin by Starstruck Inc., which - according to the plans - was destined to be launched from a platform that would remain in high seas.

Finally, CSLA includes a list of entities that remain covered by its provisions. In point 8 of section 4, a "person" (i.e. the same person that was previously mentioned in payload definition) is defined as "any individual and any corporation, partnership, joint venture, association, or other entity organized or existing under the laws of any State or any nation". As it can be seen, this concept of "person" is not purely limited to the USA citizens. This has an impact on subsequent provisions of CSLA concerning licensing of activities, a prime example of which is section 6 paragraph A1 and A2. While paragraph A1 prohibits any person (as defined above) from operating - within the territory of USA - a launch vehicle or a launch site without a relevant license that was issued in accordance with provisions of this act. Paragraph A2 contains similar prohibition - however directed solely towards the USA citizens attempting to conduct such activities outside of the USA territory.

Similarly to previously analyzed approach, authorization and supervision of launch activities - in general - remained with the DoT.¹²⁰ However, it is not the DoT itself that does the "compliance" part itself, but rather the bulk of the burden tied to ensuring compatibility of proposed activities with domestic legislation, as well as developing technical regulations was left with the Office of Space Transportation (hereinafter: OOST), that had been formed within FAA, which in turn was founded within the structures of DoT.¹²¹ Subsequent regulations adopted by the FAA provide more detailed guidance as to who will be required to obtain a license based on the place of the launch and "nationality" of the person in question.¹²² To this end, the procedure diversifies the requirements for the license depending on the place where the launch or reentry activity will take place (i.e. within or outside of the USA), uSA citizens, and foreign entities "in which a U.S. citizen has a controlling interest".¹²³ Licensing regime executed by OOST¹²⁴ governs four types of activities that are executed by persons within territory of the USA:

- i. operation of launch sites;
- ii. operation of reentry sites;

¹²⁰ CSLA, § 50903.

¹²¹ P.A. Varwing, R. S. Jakhu, "National regulation of Space Activities", Springer, New York, 2010, p. 406.

¹²² Nationality in this instance is understood in rather loose terms as it encompasses both citizenship of natural persons as well as control that is being executed over an otherwise foreign entity by the U.S. national. ¹²³ 14 CFR, § 413.3.

¹²⁴ P.A. Varwing, R. S. Jakhu, National..., op. cit., p. 406.

- iii. conducting the launch of the launch vehicle;
- iv. reentry of given vehicle.

Additionally OOST reviews documentation and approves the same four categories of activities that are being conducted outside of the USA by its citizens or entities organized therein. A slightly different approach was adopted when the entity that either operates a launch/reentry site, or conducts a launch is itself a foreign entity in which a USA citizen has a controlling interest. Such an entity will be required to obtain a relevant license to operate from within the USA as per the rules described above since it clearly does fall within the definition of a "person".

Should the activity in question be conducted from outside the territory of any state, a license will be required, providing there is no international agreement between the USA and the other state, that would establish the other state's jurisdiction over the endeavor in question. If, however, the activity is to be conducted from that state's territory or its territorial waters, the USA license will be only required if the USA have assumed jurisdiction over such operation, by means of international agreement. This ensures that whenever USA can be regarded within the international framework as a launching state, such activity is either fully governed by domestic regulations of the USA, or there is another state that has assumed the obligation to authorize and supervise it. This will have of course no bearing on the issues of potential liability or responsibility for such an endeavor, as in both cases USA may be held either responsible or liable towards third parties. However, such an approach still enables USA to either enforce its regulations and fulfill authorization and supervision obligations by itself, or ensure that such review is being carried out by another state. At the same time it is not required for this other state to remain party to any of the treaties forming *corpus iuris spatialis*.

2.2. Licensing procedure - launch and reentry

The procedure requires the entity that ought to file an application for a license, to conduct preliminary consultations with the FAA. These need to take place before the license application is submitted, in order to identify any potential issues that might be connected to operations proposed.¹²⁵ The FAA may also decline to even review the application after preliminary analysis, however in such instances, it is obliged to provide the applicant with a list of reasons for rejection, and a description of actions that must be taken in order for the application to be accepted for review.¹²⁶

FAA has 180 days since filing of the application, to decide whether the license will be granted. After 120 days, should there be some outstanding information required on part of the applicant, and the license is still not granted, the FAA will inform the applicant on the scope of the information that are still required.¹²⁷

The licensing proceedings themselves are focused on reviewing the launch/reentry vehicle, launch/reentry site, payload characteristics and possible impact of the mission on USA policy and international obligations. To this end, FAA does provide a payload review, safety and policy approvals. Once granted, safety approvals can be then provided to FAA together with license application by the person seeking it, in order to prove compliance with federal rules.

Safety approvals can be performed either during the licensing process or prior to it. Safety approvals can be granted for "safety elements" provided by suppliers. This category encompasses "launch vehicle, reentry vehicle, safety system, process, service or any identified component thereof" as well as "qualified personnel performing a process or function related to licensed launch activities or vehicles".¹²⁸ Prior to requesting safety review and approval, just as it is the case with obtaining the license, the person seeking such approval has to enter into consultations with the FAA.¹²⁹ The applicant must demonstrate the compliance of subject-matter safety elements with standards contained in FAA regulations,¹³⁰ as well as provide its operating limits.¹³¹ Should the approval be granted, it remains valid for five years, during which the holder of such approval must maintain records that will demonstrate his compliance, plus one year after the end of the approval duration.¹³²Additionally, a distinction is being made

- ¹²⁶ 14 CFR, § 413.11.
- ¹²⁷ 14 CFR, § 413.15.

¹³⁰ 14 CFR, § 414.19.

¹²⁵ 14 CFR, § 413.5.

¹²⁸ 14 CFR, § 414.3. ¹²⁹ 14 CFR, § 414.9.

¹³¹ 14 CFR, § 413.7d.

¹³² 14 CFR, § 414.25.

basing on the type of vehicle used,¹³³ as well as the type of launch range (i.e. federal and non-federal) that is being used.

Should the applicant wish to conduct an ELV launch from federal launch, it is possible for the FAA to grant a safety approval for the operator of such launch, based on safety rules adopted for federal range.¹³⁴ Launches being conducted from non-federal ranges face a more thorough inspection, as the applicant is required to provide a wider scope of information, documenting all information included in FAA regulations 415.109 to 415.133.

Policy approvals concern possible impact of given activity on USA's national security and foreign policy. This review includes the analysis of foreign ownership of the applicant with sole proprietors, partnerships, joint ventures and associations having to disclose any foreign ownership, and corporation only such ownership that is greater than 10% of total shares. During the policy review, FAA will consult with the Department of Defense, Department of State and any other federal entity it might deem necessary in order to establish whether the proposed launch does not hinder aforementioned American goals.

The FAA will also perform payload review, in order to determine whether it "would not jeopardize public health and safety, safety of property, national security or any I.S. international obligations".¹³⁵ However, FAA will only review payloads that are not being subject to jurisdiction of any other federal agency, or that are subject to U.S. Government ownership. Initially, the applicant has to only provide the class of the payload in question in its license application, however updated information is required by the FAA no later than 60 days prior to launch. Again, similarly to safety approvals, a payload review may be requested by the launch operator to be conducted, prior to filing license application. Such review may also be - similarly to policy review - subject to consultations between FAA and other branches of the government.

Finally, FAA may grant waivers from certain license requirements if it concludes that "the waiver is in the public interest and will not jeopardize the public health and safety, safety of

¹³³ ELV (expendable launch vehicles) and RLV (reusable launch vehicle).

¹³⁴ 14 CFR, § 415.33 & 415.41.

¹³⁵ P.A. Varwing, R. S. Jakhu, National..., op. cit., p. 411.

property, and national security and foreign policy interests of the United States."¹³⁶ Such waiver requests will be - in general - reviewed by the FAA on a case by case basis. However, as it is being pointed out in doctrine,¹³⁷ FAA appears to follow a four-step review addressing potential health and safety issues that may come into play once the waiver is granted. As it is being listed in the Notice of Waiver issued for Blue Origin preflight preparatory activities, FAA appeared to be most concerned with:

- i. whether the activities in question are closely proximate in time to ignition or lift-off
- ii. do they entail critical steps preparatory o initiating flight
- iii. are they unique to space launch
- iv. are they inherently so hazardous as to warrant faa's regulatory oversight?

2.3. Types of issued licenses

In general, licenses issued by FAA can be doctrinally divided into two categories - covering either a launch of a reusable or expendable vehicle. Depending on what type of vehicle is being employed during the launch, the scope and timeframe assigned for such license may differ.

In both cases a distinction was made between operator licenses and "one time" licenses. Both RLV and ELV operator licenses provide for an indefinite number of launches. However, such licenses require the operator to conduct the launches in question from a specific launch site. Similarly, in case of RLV licenses, the operator has to make use only of license-covered reentry sites or locations, and make sure to follow priorly disclosed trajectories.¹³⁸ This type of license also provides for the possibility to utilize only ELVs or RLVs of specific type and family, and bearing a specified class of payloads. ELV and RLV operator licenses are issued for different time periods, with ELV covering 5 years and RLV only 2 years.¹³⁹

The distinction between ELVs and RLVs was also maintained in the case of licenses that provide for a limited number of launches to be performed. For RLV's such licenses are

¹³⁶ CSLA, § 50905.3.

¹³⁷ P.A. Varwing, R. S. Jakhu, National..., op. cit., p. 407.

¹³⁸ 14 CFR, § 431.3.

¹³⁹ 14 CFR, § 431.3 & 415.3.

called "Mission-specific license" and ELV-related regulation simply defines them as "Launch specific license". However, none of the two types described above need to necessarily license only a single launch per se. In case of RLV, the mission-specific license, while providing for authorization of a single type of RLV, and a particular launch/reentry site, can authorize multiple flights, providing those will be individually identified under the license. Mission-specific licenses are terminated upon "completion of all activities authorized by the license or the expiration date stated in the reentry license, whichever occurs first".¹⁴⁰ In case of ELVs, FAA may provide a launch-specific license, which - like RLV - can cover one or more launches that have the same launch parameters, launch vehicle and launch site. This license identifies each launch that was authorized under it, and is terminated either due to expiration of the deadline for the last launch, or by exhausting the amount of launches that it was provided for.

2.4. Experimental permits

In 2004 the institution of experimental permits was introduced to CSLA. The change was motivated by the will "to allow reusable suborbital (passenger-carrying) launch vehicle developers to build and test their vehicles without undue regulatory constraints".¹⁴¹ It came to life with addition of section 50906 CSLA, that has outlined the framework for providing permits to relevant entities.

First of all, it has to be stated that an experimental permit is not a license, nor does it aim at replacing one. In fact, those two types of approval being granted by the FAA have distinct goals. While the license aims at ensuring that any given activity (also commercial in nature) does comply with the laws and international obligations of the USA, experimental permits are aimed at facilitating development of technologies that will subsequently be subject to licensing regime, should they be used outside of aforementioned "development" framework. To this end, in order to minimize the amount of changes to legislation introduced, a permit shall be consider a license, its holder as licensee, the vehicle in question should be considered as licensed and the entire process of obtaining a permit should be understood as obtaining a

¹⁴⁰ 14 CFR, § 431.3.

¹⁴¹ G. Oduntan, *Sovereignty and Jurisdiction, in the Airspace and Outer space: Legal Criteria for Spatial Delimitation*, Routledge, Cavendish, 2011, p. 278; *Guidelines for Experimental Permits for Reusable Suborbital Rockets*, Federal Aviation Administration, available at <u>http://www.space.com/media/pdf/ep_guidelines_ver1.pdf</u> (accessed: 24.06.2023).

license for purposes of sections 50907 / 50908 / 50909 / 50910 / 50912 / 50914 / 50917 / 50918 / 50919 / 50923.¹⁴²

In order to obtain a permit, a person is required to apply to the Secretary of Transportation. Such a permit, if the requirements are met, shall be issued no later than 120 days after application. In case that the permit is not issued within 90 days, the Secretary of Transportation shall provide a list of pending issues and actions required to be undertaken in order to grant the permit. The requirements for the permit itself are the same as for obtaining a license, as it is confirmed in sec 50905(b)(1). The same applies for - as mentioned above - any prerogative of federal administration towards licensed activities, where the term "permit" and "license" are being regarded as meaning the same. This applies to monitoring activities, suspensions, revocations and modifications of licenses, prohibition and suspension of launches, administrative hearings and judicial review, liability and insurance, enforcement of measures and consultations.

Furthermore, as it is directly provided in CSLA, while providing the permit, certain requirements can be effectively waived for experimental permit, shall the Secretary decide that "the requirement is not necessary to protect the public health and safety, safety of property, and national security and foreign policy interests of the United States".¹⁴³ Secretary decides this by means of regulation, after consulting with the head of the appropriate executive agency.

As it is provided in section 50906(e), a permit authorizes "an unlimited number of launches and reentries for a particular suborbital rocket or suborbital rocket design, or for a particular reusable launch vehicle or reusable launch vehicle design". Moreover such permit is not subject to time limits characteristic to license-related launches. Experimental permits also do feature a set of limitations. First of all, they can be conducted solely for reusable suborbital rockets or launch vehicles that will be launched into suborbital trajectory.¹⁴⁴ Secondly, such launch should be conducted solely for purposes of:

i. research and development to test design concepts, equipment, or operating techniques;

¹⁴² CSLA, § 50906.i.

¹⁴³ CSLA, § 50906.c.

¹⁴⁴ CSLA, § 50906.d.

- ii. showing compliance with requirements as part of the process for obtaining a license under this chapter; or
- crew training for a launch or reentry using the design of the rocket or vehicle for which the permit would be issued.¹⁴⁵

Additionally, the permit specifies the type of modifications that can be introduced without invalidating the permit due to design changes.¹⁴⁶ Permits, unlike licenses, are also nontransferrable.¹⁴⁷ nor should launches conducted under such permit be utilized for "carrying any property or human being for compensation or hire".¹⁴⁸ This poses a certain issue, when the same design is practically safe enough to carry our commercial activities, yet its development has not yet finished. Aforementioned issue was subject to a hearing in the House of Representatives.¹⁴⁹ Initially, the CSLA did not provide for a possibility to continue testing under the permit, and provide commercial services under a separate license for the same type of vehicle. This in turn forced some companies to request a suspension of license application review by the FAA, in order to be able to continue testing under the permit.¹⁵⁰ Subsequently. **CSLA** sec 50906(g) was amended and as of now provides:

"The Secretary may issue a permit under this section notwithstanding any license issued under this chapter. The issuance of a license under this chapter may not invalidate a permit issued under this section."

This means that simultaneously a permittee can continue testing of a vehicle in question, providing for all other requirements for qualifying a launch as within the experimental permit scope are observed, and conduct a commercial activity with the same type of vehicle, under a separate license.

2.5. Supervision

¹⁴⁵ Ibid.

¹⁴⁶ CSLA, § 50906.d2.

¹⁴⁷ CSLA, § 50906.f.

¹⁴⁸ CSLA, § 50906.h.

¹⁴⁹ Necessary Updates to the Commercial Space Launch Act: Hearing Before the Subcommittee on Space, Committee on Science, Space, and Technology, House of Representatives, One Hundred Thirteenth Congress, Second Session, February 4, 2014

¹⁵⁰ This was the case with Virgin Galactic and Scaled Composites. FAA agreed to such resolution.

As previously mentioned, authorization is a different concept from supervision. While both concern state's oversight, and are included in article VI of OST, the supervision concerns an obligation of continuing character that spans beyond "pre-flight checks". USA legislation in this regard gives some ample tools for OOST to exercise its authority and bring international obligation into life.

Firstly, after the license has been granted (i.e. given outer space activity has been authorized), licensees are obliged to allow both Federal officers as well other personnel that has been designated by the FAA, to "observe licensed facilities and activities".¹⁵¹ OOST has the possibility to revoke or suspend any type of license. It may exercise such authority should it find that the licensee has "substantially failed"¹⁵² to follow the terms of license or either the provisions of CSLA or FAA regulations. Moreover, the FAA is able to "modify a license or permit issued". This process may be initiated either by the application of licensee or permittee, or by the FAA on its own.¹⁵³

It may also be the case that the immediate termination, prohibition or suspension of a "licensed or permitted launch, reentry, or operation of a launch or reentry site"¹⁵⁴ is necessary. This will be the case should the FAA come to a conclusion that previously accepted activity does pose a threat to "the safety of property, or any national security or foreign policy interest of the United States".¹⁵⁵ This solution, as clarified by point b of 14 CFR § 405.5 should only be made effective if exercising no other office's authority will not produce desired results.

Applicants for a license and licensees do have the ability to challenge negative decisions delivered and made by OOST. This challenge can be brought forward by means of requesting a hearing following such a decision. This can occur in three instances. Firstly, should a negative decision concern a request for transfer of a license, both the applicant as well as the transferee can request such hearing, including imposing conditions on a license transfer.¹⁵⁶ A hearing may also be requested in connection to refusal by OOST to allow launch or reentry of a payload - such hearing may be request by payload owner or operator. The same possibility was provided

¹⁵¹ P.A. Varwing, R. S. Jakhu, National..., op. cit., p. 408.

¹⁵² 14 CFR, § 405.3.

¹⁵³ 14 CFR, § 405.3a.

¹⁵⁴ 14 CFR, § 405.5.

¹⁵⁵ Ibid.

¹⁵⁶ 14 CFR, § 406.1.

in case of prevention of licensed activity or suspension, revoking and modification of priorly granted license. Should a party want to seek the change of the decision delivered by FAA by hearing, it has to file a petition no later than 30 days after the decision in question has been issued.

However, the system that describes the means by which both the FAA and the licensee can review either the applications or already approved activities, and potentially challenge the issued decisions, does not apply in all circumstances. Firstly, it has to be noted that the possibility to request a hearing is excluded in cases of OOST terminating the license by means of emergency orders mentioned in 15 CFR 405.5. Secondly, several provisions concerning the possibility to modify or suspend the license have been excluded for application to activities performed basing on experimental permits. Firstly, as provided by sec. 50908 of CSLA, contrary to "regular" licenses, the Secretary cannot modify "permits"¹⁵⁷ due to issuing of a safety regulation introduced in pursuance of section 50905(c). Additionally, due to the experimental character of the operation in question, it cannot be suspended if "previous launch or reentry under the license has resulted in a serious or fatal injury"¹⁵⁸ as this could potentially defy the purpose of issuing an experimental permit in the first place.

Persons conducting launches are obliged to present the FAA with the launch schedule.¹⁵⁹ No later than 60 days prior to the licensed launch a payload and flight information has to be furnished, which includes projected flight path, impact site and on-orbit activities.¹⁶⁰ Deadline for submitting flight and ground safety analysis was set at 30 days before launch, and finally - 15 days before launch - a licensee is obliged to present a completed Launch Notification Form of FAA/ US Space Command. Unless the objects in question are being registered by a foreign state, launch and reentry operators must furnish data to FAA concerning registration information for purposes of compliance with REG.¹⁶¹ It has to be stressed that launch and reentry operators are not as such bound by REG and its provisions. This remains to be an international obligation of the USA, which merely passes on part of the administrative burden onto the operators of a given launch. The list of information required by FAA regulation corresponds directly to provisions of REG's article IV.

¹⁵⁷ Shorthand description of "experimental permit" as provided by CSLA

¹⁵⁸ CSLA, §50908.d.3.

¹⁵⁹ P.A. Varwing, R. S. Jakhu, National..., op. cit., p. 413.

¹⁶⁰ Ibid.

¹⁶¹ 14 CFR, § 417.19.
2.6. Export Controls

So far the issue of supervision over outer space activities was being analyzed solely from the perspective of article VI of OST, that is, whether the means employed by the state-part to authorize and supervise outer space activity of its non-governmental entities are sufficient. However, article VI is not the only provision of *corpus iuris spatialis*, that outlines state's obligations towards the international community, when engaging into outer space activity, nor does it explicitly mention every area that needs to be either reviewed or controlled by the state in question. A quick glance at remaining provisions of OST points to quite extensive obligations on part of the launching state.

Measures mentioned above are not the only means by which the federal administration can supervise outer space activities that are being conducted by persons as defined in CSLA. Besides the licensing framework that does allow for the actual launch to take place, depending on the characteristics of the activity in question, the license or permit applicant may have to obtain export permission that would enable them to move equipment necessary to conduct the launch outside of USA territory. Such control over exporting and importing of certain technologies is being executed by the Department of State (DoS) and Department of Commerce (DoC).

DoS conducts control of imported and exported items in compliance with the Arms Export Control Act.¹⁶² The technical aspect of export controls is being handled by the Directorate of Defense Trade Controls (DDTC). The DoS and its subordinate entity - DDTC - deals with export controls of items, technical data and services included in U.S Munition List (USML) and International Traffic in Arms Regulations. The DoC performs export controls provided in the Export Administration Act. This legislation allows DoC to introduce Export Administration Regulations (EAR), which cover the means by which items included on CCL can be exported and re-exported.

While the plethora of agencies and lists may appear confusing, there is a method to this madness. Historically, launch vehicles, satellites, technology and know-how used to develop

¹⁶² U.S. Code, Title 22, Chapter 37, Arms Export Control, 22 U.S. Code § 2771 - 2781, available at <u>https://www.govinfo.gov/app/details/USCODE-2021-title22/USCODE-2021-title22-chap39-subchapIII-sec2778</u> (accessed: 24.06.2023), § 2778.

and produce them was of strategic value to every state engaging in outer space activities, and as such constituted an important part of maintaining not only national but also international safety and security. As the same technologies are frequently being used both in military and commercial applications, strict controls had to be put in place in order to make sure that certain items do not fall into the wrong hands. The issue was important enough to give rise to intergovernmental efforts to create and maintain a common policy of states concerning usage, movement and export of dual-use goods and technologies.¹⁶³

However, this has led to a whole new set of issues on part of U.S.A domestic regimes, with the regulations being overly "cautious" to the point of hindering the development of the commercial sector. The situation was subsequently amended in 2014, with a major reform of export controls, aimed at facilitating not only movement of the goods themselves from US to other locations, but also in allowing non-US citizens to work on certain dual-use parts of otherwise commercial projects.

It is crucial to note that, after the reform in November of 2014,¹⁶⁴ USML operates on a "positive control" principle. This means that USML provides only for very specific items and services to remain covered by International Traffic in Arms Regulations (ITAR), and subsequently by DoS, with remaining items remaining under the export control of DoC. In order to establish what kind of license needs to be obtained, a "top-down" analysis of ITAR, EAR & corresponding lists has to be performed. This is however greatly facilitated by the "positive control", with items and services falling into EAR unless specifically provided for in ITAR. Moreover, an ITAR controlled element will cease to be under its requirements, and move into EAR regime upon "its (irreversible) integration into an EAR spacecraft".¹⁶⁵

¹⁶³ Of particular importance are the Missile Technology Control Regime (MCTR) and Wassenaar Arrangement (WA). While these endeavors are not international treaties per se, and are not aimed at creating binding obligations on the participants, they still serve a very important role in maintaining common policy applied to dual-use goods and technologies.

¹⁶⁴ U.S. Federal Register, Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category XV; Correction, available at <u>https://www.federalregister.gov/documents/2014/11/10/2014-26631/amendment-to-the-international-traffic-in-arms-regulations-revision-of-us-munitions-list-category-xy (accessed: 24.06.2023), § 66608.</u>

¹⁶⁵ U.S. Export Controls for the Commercial Space Industry, U.S. Department of Commerce's Office of Space Commerce & Federal Aviation Administration, available at <u>https://www.space.commerce.gov/wp-content/uploads/2017-export-controls-guidebook.pdf</u> (accessed: 24.06.2023), p. 22.

2.7. Payload reviews

Up to now the crucial point of this analysis has been licensing of the launch, reviews of launch vehicles and control of their export. However, the only purpose of the entire launching process is placing an object outside of earth's atmosphere. The term payload was defined in 51 U.S.C. § 50902(13) as "an object that a person undertakes to place in outer space by means of a launch vehicle or reentry vehicle, including components of the vehicle specifically designed or adapted for that object".

That being said, USA's domestic regime does not have a licensing procedure per se, that would concern outer space objects. Regulations provide for a review of payload to be conducted either by FAA, FCC, DoC National Oceanic and Atmospheric Administration (NOAA).¹⁶⁶ By default, payloads are subject to FAA review, unless one of the other agencies has explicit jurisdiction over it.¹⁶⁷ Some payloads, including those that are either owned or operated by the US Government are exempted from the review.¹⁶⁸

The main goal of the review conducted by the FAA is to ascertain that "would [not] jeopardize public health and safety, safety of property, U.S. national security or foreign policy interests, or international obligations of the United States."¹⁶⁹ The payload review, while not being a separate licensing procedure, is still a part of the launch license. It is possible however to conduct the review both as a part of the licensing process, or separately from it. This can be requested by either the payload owner or its operator in advance of the licensing application.¹⁷⁰ For the purposes of licensing procedure, the disclosure can be limited to the class of the payload, this however needs to be followed by current information concerning the payload no later than 60 days prior to planned launch.¹⁷¹ Such review also makes use of interagency consultations. Even though FAA is by default the entity that should perform payload review, it is obligated to consult with other agencies should the launch of the payload in question "present

168 Ibid.

¹⁶⁶ 14 CFR, § 415.53.

¹⁶⁷ Ibid.

¹⁶⁹ 14 CFR, § 415.51.

¹⁷⁰ 14 CFR, § 415.57.

¹⁷¹ Ibid.

any issues affecting public health and safety, safety of property, U.S. national security or foreign policy interests, or international obligations of the United States".¹⁷²

Which agency should be contacted is entirely dependent on the issue that may require consultation. In cases of national security, FAA will consult with DoD, for potential incompatibility with USA's foreign policy interests or international obligations FAA will refer to DoS, and - quite nebulously - other federal agencies, should the necessity arise. After collecting all of the information, FAA can either issue a favorable payload determination, or decline to issue one, should the payload "jeopardize public health and safety, safety of property, U.S. national security or foreign policy interests, or international obligations of the United States".¹⁷³ In case of an unfavorable outcome of the review, FAA will issue a notice stating the reasons for the unfavorable determination made by the FAA. Subsequently, a person that was issued such a decision can respond to the determination made by the FAA and request a reconsideration.

The FAA's framework for issuing payload approvals is far less detailed than the one utilized for granting launch licenses, relying equally on data furnished by the payload's owner and operator, as on the input from other federal agencies. At the same time it does recognize on numerous instances, as discussed above, the existence of international regulations and possible non-conformity of proposed payload with international obligations undertaken, agreed and binding on the USA. It also did spur some controversy on when and whether the FAA can decline providing an approval. This issue is best visible when taking into account novel and ground-breaking outer space endeavors. In 1999 Intraspace Corporation declined payload approval for its nuclear powered space tug, due to - as described by FAA - "absence of on orbit jurisdiction over the proposed payload means that no government agency would have regulatory oversight to ensure adherence to any necessary operating restrictions and to safeguard U.S. national interests".¹⁷⁴ In 2014, FAA refused to reassure Bigelow Aerospace that its currently developed lunar habitat will not be subject to another payload review, following its 2004 successful payload determination. In 2016 FAA in its payload review documentation for Moon Express's proposed moon lander and vehicles the agency concluded:

¹⁷² Ibid.

^{173 14} CFR, § 415.61.

¹⁷⁴ L. Montgomery, US Regulators May Not Prevent Private Space Activity on the Basis of Article VI of the Outer Space Treaty, Catholic University of America - Columbus School of Law, Columbus, 2018, p. 9.

"For this particular mission and set of circumstances, the FAA concludes, in concurrence with the Department of State, that the enforcement of these representations constitutes compliance with Article VI of the Outer Space Treaty."¹⁷⁵

An argument is therefore being made, in light of the inconsistent approach by FAA, that by analysis of Article VI of OST, and subsequently seeking to comply with its provisions constitutes a gross overstep of FAA's prerogatives as it effectively applies on a federal level a treaty provision that is not directly enforceable in domestic legal regime of USA. As such an approach is in violation of SC jurisprudence and may be incompatible with USA's constitution, it should therefore be ceased at once. Moreover, it advocates for a very narrow approach when it goes to analyzing applicable international rules, going as far as to claiming that in no place does OST require authorization and continuing supervision over all outer space activities.¹⁷⁶ Finally it proposes to perform only those payload reviews which are not likely to " expose the United States to a risk of liability, or may not be of sufficient concern to justify the expenditure of government resources".¹⁷⁷ Setting aside for now the issues of international liability and responsibility and the manner in which they presented, we are left with three main points.

Firstly, article VI cannot serve as a basis for the FAA's decision due to issues of constitutional nature. Secondly, it argues the scope of obligation contained in article VI of OST. Thirdly, it argues for an introduction of a novel approach to treaty text analysis and interpretation, thus affecting the obligations that are imposed on the state parties. Each of these points will be addressed in turn.

The issues of article VI in light of the USA's constitutional system concern mainly lack of its direct effect on the federal level of rights and obligations due its provisions being not self-executing. As much as this may serve as a fascinating basis for discussion within doctrine, it is ultimately irrelevant for purposes of our analysis. Two arguments may be made in order to support this point of view.

¹⁷⁵ Moon Express Payload Review Determination, Federal Aviation Administration, 2016, available at <u>https://www.faa.gov/newsroom/moon-express-payload-review-determination</u> (accessed: 24.06.2023).

¹⁷⁶ L. Montgomery, US Regulators..., op. cit., p. 27.

¹⁷⁷ Ibid.

Firstly, if the provisions of article VI of OST are indeed self executing, the entire discussion is moot. Therefore analysis presented below will regard article VI of OST as not having the self-executing characteristics, as described by the Supreme Court of the USA in the Medellin case.

Secondly, FAA did not base its decisions quoted above solely on article VI, nor did it reference article VI of OST on its own. Rather what it did, is - following provisions of CSLA described above - inquired other federal agencies as to potential "issues affecting public health and safety, safety of property, U.S. national security or foreign policy interests, or international obligations of the United States".¹⁷⁸ It then followed advice of DoS, which in its analysis took provisions of article VI of OST into account when drafting its advice. I have used the term "took into account" rather than "based its decision" deliberately, not in an attempt to deceive the reader by substituting one term with what apparently can be regarded as synonym, but due to the CSLA and international law provisions themselves. It has be noted that USA remains a state party to OST, and that OST, as any other ratified treaty, functions in one way or another in the USA's legal regime. At the very least it does outline obligations that were undertaken by the USA, regardless of the self-executing character of the provisions of OST itself. CSLA on the other hand provides for the possibility of review of the payload in light of USA's international obligations, not only federal law. Obligations imposed on the states can be both of self and non-self executing character, and CSLA does not provide for any distinction. On the contrary, it lists international law in a broad and general manner, listing it together with terms as tenuous as "national security" and "foreign policy interests", clearly indicating that the crux of the matter is the condition of the state, and obligations incumbent on the state as such, not merely provisions of a treaty that were transposed to federal law. It also remains unclear how it would be possible to effectively violate article VI of OST, by virtue of it not being directly applicable on the federal level, and thus "invisible" to any federal agency, and not damage USA's foreign policy interests. Taking this into account, the only way for this line of argumentation to prove itself successful, is to assume that only self-executing provisions of public international law should be regarded as international obligations by federal agencies of the USA. In turn, that would invalidate the vast majority of each and every international treaty provisions and custom, and introduce a novel definition of what international obligation is. Such a view, however, remains in sharp contrast with the beginnings of outer space regulations

^{178 14} CFR, § 415.61.

in the USA, where the private entities were de facto obliged to search for an agency that might be relevant for outer space activity, due to international obligations binding on the USA. If the presented logic would be applied to Connestoga's launch, it would face absolutely no legal issues or administrative challenges.

The second argument that is being made, attempts to prove that article VI of OST itself does not require state parties to authorize all of outer space activities.¹⁷⁹ This notion is further substantiated by referring to the term "activities" being not further defined, or state parties to each developing its own set of rules aiming at implementing article VI. Finally, terms of "continuing supervision" and "authorization" are also labeled as not established well enough in treaty as to their scope, yielding what appears to be the only possible outcome - the inability to establish what the article VI of OST is about. In order to clear some of the confusion, let us turn our attention to the actual text of article VI:

"States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty. The activities of non-governmental entities in outer space, including the moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty. When activities are carried on in outer space, including the moon and other celestial bodies, by an international organization, responsibility for compliance with this Treaty shall be borne both by the international organization and by the States Parties to the Treaty participating in such organization."

It has to be observed that indeed article VI does not provide for a definition of the word "activities". However, neither public international law nor USA's law requires every article to simultaneously contain all of the definitions of the terms used in given article in that particular article, as such approach would undoubtedly prove itself at the very least confusing with entirely unusable being the more probable effect. Additionally, according to the doctrine "Any activity in outer space is subject to article VI".¹⁸⁰ This notion is further reinforced by a narrower

¹⁷⁹ L. Montgomery, US Regulators..., op. cit., p. 22.

¹⁸⁰ M. Gerhard in: CoCoSL I, p. 109.

approach of article VII, tying liability to launching or procuring the launch of a given space object, rather than merely engaging in outer space activity. In any case however, it does provide for a minimum of what can be considered as a space activity - and that would be precisely launching or procuring a launch of a space object.

Finally, the third argument provides for modification of the fashion in which international obligations should be interpreted by limiting payload review only to those that "expose the United States to a risk of liability, or may not be of sufficient concern to justify the expenditure of government resources". ¹⁸¹ First of all, it remains in stark contrast with article 31 of the Vienna Convention on the Law of Treaties (hereinafter: VCLT)¹⁸², and customary rule enshrined therein, as it takes into account arbitrary means of implementing PIL, rather than text-based. Neither OST nor VCLT are conditioning obligations of the state on the issue of "justified expenditure of governmental resources". No indication is also made as to the higher importance of outer space activities that can end in USA's liability, as - by virtue of article VII of OST - every space activity attributable to the USA can end in the federal government being liable for incurred losses. Such interpretation seems not only to go where no man has gone before, but also where no lawyer ever should.

¹⁸¹ L. Montgomery, US Regulators..., op. cit., p. 22.

¹⁸² Vienna Convention on the Law of Treaties, U.N.T.S. 18232, 1969.

3. "New Space"

USA legislation also touches upon the issues of "new space"¹⁸³ with its 2015 U.S. Commercial Space Launch Competitiveness Act (hereinafter: CSLCA).¹⁸⁴ Amongst numerous changes to CSLA, it also contained several provisions concerning very basic and rudimentary regulation on mining activities in outer space. It amended section 402, title 51 by adding an entirely new subtitle, devoted to the issue at hand.

Since its main objective is - less likely - to provide some framework for outer space mining, or - more likely - gauge the international reaction to such legislation, it does not contain any precise or detailed provisions that would actually provide us with any sort of information as to how such activities should be handled both on national and international level. Essentially what it does is provide us with definitions of space and asteroid resources, and detailing rights that may be obtained in respect to it.

Section 51301 contains definitions used by the act in question. In essence it provides only a meaning of asteroid resource and space resource, since the definition of US citizen was taken directly from section 50902 described above. As such, space resources have been defined as "in general [...] an abiotic resource in situ in outer space", including water and minerals. Asteroid resources were described simply as space resources located on asteroids, without any further justification or explanation.

The operative part of the act in question consists of a single article that assures any U.S. citizen that is "engaged in commercial recovery of an asteroid resource or a space resource" is "entitled to any asteroid resource or space resource obtained, including to possess, own, transport, use, and sell the asteroid resource or space resource".¹⁸⁵ This is however applicable so long as the resources in question were obtained according to applicable law including international obligations of the USA.¹⁸⁶ The act in question contains one more provision that

¹⁸³ New Space or Space 2.0 is a loose term used to cover each and every "non-standard" outer space activity such as asteroid mining, space tourism, mega-constellation telecommunication.

 ¹⁸⁴ U.S. Commercial Space Launch Competitiveness Act, H.R.2262, available at <u>https://www.congress.gov/bill/114th-congress/house-bill/2262/text</u> (accessed: 24.06.2023).
 ¹⁸⁵ CSLCA, § 51303.

¹⁸⁶ Ibid

expresses a belief of the congress, that by enacting this legislation, USA does not claim sovereignty nor does it intend to do so in relation to any part of outer space.¹⁸⁷

While being rather concise, the regulation in question, sparked numerous discussions regarding its interpretation, and relation with *corpus iuris spatialis*. Two issues have to be addressed at this point – firstly, which provisions of *corpus iuris spatialis* would be applicable to the endeavors mentioned, and secondly how does USA's legislation ensure compliance of this act with its international obligations.

It is worth mentioning that the issue of owning parts of outer space or celestial bodies has already been subject to judicial review. In 2004 case Nemitz v USA, Gregory William Nemitz claimed ownership over asteroid Eros 433, and demanded a "parking fee" from NASA in conjunction with a landing of a probe on its surface.¹⁸⁸

The courts have dismissed the case on multiple occasions, however the basis for their reasoning relied more on the fact that Mr. Nemitz could not prove, that he indeed was the owner of Eros 433, rather than on the analysis of applicable rule of public international law. The court's considerations did take into account the context of international regulations. Firstly, it has been noted that "failure to the United States to ratify the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, commonly referred to as the Moon Treaty, nor the United State's ratification in 1967 of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, commonly referred to as the Outer Space Treaty, created any right in Nemitz to appropriate private property rights on asteroids".¹⁸⁹ Secondly, after a motion made by Mr. Nemitz, DoS did acknowledge that "private ownership of an asteroid is precluded by Article II of [OST]".¹⁹⁰ The quoted position of DoS, may appear to contradict the latest legislative changes made by the U.S., however one has to bear in mind that the remark was made 11 years

¹⁸⁷ CSLCA, section 403.

¹⁸⁸ Mr. Nemitz is a member of the "sovereign citizens" movement, and as such does perceive himself as a part or a member of USA's legal system.

¹⁸⁹ Eros Project – Order of Dismissal, available at: <u>http://www.erosproject.com/order03.html</u>, (accessed: 24.06.2023).

¹⁹⁰ Eros Project – US Department of State reply, available at: <u>http://www.erosproject.com/exhibit01.html</u>, (accessed: 24.06.2023).

before the enactment of the Commercial Space Launch Competitiveness Act of 2015, and its wording indicates owning of an asteroid as such, rather than exploiting its natural resources.

Over the course of years, public international law has, created two fundamental interpretations of article 2 of OST, which differ in how they treat & understand the term "space mining". Part of the doctrine presents a view that the concept of "space mining" is ultimately outside of the scope of article 2 of OST. The other viewpoint that has been voiced in the academic literature, is of the opinion that at current stage of development of outer space law, space mining does raise some quite serious concerns as to the ability of a state engaged in such an endeavor, to simultaneously fulfill other obligations stemming from the OST.

The supporters of space mining activities being in line with OST's article 2, as its provisions provide only for the prohibition of "national" appropriation. According to this line of reasoning, space mining cannot produce the effects mentioned in article 2, as it will not lead to territorial claims over celestial bodies or outer space as such, since its focus is on exploitation of resources rather than incorporating parts of outer space into state's territory. Moreover – if one were to adopt an extremely literal interpretation of article's 2 contents - since the mining itself would not be conducted by states themselves, but rather by private entities, the national character of the possible appropriation would not be present either way. Finally, it is being pointed out that the issue at hand does present some similarities to exploitation of areas on earth that – like outer space – cannot be subject to territorial claims or otherwise of extension of state's sovereignty, but nonetheless remain open for states to explore and utilize.

The non-appropriation principle was included in article II of OST. It provides that, "Outer space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means." However the concept itself was not new to the doctrine at the time of OST's entry into force, as it has been mentioned in RES 1721 and RES 1962. Point 1B of RES 1721 indicates that neither outer space nor celestial bodies are subject to national appropriation. RES 1962, being itself a template for the future OST, provides in its article II "Outer space and celestial bodies are not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means".¹⁹¹ The concept itself does have a significant impact on the

¹⁹¹ RES 1962, p. 3.

functioning of *corpus iuris spatialis*. A prime example of this would be the concepts enshrined in Article 1 of OST. Since the states are incapable of extending its territorial sovereignty over any part of outer space or celestial body, helps to reinforce the duties to conduct outer space activities "for the benefit and in interests of all countries" and in "common interest".¹⁹² In this regard, the non-appropriation principle is merely a tool, that enables other provisions of *corpus iuris spatialis* to exist and be both factually and functionally relevant and possible to implement. At the same time, the issue of legality of outer space mining can be approach from the perspective of VCLT provisions as well. To do this, it will be necessary to define the terms "national" and "appropriation", as none of them did obtain a treaty definition within OST.

According to the article 31.1 of VCLT, treaty provisions should be "interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose."¹⁹³ As it has been pointed out in the doctrine, appropriation of a given territory can be a result of five distinct situations: accretion, cession, conquest, occupation and prescription.¹⁹⁴ However, from the perspective of the outer space regulations, only "conquest" and "occupation" are relevant, as remaining manners in which a state may extend its territory are dependent on another previously owning the territory in question. As it has been noted by the USA's delegate for the UN COPUOS, ""[t]he purpose of this provision was to prohibit a repetition of the race for the acquisition of national sovereignty over overseas territories that developed in the sixteenth, seventeenth, eighteenth and nineteenth centuries. The treaty makes clear that no user of space lay claim to, or seek to establish national sovereignty over outer space".¹⁹⁵ Therefore it would appear, that considerations of the nonappropriation principle were quite extensive, taking into account not only the immediately possible political and economic consequences, but at the very least tried to avoid the issues and mistakes inter alia of the colonial era, when conquest both fed and justified by access to natural resources that came along with it. This is not to say, that there are any direct parallels between the colonial era and space mining, as such a notion would be just as unsubstantiated as it would be absurd. However, what it shows, is that the possible exploitation of natural resources of outer space is intrinsically linked with the claims of sovereignty over it. This is all the more relevant since article 2 does not provide an exhaustive list of means by which appropriation of

¹⁹² OST, art. 1; S. Freeland, R. Jakhu in: CoCoSL I p. 48.

¹⁹³ VCLT, art. 31.1.

¹⁹⁴ M. N. Shaw, *International Law*, 6th edition, Cambridge University Press, Cambridge, 2008, p. 495.

¹⁹⁵ S. Freeland, R. Jakhu in: CoCoSL I p. 49.

outer space or celestial bodies could be conducted. What it does instead, is focusing on the outcome, making any discussion about what type of outer space activity ultimately lead to appropriation moot, as it is the appropriation itself that is being banned, not appropriation done in a certain way. It appears that it would include any factual utilization of outer space or a celestial body that would exclude the possibility of any other state to gain access to a given part of outer and/or a celestial body, or hamper its abilities to conduct its own space exploration. This outlook has been shared by drafting parties from the very onset of the development of *corpus iuris spatialis*, with USA's president, Lyndon B. Johnson, letter of Transmittal to the US Senate stating: "We of the United States do not acknowledge that there are landlords of outer space who can presume to bargain with the nations of the Earth on the price of access to this domain".¹⁹⁶

As for the term "national", according to article 31.1 of VCLT, an ordinary meaning of the words used has to be taken into account when interpreting the contents of a treaty provision, in their context and in light of treaty's object and purpose. The Marriam Webster dictionary of English language defines the term national means either "of or relating to a nation" or "belonging to or maintained by the federal government".¹⁹⁷ Therefore literal understanding of the term "national" would mean that only appropriation conducted as a result of an activity undertaken by a government and/or state, or procured by a government or state. Such an understanding could potentially make space mining entirely legal – within the rules laid down by OST – by being essentially outside of their scope. Since the mining in question would be performed by a non-governmental entity, whatever the outcome in terms of appropriation would be, it could not be national, does not being covered by article II.

However, such an interpretation would not be correct, as the meaning of the term "national" has to be in interpreted in a manner corresponding with the context in which it is used, as well as object and purpose of the OST itself. OST itself appears only to provide a distinction between national and international outer space activities.¹⁹⁸ At the same time, article VI of OST stipulates that state parties bear international responsibility for national activities in

¹⁹⁶ L.B. Johnson, *Special Message to the Senate on Transmitting the Treaty on Outer Space*, Hearings before the committee on foreign relations, 90th congress, first session, 1967, available at <u>https://www.presidency.ucsb.edu/documents/special-message-the-senate-transmitting-the-treaty-outer-space</u> (accessed: 24.06.2023).

¹⁹⁷ Definition of the word "National" available at <u>https://www.merriam-webster.com/dictionary/national#learn-more</u> (accessed: 24.06.2023).

¹⁹⁸ S. Freeland, R. Jakhu in: CoCoSL I p. 51.

outer space "whether such activities are carried on by governmental agencies or by nongovernmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty".¹⁹⁹ This in turn advocates for the understanding of the term "national" in a broad way, encompassing the entirety of outer space activities – both public and private - that can be undertaken within state party jurisdiction, rather than limiting it solely to the operations either conducted by the government itself, or procured by it. Since mining activities, irrespective of who conducts them, would be treated as national in character, there is little reason to single out appropriation as incapable of being covered by article II, as attributable to the state party in question.

Another argument can be put forward in order to justify legality of outer space mining focuses on reframing the issue by presenting is as an extraction of natural resources, with no apparent effect on the access to or ownership of the outer space or celestial bodies, and thus not being banned by any of the discussed treaties.²⁰⁰ However, such an approach merely disguises the problem rather then solving it. The most important issue in terms of contents of article II and space mining appears not to be whether space mining as a category of outer space activities is allowed or not, but rather how it should be performed to be compatible with public international law including *corpus iuris spatialis* and especially article II of OST. This type of analysis can be traced back directly to the famous Lotus Case, with emphasis being put not on "what type of activity is banned" but rather on "what obligations did the given state agree to observe".²⁰¹

With this mindset, any activity that does not lead to national appropriation "by claim of sovereignty, by means of use or occupation, or by any other means",²⁰² and remains in line with articles I, III and IX of OST, as well as any other applicable provision of public international law, will undoubtedly remain legal. This, however, raises questions whether in the current state of public international law, such operations can fulfill all of the aforementioned requirements. It comes up as bewildering as to how this can be achieved if states begin to grant rights to resources that remain in outer space. As much as - on a purely linguistic level - this

¹⁹⁹ OST, art. 6.

²⁰⁰ P.J. Blount, C. J. Robinson, *One Small Step: the Impact of the U.S. Commercial Space Launch Competitiveness Act of 2015 on the Exploration of Resources in Outer Space*, North Carolina Journal of Law & Technology, vol. 18, 2016, p. 169.

²⁰¹ J. Połatyńska, P.Daranowski, *Prawo Międzynarodowe Publiczne wybór orzecznictwa*, C.H.Beck, Warszawa, 2011, p. 31.

²⁰² OST art II

surely does not amount to appropriation, it - at the very least - sends a signal of particular states attempting to protect more rights than the states enjoy themselves. It also raises concerns as to, whether a highly organized operation, that would last years on end, placed either on the moon or other celestial body, would not amount to de facto appropriation due to extensive use, and maintaining some level of political and economical "defense" on part of a given state? Would safeguarding the exclusive right to utilize and exploit given natural deposits in a time span and fashion common for mining operations not amount to "any other means" clause in article II? After all, it is difficult to imagine that either private or public-private joint-venture would on the one hand maintain profitable operation while at the same time allowing every other state and entity to conduct its own mining operation virtually at the same space, without the possibility to, colloquially, fence-off their own lot.

This way of approaching the issue shows not only that - while not outright banned - the mining operation in outer space can be best described as "socially tricky" within the international framework. However, this leads us to the second point mentioned by the proponents of outer space mining - and that is turning to already existing agreements concerning so-called "Res communes omnium" in order to interpret the existing rules on outer space prospecting. An obvious example of such a regime, would be the rules concerning exploitation of deep seabed. Included in United Nations Convention on the Law of the Sea convention of 1982²⁰³ (hereinafter: UNCLOS), they comprise an attempt to regulate an activity that strikingly resembles the one in outer space - tapping into the deposits of natural resources without claiming sovereignty over the actual territory they are contained in.

UNCLOS defines the deep seabed (or The Area) as "the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction"²⁰⁴. It shall be regarded as "common heritage of mankind",²⁰⁵ and be free from any claim of jurisdiction²⁰⁶ with rights to natural resources contained therein being "vested in mankind as a whole".²⁰⁷ Additionally, UNCLOS and its provisions as well as any subsequent agreement made on their basis is regarded as the only legal and valid way to extract the resources contained in the Area.²⁰⁸ Moreover, activities

²⁰³ United Nations Convention on the Law of the Sea, U.N.T.S. 31363, 1982.

²⁰⁴ UNCLOS, art. 1.

²⁰⁵ UNCLOS, art. 136.

²⁰⁶ UNCLOS, art. 137.1.

²⁰⁷ UNCLOS, art. 137.2.

²⁰⁸ UNCLOS, art. 137.3 & 138.

of states conducted in the Area shall be "carried out for the benefit of mankind as a whole, irrespective of the geographical location of States, whether coastal or land-locked, and taking into particular consideration the interests and needs of developing States and of peoples who have not attained full independence or other self-governing status recognized by the United Nations".²⁰⁹ Potentially problematic issues of actually distributing the benefits are addressed immediately after with this particular issue being subject of the Authority's prerogatives.²¹⁰ The Authority itself is established in article 156 and remains a central body which, and through which, exploitation of deep seabed resources can be performed. As it is pointed out, such activity can be performed after an application is accepted by the Authority, and required sites are "banked" for future use, in order to ensure that the goal of "global benefit" can be - albeit theoretically - achieved.²¹¹ Moreover, UNCLOS specifies that whatever the activities in question shall be made in such a manner as further and foster exploration of the deep seabed,²¹² as well as securing certain rights and profit participation for the authority²¹³ in order to enable it to fulfill its roles and duties. UNCLOS also contains provisions on periodical review of activities in the Area.²¹⁴

A similar attempt was made in relation to obtaining resources from Antarctica. As much as exploitation of natural resources of the Antarctic is currently banned under the provisions of Protocol on Environmental Protection to the Antarctic Treaty (hereinafter Madrid protocol),²¹⁵ a separate agreement named Convention on the Regulation of Antarctic Mineral Resource Activities was proposed in order to establish an "international property regime in Antarctica.²¹⁶ It described 3 categories of natural resources utilization in Antarctica - exploration, development and prospecting, out which prospecting as the only one, provided for ownership of prospected items. Additionally, investigation of areas and locations that could potentially be exploited in the future was also allowed, however, without any prejudice as to the rights and territorial claims of the state parties.²¹⁷ Additionally, any such activity would be subject to

²⁰⁹ UNCLOS, art. 140.

²¹⁰ UNCLOS, art. 140.2.

²¹¹ E. Egede, Africa and the Deep Seabed Regime: Politics and International Law of the Common Heritage of Mankind, Springer-Verlag, Berlin, 2011, p. 17.

²¹² UNCLOS, art. 150.

²¹³ UNCLOS, art. 151.

²¹⁴ UNCLOS, art. 154 & 155.

²¹⁵ Protocol on Environmental Protection to the Antarctic Treaty, U.N.T.S. 5778, 1991, art. 7.

²¹⁶ J. G. Wrench, *Non-Appropriation, No Problem: The Outer Space Treaty Is Ready for Asteroid Mining*, Case Western Journal of International Law, vol. 51, 2019, p. 453.

²¹⁷ J. G. Wrench, *Non-Appropriation...*, op. cit., p. 454; CRAMRA - preamble.

authorization and permit issued by The Regulatory Committee established by CRAMRA. However, the treaty in question did not come into force, as not enough states that have expressed territorial claims to Antarctica became parties to it. As of now, the issue of potential mineral resource exploitation has been postponed until the year 2048.

As it is indicated by some authors in the doctrine,²¹⁸ other international regimes concerning exploitation of resources within the areas of common interest are indicative that the international community does evaluate such possibility, and that currently existing practice can be used to shed some light on OST's and *corpus iuris spatialis* position in outer space mining. Sadly, however, this does not appear to be the case, even less so in terms of analyzed Title IV of CSLCA. First of all, it needs to be noted that whenever a possibility for exploitation of natural resources that would involve prolonged activities in one and the same spot/territory outside of the jurisdiction of any state for a prolonged period of time, a separate, tailored-made solution was being either introduced or at least drafted. This was also the case with outer space, as the Moon Agreement - which is sometimes called as the "failed" agreement, as neither Russia nor USA entered it²¹⁹ - already did address the issue of space mining. Article 11 of said agreement provided for a de facto temporary ban on any mining activity that would take place on the Moon or other celestial body.²²⁰ It also maintained the notion of non appropriation of any part of the Moon, that was already expressed in OST. However, MOON differs significantly from OST's article II in its article 11 points 5 & 7. There, we learn that state parties to MOON "hereby undertake to establish an international regime, including appropriate procedures, to govern the exploitation of the natural resources of the moon as such exploitation is about to become feasible".²²¹ As per article 11.7 such an agreement shall include:

- i. The orderly and safe development of the natural resources of the moon;
- ii. The rational management of those resources;
- iii. The expansion of opportunities in the use of those resources;
- iv. An equitable sharing by all States Parties in the benefits derived from those resources, whereby the interests and needs of the developing countries, as well as the efforts of

²¹⁸ J. G. Wrench, *Non-Appropriation...*, op. cit., p. 439.

²¹⁹ This threshold for the success of international agreements appears to be becoming more outdated with every day and new scientific and political developments.

²²⁰ MOON, art. 11.3.

²²¹ MOON, art. 11.5

those countries which have contributed either directly or indirectly to the exploration of the moon, shall be given special consideration.

Moreover, such agreement would also include the manner in which MOON would utilize the Common Heritage of Mankind concept, as it should be used exclusively within the framework of MOON.²²²Additionally, it would provide for a very accurate design of the regime in question as at the moment there is no technical possibility to conduct any large scale space mining operation, nor is there any market for resources extracted in such a way. Therefore, the aim of article 11 of MOON was not to limit state parties in any way - as the limitations were predominantly of technical, not legal nature - but rather to introduce a path forward for interested parties to come up with an internationally acceptable solution.²²³ It is worth mentioning that draft of the Moon Agreement has been accepted by each state member in the UNCOPUOS prior to being adopted by the UN General Assembly. It was no other state than the USA who remained the strongest advocate for introducing the common heritage of mankind concept into the treaty. It would therefore appear that there already is an international instrument that has been drafted by each of the most interested of states - at least in terms of space mining - whose adoption would fall directly in line with international practice as to the utilization and exploitation of natural resources from common areas.

Without such agreement it seems, none of the states perceived it possible to go on with the mining activities while basing on the current set of rules. This was even the case with USA which although ultimately did not accede to UNCLOS II, at least attempted to regulate some of the potential issues either by securing mutual recognition of exploited areas with other states,²²⁴ and later on introduced a domestic regulation inter alia prohibiting applying for deep seabed mining licenses with the sole intent of selling the rights later on without any real goal of extracting the minerals in question.²²⁵ Following the practice of international community, it would seem that in order to regulate further the space mining operation, one would seek out the possibility to create another "custom" international regime, designed solely for this activity in mind, rather than to interpret already existing rules with what can be described as semi-correlated state practice in a somewhat different field. Such an approach would be unlikely to

²²² R. S. Jakhu, S. Freeland, S. Hobe, F. Tronchetti in: CoCoSL II, p. 394.

²²³ Ibid, p. 397.

²²⁴ Provisional Understanding regarding deep seabed matters, U.N.T.S 23601, 1984.

²²⁵ U.S. Code, Title 30, Chapter 26, Deep Seabed Hard Mineral Resources, 30 U.S. Code § 1401 – 1473 <u>https://uscode.house.gov/view.xhtml?path=/prelim@title30/chapter26&edition=prelim</u> (accessed: 24.06.2023).

reflect the intent of the OST's drafting parties back in the late 1960s and is outside of scope of the evolutive interpretation framework provided for in VCLT.

As for the CSLCA itself, it leaves little in terms of doubt as to whether its provisions are in line or in breach of public international law. In fact, they are utterly indifferent to PIL, as the mining activity as such is not banned, just as ownership of space-originated material appears to be.²²⁶ What should be looked out for is the possibility and capacity to perform such operations without violating any of *corpus iuris spatialis* provisions, which - due to reasons already discussed - may prove to be potentially problematic.

Finally it appears that this is not a problem or an issue of international law as such but rather of USA's approach to international law, where each and every - no matter how tenuous attempt at organizing an activity in international framework, gets shot at the first sight of even potentially inhibiting business and activities of private actors. This, of course, does not preclude USA from later on creating the same or virtually the same rules on federal level. The object and purpose of such legislative policy to this day remains unknown.

4. Military utilization of outer space

USA, much like the other world superpowers, regard outer space not only as a sphere of purely scientific or economic influence, but actively pursue development of its military applications since the dawn of the space age. Having in mind that what Francis Fukuyama stated concerning alleged "End of history" appears to be more inaccurate with every day, it is unlikely that the trend of military exploitation of outer space will drastically decline in upcoming decades.

Interest of the American military in outer space began as early as 1947. It was at that time that the US Army, Air Force and Navy began experimenting with ballistic missiles. Navy and Air Force activities on space object monitoring were joined in 1960 and formed the Space

²²⁶ That is if ownership of samples obtained for scientific research can be any indication of relevant state practice in this respect.

Detection and Tracking System.²²⁷ This formed a basis for what was later to become Continental Air Defense Command and finally in 1975 North American Aerospace Defense Command (NORAD). This was, however, far from being a permanent solution. As early as 1982, alongside the introduction of the National Space Program introduced by the Reagan administration, Air Force created its own organizational framework devoted to outer space operation - the Space Command. Six years later, in 1988, the US Army created Army Space Command.

Air Force Space Command played a significant role in Reagan's Strategic Defense Initiative (SDI) - or, as it was more popularly known - Star Wars. SDI encompassed both conducting reconnaissance via space objects as well as developing satellites capable of carrying conventional weapons aimed primarily at intercepting Soviet ballistic missiles.²²⁸ This task proved to be engaging enough to validate Space Command's takeover of NORAD defense prerogatives.²²⁹ Ultimately, the entire Star Wars program was scrapped after the end of cold war, with subsequent decades putting more emphasis on war on terror, which did not require such extensive focus being put on outer space military activities. What it did however, was proving just how important outer space can be for facilitating military ground operations. With an adequate political climate at the end of 2020s, the plan to include outer space activities in a sixth, separate service branch of the US military came into fruition. This was not without the political involvement of then-current president Donald Trump, directing DoD to prepare for the introduction of such administrative division of the US military.²³⁰

Concurrently, USA has spearheaded a distinct interpretation of outer space utilization for "peaceful purposes". According to the American approach, which appears to remain consistent from the beginning of the space era,²³¹ the term of "peaceful purpose" should be understood as meaning "non-aggressive" rather than "non-military".²³² This sentiment and

²²⁷R. Farley, *Space Force: Ahead of Its Time, or Dreadfully Premature?*, CATO Institute, 2020, available at: <u>https://www.cato.org/policy-analysis/space-force-ahead-its-time-or-dreadfully-premature</u> (accessed: 24.06.2023).

²²⁸ Ibid.

²²⁹ Ibid.

²³⁰ D. J. Trump, *Text of a Memorandum from the President to the Secretary of Defense Regarding the Establishment of the United States Space Command*, White House, 2018.

²³¹ B. Cheng, *Studies in International Space Law*, Clarendon Press, Oxford, 2004, p. 515. e

²³² E. R. Finch Jr., *Outer Space for "Peaceful Purposes"*, *American Bar Association Journal*, vol. 54, no. 4, 1968, p. 365.

understanding continues to this day, with new generation of lawyers²³³ more or less repeating the same notions based on the same sources and facing the same counter-arguments as their predecessors. Having in mind the almost ritualistic nature of the conundrum at hand, I believe that this analysis has to follow suit on the path so many have taken before.

The American approach, which treats the term "peaceful" as "non-aggressive" rather than "non-military" appears to rely on three possible basis: historical position of the USA on the matter at hand with simultaneous lack of protest from other state parties to OST, interpretation of UN Charter and interpretation of OST itself. All of the above-mentioned points will be addressed in turn.

First and foremost, the doctrine supporting USA's position appears to rely on the historical approach, pointing both the consistency of the USA's approach over the decades, as well as hinting that the understanding of the term "peaceful" as "non-aggressive" was if not directly inspirational for the OST's drafting states, then at least acknowledged and accepted. Both of aforementioned points appear to be "problematic" at best. They appear to correspond to two distinct subsidiary means of interpretation, codified in VCLT - that is dynamic interpretation due to subsequent practice as well as relying in its interpretation on the preparatory works of a given treaty as well as circumstances of its conclusion. However, in both cases, in order to even consider utilization of this subsidiary means, we have to come to the conclusion that the meaning of the article IV of OST is ambiguous or obscure.²³⁴

Firstly, as far back as 1958, UNGA in its resolution that has established COPUOS (which, curiously enough, was supported and voted for by the USA) noted that the UNGA wishes to "avoid the extension of present national rivalries"²³⁵ into outer space, as well as expresses belief that "outer space should be used for peaceful purposes only".²³⁶ This, while far from being decisive, definitely shows that the approach of the USA has not always been as uniform as it is being presented right now. Secondly, it appears that the OST's article IV, as described in earlier parts of this dissertation, appears to rely heavily - in its drafting stage - on Antarctica Treaty 1959 and Nuclear Test Ban treaty 1963, both of which do provide for either

²³³ C. M. Petras, "Space Force Alpha" - Military Use of the International Space Station and the Concept of "Peaceful Purposes", The Air Force Law Review vol. 53, 2002.

²³⁴ VCLT, art. 31 & 32.

²³⁵ Question of the Peaceful Use of Outer Space, UNGA Resolution 1348(XIII), 1958, preamble & p. 3.

²³⁶ Ibid., p. 1 & 10.

an absolute ban on any military activity being conducted in Antarctica (safe for utilizing military personnel for non-military missions and applications), or for a ban on conducting tests of nuclear weapons in outer space. None of the aforementioned treaties (as mentioned) provides for a definition of the word "peaceful" that would favor its non-aggressive over non-military understanding. On the contrary, Antarctic treaty in its article 1, stresses the same points as the OST, underlining the importance of both practical ability to use military personnel in early 1960's (when no other professionals were able perform even the most basic exploration of outer space) and safeguards that this utilization of military personnel will remain just that utilization of military personnel for an ultimately non-military cause. Thirdly, there appears to be no collusion between the utilization of the moon and other celestial bodies for peaceful purposes (understood as non-military) and conducting such activities by means of military personnel. Both Antarctic treaty and OST appear to share the outlook of Edwin B. Parker, umpire of US-German mixed claims commission of 1922, where he advocated for determining the type of activity by looking at its functional characteristics,²³⁷ by evaluating the famous role of Parisian taxi cabs in delivering soldiers to the frontlines. According to his outlook, depending on the purpose and circumstances of actual utilization of a given facility and personnel that should help us determine whether a given object or activity is military or not. Having this in mind, it would be difficult to clearly point out why any of the circumstances would either advocate for the existence of some special circumstance of OST's conclusion that would hint at the validity of American interpretation of the term "peaceful". The same goes for preparatory works not supporting such a notion, nor subsequent state practice being able to solve this issue as it is being both limited to USA and effectively non-existent as - beyond stating the fact that the USA's authorities intend to interpret the word "peaceful" as "non-aggressive", at no point in time did USA act upon its declaration thus giving the remaining part of international community a chance to express its dissatisfaction or support.²³⁸

²³⁷ B. Cheng, *Studies* ..., op. cit., p. 519.

²³⁸ Ibid.

5. USA's Liability Regime for Outer Space Activities

Potential liability for damages inflicted during the conduct of outer space activities has been a gigantic factor for the development of domestic American regulations on outer space. This was due to the impact it might have had for private space endeavors, and development of both domestic and "export" markets of space-based services. The regime proposed an ultimately included in CSLA had to address both the issues of liability of the USA as a launching state towards other states, as well as provisions concerning liability of private entities subject to USA's jurisdiction.

This required balancing of the risks of outer space conduct, and a manner in which those risks should be covered. Both too strict and too lax of a legislation would hamper the development of the industry, either by burdening it with insurmountable costs of insurance or other types of guarantees, or by making the entire endeavor too risky for anyone to take part in.²³⁹

The approach adopted in the USA is based on a basis of insurance and cross waivers of liability. that are purchased and issued by each entity that takes part in the activity in question. CSLA distinguishes between first, second and third party risks that are subject to waiver and insurance coverage. Following analysis will concentrate on the issues of 1st, 2nd and 3rd party claims, the institution of liability cross-waivers, as well as the maximum probable loss concept.

First of all CSLA mandates that the licensee or the transferee maintain a certain level of financial safeguards in the anticipation of possible damage being caused in connection with outer space activity. Following the provisions of CSLA, the insurance or financial guarantee has to be obtained "(w)hen a launch or reentry license is issued".²⁴⁰ The act also provides a list of circumstances which would entail the liability of the licensee/transferee. This was drafted in a somewhat peculiar way, as it includes both the types of damages that should be covered by the insurance, as well as the entities that may present the claim in question. The claims themselves can be presented either by a third party or by the US Government itself. However,

 ²³⁹ V. C. Ernest, *Third Party Liability for Outer Space Industry: To Pay What No One Has Paid Before*, Case Western Law Review, vol. 41, issue 2, 1991, page 506.
 ²⁴⁰ CSLA, § 50914.A1.

the circumstances of both of those claims will be quite different. The third party claims covered by the provisions of CSLA consist of "death, bodily injury, or property damage or loss resulting from an activity carried out under the license"²⁴¹, whereas US Government claims consist of claims against a "person" for "damage or loss to Government property resulting from an activity carried out under the license".²⁴² Both of these types of claims are subject to the maximum probable loss concept. Therefore, in this very brief excerpt of a regulation, US legislative has included no less than three terms that required more extensive discussion, in order to understand what the licensee or transferee is potentially liable for.

First of all, the term "third party" term was defined in a "negative" manner - it includes every person (as defined earlier by the same act) that is not:

- A. the United States Government or the Government's contractors or subcontractors involved in launch services or reentry services;
- B. a licensee or transferee under this chapter;
- C. a licensee's or transferee's contractors, subcontractors, or customers involved in launch services or reentry services;
- D. the customer's contractors or subcontractors involved in launch services or reentry services; or
- E. crew, government astronauts, or space flight participants.²⁴³

It has to be noted that terms "first party" and "second party" have not been covered or defined within CSLA, and - while utilized within the doctrine - remain nothing more than a method for keeping track of the rights and obligations of parties in question. The concept of "first party" concerns all of the entities mentioned in CLSA § 50914 b.1.A & B - so licensee, transferee, their contractors, subcontractors, clients, crew members etc.. The "second party" concept is however a little more complicated. While it is possible to regard it simply as the US Government, its agencies, contractors and subcontractors, it has to be borne in mind that the diversification of maximum probable loss limits is made not purely on entity type basis, but also takes into account the merits of the claim itself. Additionally, some of the Code of Federal

²⁴¹ Ibid, point A.1.a

²⁴² Ibid, point A.1.b

²⁴³ CLSA § 50902.26.

Regulations provisions do provide for "third party treatment" of claims that would otherwise be regarded as not falling within that scope *ratione personae*.

Secondly, the term "person" was defined in 51 USC § 50902 point 15 to mean "<<pre>person>>
means an individual and an entity organized or existing under the laws of a State or country".
This encompasses virtually each and every natural and legal person that has taken part in the activity that has been undertaken as per the license in question.

Finally, CSLA utilizes the term "maximum probable loss". This concept effectively introduces a cap on what financial guarantees a licensee or a transferee has to safeguard, in order to conduct the launch and outer space operations. This in itself is of utmost importance as the operation in question is - up to this day - one carrying the risk of tremendously high financial damage being caused. By introducing a system that provides a "cap" on the liability, legislative did - effectively - provide a worst case scenario benchmark for the entities within the industry. The maximum probable loss can be further divided into two tiers - its absolute highest amount provided directly within CSLA and the actual amount required to be insured or guaranteed by the licensee or transferee as determined by the FAA in a separate procedure.

CSLA caps the potential liability at 500,000,000 USD for claims raised by third parties, whereas provides only for 100,000,000 USD of required guarantees for claims of the US government.²⁴⁴ However, the 100,000,000 limit applies solely to claims concerning damages to US government property. Therefore - at least in principle - CSLA appears to adopt criteria based on both the entity presenting the claim, and the merits of the claim. Should the amount of claims supersede it, the federal government will cover the claims up to the amount of 1,500,000,000 USD.²⁴⁵ In the event that this amount would still prove to be insufficient for covering the claims in question, the liability goes back to the licensee or transferee.

These amounts serve as the maximum amount of damage that has to be covered either by the insurance or other financial guarantees. The actual amount required is determined by the FAA by applying the maximum probable loss (hereinafter: MPL) regime. This is being performed at the request of the licensee, on a case by case basis, with the FAA being obligated

²⁴⁴ CSLA, § 50914.

²⁴⁵ CSLA, § 50915.

to provide a determination no later than 90 days after submission of all required information.²⁴⁶ However, as provided in Appendix 1 to 14 CFR § 440, the information supporting the request for determination of the MPL must be submitted together with the request.

The purpose of MPL calculation is to establish the actual amount of insurance or financial guarantee that has to be either bought or safeguarded by the licensee or transferee. A separate process and calculations are introduced and performed for US government and third party claims.²⁴⁷ MPL is defined as "the greatest dollar amount of loss for bodily injury or property damage that is reasonably expected to result from a licensed or permitted activity".²⁴⁸ It is provided in Code of Federal regulations that a damage can be reasonably expected to occur if the chance of it happening is 1 in 10,000,000 in case of third party claims, and 1 in 100,000 in case of claims of the US government.²⁴⁹

Aforementioned solutions are complemented by a system of cross waivers and mandatory insured parties. The insurance obtained by either the licensee or the transferee has to list - as insured parties - the licensee. its customers, contractors or both the licensee and its customer, employees and subcontractors. The same applies for US Government, its contractors and subcontractors that are involved in subject-matter launch as well as US government personnel.²⁵⁰

As an additional measure to simplify the liability regime of space operation, CSLA and CFR does introduce an institution of cross-waivers. In essence, their goal is to make sure that every entity that takes part in the launch assumes the responsibility for damage that may occur as a result of the activity in question.²⁵¹ This means that the licensee/transferee, customers, contractors and subcontractors must all enter in the agreement that effectively waives their rights to seek compensation for damages from other parties of said agreement. In case of US government involvement in the particular launch, the FAA, licensee and its customer are required to enter into a three-way reciprocal waiver.²⁵² Similarly, in cases of involvement of

²⁴⁶ 14 CFR § 440.7b.

²⁴⁷ P.A. Varwing, R. S. Jakhu, "National regulation of Space Activities", Springer, New York, 2010, p. 412.

^{248 14} CFR § 440.3.

²⁴⁹ Code of Federal Regulations also contains a list of provisions that are required to be included in the insurance contract - 14 CFR § 440.13.

²⁵⁰ 14 CFR § 415.57.

²⁵¹ 14 CFR § 440.17b.

²⁵² 14 CFR § 440.17c.

both the US government and either a flight participant or a crew member, the FAA is obligated to enter into a waiver of claims between the FAA and said persons. The waiver system limits the amount of possible claims made in connection to performed launch, by essentially excluding the possibility of claims being presented by one entity involved in a launch against another.

The typical situation provides for all of the private entities being both an insured party for the purposes of third party and government liability insurance, and simultaneously a member of the cross waiver agreement. The CFR is clear in that respect, stating that each party "waives and releases claims against all the other parties to the waiver and against any other customer, and agrees to assume financial responsibility for property damage it sustains and for bodily injury or property damage sustained by its own employees, and to hold harmless and indemnify each other from bodily injury or property damage sustained by its employees, resulting from a licensed or permitted activity, regardless of fault".²⁵³ This makes all the entities involved "on their own" so to speak in terms of damages they and their employees sustain, even if the damage itself would be entirely due to the act or omission of another party of the same waiver. This system changes once the US government is involved in the subject matter launch. In this instance the cross waiver concerns only the amounts in the excess of calculated MPL (ultimately being capped at 100,000,000 USD).²⁵⁴ Code of Federal regulations provides for additional - separate from the cross waivers signed between the non-governmental entities - "layer" of cross waivers, that encompasses solely the US government, licensee or transferee and its clients. In turn, each party to the waiver "extends the requirements of the waiver" to cover contractors, subcontractors, which leads to said entities being solely responsible for the damage they sustain.²⁵⁵ However in case of governmental contractors and subcontractors, the waiver in question concerns only amounts that supersede the previously calculated MPL amount.²⁵⁶ Additionally, code of Federal regulations specifically calls for regarding third-party claims as including "United States, its agencies, and its contractors and subcontractors"²⁵⁷ to the extent that the claim does not concern US Government property.

²⁵³ 14 CFR § 440.17b.

²⁵⁴ This - should the insurance be unavailable - can be waived as well by the Secretary of Transportation in cases of policy exclusion which will be deemed as "usual for the type of insurance involved".

²⁵⁵ 14 CFR § 440.17.c.

²⁵⁶ CSLA, § 50914.b2.

²⁵⁷14 CFR § 440.9.

Similar approach - at least to its merits - corresponds to the insurance for third party claims itself, with CSLA specifically providing for US Government, its contractors and subcontractors as protected parties.²⁵⁸

Having this in mind, the FAA is regarding government contractors as third-party beneficiaries of the insurance obtained by the licensee or transferee - at least up to the MPL amount calculation. As it has been stated in FAA final rule of 18.08.1998 "the agency views Government contractors and subcontractors as third-party beneficiaries of the reciprocal waiver agreement and the Government is responsible for protecting their interests ".²⁵⁹ Therefore the damages done to contractors or subcontractors are significantly better covered than those of the private entities. In case of a particular launch causing damage, the contractor of the licensee cannot tap into the licensee's insurance for third party claims. Meanwhile, the US government's contractor can not only benefit from third-party damage and insurance, but is also covered by the government assuming the losses that exceed previously indicated limits. As it has been stated in previously quoted FAA's ruling - "In the event Government contractor property is damaged, the Government would look first to the licensee's property policy for coverage in order to relieve financial risks to the Government. The contractor's insurance would cover the second tier of risk up to policy limits. In both instances, the risk of loss above statutorily-required insurance is borne by the Government."²⁶⁰

The domestic regime described and analyzed above does not have direct influence on responsibility and liability of the USA on an international level. In fact the domestic and international realm of liability remain entirely separated. The domestic regime concentrates and provides for solutions only in terms of the launch and planned reentry, without taking into account any damages that may be the result of unplanned reentry of a space object or collisions of space objects in outer space. While this can be regarded as an omission on part of the domestic legislation, it stems from the unlikeliness - so far - of such incidents taking place. At the same time, this void is being covered by the Liability Convention from the international perspective. Taking into account the definition of a "person" in CSLA, claims that are covered

²⁵⁸ CSLA § 50914.a4.

²⁵⁹ Financial Responsibility Requirements for Licensed Launch Activities; Final Rule, Federal Aviation Administration, 1998, available at: https://www.faa.gov/about/office_org/headquarters_offices/ast/licenses_permits/media/14cfr-440.pdf (accessed: 24.06.2023)

²⁶⁰ Ibid.

by the act in question concern solely entities (natural or juridical) subject to the laws of the USA.²⁶¹ At the same time Liability Convention in its article VII excludes such claims from its provisions. This leaves - for foreign entities' claims concerning unplanned reentry and collisions of space objects - the international venue, at least from the public law perspective. The liability regulation concept present in CSLA at its core appears to be mainly concerned with simplifying potential disputes that may arise in connection with any activity in question, while at the same time enforcing a mandatory insurance or financial guarantee to ensure the possibility to accommodate respective claims.

6. The case of New Zealand cooperation

Licensing, being one of the most important parts of maintaining supervision and control over domestic outer space activities, remains in the focus of all regulations adopted by each respective countries' legislatures. With the USA being currently one of the biggest investors, development centers and markets, it is no wonder that some of the other states may decide to shape its legislations to either mimic or directly match the ones of the USA. However, the New Zealand approach, in light of its importance for the future of international cooperation in business and economic sphere, deserves a separate mention. The rationale for this being discussed as part of the American regime, lies in the distinct character of this relation encompassing both the elements of legislative recognition of other state's administrative acts and decisions, as well as in purely business arrangements.

6.1. Technology & political cooperation

On 12th of December 2016 New Zealand and the USA concluded an "Agreement between the Government of New Zealand and the Government of the United States of America on Technology Safeguards Associated with United States Participation in Space Launches from

²⁶¹ CSLA, § 50902.15.

New Zealand".²⁶² This agreement streamlined the process of utilization and management of USA-originated technology, thus relieving some of the burden imposed by regulations on export controls. Additionally, New Zealand remains one of the signatory states of Artemis Accords, to which it acceded on 31st of May, 2021. As this does touch upon the subject of utilization of outer space resources, and possibly paves the way for future space mining operations, New Zealand issued a series of governmental analysis, which largely do follow USA approach to this subject, by reiterating the compliance of utilization of outer space resources with current state of public international law, as well as the need for its subsequent development.²⁶³ This, in turn, creates a rather interesting situation from the international law perspective, as while the technical capabilities of commercial extraction of natural resources of outer space may not be present as of now, the approach of some of the states with quantifiable outer space capabilities appears to be more and more aligned.

6.2. Legal cooperation between USA and New Zealand

Finally, the New Zealand Outer Space and High-altitude Activities Act 2017²⁶⁴ (hereinafter HAA) provides for a direct possibility to utilize licenses concerning activities in outer space, obtained in foreign jurisdictions, in order to ease the administrative burden in New Zealand. Article 51 of HAA provides that "The Minister may treat a license, permit, or other authorization that concerns a matter relevant to the Minister's decision and that was granted, or is likely to be granted, to an applicant or other person in a country other than New Zealand as satisfying some or all of the criteria" for obtaining either launch, overseas launch or facility license as well as payload and overseas payload permits. While the aforementioned provision remains only a part of the licensing process introduced in New Zealand, its long-term importance cannot be underestimated. As it has been discussed in previous parts of this dissertation, each of the state parties to *corpus iuris spatialis* is obligated to ensure that the

²⁶² Agreement between the Government of New Zealand and the Government of the United States of America on Technology Safeguards Associated with United States Participation in Space Launches from New Zealand, NZTS2016/14, available at <u>https://www.treaties.mfat.govt.nz/search/details/t/3858/c_1</u> (accessed: 24.06.2023).

²⁶³ Cabinet paper on Space Resource Utilisation and the Artemis Accords, New Zealand Ministry of Business a& Employment, 2021, available at <u>https://www.mbie.govt.nz/dmsdocument/15305-space-resource-utilisation-and-the-artemis-accords-proactiverelease-pdf</u> (accessed: 24.06.2023).

²⁶⁴ New Zealand Outer Space and High-altitude Activities Act, 2017, available at <u>https://legislation.govt.nz/act/public/2017/0029/latest/DLM6966275.html?search=ts_act%40bill%40regulation</u> %40deemedreg_Outer+space_resel_25_a&p=1 (accessed: 24.06.2023).

national outer space activities are subject to its continuing supervision and control. Article 51 does not change this provision in itself, as it does not transfer fully the decision on whether the license should be granted or not to another state party. However, it does recognize inherent similarities shared between the review processes of each state party to the *corpus iuris spatialis*. Having in mind that legislations adopted by the state constitute an element of practice,²⁶⁵ this can be considered as an emerging state practice in terms of the contents, interpretation and process of the licensing and authorization of outer space activities.

Having in mind previously mentioned agreements concerning technological exchange and security, the HAA appears to provide a rather favorable position to US-based entities wishing to extend its outer space activities into New Zealand, as some of the administrative requirements that has been already fulfilled and recognized in the USA, can be later reused in New Zealand, thus limiting the costs and time investment. Furthermore, as it is being pointed out in doctrine, both the HAA and CSLA reflect " the same dual purpose [...] not only to regulate (for purposes of safety and other public interests), but also to <<factbody>."²⁶⁶

However, this should not be regarded as being coterminous with full legal compatibility between the acts governing outer space activities as such. Previously mentioned alignment is very "objective focused", which does not necessarily translate to alignment in the realm of definitions utilized by the USA and New Zealand, or even types of licenses issued.

Firstly, the HAA, similarly to the Australian legislation introduces a concept of payload permit,²⁶⁷ a concept that is not easily comparable to any of the institutions introduced by CSLA. While CSLA does provide for payload review that is based on its type and performed by respective USA's agencies, there appears to be no separate permit as such. Therefore, the existence of a separate permit in New Zealand's introduces not only the necessity to provide a corresponding documentation to materially the same activity (such as it appears to be the case with HAA's article 51 and e.g. launch vehicle), but to supplement the application for payload

 ²⁶⁵ North Sea Continental Shelf (Federal Republic of Germany v. Netherlands), Dissenting Opinion of Judge Lachs to Judgment of 20 February 1969, I.C.J. Reports, 1969, p. 228; A. M. Weisburd, *The International Court of Justice and the Concept of State Practice*, University of Pennsylvania Journal of International Law, vol. 31, 2009, p. 309.
 ²⁶⁶ F. G. von der Dunk, *Kiwis in Space: New Zealand's "Outer Space and High-Altitude Activities Act"*, Proceedings of the 60th Colloquium on the Law of Outer Space, vol. 60, International Institute of Space Law, 2017, p. 2.

²⁶⁷ HAA, art. 15.

permit with elements of the launch license obtained in the USA. It has to be stated that in any case, such an approach is likely to become a major simplification over the possible requirement of undergoing two fully separate licensing procedures.

Secondly, the HAA does differ quite significantly from the CSLA in its approach to suborbital flights. While CSLA, as mentioned previously, incorporates suborbital launches into its launch definition, New Zealand introduces a separate class of high-altitude licenses, payloads and vehicles. Such a solution, while intended to circumvent the age-old problem of the delimitation of outer space merely masks it, as the "high altitude" realm becomes effectively an equally not defined buffer zone between airspace and outer space. The term itself is defined as remaining above the flight level 600 (which translates to altitude above 60,000 feet - roughly equal to 18 kilometers above ground), and simultaneously being above "the highest upper limit of controlled airspace under the Civil Aviation Act 1990" (around 2.9 kilometers above ground). As it is being pointed out in doctrine, this does not inherently introduce any meaningful distinction between the outer space activities and high altitude operations, as both of them will be undoubtedly fulfilling both of aforementioned requirements at the same time.²⁶⁸ The possible confusion is only deepened by introducing an aircraft definition of ""any machine that can derive support in the atmosphere from the reactions of the air otherwise than by the reactions of the air against the surface of the earth", clearly derived from the annexes to Chicago Convention,²⁶⁹ as well as by defining the space object as either a launch vehicle, payload or any part of either of them.²⁷⁰ In that way New Zealand's legislation, while favorable to foreign investors from the perspective of administrative "leniency", provides for a curious case of mixing together the physical elements of outer space delimitation with a more purpose-oriented approach adopted by the USA.

²⁶⁸ F. G. von der Dunk, *Kiwis...*, op. cit., p. 3.

²⁶⁹ HAA, art. 4; An Annex 7 to the Convention on International Civil Aviation, U.N.T.S. 295, 1947.

²⁷⁰ HAA, art. 4.

II. France

1. History of legislation

Like the vast majority of early developments in outer space exploration, French attempts at conquering the last frontier for practical intents and purposes started after the end of World War II.²⁷¹ The history of French legislation on outer space activities closely reflects the political and industrial reality of respective decades of outer space exploration. Due to the desire of European states to develop and rely on regional capabilities in terms of outer space exploration, as well as the French unique capabilities in terms of launch sites, the beginnings of French domestic legislation were focused more on the public than private endeavors. This gave birth to the Ariane Launcher program.

On 21 of September, 1973 an agreement called "Arrangement between certain European Governments and the European Space Research Organization concerning the execution of the Arian Launcher Program" was concluded. Its aim was twofold. Firstly, state parties wanted to further develop Ariane initiative in order to safeguard the possibility for Europe to independently place satellites on the geosynchronous orbit. Secondly - and in light of future commercial applications - the state parties wanted the Ariane to be competitive in terms of costs of launch and production.²⁷²

While the agreement itself provided for ESRO's ownership - on behalf of the other state parties - of the Ariane launcher parts and produced launching facilities, the participants of the program who possessed the facilities that could be used for the Ariane program were obligated to make them accessible for that purpose on the "marginal cost reimbursement" basis.²⁷³ The actual execution of the program was given to the French Centre National d'Études Spatiales (hereinafter: CNES).

²⁷¹ A reference to practical intents and purposes is made due to a very limited research in rocket technology done before World War II commenced, and during it. However the work done - while limited - should not be forgotten. It consisted of researching and developing the rocket EA-41 Eole invented by Robert Esnault-Pelterie and later on further developed in collaboration with Jean-Jacques Barré. The research continued throughout World War II as part of the Free France effort. After the cessation of military activities the natural object of technical and scientific interest was further development of V2 rocket scavenged from the Third Reich.

 ²⁷² E. J. Hermida, *Legal Basis for National Space Legislation*, Space Regulations Library, Montreal, 2003, p.160.
 ²⁷³ Ibid.

In order for the operative part of the program to continue, CNES and ESRO had to enter into bilateral agreements concerning the operative part of the project. This came into fruition on 7th of February 1974, with CNES being responsible for management of finances and technology, organization of the actual work to be done as well as choosing the appropriate industrial contractors.²⁷⁴ Later on, due to creation of the European Space Agency (hereinafter: ESA), the Ariane program was officially registered as part of ESA's optional programs.²⁷⁵

The legal landscape of French outer space operations changed once the ESA came into life. At that time USA was still the only nation with at least theoretical capability of providing commercial space launches, and France - being the owner of the Guiana Space Center - was the only country in Europe that could provide the physical facilities to change that situation. On 19th of May 1976 concluded an agreement with ESA concerning Guiana Space Center utilization, where the French government guarantees access and unrestricted use for ESA's for purposes of its operations.

After the successful launch of Ariane 1 on 24th of December 1979, France together with ESA established Arianespace, a company that would "promote, market and manage the operation of Ariane".²⁷⁶ Arianespace was therefore established on 26th of March 1980, with CNES and Europeans Aerospace and Defence Industries being the majority holders. What followed shortly thereafter was another agreement between CNES and ESA called the "Declaration by certain European governments relating to the Ariane Launcher production phase" concluded on 14th of April 1980, which concerned rules on mutual support between newly formed Arianespace and ESA.

Regulations mentioned above provide also for rudimentary liability regime of French operations in outer space. However, due to the multilateral nature of the entire endeavor in question, the regime itself does not concentrate on providing provisions that would be applicable to entities outside of the CNES/ESA/Arianespace trio. The doctrine summarized the approach adopted by French authorities as similar to that of NASA and its system of managing

²⁷⁴ E. J. Hermida, *Legal...*, op. cit., p.161.

²⁷⁵ Ibid.

²⁷⁶ B. Harvey, *Europe's Space Program: To Ariane and Beyond*, Praxis Publishing, Chichester, 2003, p. 169.

the liability by a system of cross waivers.²⁷⁷ Similarly to the USA, three liability "tiers" can be distinguished, divided into first, second and third party claims.²⁷⁸

As it is being pointed out in doctrine, first party risks are contained by means of liability cross waivers, and were "assumed by Arianespace and its customers".²⁷⁹ These - similarly to the USA's regime - include assumption of risks and their consequences by each party, a waiver of right to file a claim as well as an obligation to hold harmless the other party should the claim be filed despite the waiver. The last provision was included due to the lack of possibility in the French law to waive responsibility for bodily injury - consequently this leaves open the possibility for e.g. employees of either Arianespace or its customer, to present a claim before French court regardless of waiver signed. In such circumstances a party whose employee would present such a claim is under the obligation to hold the other party of the waiver "harmless". The material scope of the waivers in question is equally broad as it encompasses property damage, death, bodily harm, consequences of events listed above as well as launch and satellite mission failure. Having this in mind, the essence of the first party waivers remained the same in French legislation as it did in the USA - it effectively transfers the risks from the operator onto the client, and applies equally to the "first parties" as well as to their contractors and subcontractors.²⁸⁰ The instances of damage being actually caused by the client to the operator of the launch vehicle can be characterized as purely theoretical.²⁸¹

2. Liability - second party claims

The second party risks encompass the risks that are being borne by the French Government, ESA and its member states that stem from Arianespace operations. As it is being pointed out in doctrine, due to the multilateral character of the project, multiple parties can potentially be regarded as launching states in light of the OST and LIAB provisions.²⁸² Having stated that, one has to remember that the doctrine of "once a launching state, always a launching state" is very much operational still today, forcing the states to find a solution to a very practical

²⁷⁷ E. J. Hermida, *Legal...*, op. cit., p. 155.

²⁷⁸ J. Hermida, *Risk management in Arianespace space launch agreements*, available at: <u>http://www.julianhermida.com/dossier/dossierarianespace.htm</u> (accessed: 20.06.2023).

²⁷⁹ E. J. Hermida, *Legal*..., op. cit., p. 155.

²⁸⁰ This is being achieved by respective contractors and subcontractors entering into subsequent liability waivers.

²⁸¹ E. J. Hermida, *Legal*..., op. cit., p. 155.

²⁸² E. J. Hermida, *Legal...*, op. cit., p. 157.

issue of liability borne by a theoretical approach to law. Curiously, in the discussed period, there were no clear-cut provisions that would provide for a comprehensive liability regime in French law. It appears that the entire issue was left to rules of international character. The production agreement concluded in 1980 stipulates in its article 4.1 that "French Government shall be responsible for the payment of any damages that may be awarded" due to the launches conducted by Arianespace.²⁸³ Additionally, Arianespace itself was required to reimburse the French government up to the amount of 400 million Francs, should the government pay the "damages it may be required to pay under the terms of paragraph 4.1".²⁸⁴ This solution effectively creates a separate liability regime of international character made specifically for Ariane program.

While France would either way be treated as a "launching state" under *corpus iuris spatialis*, and thus would be liable to the extent provided within the treaties, the same could - albeit only potentially - be said about remaining parties to any given launch. The production declaration of 1980 could not of course alter the provisions of outer space treaties, what it could do however, was introducing another "layer" of liability for such damages. Its scope - as indicated in the production declaration - encompasses solely the launch of and damages caused by the launch in question. Therefore the French government remains liable for any damage inflicted in connection with Arianespace launches, however this in itself does not absolve any other parties from being held liable on the basis of *corpus iuris spatialis*. Rather, it obligates the French government to undertake steps necessary to prevent claims being presented to any other party of the production declaration, and later to be reimbursed by Arianespace up to the ceiling of 400 million Francs. It is important to note that the 400 million Francs (or 61 million euro as it has been recalculated during the future decades) does not take into account the number of claims - and covers all claims stemming from a single launch.

Therefore the "second party" claims in case of early French legislation, are effectively limited to the ceiling of 61 million euro, that the French government is entitled to be paid back by Arianespace, in case of any damage being compensated by the French government in connection to a launch done by the company.

 ²⁸³ Declaration by Certain European Governments Relating to the Ariane Launcher Production Phase, 1980, available at <u>https://www.jaxa.jp/library/space_law/chapter_3/3-2-2-3/index_e.html</u> (accessed: 24.06.2023).
 ²⁸⁴ Ibid, art. 3.9.
3. Liability - third party claims

Finally, the regulations had to tackle the issue of third party claims as ultimately - from the public international law perspective, those are the only actual claims that may arise. This however, did create a certain problem. Due to the multilateral nature of the endeavors at hand, one can argue that all of the potentially damaged parties are participating in the launch itself, therefore becoming not covered by the provisions of LIAB. In essence, should the launch cause any damage to any of the parties, the aforementioned regulations would render the French government ultimately liable to cover them, however the source of this obligation stemmed from the production agreement and not *corpus iuris spatialis*. Of course, it is still possible that somehow the launch may cause damage to property of a state or nationals of a state that is not the party to Ariane program, however the chance of that happening - having in mind geographical location of GSC - is miniscule at best, and covered in any case by either the 61 million guarantee obtained by Arianespace, or by the French government due to LIAB provisions.

However, the issue of potential damages being caused or sustained by ESA, as an independent public international entity remained. This issue was addressed in the GSC agreement concluded in 1993.²⁸⁵ Article 11.1 introduces a rudimentary regime of liability, which divides potential claims into stemming from the development and those stemming from the actual launches conducted as part of the Ariane program. In cases of damage being caused by the use of the facilities of CSG/CNES while developing Ariane program to "the Agency itself, to a member State, to a third State, to nationals of those States or to any other person", the ESA agrees to hold harmless the French Government unless the "damage arises out of gross negligence or a willful act or deliberate omission on the part of the French Government or of persons acting on its behalf". In a rather superfluous manner, article 11.2 of the same agreement underlines that ESA shall not hold harmless the French government for damages that were influenced as part of utilization of GSC for programs other than those of the agency.

²⁸⁵ Agreement Between the French Government and the European Space Agency Concerning the Guiana Space Centre, 1993, available at <u>https://www.unoosa.org/oosa/en/ourwork/spacelaw/nationalspacelaw/bi-multi-lateral-agreements/france esa 001.html</u> (accessed: 24.06.2023).

Article 11.3 outlines the relations of French Government and ESA in cases of damage being caused "by reason of the execution of the CSG of launch activities by the Arianespace company or by persons in its service". In such a case it is the French Government that shall hold the Agency and its member states harmless for any damage caused to either the Agency itself, its members, third parties or nationals of those countries or any other person. However, this is subject to two exceptions which have the effect of absolving the French Government from holding harmless the Agency as well as its member states. Firstly, this will take place should the damage be "[arising] out of gross negligence or a willful act or deliberate omission on the part of the Agency, of persons employed by the Agency or of States members of the Agency ".²⁸⁶ It is also provided that should the gross negligence and willful misconduct happen on part of the French Republic acting as a member state of the ESA, then the French Government will still hold the Agency and its remaining members harmless. In the event that the loss or damage has been found "to be due to the Agency's satellite" then - regardless of possible negligence or willful misconduct - the expenses to establish the cause as well as amend the damage, should "be borne by the Agency and apportioned among the States participating in the satellite program concerned".

4. Registration

Another issue that had to be tackled by French authorities concerned the actual registration of the launched space objects. This issue was all the more important as in the late 1970s and early 1980s registration regime created by RES 1721 was being substituted for a more comprehensive system introduced by REG, which emphasized the importance of national registries of space objects. However, despite the fact that France remained one of the drafting parties of REG, and ratified said treaty in 1976, it continued to register their space object within the UN basing on RES 1721 scheme. It was not until 1984 that France have begun registering and re-registering the satellites in conformity with article IV of REG.²⁸⁷ This was however not coterminous with France establishing its national registry in line with REG provisions, as it did not happen until 2004. Therefore the registrations performed by France in the respective period closely mimicked in character previously examined issues being what can be most

²⁸⁶ Ibid., art.11.3.

²⁸⁷ French registration notification, UN Doc. ST/SG/SER.E/445, 2004, available at <u>https://www.unoosa.org/documents/pdf/ser445E.pdf</u> (accessed: 24.06.2023).

graciously described as eclectic. A prime example of such an approach is French satellite GEOS-2, launched on 21st September 1978 from Cape Canaveral. Firstly, it was duly registered within the UN RES 1721 framework on 27th of September 1978.²⁸⁸ Subsequently the same satellite was registered by ESA, as an International Intergovernmental Organization, within the REG framework on 10th of January 1983.²⁸⁹ The ESA registration document remained therefore the original registration document for purposes of REG and Register maintained by UNOOSA. Subsequently, it has been re-registered by France on 2nd of March 2004, with a note stating that this notification "supersedes registration data previously submitted by France" - even though it has been already registered for purposes of Article IV by ESA.²⁹⁰ Then, 3 years later, France notified UN SG and UNOOSA that the satellite was no longer operational and - quite frankly - still remained French.²⁹¹ Finally on 30th of June 2010, France did request removal of GEOS-2 from its registry.²⁹² The same modus operandi was employed for a multitude of previously France-registered space objects.

5. Non-Arianespace endeavors

Similar approach was adopted by France in the case of Spot Image, a public limited company now owned by Airbus Defense and Space.²⁹³ It was originally created by CNES with shareholders also coming from Sweden, Belgium and Italy.²⁹⁴ The main goal of the enterprise was commercial utilization of earth imaging data. Having in mind that the company itself was merely an administrative body that organized the international SPOT program, financed by aforementioned governments, the "production cycle" of this commercial-partnership appears to be similar to this of Arianespace, with France via CNES, exercising control over the activity in question, while formally being executed by a private law entity. The case of Spot Image however remained distinct from that of Arianespace, as there were no separate provisions

²⁸⁸ French registration notification, UN Doc. A/AC.105/INF.378, 1978, available at <u>https://www.unoosa.org/documents/pdf/inf378E.pdf</u> (accessed: 24.06.2023).

²⁸⁹ ESA registration notification, UN Doc. ST/SG/SER.E/073, 1983, available at <u>https://www.unoosa.org/documents/pdf/ser073E.pdf</u> (accessed: 24.06.2023).

²⁹⁰ French registration notification, UN Doc. ST/SG/SER.E/445..., op. cit.

²⁹¹ It was included in within section "French satellites still in orbit but no longer operational".

²⁹² French registration notification, UN Doc. ST/SG/SER.E/588, 2010, available at <u>https://www.unoosa.org/documents/pdf/ser588E.pdf</u> (accessed: 24.06.2023).

²⁹³ Spot Image PLC, general information available at <u>https://en.wikipedia.org/wiki/Spot Image</u> (accessed: 24.06.2023).

²⁹⁴ A. Kerrest de Rozavel, F. G. von der Dunk, *Liability and Insurance in the Context of National Authorisation*, Studies in Space Law, vol. 6, 2011, p. 26.

concerning third party liability. If Spot Image would be launched by Arianespace then - following the position of the doctrine - this particular issue would have been already dealt with via the agreements covering the Ariane program. In the case of the satellites in question being launched from a different location, the status of France as the launching state could be established in "an indirect fashion at best".²⁹⁵

6. Paving the way for new legislation

The somewhat eclectic system of regulating French outer space activities became a source of concern in the late 1990s, when French Space Department at the Ministry of Research and New Technology published its report, ²⁹⁶ stating that the then-present framework was merely "acceptable for current programs" however only for programs that remain public in nature. Moreover, as it has been pointed out in literature, a de facto lack of any sort of national regulation did amount to "economical deficiency" and had detrimental effect on the development of the space industry in France as such.²⁹⁷ Furthermore, the report identified a potential issue as to the institution of "cross-waivers" being infinitely less established in French jurisprudence than it has been in the USA's, and the need for establishing a comprehensive regulation encompassing this concept. The report also indicated that in order to be successful and create an incentive for domestic and foreign investors, the legislation needs not to "slow down the activities of companies by loading them with administrative burden".²⁹⁸ A solution incorporating the dual - authorization and license - system has been proposed in order to alleviate the often redundant and repetitive authorizations for launch operators, in cases of already verified procedures and vehicles.

²⁹⁵ A. Kerrest de Rozavel, F. G. von der Dunk, *Liability...*, op. cit., p. 26. The responsibility and liability of France might be - however – more direct. This is due to the fact that the French Government, albeit treating CNES as an intermediary, did establish the company in question and had, alongside other governments, shares in it, therefore making the "procuring the launch" clause of LIAB easier to prove, as the main reason and motive for establishing the company in the first place was launching objects into space for commercial purposes. Additionally, none of the treaties that establish *corpus iuris spatialis* does differentiate between being "directly" and "indirectly" liable or responsible.

²⁹⁶ P. Clerc, Consequences of the French Space Law on Space Operations (FSOA) on CNES's Mission as a Contracting Space Agency, in Contracting for Space, Contract Practice in the European Space Sector, Routledge, New York, 2016, p. 126.

 ²⁹⁷ B. Schmidt-Tedd, I. Arnold, *The French Act relating to space activities From international law idealism to national industrial pragmatism*, ESPI Perspectives, vol. 11, 2008, p. 2, available at: https://www.files.ethz.ch/isn/124756/espi-perspectives 11.pdf (accessed: 20.01.2023).
²⁹⁸ B. Schmidt-Tedd, I. Arnold, *The French...*, op. cit., p. 4.

A study group within Conseil d'Etat has been created by order of the Prime Minister, which in April of 2006 produced a report, shortly followed by introduction of a first draft of future legislation. The act itself was passed on 3rd of June 2008, with two executive decrees being introduced in 2009.

7. Contemporary legislation

Studies over a new legislation concerning outer space activities began in 2004, by order of the French Prime Minister.²⁹⁹ The French Space Operations Act (hereinafter FSOA) was adopted in June 2008,³⁰⁰ and regulates the - absent up to this point - issues of authorization, licensing, registration and insurance in a more general manner, not being solely focused on developing governmental or intergovernmental programs. It was later complemented by the Authorization Decree No. 2009-643 (hereinafter: AD) that concerned exploring in more detail the authorization regime on part of CNES.³⁰¹

Article 1 of FSOA contains definitions of terms used throughout the act. First and foremost it established and utilizes the concept of "space operation". According to FSOA Article 1 point 3, space operation means "any activity consisting in launching or attempting to launch an object into outer space, or of ensuring the commanding of a space object during its journey in outer space, including the Moon and other celestial bodies, and, if necessary, during its return to Earth." The French legislation, by indicating a division between "launching of a space object" and having subsequent "command" over it - clearly indicates that it is applicable to a broader scope of activities than its American counterpart. Unlike the USA, France's act appears to be - at least as far as definitions go - equally concerned with both the launch of the space object as with the operation of the space object itself.³⁰² Point 4 of FSOA's article 1 contains definition of the "launching phase", and describes it as a time period, belonging to a

²⁹⁹ A. Kerrest de Rozavel, F. G. von der Dunk, *Liability...*, op. cit., p. 16.

³⁰⁰ French Space Operations Act, LOI n° 2008-518 du 3 juin 2008 relative aux opérations spatiales, available at <u>https://www.legifrance.gouv.fr/loda/id/JORFTEXT000018931380/</u> (accessed: 24.06.2023).

³⁰¹ Decree no 2009-643, adopted on 9th of June 2009, relating to authorizations provided according to French Space Operations Act, Décret n° 2009-643 du 9 juin 2009 relatif aux autorisations délivrées en application de la n° 2008-518 3 iuin 2008 loi du relative aux opérations spatiales. available at https://www.legifrance.gouv.fr/loda/id/JORFTEXT000020719487/ (accessed: 24.06.2023).

³⁰² An argument can be made that while the USA's legislation does not explicitly contain provision that would regard actual space object's operation on equal grounds with the launch of it, it does so implicitly, by requiring a safety approval of the object in question, which includes mission review.

wider space operation, that begins as soon as the activities that lead to the launch can no longer be canceled or reversed, and ending - unless authorization documents provide otherwise -"when the object to be put in outer space is separated from its launch vehicle".³⁰³ The concept of "launch vehicle" was not elaborated further within the legislation, relying on the term coined initially in *corpus iuris spatialis* (especially REG and LIAB).

Article 1 point 5 provides an insight into the content of the "phase of command" term. According to the act it concerns the period from the moment of separation of space object that is destined to be placed in outer space, and ends when "the first"³⁰⁴ of the following three events occurs:

- when the final maneuvers for de-orbiting and the passivation activities have been completed;
- when the operator has lost control over the space object;
- the return to Earth or the full disintegration of the space object into the atmosphere;

Prior description of space operation as well as launch and command phases was necessary in order to provide a complete representation of the damage definition provided by FSOA. FSOA provides that the term damage for its purposes refers to damage done to "to persons or property, and in particular to public health or to the environment"³⁰⁵ that has been done directly by a space object "as a part of a space operation". ³⁰⁶ Curiously enough, the presented definition does explicitly exclude from the term damage any "consequences arising from the use of the signal transmitted by this object for users". What is more, the term "space object" was not defined in the FSOA, relying on PIL to fill in the void, i.e. encompassing both the actual object destined to be placed on orbit, as well as its component parts, followed by the launching vehicle and its component parts. More importantly however, the term "damage" as provided above does include damage inflicted both on the surface of the earth, or to aircraft in flight or to other space objects. This was achieved by connecting it on one hand to the concept of "persons or property" without specifying where such persons or property should reside, and to the concepts of "space operation" on the other, which includes both the launching and command phase.

³⁰³ FSOA, art. 1.4.

³⁰⁴ FSOA, art. 1.5.

³⁰⁵ FSOA, art. 1.1.

³⁰⁶ Ibid.

Further on, FSOA defines the term "space operator" or "the operator" as it is being used in other articles as any person - be it natural or juridical - that carries out a space operation "under its responsibility and independently".³⁰⁷ Furthermore, FSOA provides for a "thirdparty" definition, stipulating that a third party is a juridical or natural person "other than those taking part in the space operation or in the production of the space object(s) the launch or command of which is part of the operation."³⁰⁸ In a rather peculiar twist, the same point provides for a quasi commentary to itself, specifying that the space operator alongside its contractors and subcontractors, as well as the customer of the space operator (likewise including its contractors and subcontractors) shall not be regarded as third parties.

FSOA in point 7 of the first article provides also a definition of "space-based data primary operator" as any person of natural or juridical character "ensuring the programming of an Earth observation satellite system or the reception of Earth observation data from outer space."

7.1. Authorizations and licenses

Following provisions of article VI of OST, French legislation introduces a regime covering requirements of authorization and continuing supervision. To this end, France has adopted an approach concerning oversight over outer space activities of entities remaining under its jurisdiction featuring "multi-use" licenses as well as singular authorizations. These - from the legislative point of view - are based not only on FSOA, but also on the AD, that provides a detailed outline of the process.³⁰⁹

Regardless of whether the analysis concerns a license or a single authorization, the governmental entities that issue respective clearances remain the same. AD provides that in each case, the body that is the recipient of specific motion and ultimately grants the authorization of license in question is the Minister in charge of Space Affairs.³¹⁰ Alongside the

³⁰⁷ FSOA, art. 1.2.

³⁰⁸ FSOA, art. 1.6,

³⁰⁹ It must be noted however that from a purely organizational point of view licenses remain a subtype of authorizations and are treated as such by the FSOA. ³¹⁰ AD, art. 1.

relevant ministry, CNES is responsible for creation of technical regulations (hereinafter: TR) and monitoring their implementation. On top of that, the FSOA and AD provide - in total - for up to four distinct types of procedure concerning placing objects in outer space, each requiring different scope of review and involvement of both the applicant as well as the public bodies.

7.2. Entities and activities covered by the legislation

FSOA regulates both who is obligated to obtain an authorization prior to commencement of outer space activities, as well as the types of activities that require state's "consent". The subjective scope of regulation is based - rather predictably - on the term of space operator, and its nationality. The material scope of the regulation is focused however on whether the outer space activity in question consists of merely obtaining control over an already launched outer space object, or does it also involve its launch. In the latter case a further division is being made depending on whether the launch itself does take place from French or foreign territory.

In cases of planned launch taking place from the territory of France or from "means or facilities falling under French jurisdiction"³¹¹ every space operator, regardless of its nationality - which includes its place of registration - is obliged to obtain authorization from relevant authority. The same applies in cases of de-orbiting - or as it is being called by FSOA the "return" of an object to national territory or facilities that fall under the French jurisdiction - a space operator desiring to proceed with such a return is required to obtain prior authorization regardless of its nationality.

Article 2.2 of FSOA deals with the launch being conducted from the territory or a facility of a foreign state, including areas that do not remain under the jurisdiction of any state (e.g. high seas and outer space), and - similarly to point 1 - with return of a space object that meets such conditions. FSOA provides that only French operators are required to obtain prior authorization before commencing their activities.

³¹¹ FSOA, art 2.1,

Article 2.3 references the issue of procuring the launch of a space object and "intending to command such an object during its journey in outer space". In such a case any French natural person or juridical person whose headquarters are located in France, is obliged to obtain authorization before seizing command over a space object or procuring its launch.

Finally, article 3 of FSOA deals with the issue of transfer of ownership and control over already launched space objects.³¹² Article 3 provides for two distinct cases of such transfer - seizing the command of a space object that has been subject to French authorization in the past, and transfer of command of an object that has not been authorized pursuant to FSOA. In the first instance, transfer of such an object to a third party is always mandated by obtaining prior and relevant authorization. In the latter, it is only mandatory if the entity that aims at obtaining command over such an object is a French operator.

7.3. Types of authorization

Pursuant to what has been indicated during the drafting of FSOA, French legislation does include five distinct ways (or rather "versions") of space activities authorization. These are:

- i. single authorization;
- ii. simplified authorization;
- iii. license attesting moral, financial and professional guarantees (hereinafter guarantee license);
- iv. license complemented by technical conformity certification of generic procedures and systems (hereinafter technical license);
- v. license equivalent to authorization for a set period of time and operation limit (hereinafter operational license).

FSOA does not provide for a "default" type of authorization, however due to the complexity of the system at hand as well as its internal order the analysis should begin with "single

³¹² FSOA in this instance uses the term "commanding of a space object".

authorization" to be given for a launch conducted from the territory or facility remaining under the jurisdiction of France.

7.4. Single authorization

Firstly, one needs to analyze the contents of article 4 of FSOA, as it does contain general rules on space activity authorization. In order to authorize the launching, command or transfer of a space object, the administrative authority needs to verify a series of applicant's qualities. Amongst those, article 4 mentions, moral, financial and professional qualities of both the applicant and - should it become necessary - its shareholders as well. Additionally systems and procedures that the applicant "intends to implement"³¹³ will also be scrutinized in light of technical regulations provided for in AD. The passing of AD itself is mentioned at the end of article 4, where it is stated that the decree should specify:

- i. required supporting documentation to be delivered by the applicant;
- ii. which administrative authority will be competent to grant such authorization, and establishing technical regulations previously mentioned;
- iii. conditions for granting licenses;
- iv. conditions for granting exemptions from compliance checks.

As it has been provided in article 1 of AD, authorizations are provided by the Minister in charge of Space Affairs (currently this duty is performed by the minister of research and technology). Furthermore, the furnishing of required documentation has been divided into two parts.

Firstly, AD contains a list of administrative documents that need to be presented in order to make sure that the applicant does meet moral, financial and professional requirements as well as operation's description that indicates that it will not jeopardize France's interests of national defense as well as international obligations. Specifically, the documentation to be provided by the applicant has to contain details of the company's financial situation and details of its governance. management systems that were implemented within the company, safety

³¹³ FSOA, art. 4.

policies and training in place as well as the scope and nature of financial guarantees that can be provided.

Secondly, applicants are obligated to furnish data in line with CNES's technical regulations and GSC's safety regulations, in order to make sure that proposed activity ensures safety of persons, property, protection of public health and of the environment.³¹⁴ These need to specifically include "A description of the space operation to be conducted as well as systems and procedures that the applicant intends to implement".³¹⁵ Alongside the said description, the applicant also has to include a file containing a compliance notice of technical regulations, internal standard and quality management, safety provisions, studies of hazards and environmental impact of planned activities as well as documents covering risk management measures and emergency relief measures.³¹⁶

Depending on whether the systems that are supposed to be used in operation are already being exploited commercially, or are still undergoing development, there are two possible paths to go forward. If the technology does already exist and has been assessed, the authorization is being provided, but remains subject to prescriptions indicated in article 5 of FSOA. If the technology however is still in development, the applicant can initiate a "pre-application procedure",³¹⁷ which ends in CNES providing a "certificate of preliminary technical conformity with technical requirements".³¹⁸ While such consultation is non-mandatory in character, and formally remains outside of the authorization framework, it is still "opposable" to public authorities during the authorization process.³¹⁹

7.5.Operations conducted from territory or a facility of a foreign state

FSOA and AD do take into account and enable commission of space operation from the territory or a facility that remains under the jurisdiction of a foreign state. This - as it will be shown below - can become more concise than a "regular" space operation conducted from French territory or facilities. This is ultimately due to the fact that as much as France could be

³¹⁴ FSOA, art. 4 & 5 & 8; AD, art. 1.

³¹⁵ P. Clerc, *Imposition of space sustainability guidelines on the commercial space sector*, Toulouse Space Show'12 Space & Law program, p. 14, available at <u>https://iislweb.space/wp-content/uploads/2020/01/2012 Clerc.pdf</u> (accessed: 20.01.2023).

³¹⁶ AD, art. 1.II. ³¹⁷ AD, art. 11.

³¹⁸ AD, art. 14.

AD, and 14. 319 D Class I

³¹⁹ P. Clerc, *Imposition*..., op. cit., p.15.

still regarded as a launching state on the basis of *corpus iuris spatialis*, it's impact on how the activity in question has to be performed, and its responsibility would be somewhat "diluted" if not excluded for all practical purposes. Firstly, France would not be the only launching state in question, being at best regarded as a state merely procuring the launch³²⁰. This indicates that for purposes of OST & LIAB its liability would be ultimately shared with another state party. While rules of *corpus iuris spatialis* may be described as not specific enough in this regard, article V of LIAB clearly states that "Whenever two or more States jointly launch a space object, they shall be jointly and severally liable for any damage caused".³²¹ It further elaborates that should one the responsible States pay compensation for the damage in question, it will have the right to claim indemnification. Moreover, a State from whose territory or facility an object has been launched will always be regarded as a participant to such joint launching.³²² This clearly shows that regardless of what interpretation of "procuring the launch" would be adopted, in case of France, it would never be the only liable state (as long as the other state from whose territory or facility the object is launched remains party to LIAB), therefore mitigating risk for France in a significant way. Secondly, there is an issue of what actual degree of control can France exercise over a launch conducted outside its jurisdiction. A brief examination of OST's article VI, shows that it does not limit or mitigate the authorization and continuing supervision of space activities depending on where the activity is performed. At the same time, if the other State remains a party to OST, the same rules of corpus iuris spatialis will have to be observed by it. Hence, while France will not have an equal amount of factual control over the activity in question, from the perspective of international law, it bears little to no difference, as there will remain another state party that will have jurisdiction to enforce compliance with PIL rules regarding the same operation. With this in mind, article 4 of FSOA clearly indicates that in cases of a space operation being conducted from territory of a foreign State or its facility, conditions that were otherwise set up for the operation in question may be exempted by administrative authority "when the national and international commitments made by that State as well as its legislation and practices include sufficient guarantees regarding the safety of persons and property and the protection of public health and the environment, and liability matters."³²³ AD further clarifies this requirement in section 12. The applicant is obligated to deliver all information that would enable the assessment of guarantees mentioned

³²⁰ Should one adopt a broader definition of a launching state present in e.g. LIAB.

³²¹ LIAB, art. 5.

³²² LIAB, art. 5.3.

³²³ Unofficial translation of French Space Operations Act, Journal of Space Law, vol 34, 2008.

in FSOA 4 point 4 (exemptions in question can concern both entirety or part of the obligation). Subsequently the Minister decides on whether the exemption that was motioned for is granted or states the reason for his refusal.

7.6. Control over a space object and its transfer

Definition of space operation provided for in FSOA includes " ensuring the commanding of a space object during its journey in outer space, including the Moon and other celestial bodies, and, if necessary, during its return to Earth", and according to FSOA's article 2 point 3, requires a authorization in order to be legally carried out by space operator subject to FSOA. Similarly to previously discussed topics, FSOA delegates details of this particular issue over to AD. AD's chapter IV concerns authorizing control over a space object and transfer of such control from one space operator to another. As for the control itself, section 13 does not change the overall authorization regime in any meaningful way. A space operator wishing to control a space object during its operation within outer space has to obtain a prior authorization, including all the terms and conditions provided for in previous chapters. This authorization however, includes and encompasses all technical operations that are required for the control in question, irrespective of whether they are being carried out by the operator himself or by persons that act within its authority.³²⁴ Therefore the French legal regime, while dealing with a singular concept of authorization, does require it for both the launching as well as operating the space object itself. Section 14 point 1 indicates that in the instance of a space object that was previously authorized by state authorities, the request for transfer authorization has to be jointly presented by the operator that currently has the control over the space object, and the operator that seeks to obtain the control over it. Such a request needs to specify the nature of the space object in question, as well as follow rules concerning authorization mentioned in article 1 of AD. It is also possible for the recipient operator to base its part of the request on previously granted license rather than undergo the full authorization procedure.

Article 3 of FSOA provides for a possibility to transfer control exercised over a space object both between France-based operators and between foreign operators and French entities. According to FSOA such transfers require prior authorization, with the terms of such transfer to be further elaborated in the decree of a Council of State - AD. AD in section 14 point 2

³²⁴ AD, art. 13. It also enumerates that its provisions are applicable in particular to "maneuvers positioning and station keeping, orbital maneuvers as well as deorbiting."

specifies the procedure in cases of the recipient operator not being subject to FSOA's regime (i.e. including foreign entities). In such instances the current space operator presents the nature of the space object as well as all relevant documentation that justifies why the recipient operator does not fall under the jurisdiction of the FSOA, supported by guarantees that the object that is being transferred will be duly registered and notified to the SG of UN.

7.7. Licenses

It has to be observed that the technical part of authorizations assessment is not the only one that can be subject to prior examination by the authorities in order to make the actual authorization process faster. This, in turn, is the key component that differentiates the standard authorization from remaining types of governmental oversight of outer space activities, by enabling a more "fast-track" approach to the process. Licenses themselves are being regulated by both FSOA and AD. The role of FSOA itself is however somewhat limited in terms of licensing regime. Article 4 of FSOA lists 3 types of licenses that are possible to obtain by the applicant. These are: license attesting moral, financial and professional guarantees, license attesting compliance of technical procedures and systems employed, as well as license that is equal to authorization process. Apart from enumerating license types, FSOA delegates to AD the issue of establishing conditions that have to be met in order to grant aforementioned licenses, and "modes in which the beneficiary of such a license informs the administrative authority of the space operations he undertakes".³²⁵

Detailed regulation concerning licenses has been included in chapter II of AD. Taking into account the delegation included in FSOA, the AD in its article 8 provides that licenses that have been indicated in the third paragraph of article 4 of FSOA are to be granted and respective applications reviewed based on the rules concerning regular authorizations indicated in chapter I of said decree. Additionally, article 8 of AD indicates that the maximum period within which the license will remain valid is 10 years, however it may just as well be granted for a shorter period should the minister "by reasoned decision" decide to grant a license for a shorter than requested period.

³²⁵ FSOA, art. 4.3.

7.8. "Technical" licenses

In the subsequent articles, AD delves into the issue of particular license types, and applicable rules. Article 9 mentions rather cryptically named "licenses mentioned in the second sentence of the third paragraph of article 4". It is to be found out that the license in question is the technical license, or how it is being put in FSOA, a license attesting compliance of systems and procedures "referred to in the first paragraph with the technical regulations set forth". After a bit more deduction we may finally safely assume what should have been elementary,³²⁶ that indeed the regulation refers not only to the ominous "technical" license, and requirements listed in article 1 point II of AD, but may just as well be requested solely for part of the systems and procedures in question. Having finalized our brief excursion into the rather Poirot-esque realm of article 9 of AD, we are bound to draw a subsidiary conclusion that "[The French legislator] methods are his own."³²⁷ The license in question has a direct impact on the manner in which authorization for given space activity will be granted. Should the authorization be requested for already commercially available without a license, the AD in its articles 2 to 6 provide for a 4 month timeframe with at least 2 months being reserved to CNES. However, if the applicant possesses the license in question, the review time is reduced to one month and 15 days being granted to CNES respectively.

As this has been indicated above, there also exists a possibility to obtain a "preapplication"

approval. This possibility is aimed specifically at systems that have either never been before or are still under development. Article 11 of AD provides that any person that is responsible for the design or development of a system that is intended to be used in outer space operation, and remains of critical nature to safety of persons and property, or protection of public health and the environment, as prescribed in first paragraph of FSOA's article 4, can request CNES certification of aforementioned systems with technical regulations. The certification request should be corroborated by a file "describing the general technical characteristics as well as its development plan"³²⁸. CNES conducts inspections, tests and analysis that are required by technical regulations, and provides a document "attesting the conformity of the critical system or subsystem with the technical regulations" at the end of each development stage. Such a

³²⁶ Arthur Conan Doyle, passim.

³²⁷ A. Christie, *The Big Four*, William Collins & Sons, Glasgow, 1927.

³²⁸ AD, art. 11.

document can be then utilized in order to support authorization requests that may be submitted with due observance to be given to the conditions that remain set in Chapter I of AD. Such documentation is in no way equal or should be treated as a substitute for either an authorization or a license, nor does it prove compliance of system in question with the technical regulation in scope or capacity other than initially submitted for.

7.9. Licenses equal to authorizations

FSOA provides also for the possibility of space operators to obtain a "license equal to authorization", with the main purposes being facilitating space operations of repeating character, that utilize the same systems and share common mission characteristics. As it is provided in article 11 of AD, applicants that aim to obtain a license of aforementioned type, are required to present a precise description concerning each type of activity and operation concerned. Subsequently, any activity or operation that would not be covered by the license obtained, has to undergo mandatory authorization process, pursuant to chapter 1 of AD. In order to conduct an operation, the license holder is required to inform the appropriate Ministry on the details of the planned operation within 1 month of it taking place. However, the AD also includes an opportunity for the license holder to conduct a more "ah hoc" operation should it not be possible to comply with said requirement "due to urgency" - this requires a justification to be presented to the Minister describing the rationale and need for the operation in question. This, however, does impact only the timeline for the notification in question, not the obligation to notify itself.

8. Financial Guarantees

Both FSOA and AD provide for financial guarantees to be in place in order for authorization to be granted as one of the obligations of space operators. Article 6 of FSOA specifies that any operator seeking to obtain a license or an authorization is obligated to obtain and maintain an insurance or other financial guarantee that should be approved by a competent authority.³²⁹ The guarantee or insurance in question has to be maintained for as long as an

³²⁹ FSOA, art. 6.1.

operator can be held liable as provided in article 13 (see below). Furthermore, the insurance or guarantee has to be obtained and maintained for a specific amount. However, FSOA in its article 16 and 17 does not provide for a specific number above which the State overtakes the liability for launching and command phase of given space operation. The amount itself was established in 2008 Finance act as remaining between 50 and 70 million euro,³³⁰ with Arianespace being required to ensure 60 million euro of guarantees per launch.³³¹ FSOA additionally specifies that the amount in question is intended to cover damages that may be caused to third parties up to the amount specified,³³² and has to list as insured parties the Government and its public bodies, ESA and Member States of ESA as well as the operator himself together with persons that took part in production of the space object as well as its operation.³³³

AD, as indicated in FSOA, provides further details on financial guarantees. Section 16 specifies a catalog of what constitutes a guarantee - it can be a written commitment from a credit institution, insurance or finance company, or a proof of self-insurance i.e. information of assets available to be liquidated in order to satisfy the claim in question. Such guarantees are required to be presented prior to commencing the space operation in question.

However, the financial guarantees will not always be required, as AD includes provisions that make it possible for a given space operation to be exempted from this obligation. Such exemption may be granted upon the request of the space operator in two cases - either due the financial factors currently present on the insurance market, or due to the nature of the operation in question. Should obtaining of the guarantee in question be impossible due to the "state of insurance market", the minister responsible for granting the authorization together with the minister responsible for budget may issue - by joint decision - an exemption to obtaining an insurance or other type of financial guarantee, provided that the applicant has sufficiently attested his financial solvency in the motion for exemption.

³³⁰ French Finance Act, LOI n° 2008-1443 du 30 décembre 2008 de finances rectificative pour 2008, available at <u>https://www.legifrance.gouv.fr/loda/article_lc/LEGIARTI000020042301</u> (accessed: 24.06.2023), art. 119.

³³¹ F. G. von der Dunk, *Towards 'Flags of Convenience' in Space?*, IISL-ECSL Symposium, Vienna, 2012, available at <u>https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1075&context=spacelaw</u> (accessed 24.06.2023), p. 7.

³³² FSOA, art. 6.2. ³³³ FSOA, art. 6.3.

⁵⁵⁵ FSOA, art. 6.3.

A special exemption can also be granted in the case of satellites operating from geostationary orbit. In case of a satellite remaining in a determined slot of said orbit for a fixed period, the minister in charge of space operation may grant an exemption from the obligation to obtain financial guarantee or insurance for as long as the satellite in question does remain in the same orbital slot.³³⁴ As soon as a space operation concerns the change of a given satellite's orbital position, the operator in charge of it has to produce insurance or a guarantee mentioned in article 6 of FSOA and in accordance with the procedure provided for in section 16 of AD.

9. Liability

Apart from listing a series of provisions concerning financial guarantees, FSOA contains rules on the liability connected to outer space operations, with Title IV being devoted to this particular topic. A preliminary analysis of the FSOA's structure shows that the French legislation does divide the possible liability concerns into two main categories - either dealing with compensation of third parties (chapter I) or persons that are taking part in the space operation itself (chapter II). Subsequently, the regulation follows the scheme introduced in LIAB, with the liability regime being strictly dependent on where damage has been inflicted.

According to FSOA's article 13 the space operator shall remain the entity that is first and foremost responsible for any damages inflicted in connection to space operations he conducts. In case of damage being caused either in the airspace or on the ground, the operator will remain absolutely liable. Should the damage in question be caused anywhere else than in the airspace or on the ground, the liability of the operator should be assessed based on his fault.³³⁵ Furthermore, space operator's liability once assessed can only be either reduced or completely set aside, should the fault on part of the victim be proven. The time during which the space operator remains liable for the damages caused has been limited in regards to the timeline of the operation. As a general rule the space operator remains liable until the obligations provided for in the license are fulfilled, but no longer than 1 year after they should have been fulfilled according to the authorization.

Much like the USA, France also provides for a cap to the liability that has to be borne by the space operator himself. Pursuant to provisions of articles 16 & 17 of FSOA, these caps

³³⁴ AD, art. 18.

³³⁵ FSOA, art. 13.1 & 2.

are introduced separately for the launching phase and operation after it. The cap is determined *ad casum* and provided for in authorization documents, in accordance with the framework that was set forth in the finance act.³³⁶

Limits mentioned above are indispensable in order to determine the scope of actual financial burden that will be shared between the operator and the state. As much as PIL does oblige each of the corpus iuris spatialis state parties to be liable for damages stemming from outer space activities that remain attributable to them, there is nothing that would prohibit the states from establishing the regime that would make it possible to reclaim parts of the paid compensations. Article 14 of FSOA contains provisions concerning the possible amount of indemnification that can be claimed by a state. In the event that the French Republic does pay compensation for damage as provided in OST or LIAB, it can present the claim towards the space operator. This claim however is limited by a number of factors. First of all, indemnification will be reduced by the amount of insurance or financial guarantee that the government has benefited from. Secondly, if the damage was caused by the space object carrying out its operation as per its authorization, the government of France will have its indemnification claim limited to the cap indicated in articles 16 (in case of launching phase) & 17 (after the launching phase and during return to earth) respectively. However, should the space operator cause the damage by its willful misconduct, the limitations mentioned above would not apply. At the same time the government of France cannot present a claim for indemnification if the operation of the space object was duly authorized and the damage itself was a result of acts that were undertaken for the governmental interest.³³⁷

FSOA enables the operator to benefit from governmental guarantee, should the operator be found liable to compensate for the damage caused. However, this possibility was limited in article 15 of FSOA, i.e. limited to authorized space operations that were conducted either from a territory or a facility belonging to France, member states of the European Union or member state of European Economic Area. Apart from the operator, a "persons that are not third parties" can also benefit from governmental guarantee if the damage in question and their subsequent liability concern incidents that occurred during the launching phase. The guarantee itself appears to be deceptively similar to the indemnification postulated in article 14, however it is

³³⁶ FSOA, art. 16 & 17.

³³⁷ FSOA, art. 14.

applicable in the cases of the operator being previously condemned to compensate the damages. In such instances the operator in question - providing there is no willful misconduct on his part - can benefit from the provisions of articles 16 & 17.

Finally the FSOA does refer to the issue of the liability of natural persons that can arise in connection to space operations. As it is being provided in article 19 of FSOA the natural persons, that are involved in the space activity, are protected from any independent if the state guarantee, financial guarantee or state guarantee has already been used to compensate for the damage in question. This does not include a willful misconduct on part of the natural persons for which they still remain entirely liable. Article 20 of FSOA extends this principle to anyone involved with production of the space object or space activity, and the impossibility of such person to be sued by anyone involved in the same activities on a contractual basis, unless either specifically provided in the contract or due to willful misconduct.

10. Registration

FSOA remains silent as to the details of space object registration. It has been effectively limited to article 12 indicating that - should the registration be required by article II of REG or other international agreements - such registration should be carried out. The technical side of maintaining and operation of the national registry was left to be included in the respective orders and decrees. The CNES remains responsible for operating and maintaining the national registry,³³⁸ and operators are obliged to provide CNES with relevant information in order for those to be included in the registry. The list of information that needs to be provided by space operators has been included in the order dated August 12, 2011 and includes designation of the space object; function of the object in question; information on which entity has constructed the object in question; the historical data relating to the property or any sureties that remain valid in connection to the space object; date and place of launch; final orbital parameters; how the object is controlled while remaining in outer space; as well as any possible anomalies that might take place during the mission.³³⁹ Should any of the information that the space operator

³³⁸ Decree no. 84-510 on the National Centre for Space Studies of 28 June 1984, Décret n°84-510 du 28 juin 1984 relatif au Centre national d'études spatiales, available at <u>https://www.legifrance.gouv.fr/loda/id/JORFTEXT000000337492</u> (accessed: 24.06.2023), (hereinafter: CNES Decree).

 $^{^{339}}$ Decree no 2009-643, adopted on 9th of June 2009, relating to authorizations provided according to French Space Operations Act, Décret n° 2009-643 du 9 juin 2009 relatif aux autorisations délivrées en application de la loi n° 2008-518 du 3 juin 2008 relative aux opérations spatiales, available at

is obligated to furnish to CNES change during the mission of the outer space object in question, said operator has to provide CNES with updated information.³⁴⁰ Information that is obtained by CNES is passed to the Ministry of Foreign Affairs, which then notifies the UN (technically, the ultimate recipient of the information is UNOOSA) and requests respective entries into the UN Register to be made.

https://www.legifrance.gouv.fr/loda/id/JORFTEXT000020719487/ (accessed: 24.06.2023), (hereinafter: Registration Decree), art. 1.

³⁴⁰ CNES Decree, art. 14.4; Registration Decree, art. 2.

III. Australia

Even though Australia may not appear - from layman's perspective - to be a spaceindustry powerhouse, it had a tremendous impact on how outer space is being utilized to this day. This is due to Australia's contribution to the global space sector as well as vast reliance on international cooperation in that respect. On top of that Australia's geographical location makes it a feasible launch location, due to how close it is to the equator.

The history of Australia's "serious" involvement in space-industry starts on 29th of November, 1967 when Australia launched the WRESAT-1 satellite. The mission's main goals were both scientific and industrial. While WRESAT-1 was supposed to collect certain scientific data on the natural phenomena that occur in the upper layers of earth's atmosphere, it also served as a test vehicle whose data would be subsequently used by European Launcher Development Organisation and the British space program. Moreover, while the satellite itself was made fully in Australia, the launch vehicle - namely Sparta rocket - was donated by the USA. Regardless of the international character of the activity in question, the end result of this activity was Australia becoming the 3rd country in the world capable of launching objects into outer space from its own facilities. This in turn broke the USA-USSR duopoly, offering an alternative to already established providers of outer space services. Building upon this success, Australia became one of the affiliates in European Launcher Development Organisation and provided invaluable input by allowing the organization to utilize its spaceport in Woomera. Moreover, Australia was part of a global effort in maintaining continuous radio service for the Apollo program.

Australia's contribution to the international realm of outer space exploitation extended also into the legal field. Australia was one of the founding fathers of the *corpus iuris spatialis* as we know it, being one of the drafting states of OST, and remaining a party not only to ARRA, REG, LIAB but also to the Moon Treaty. This legislative endeavor has been possible due to Australia becoming one of 24 founding members of COPUOS³⁴¹ in 1959.

³⁴¹ Timeline of Australia's involvement in outer space policy can be found in *History of Space in Australia*, available at <u>https://quokkaspace.wordpress.com/history-of-space-in-australia/</u> (accessed: 24.06.2023)

However, these accomplishments did not translate immediately into development of domestic legislation on utilization of outer space, as Australia faced "phases" of increased interest in outer space utilization followed by periods of stagnation in its national activities from the 1970s onwards.³⁴² In fact one of the first major domestic endeavors aimed at regulating Australian outer space activities came only in 1986 when the Australian Space Commission was formed.³⁴³ This was subsequently replaced in 1994 by the Australian Space Council. Both of these institutions in their respective time-frame performed an advisory role to the Ministry of Transportation, aiding it in procurement of a national space program, finalized in 1996. Concurrently, in 1987 Australia decided to establish the Outer Space Affairs bureau which provided oversight over the same program.³⁴⁴ After finalization of the national space program, the Australian approach to outer space activities experienced yet another change, with the central government abandoning the concept of special treatment for the outer space industry. In a striking contrast to previous policy, the Australian government decided to treat outer space as any other domain of industrial and scientific research. This was aimed at - in a way - singling out the most promising of the scientific and industrial branches that could quickly yield the best results with minimal involvement of a state. Pursuant to this, all of outer space programs, issues and endeavors were transferred to the Ministry of Industry, Tourism and Natural Resources. This approach regarding the national policy of outer space development remained in place until 2015.

1. Legislation

The first legislation concerning outer space *per se*, The Space Activities Act, was introduced in Australia in 1998. Its aims remained rather rudimental and were focused on providing a system for authorization and regulation of outer space activities, rules concerning liability for damages caused in course of performance of said activities and implementing obligations that were taken upon by ratifying elements of *corpus iuris spatialis*.³⁴⁵ However, advancements made in terms of both technology and its market application, forced Australia

 ³⁴² K. A. Dougherty, Australia in Space: A History of a Nation's Involvement, ATF Press, Adelaide, 2017, p.139
³⁴³ Ibid.

³⁴⁴ Ibid.

³⁴⁵ All 5 of the treaties that Australia remains party to became schedules attached to The Space Activities Act of 1998.

to reconsider its position in terms of technical and legal capabilities to support the quickly developing outer space sector. In order to tackle this challenge, Australia launched the "Space Industry Review" in 2015.³⁴⁶ As a result of the conducted review, it was decided that the 1998 Space Activities Act should be fundamentally amended. The proposed scope of changes included introducing a high power rocket classification, enabling utilization of modern launching possibilities (e.g. launch from an aircraft), facilitation of approval process, and introducing appropriate legal guarantees for the activities bearing the most risk.

As of 2022, this regulation is called the Space (Launches and Returns) Act of 2018 (hereinafter SL&R).³⁴⁷ It aims at providing a comprehensive regulation on authorization and licensing of both facility-based activities and launches themselves. including the issues of insurance and potential liability. This act is supplemented by specific general, insurance and high power rockets published in 2019. These, as was the case with France and USA, provide more of a technical insight as to what is required - practical terms - from the licensee in question.

2. Definitions

Most recent update on Australia's SL&R provides a rather lengthy chapter devoted fully to defining subsequently utilized in the act. However, the terms themselves are not dramatically different from what was already described in cases of the USA and France. The term Australian national encompasses both natural and juridical persons that are either a citizen or resident of Australia, or remain incorporated either under the law of the Commonwealth itself, its State of territory.³⁴⁸ Curiously this term does include "the Commonwealth, a State or a Territory" itself as an Australian national.

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³⁴⁶ T. Jones, M. Bovaird, D. McGirr, *The Space Law Review: Australia*, The Law Reviews, 2023, available at <u>https://thelawreviews.co.uk/title/the-space-law-review/australia</u> (accessed 24.06.2023)

³⁴⁷ Australian Space (Launches and Returns) Act 2018, C2021C00394, available at <u>https://www.legislation.gov.au/Details/C2021C00394</u> (accessed: 24.06.2023). ³⁴⁸ SL&R. art. 8.

The Australian territory concept incorporates territory of Australia and that of each of its external Territories, as well as respective territorial seas and seas on the landward side of either Australia or respective States & territories.³⁴⁹

As for the damage, the act does introduce a distinction between damage being understood in relation to a space object and to a high powered rocket. Space object wise SL&R does not introduce any new definition of its own, relying directly on the definition of damage provided for in LIAB. Additionally, the act provides that should the damage concern the operation of a high power rocket, the term damage is to be understood as "loss of life, personal injury or other impairment of health or loss of or damage to property of persons". In an example of somewhat circular logic, the definitions part of the act do not provide the definition of high powered rocket per se, resorting only to claiming that high powered rocket is an "object of a kind prescribed by the rules for the purposes of this definition". The concept of high powered rocket is further elaborated in SL&R High Power Rocket Rules 2019 (hereinafter HPR),³⁵⁰ where they are defined based on their capacity for thrust and maneuverability.³⁵¹

Launch facility is described - again, in a very "space object" kind of way - as a facility, be it fixed or mobile, that is placed specifically in order to conduct launches of space objects. This term also includes all other facilities in the same place or that are necessary to conduct the launch. This definition, and the SL&R itself, do not however define the term "launching state" on its own, relying instead on the definition present in LIAB.

The definition of the launch itself distinguishes between the launch of a space object and the launch of a high powered rocket. While the operative part of the definition offers a somewhat standard, in comparison to other discussed regimes, approach to that issue, indicating that an attempted launch should be treated the same as an actual launch, it also provides for a 100 kilometer limit "above mean sea level". Thus, only launches destined to reach or place a space object "into an area beyond the distance of 100 km above mean sea level" will remain in scope of this act. The inclusion of the altitude "ceiling" is referring to the

³⁴⁹ Ibid.

³⁵⁰ Australian Space (Launches and Returns) (High Power Rocket) Rules 2019, F2019L01119, available at <u>https://www.legislation.gov.au/Details/F2019L01119</u> (accessed: 24.06.2023).

³⁵¹ For a given device to be treated as a high power rocket, it has to have either a "total impulse greater than 889,600 Newton seconds" or "total impulse greater than 40,960 Newton seconds and is fitted with a system or systems that allow active control of its trajectory".

Karmann line, a proposed technical boundary between outer space and earth's atmosphere. However such distinction is not present in the *corpus iuris spatialis*, which had diligently avoided providing any delimitation of outer space. It also departs from the usual understanding of space-flight as such, which usually includes performing a single orbit by the space object in question. In turn, this requirement places suborbital flights within the scope of presented act, as any such flight is ultimately bound to either be conducted by means of high-powered rocket within discussed ramifications, and cross the 100 kilometer boundary.

Persons and organizations that are involved in outer space operation have been defined in a manner similar to the launch term, distinguishing between entities involved in launch of high powered rockets, and those taking part in launch of the space object itself. Persons involved in high powered rocket launches are described as launch parties. But, according to point A of the provided definition, if the launch itself is being authorized by a high power rocket permit, the launch party is the holder of the permit in question. However, the term launch party encompasses also launches that have been procured based on the authorization certificate, with the holder of said certificate being the launch party in question. The act provides also that in the case of none of the previously described configurations of entities is applicable to the launch and the launch of high power rocket still takes place, the launch party status is given to both "the person or persons who carried out the launch of the high power rocket" and "any other person specified in the rules made for the purposes of this definition".

The definition of the responsible party remains to be somewhat more complicated. It closely follows the definition of the launch party in its structure, in terms of sources of authorization. The term itself refers to the responsible party as "being responsible" for launch or return of a space object. Subsequently the act specifies that in cases of both the space object's launch being authorized by means or a permit or a certificate, the holder of said permit or certificate should be regarded as the responsible party for given launch or return of a space object. However, the term responsible party encompasses also the holders of the overseas payload permit and - much like with launch party - indicates an "any other case" scenario. "Any other case" according to the provided definition include persons who carried out the launch of the space object in question, persons who during the launch remained owners of the entirety or even part of the payload that constitutes the space object and "any other person specified in the

rules made for the purposes of this definition".³⁵² In the ultimate instance, the SL&R includes a certain restriction. A person will be treated as a responsible party for a space object that has been launched from a facility (fixed or mobile) that remains outside Australia, or for a space object that was returned outside the territory of Australia only if said person remains to be an Australian national.

Having in mind that outer space operation may require input from multiple actors, SL&R does include the concept of a "related party" to the responsible party or launch party. A person becomes a related party to either responsible or launch party if any of the requirements listed below occurs:

- i. the first person has a financial or ownership interest in all or part of the space object or high power rocket.
- ii. the first person was involved in preparing all or part of the space object for the launch or return or preparing all or part of the high power rocket for the launch.
- iii. the first person is a contractor, subcontractor or supplier involved in the launch or return or the preparation of all or part of the space object for the launch or return; or preparing all or part of the high power rocket for the launch.
- iv. the first person is a director, officer, employee or agent of the responsible party or launch party.

It is still possible however for the rules of SL&R to modify regulations given above and "provide that specified persons are, or are not, related parties of a responsible party or a launch party".³⁵³

3. Authorization and control

³⁵² SL&R, art. 8.f.

³⁵³ SL&R, art. 8.2.

SR&L, in line with its aims, serves the function of fulfilling OST's article VI provision by offering authorization and continuing supervision of outer space activities conducted by Australian entities. This includes the SR&L providing for five different types of permit or authorizations, that can be required from respective parties prior to commencing outer space activities. This chapter shall in turn provide an overview of launch facility license, launch permit, high power rocker permit, overseas payload permit and return authorization.

SR&L remains rather ambiguous in terms of requirements in standards that have to be met in order to grant the license in question, leaving the details to detailed administrative rules adopted in 2019 (hereinafter General Rules).³⁵⁴ Therefore the analysis of this and following licenses will encompass both the SR&L as well as general rules provision.

3.1. Launch facility licenses

Article 18 of SR&L provides that launch facility licenses are being granted and revoked by the Minister that remains in charge of outer space activities. The applicant for the license in question has to provide proof of competence, necessary environmental approval and environmental plans "for the construction and operation of the launch facility" and proof of sufficient funding for construction and operation of the launch facility.³⁵⁵ Additionally the applicant has to ensure that the construction on operation of the launch facility poses "as low as is reasonably practicable" threat of substantial harm to public health and safety, as well as threat of any substantial damage.³⁵⁶ The Minister also has the right to reject the application for "reasons relevant to the security, defense or international relations of Australia".³⁵⁷ A license granted by the Minister has to specify the day on which it enters into force, period for which it is granted (not longer than 20 years) as well as any additional conditions as provided in section 20.³⁵⁸ General rules further elaborate on the specifics of the procedure and information that has to be provided. Apart from detailed information on the entity that applies for the license such as its name, address, ownership structure,³⁵⁹ data on future facility structure and operation is

³⁵⁴ Australian Space (Launches and Returns) (General) Rules 2019, F2019L01118, available at <u>https://www.legislation.gov.au/Details/F2019L01118</u> (accessed: 24.06.2023).

³⁵⁵ SL&R, art.18.

³⁵⁶ Ibid.

³⁵⁷ Ibid.

³⁵⁸ SL&R, art.19.

³⁵⁹ General Rules, art.13.

also required. The general rules provide for a three-step procedure which should be discussed in turn.

The first step includes that the applicant for the license in question is obliged to provide the Minister location or locations of the launch facility, depending on whether the facility in question is going to be fixed or mobile.³⁶⁰ Additionally the applicant is obliged to provide information on intended use of the facility along with the frequency of launches and kinds of vehicles that will be launched and when the facility itself will become operational.³⁶¹ However, the license is not required to commence or even finalize the construction of said facility, as article 14 point f of General Rules indicates that "if construction of the launch facility has not commenced" the applicant should provide for an approximate deadline for finalizing its construction.

The applicant is also required to provide a facility management plan, which has to include "operating strategy" which shall take into account the expected frequency of launches, types of vehicles and flight paths, procedures and best practices compendiums especially concerning security measures that are to be adopted, manner and procedures covering the reporting of the current operations taking place at the facility, quality assurance plan of the operation of the facility (and its construction should the facility not be ready at the moment of the application), records and documentation keeping system including maintenance recording and failure reporting.³⁶²

The second step or stage of the application is initiated by the Minister who requests the applicant to provide relevant documentation.³⁶³ The documentation includes organizational structure and personnel information, design specifications and engineering plans, emergency plans, environmental approvals and technological security measures. As such the applicant is obliged to provide an emergency plan that encompasses proposed responses to "accidents and incidents involving a space object or high power rocket that is launched, or is attempted to be launched, from the launch facility", ³⁶⁴ or emergency of any other kind that would occur at the

³⁶⁰ Ibid, art. 14.a&b.

³⁶¹ General Rules, art. 14.e&f

³⁶² General Rules, art. 15.

³⁶³ General Rules, art. 17.

³⁶⁴ General Rules, art. 20.1.a.

facility itself or near its premises. Such a plan must include approvals that may be required in connection to response activities for any given emergency.³⁶⁵

Likewise, the application has to contain the environmental approvals that are required for the facility in question to be constructed, and flow from the law of the Commonwealth, its States or Territories.³⁶⁶ The application has to feature an "environmental plan" for both the operation of the facility as well as its construction, should it be still ongoing. In case of another legislation requiring such a plan for the purposes of the activity in question, the obligation can be fulfilled by the applicant attaching an environmental plan prepared for the purposes for the "other" legislation in question. However in the event that no other act requires drafting of such a plan, the environment plan presented to the Minister for the purposes of obtaining the facility license should include information on procedures adopted to maintain operation and construction in line with the laws of the Commonwealth, States and Territories, assessment of the "likely" impact that the facility and its construction will have on the environment, arrangements targeted at mitigating any adverse effects that the construction or ongoing operation of the launch facility might have on the environment, as well as outlining the manner in which fulfillment of above mentioned obligations should be reported and reviewed.³⁶⁷

Finally the third stage of the application process covers, in essence, all of the outstanding approvals³⁶⁸ and verifications³⁶⁹, including provision of a plan leading to the applicant obtaining all of the indicated approvals.

Launch facility license may be varied, transferred, ultimately revoked³⁷⁰ or suspended³⁷¹ by the Minister depending on the circumstances. In order to change the provisions of the license or transfer the license altogether, a motion filed by the licensee is obligatory. While general rules are only briefly discussing amendments to the license, stipulating that the application must contain "a description of the variation the holder is requesting" as well as "the reason for requesting the variation" together with any supporting material the licensee believes will be of assistance to the Minister, the transfer of already given license was described in much

³⁶⁵ General Rules, art. 20.3.

³⁶⁶ General Rules, art. 21.

³⁶⁷ General Rules, art. 21.

³⁶⁸ SL&R, art. 24.

³⁶⁹ SL&R, art. 25.

³⁷⁰ Ibid.

³⁷¹ SL&R, art. 26.

more detail.³⁷² First of all, the transfer procedure has to be initiated by "the person to whom it is proposed to transfer the license".³⁷³ The application for transfer of the license has to include the same elements as the original motion.³⁷⁴

3.2. Launch permits & Authorisation certificates

Australian legislation makes it possible to conduct launch or return of a space object only on the basis of a granted launch permit or authorization certificate.³⁷⁵ These two bases for outer space activity and operation will be discussed in turn.

The launch permit can be issued either for "one or more space objects" or for an entire series of space objects launches that have characteristics similar enough for the minister to consider that they may be subject to an authorization by a single permit.³⁷⁶ Likewise, the Minister can authorize one or more space objects to be returned "in connection with the launch or launches, to a specified place or area in Australia".³⁷⁷ However it has to be stated that the space objects that are being returned do not necessarily need to be the same objects that have been launched, i.e. there exists a possibility for a launch vehicle to simultaneously deliver and retrieve different objects from outer space while being covered by a single launch permit.

According to article 28, the launch permit can be issued if the Minister is satisfied that the person applying for said permit is "competent to do so", the insurance and financial prerequisites have been satisfied, the risk of substantial harm to public safety & health is "as low as is reasonably practicable". Additionally the space object in question cannot contain nor be in itself a weapon of mass destruction, and not pose any threat to the defense, security or international relations of Australia. However, the list provided in article 28 is not exhaustive, as the point 3(f) outlines that along above mentioned criteria "any other criteria prescribed by the rules for the purposes of this paragraph". An example of such a situation is the space object being jointly launched by Australia and another state. Should this be the case, the Minister can

³⁷² General Rules, art. 28.

³⁷³ General Rules, art. 30.

³⁷⁴ General Rules, art. 33.1.

³⁷⁵ SL&R, art. 12.

³⁷⁶ SL&R, art. 28.1.a&b.

³⁷⁷ SL&R, art. 28.2.

take into account the existence of an agreement with the government of the foreign country which provides for indemnification of Australia and assumption of liability by said country for damages that may arise due to the operation of the objects in question.

SL&R provides a set of default conditions for the issuance of launch permits. First of all the launch permit has to indicate the date on which it enters into force and expires.³⁷⁸ The end of validity of a given permit can also be indicated by occurrence of a certain event rather than a fixed date (e.g. completing a launch in question).³⁷⁹ The duration of the issued permit can be subject to extension by the Minister.³⁸⁰

Article 30 largely extends on the previously mentioned requirements and provisions that are to be included within the launch permit. Point A reiterates that the launches or returns that are covered by a given permit must be exercised in such a way as to not be "likely to cause substantial harm to public health or public safety or to cause substantial damage to property". Point B reiterates that the space objects being launched cannot, under any circumstances, contain any nuclear weapons or weapons of mass destruction. The intention behind indicating nuclear weapons outside of the scope of the term "weapons of mass destruction" appears to be to mimic the provisions of OST, especially its article IV as closely as possible. SL&R also requires a written approval, regardless of the launch permit provided, for a space object to be powered by a nuclear power source.³⁸¹ The holder of the permit also has to abide by all of the requirements and regulations concerning the insurance and financial requirements that have been provided for in SL&R.

Much like in the case of obtaining a facility license, in case of launch permits there are also detailed provisions contained within Space (Launches and Returns) (General) Rules 2019. Most importantly, they lay out a detailed scheme of information to be provided by the applicant in order to obtain the permit, including information on its organizational structure,³⁸² information about launch itself, flight path, launch vehicle that will be utilized to place a given space object in outer space, its flight history and tests performed on this particular type of launch vehicle and information about the payload. This information is further complemented

³⁷⁸ SL&R, art. 29.1.a.

³⁷⁹ SL&R, art. 29.2.

³⁸⁰ SL&R, art. 29.3.

³⁸¹ SL&R, art. 30.e.

³⁸² General Rules, art. 43.

by the launch management plan and risk hazard plan as well as debris mitigation strategy. While being extremely informative in itself, the rules mentioned do not contain any references to international law of a groundbreaking nature. What remains worth noting however, is a dramatic shift from the approach adopted by the USA. While USA's legislation appears to place the bulk of the burden on the launch itself, and regarding payload-related formalities as subsidiary to the launch, Australian approach does not appear to follow suit, treating the payload as an integral part of any launch operation, including financial and insurance aspects.

3.3. High power rocket permit

Regulations covering high power rocker permits largely follow and reiterate provisions contained in part devoted to launch permits. Still it is the Minister who is tasked with reviewing and finally providing the permit in question. Likewise the initial requirements set forth before the applicant are the same, as the Minister has to be satisfied that the person who wishes to carry out the launch is competent to do so, that the financial or insurance requirement are met, and that the launch of high power rocket risk of causing substantial harm to public health, safety or property damage is as low as reasonably practicable.³⁸³ Additionally the Minister has to take into account issues of national security, defense and that of international relations of Australia in order to make sure that the proposed activity does not pose a threat to any of them.³⁸⁴ Subsequent requirements for the high power rocket permit are contained in HPR of 2019.³⁸⁵ These, however, safe for reiterating the already discussed definition of high powered rocket, remain similar in terms of types of information and procedure to the launch permit. One of the features that is worth mentioning is the requirement for the applicant of high power rocket permit to furnish information about the payload, which will be launched, doubling the information that either already was assessed during the launch permit of space object phase, or will be assessed. Additionally, the applicant has to "ensure that the launch is conducted in accordance with the Flight Safety Code" and that the high powered rocket will "not cross into the territory or airspace of a foreign country unless an arrangement for the purpose of the activity is in place between Australia and the foreign country.".³⁸⁶

³⁸³ SL&R, art. 38.

³⁸⁴ SL&R, art. 38.d.

³⁸⁵ See footnote no. 341.

³⁸⁶ HPR, art. 10.

The permit that is motioned to be issued, has to specify the date it comes into force as well as the period of time it covers.³⁸⁷ Similarly to the launch permit, the permit can indicate an event that will mark its expiry instead of a fixed date, and it can be extended by the Minister.³⁸⁸ The permit in question can - much like the launch permit - be subject to transfer, revocation, or be changed after its issuance.

3.4. Overseas payload permit, return authorization and authorization certificates.

Apart from the rather standard means of conducting space activities, such as physically launching a space object from the territory of Australia or its territorial waters, the SL&R does attempt to adapt to the new reality of commercial space flight, by embracing the possibility of the space objects being launched not only within national framework, but also from outside of its territory, as well as providing a more "flexible" means of granting authorization that would still be in compliance with international obligations of Australia. Three instruments mentioned above will be briefly discussed in turn.

Overseas payload permits concern launches of one or more space objects "from a specified facility (whether fixed or mobile), or specified place, outside Australia using a specified launch vehicle".³⁸⁹ The rules for granting the overseas payload permit as well as standard permit terms remain largely the same as in the launch permits. It has to be noted that the Minister while considering whether to grant an overseas launch permit "may (...) have regard to"³⁹⁰ whether there are any agreements or arrangements (as well as its contents) between the launching from whose territory and facility the object shall be launched and Australia, that would indemnify Australia in case of any event giving rise to the liability of the launching state. This may appear counter-intuitive, however as it has been mentioned numerous times in the doctrine - "once a launching state, always a launching state".³⁹¹ This results in any potential agreement or arrangement having only the impact of relieving financial burden from

³⁸⁷ SL&R, art. 39.

³⁸⁸ Ibid.

³⁸⁹ SL&R, art. 46.b.

³⁹⁰ SL&R, art. 46.b.3.

³⁹¹ R. S. Jakhu, *Regulatory framework and organization for space debris removal and on orbit servicing of satellites*, Journal of Space Safety Engineering, vol 4, issues 3-4, 2017, p. 4.

Australia should any event giving rise to its liability actually take place. It does not however make it impossible for an injured state to demand compensation from Australia directly, as it is very likely it could be considered a state "procuring the launch" thus being considered a launching state as well.

Return authorizations are meant to authorize solely a return of a space object from outer space into or outside the territory of Australia. Once again the requirements mentioned by the SL&R as well as general rules remain largely uniform with those concerning launch permit and high power rocket permit. The most significant difference that can be spotted was included in general rules, and concerns exclusion of the general rules provisions' should the return take place outside of Australia and concern a space object that in itself is merely a payload on another space object for which the return authorization in itself is not required.³⁹² This is aimed at facilitating return of space objects by means of foreign launch service providers, where no other connection to Australia would otherwise exist, except for the space object being returned.

Lastly, the authorization certificates have a rather different aim according to SL&R than all of the previously discussed permits. Authorization certificates³⁹³ are issued in order to approve of a conduct that otherwise would be or could be against provisions of articles 11 - 15A of SL&R. Such certificates can be subsequently extended in time, varied or revoked by the Minister. The authorization certificates, while still making it possible to legally conduct space operations without obtaining an actual permit, are relieving part of the burden. General rules in this regard are limited to article 119 which merely specifies that the Minister must have regard on whether the person that is supposed to conduct the activity in question is competent to "carry out the conduct", possible exposure of the commonwealth to the "unsatisfactory risk" of liability, the probability of damage to public health, safety and property and impact of the operation on the safety, security and international relations of Australia.

3.5. Insurance and finance

³⁹² General Rules, art. 91.

³⁹³ SL&R, art. 46.u.

SL&R devotes only two articles to insurance and financial requirements of launch permits, high power rocket permits, overseas payload permits, return authorizations and authorization certificates. However, much like it is the case with previously described approvals, a separate administrative set of rules was put into place in order to address the details of the issue at hand. The differentiation between authorization listed above is based on who shall be listed as insured party. In cases of launch permit, launch authorization and return authorization in cases where the return is destined to take place on the territory or area of Australia, to satisfy the insurance/finance requirements of SL&R both the holder of the permit or authorization and the Commonwealth itself have to be insured. However, the holder of the authorization is required to be insured (or prove sufficient financial guarantees) against a liability for damage, inflicted as a consequence of exercising it, to third parties. At the same time the Commonwealth needs to be insured against a liability that can be incurred under LIAB or "otherwise under international law".³⁹⁴ In cases of overseas payload permit and return authorization with the return point being located outside of the territory or area of Australia, there is no requirement for insurance against third party claims to be obtained by the holder of said instrument. The obligation that remains however, is the obligation to have the Commonwealth insured against third party claims for compensation of damage sustained due to the launch or return operations.

Finally, article 48 of SL&R provides a very rough outline of the amounts of insurance required for each of the launches concerned, mentioning solely that while the specific amount shall be calculated or determined, and cannot exceed 100 million Australian dollars. The Space Launches and Returns Insurance Rules 2019 ³⁹⁵ (hereinafter Insurance Rules) largely corroborates the position quoted above. In cases of the activity in question being insured, the rules on insurance provide for an amount of 100 million Australian dollars for launch and return permits, high powered rocket permits and return authorizations - providing that the return authorizations in question do not fall to the category listed in article 6 item 4, i.e. returns taking place outside of the territory of Australia, or in cases of the returned space object being carried in itself by another space object that does not require a return authorization.³⁹⁶ In cases referred to in article 48.4.b of the SL&R, the rules published in 2019 provide for an amount of insurance

³⁹⁴ SL&R, art. 48.d.

 ³⁹⁵ Australian Space (Launches and Returns) (Insurance) Rules 2019, F2019L01120, available at <u>https://www.legislation.gov.au/Details/F2019L01120/Html/Text# Toc8023751</u> (accessed: 24.06.2023).
³⁹⁶ Insurance Rules, art. 6.4.
calculated utilizing the "Maximum probable loss" methodology, which should be created, updated and - currently - published by Australian Space Agency.³⁹⁷

This framework is supported by provisions of the general rules 2019 article 57, which requires from the applicant a proof of its financial solvency up to the liability amount provided by law, as well as performing calculations for purposes of maximum probable loss regime.

4. Liability

SR&L provides for two distinct regimes of liability for operations in outer space, as the act does distinguish between liability for damage "inflicted" by space objects and high power rockets. This is of course a corollary to the main distinction between these two types of activities, introduced at the permit level.

Firstly, it has to be stressed that much like French or USA's legislation, the Australian SL&R act does concern only the liability on a national level. Since there are no international rules that would govern how the responsibility and liability between entities actually performing the outer space activities is to be established, states have a lot more freedom in establishing such regulations.

Prior to describing specifics of the regulations, it has to be noted that the liability for damages caused in outer spaced is subject to a temporal cap introduced in SL&R. In the definitions part of SL&R, liability period is defined depending on what type of outer space activity is involved. For launching of the space object it is "the period of 30 days beginning when the launch takes place, or such other period as is specified in the rules". For the return of a space object it is "the period beginning when the relevant re-entry maneuver is begun and ending when the object has come to rest on Earth, or such other period as is specified in the rules". Finally, in cases of high power rocket launches, the liability period was designed to be similar to that of space object launch and consists of "the period of 30 days beginning when

³⁹⁷ *Maximum Probable Loss Methodology*, Australian Space Agency, 2019, available at <u>https://www.industry.gov.au/sites/default/files/2019-08/maximum-probable-loss-methodology-for-space-activities.pdf</u> (accessed: 24.06.2023).

the launch takes place, or such other period as is specified in the rules". Aforementioned liability periods are subsequently referred to by both general rules as well as SL&R itself.

As previously mentioned, SL&R distinguishes between liability for launching of space objects and high power rockets. In both instances however, the issue at hand concerns liability towards third parties, i.e. not the party that is responsible for the launch or party that is related to the launch, as per the definitions discussed above. However, this does not preclude Australia as such, from "complying with any obligation to pay compensation under the Liability Convention, or otherwise under international law, for such damage".³⁹⁸ If the Commonwealth indeed does pay any compensation due to international regulations, the responsible party is obligated to repay either the amount of the compensation, or the amount that it would be obligated to pay according to article 69 of SL&R (i.e. either up to the amount of insurance, or in full in cases of violations of permits or willful misconduct).

Liability for damage done by a space object, as per article 63 of SL&R encompasses damages inflicted by space objects in cases of the launch and return of given space objects. At the same time, SL&R introduces further divisions in the domestic regime of liability, differentiating between whether Australia can or cannot be considered a launching state. Having in mind a rather complex matrix of when, who and why remains liable for damage, the liability for damages by space objects will be analyzed based on the division between launch and return, with certain parts of the SL&R duplicating between both instances.

As for the launch of space objects, the liability for damages inflicted - first and foremost - can arise only within the liability period prescribed by the SL&R. Damage is covered in case of space objects being - alternatively - launched from the facility in Australia, from Australian aircraft or from a foreign aircraft should such aircraft remain in Australia airspace at the time of launch, or if Australia remains a launching state in relation to the object in question.

The liability for return of the space objects was largely constructed in the same manner, with liability being tied either to the launching place of said object, or to Australia being considered a launching state. However, due to the character of the activity in question, there is a small yet important difference between liability for damage caused while returning an object

³⁹⁸ SL&R, art. 64.2.

to Australia or outside Australia. In the first instance, it is irrelevant whether Australia can be considered a launching state, or where the object was launched from prior to being returned, as liability for damage caused will exist either way.³⁹⁹ In cases of return to a place outside Australia however, the requirement of Australia being a launching state still remains, alongside launching facilities or aircrafts.

SL&R also provides insight as to what types of damage are being covered by the regulations in question. To this end above mentioned scenarios will be applicable should the damage take place on Earth, in the air, in outer space, within or outside of Australian borders, regardless of whether the launch or return in question was authorized under SL&R or covered by an authorization certificate.

The issue of the amount of compensation due and possible involvement of the Australian government was addressed in articles 66 to 71. With the exception of returns of space objects that were not launched from Australia (either from a facility or an aircraft in flight) by a non-Australian national, following regulations have been introduced.

In cases of damage done on Earth or to the aircraft in flight, the responsible party is liable to pay compensation, unless a gross negligence of the third party or presence of any conduct of the party intended to cause the damage is present.⁴⁰⁰ The same principle applies to damage being caused in outer space to a space object belonging to a third party, property of such a third party on board of such a space object, or to a third party itself.⁴⁰¹ However, in a manner corresponding to LIAB article III, the responsible or related party will only have to pay compensation, if it remains at fault for the damage caused.

Similarly to French and USA's legislation, Australian act also provides for mitigation rules as to the amount of the compensation that is to be paid by the responsible/related parties. This, however, is subject to several restrictions. First of all, the launch permit or overseas payload permit of a space object has to be authorized by an Australian launch permit. Additionally, the damage itself cannot be an effect of a breach to any of the provisions of the launch permit, facility license or conduct intended to cause the damage in question. If the

³⁹⁹ SL&R, art. 63.

⁴⁰⁰ SL&R, art. 67.

⁴⁰¹ SL&R, art. 68.

prerequisites indicated above are met, the responsible party " is not liable to pay compensation for the damage to the extent that the amount of the compensation would exceed the insured amount for the Australian launch permit or overseas payload permit".⁴⁰² Should the liability exceed the amount paid according to article 69 point 3, the remaining amount that is to be paid towards Australian nationals will be covered by the Commonwealth up to a sum of 3 billion Australian dollars.

In cases of the return of a space object that was not launched previously either by Australian national or from Australian territory or aircraft, including foreign aircrafts in Australian airspace, no guarantees of the Commonwealth are in place, with responsible party being "liable to pay compensation for any damage the space object causes to a third party".⁴⁰³

Finally it has to be mentioned, that the space object liability regime does not "affect the rights of persons who are not third parties (for example, employees of a responsible party) from seeking compensation outside of this Act for damage to which this Part applies".⁴⁰⁴

4.1. High power rocket liability

High power rocket liability regime largely follows that of launch permits and overseas payload permits, therefore subsequent analysis will focus on the differences between the two regimes in question. Firstly, liability for launches of high power rockets feature a narrower scope of areas in which the regime is applicable. Unlike liability for launch permits and overseas payload permits, in the discussed case, there is no special liability mentioned for damages that did take place in outer space.⁴⁰⁵ Secondly, there is no mention of any redress claims that can be presented by the Commonwealth in cases of compensation made by the Commonwealth on the basis of PIL. In fact, the responsibility of Australia stemming from PIL is not mentioned at all in the high power rocket liability regime. This does not, however, serve as a means of excluding the possibility of such claims being presented or such damages being compensated by Australia, as - according to both customary international law as well as VCLT

⁴⁰² SL&R, art. 69.3.

⁴⁰³ SL&R, art. 71.

⁴⁰⁴ SL&R, art. 64, this relates to damages mentioned in SL&R part concerning launch permits and overseas payload permits.

⁴⁰⁵ SL&R, art. 75.b.

- domestic regulations cannot serve as a basis for non-performance of international obligations of a state. At the same time such regulation falls squarely in line with LIAB, as LIAB does exclude any damage suffered by the nationals of that state from its scope, alongside damage suffered by the foreigners taking part in a given operation.

4.2. Liability for permits and authorizations

As described above, SL&R does provide for two separate basis for conducting legal (in a domestic regime understanding of this term) outer space operation, with the responsible party required to obtain either a permit or an authorization. While it may be regarded as having little bearing on the actual activity taking place, as in both instances the space object or high power rocket in question can be utilized in compliance with SL&R, one difference becomes obvious should one turn its attention to liability regime. It appears that the SL&R does not offer any kind of governmental guarantees for outer space activities made on the basis of such authorizations. At the same time the issue of liability is not tied to any given permit but to the performance of the activity itself, thus not being reliant on what administrative procedure was completed prior to commencement of the activity.

5. Registration

SL&R adopts a straightforward approach in regards to registration of space objects. While it does not explicitly oblige the Minister to communicate each space object to the UNOOSA for it to be included in the UN registry. The Minister has to, however, observe the REG and any other international agreement in relation to registration of Australian outer space objects.

IV. Netherlands

So far the analysis concerned jurisdictions that either have political, economical or geographical reasons and resources to envision large scale scientific and business ventures in outer space. This has shown a generally comparable approach of said states to the issues of liability for outer space activities, insurance, authorization procedures and oversight over holders of said authorizations. However, a few of the less space-capable nations have procured a rather ingenious approach to some of the most fundamental issues of national space legislation in order to either help develop the domestic space industry, or limit the potential burden that such activities could have within the domestic realm in terms of budget as well as foreign policy.

Following the vast majority of European states, the Netherlands did not adopt any national space legislation until the late 2000s. This was due to the fact that the vast majority of space programs were conducted either through or with significant involvement of ESA. Thus it was not uncommon for the states to assume that the legislation on outer space activities is either not necessary or outright not required. Such an approach was reinforced by the landscape of the space industry in the early 90s and 2000s. Vast majority of outer space operations, due to the reliance on French, Chinese or Russian launching infrastructure, did not inherently render any state that remained involved in any given activity to immediately fulfill the launching state criteria.

In the case of the Netherlands, what started the discussion on drafting and adopting domestic regulations of outer space were the initiatives undertaken by the private sector, namely MirCorp and New Skies Satellites. MirCorp, firstly established in the Netherlands, and later being moved to the United States, was supposed to arrange private space flights onto the Mir space station. While this in itself did not put the Netherlands directly in the harm's way in terms of potential liability for damages caused by the launch of said "space tourist", as the launches were supposed to be conducted using Russian vehicles from Kazakhstan territory, it nevertheless gave rise to the possibility of the Netherlands being considered as a state that "procured the launch" for the purposes of LIAB. While one has to keep in mind that the notion of the Netherlands being considered as a state that procures the launch, merely because a company that has been incorporated within its jurisdiction sold a "seat" on a Russian space

mission is by no means straightforward and certain, the doctrine points out that such possibility nevertheless exists, as the definition of launch procurements tends to be understood broadly in scholarly works.⁴⁰⁶ While MirCorp ended up being moved into the United States of America, thus rendering any discussions as to potential involvement of the Netherlands in Russian space-tourism endeavors moot, a company called New Skies Satellites gave rise to a set of new challenges for the Dutch legislature.

It was announced on 31 March 1998 that New Skies Satellites, incorporated in the Netherlands, would take over 6 out of 24 of Intelsat satellites that were in orbit at the time. This, in turn, put the Netherlands in a rather unambiguous position of a state that is obligated to extend its authorization and supervision (basing on article VI of OST) over New Skies Satellites operations, as well as the possibility of being regarded as a launching state.⁴⁰⁷ While the first of the issues - that is of authorization and supervision - could not be avoided, the second one, offered more in terms of legal flexibility for Dutch authorities. It has to be noted that the six satellites in question were launched as part of INTELSAT constellations, and were launched either from the territory of the USA or France. This brings the issue of the launching state status in cases of in orbit transfer of satellites, and whether the obligations incumbent on the state party in terms of conducting national activities in outer space and remaining a launching state can be separated.

There remains little doubt that in the given case, the Netherlands would still be obligated to cover the activities of the New Skies Satellites space objects with its authorization and continuing supervision, as well as ensure that they remain in conformity with international obligations undertaken by the Netherlands as "the operation of the satellites and the leasing of transponders on board by the company would certainly qualify as <<national activities in outer space>>".⁴⁰⁸ However, the concept of national activities introduced in article VI of OST, according to part of the doctrine, can be treated as separate from the concept of launching state, indicated in article VII of OST, article II of LIAB, or article 1 of REG. All of the above mentioned provisions define the launching state as a state that either launches, procures the launch of a space object, or the launch in question takes place from their territory or facility. Having in mind the uniformity of the definition in question across three distinct international

⁴⁰⁶ P.A. Varwing, R. S. Jakhu, *National...*, op. cit., p. 233.

⁴⁰⁷ P.A. Varwing, R. S. Jakhu, National..., op. cit., p. 233.

⁴⁰⁸ Ibid.

treaties, it is quite certain that the concept of launching state that each and every single one of them refers to is virtually the same institution of PIL. Therefore, should a state be considered a launching basing on the provisions of REG, the same conclusion will have to be drawn in respect to LIAB or article VII of OST. However, the same uniformity does indicate that it cannot be easily considered to be coterminous with "national activities" indicated in article VI of OST, as this provision does not appear to have any analogues in remaining treaties. Moreover, the LIAB as well as REG introduced a "once a launching state, always a launching state" doctrine, since none of the treaties provide for an opportunity to cease to be a launching state in relation to a given space object. Thus it remains possible for a state to conduct national activities in outer space under article VI of OST, without remaining a launching state for an object in question. In the case at hand, all of the space objects transferred over to New Sky satellites already did have a launching state, therefore possibly limiting the risks of damage caused by them not being able to be recovered by injured parties. Of course the question of whether a state whose nationals "received" a space object by means of in orbit transfer can be considered a state "procuring a launch" remains open, however such notion was rejected by Dutch legislators. In the end, there remained a single obstacle in the way of the Netherlands being able to fully control, supervise and authorize space activities, as required by OST, while at the same time not having the status of a launching state, therefore not risking the liability inherently attached to it, and that was - jurisdiction.

Article VIII of OST clearly gives the jurisdiction over a space object to a state "on whose registry an object launched into outer space is carried". This creates the only exception to the rule of lack of state's jurisdiction over any part of outer space, and contrary to popular belief, it is less of a "gift" for state parties, and more of a tool which aim is to provide the states with legal possibly to affect the operation of the object in question. At the same time, to a casual observer, the Netherlands did strip itself of the possibility to retain jurisdiction over New Skies Satellites space objects, as the notion of the Netherlands remaining a launching state thus having the ability to have these object on its registry basing on the article 1 of REG was clearly rejected. However, article VIII of OST does not specify exactly what kind of registry is required in order to grant the state jurisdiction over a given object. Therefore the legal framework from the Dutch perspective provides for the necessity of having a national registry, in order to extend domestic jurisdiction over the New Skies Satellites, while at the same time mandating such a national registry - basing on article 1 of REG - only in cases of the registry holder in question

being classified as a launching state. The rather obvious yet ingenious answer came in the form of a question - what if there were not one but two national registries?

Indeed this became the solution adopted by the Netherlands. By means of the Space Objects Registry Decree adopted on 13th of November 2007, the Netherland's registry has been divided into national and United Nations parts, each covering different obligations stemming from OST, LIAB & REG. While inclusion of a given space object into a national "chapter" of the registry does allow Netherlands to extend its jurisdiction over the space objects sent into outer space, by no means does it go beyond the stipulation of article VIII OST. This on one hand ensured that the Netherlands will have jurisdiction to enforce its authorization and supervision regime over activities conducted from the Netherlands, while on the other conforming with the REG requirement of having such a registry in the first place, while at the same time not acknowledging the Netherlands as a launching state for the purposes of LIAB and REG. The technical aspect of the introduction of the discussed legislation remains peculiar. While the registry is establish within Section 11 of the Dutch space act,⁴⁰⁹ the division of said registry into national and UN parts has been established in article 2 of the Decree of 13th November 2007 introduced by the Minister of Economic Affairs. However, the "Dutch doctrine" centered around not recognizing the Netherlands as a launching state in cases of a space object being launched from outside of the territory of Netherlands, or control and ownership over which has been transferred to a Dutch natural or juridical person after the launch (as indicated by Dutch authorities in an explanatory memorandum),⁴¹⁰ is not universally accepted.

The somewhat opposing view within the doctrine stems from the transfer of control and ownership of two of New Skies Satellites space objects - NSS-6 & NSS-7 - performed in 2003. Said space objects were "passed over" to New Skies Satellites while already in orbit, thus prima-facie passing the self-appointed Dutch check on whether or not the Netherlands can be considered a launching state. Both satellites were launched from Kourou, and, taking into account the statement made by Steve Scott, the then-current chief technology officer, both were "designed exclusively by New Skies", and were aimed at extending New Skies Satellites'

 ⁴⁰⁹ A.Froelich (ed.), V. Seffinga (ed.), *National Space Legislation A Comparative and Evaluative Analysis*, Springer Cham, 2018, p. 73.
⁴¹⁰ Ibid.

capabilities to provide services to their customers.⁴¹¹ This points to a Dutch entity being the sole reason that the two satellites in question have been designed, produced and launched. Thus, while it is possible to - should one adopt a very restrictive definition of the launching state agree with Dutch outlook on the issue of the launching state status in cases of ownership transfer only, in case of NSS-6 & NSS-7 it is rather obvious that Dutch entities' involvement was that of procuring the launch, rather than simply buying an already launched device, since without the involvement of New Skies Satellites, none of the space objects would have ever be launched or even produced. Thus, it appears that the Netherlands would fall within the scope of article 1.c of LIAB. However, as it has been communicated by Dutch government on 22 of August 2003, the Kingdom of Netherlands does not consider itself a launching state or a launching authority in relation these objects solely because "The above-mentioned space objects were delivered in orbit to New Skies Satellites after they were launched and positioned in orbit by persons that were not subject to the jurisdiction or control of the Kingdom of the Netherlands."⁴¹² This statement appears to focus more on the physical aspects of the launching state status such as the territory or facility from which the objects are being launched, rather than on the aspects of launch procurement, in the case at hand, designing & ordering both the satellite as well as the launch service itself, thus making it impossible for the launch to take place without the involvement of Dutch entity. While the concept of launch procurement might not be sufficiently defined within the corpus iuris spatialis, it can be safely assumed that designing of the space object, ordering its launch and subsequently seizing control over it, can be safely described as procuring its launch. To assume that fulfilling above mentioned criteria is still not sufficient in order to regard given state as a launching state, would require effectively a separation of LIAB and OST in terms of attribution of non-governmental activities to the state stemming from OST's article VI, and considering the procurement of launch solely within the meaning of launches procured by the state authorities.

⁴¹¹ U. Dasgupta, *On-Orbit Transfer of Satellites between States: Legal Issues-with Special Emphasis on Liability and Registration*, International Institute of Space Law Proceedings, 2016, available at <u>https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3471940</u> (accessed: 24.06.2023), p. 6.; *New Skies' NSS-7 satellite arrives at Arianespace launch site to be readied for mid-April launch*, SpaceRef, 2002, available at <u>https://spaceref.com/press-release/new-skies-nss-7-satellite-arrives-at-arianespace-launch-site-to-be-readied-formid-april-launch/ (accessed: 24.06.2023).</u>

⁴¹² Note verbale dated 29 July 2003 from the Permanent Mission of the Netherlands to the United Nations (Vienna) addressed to the Secretary-General, A/AC.105/806, 2003, available at

https://digitallibrary.un.org/record/504379?ln=en_EN (accessed: 24.06.2023); What remains peculiar is the omission of article VII of OST, which can potentially lead to the Netherlands still being held liable for damage, despite the lack of launching state status indicated in LIAB.

In a way, Dutch outer space law does follow the trend observed in other states that were subject to the analysis, that is to draft the rules of domestic space legislation around the issues that are likely to appear, given the capabilities of domestic industry. What remains rather peculiar however, is the absolute commitment of a state that remains a party to all five state treaties, not to be regarded as a launching state, and fulfilling the absolute bare minimum of obligations that cannot be otherwise dismissed by any "exotic" interpretation of PIL.

V. Polish anticipated law on outer space activities

Ever since 2016 Poland is in the constant process of drafting and redrafting its domestic outer space legislation. To make matters even worse, the Draft of Polish Act on Space Activity and National Register of Space Objects (hereinafter Polish Draft) that has been circulating in 2019 (hereinafter has been effectively scrapped after the parliamentary elections taking place in the same year.⁴¹³ However, to this day, it remains the only tangible trace of legislation concerning outer space activities that can be subject of an analysis.⁴¹⁴ As indicated in the documents circulating during the consultation phase of the drafting, it has been based off of the Austrian domestic legislation on the same subject.

Article 1 of the draft outlines the general aims of the act, as well as the type of conduct that shall be regulated. In paragraph 1, the act stipulated that it shall cover the rules "applicable to performing space activities" as well as those "applicable to establishment and operation of National Registry of Space Objects". It has to be noted that the operational part of maintaining the National Space Registry, has been already assigned to the president of the Polish Space Agency, without said registry being established during the signing into law of Polish Space Agency act. Paragraph 2 of article 1 offers a clarification to the subject-matter scope of its application, indicating that the act itself governs space activities that are either undertaken on the territory of the Republic of Poland, on board of platforms used to launch space objects, including polish vessels or aircrafts registered in Republic of Poland, and undertaken by polish nationals, regardless of their place of residence, or polish legal persons, or entities that are not legal persons but still have the capacity to perform legal acts established in Republic of Poland.

The term "space activity" itself is defined in article 3 as "launching of a space object into outer space, utilization of a space object, and bringing a space object back onto the surface of the earth". While the first and last types of outer space activity are rather clear and

⁴¹³ Draft of Polish Act on Space Activity and National Register of Space Objects, 2017, available at <u>https://legislacja.rcl.gov.pl/docs//2/12300856/12449052/12449053/dokument300886.pdf</u> (accessed: 24.06.2023). ⁴¹⁴ This statement - intentionally - does not take into account the act establishing the Polish Space Agency, which in itself does not contain any meaningful provisions concerning conducting outer space activities by Polish natural and juridical persons, being predominantly focused on the operations of the Polish Space Agency itself.

unambiguous, the term "utilization" is not being defined in the act itself, and presumably encompasses any and all possible manners in which the space object can be utilized for both business and - should the technology arrive at that point by the time the final version of the act is signed into law - private use.

The term of "space object" has been treated in a fashion almost identical to that of LIAB and REG - with space object being considered as "as an object, which is going to be launched or which had been launched into outer space, its component parts, as well as its launching vehicle, and component parts thereof". Thus the act takes into account the possibility that the space object obtains the status well before being placed on the orbit, thus resembling the approach of France, Australia & New Zealand, whose legislation extends the status of space object and space activity in order to encompass the initial steps undertaken still on earth. Article 3 paragraph 3 introduces the term "operator" defining it as "a natural person, or legal person, or an entity that is not a legal person but still has the capacity to perform legal acts, which plans to conduct or conducts space activity". The term of the launching state has been not defined per se in the draft. Instead the definition from Article 1 of REG is being directly referenced Similar but not identical approach is adopted when introducing the term "damage", where firstly the draft does reference LIAB, without precising which article is being taken into account. Right after that, the draft offers what appears to be a direct translation of LIAB's article 1 point a, i.e. "loss of life, personal injury or other impairment of health; or loss of or damage to property of States or of persons, natural or juridical, or property of international intergovernmental organizations". The draft itself does not contain any other definitions, nor does it introduce any distinctive types of launching vehicles, space objects or types of outer space activity.

Article 4 of the Polish Draft outlines the very essence and one of the main reasons for this legislation's existence - the regime for authorization of outer space activities. Firstly, it is stated that authorization is mandatory for undertaking and performing outer space activities covered by the act in question.⁴¹⁵ Paragraph 2 of the same article outlines the list of requirements which have to be met in order for the authorization to be granted. The conditions for granting authorization in general correspond to what has been observed in already discussed domestic legislations. The activity for which the authorization is being seeked, has to be safe,

⁴¹⁵ Polish Draft, art. 4.1.

conducted by a party which "[has] sufficient knowledge and expertise relating to performing space activities", cannot pose a threat to the national safety & security, cannot interfere with other states' peaceful exploration and utilization of outer space, obtaining required insurance policy. relevant radio and telecommunication approvals and authorizations and making sure that the space object in question does not contain nor transports nuclear weapons or weapons of mass destruction. While up to this point the list of requirements may appear as rather universal or even trivial, sadly the draft's article 4 paragraph 2 does contain several provisions that are if not peculiar then at the very least quite challenging to reconcile with the public international law, as well as with the draft itself. Firstly, subparagraph 2.8 conditions awarding the authorization on presenting an "[a]greement on orbital parameters of space object, as well as safety measures to be adopted concerning utilization of dangerous materials, to be concluded between operator and entity that does conduct launching operations". While it may appear as quite rational on the outset, one has to bear in mind that the definition of space object does encompass the launching vehicle and component parts thereof. Thus, not only does the draft introduce an otherwise undefined term of the "entity that does conduct launching operations", this sort of activity would in any case be treated as a space activity undertaken by the operator. Therefore, it is not exactly clear and evident who or what said "entity that does conduct launching operations" is. It appears however, that since it has been mentioned separately from the operator, it does not conduct the space activity as such. In practicable terms there are only two possible types of entity that is conducting the launching operations. Firstly, it may be a domestic Polish juridical or natural person. In such an instance, the Polish legislation appears to be contradicting itself, as the launching entity would undoubtedly fall under the definition of the operator as an entity that does conduct space activity (launching of a space object in this instance). This would lead to the operator, itself being subject to authorization regime, being obliged to conclude an agreement with another entity concerning the conditions of the launch, with the launching entity ultimately having to obtain an authorization covering the same launch in any case, thus only prolonging the authorization process. Secondly, it may be a foreign natural or juridical person (e.g. Space X, Arianespace etc.), which in itself remains outside of Polish jurisdiction. In the second case, an argument can be made, that since polish legislation does not distinguish between launches conducted from within or outside of polish territory, the entity that effectively conducts the launch may well be regarded as an "operator" with the launch clearly falling within the definition of space activity, with the jurisdictional link consisting of participation in the launch of a satellite that shall remain under Polish jurisdiction. Of course such understanding does lead to somewhat absurd conclusions, and undoubtedly the practical approach of the authorities would not follow the same logic, favoring the treatment of the launching entity as not ultimately bound by any of the provisions of Polish space act. However, this in itself does present another set of issues, as it makes the same launch subject to what effectively is a double review. This is due to the fact, that both the state from whose territory or facility the space object is bound to be launch, will have to authorize the launch, and subsequently the same information will be subject to the review on polish side, with the authorization itself being conditioned on the contents of the agreement between polish operator and the foreign launching entity. Therefore it is not improbable that the problem of one procedure being blocked by another and vice versa may appear. A simple solution to that conundrum would be adoption of several classes of launches and more refined section containing definitions (e.g. specifying that the act concerns only launches conducted from polish territory or facility, and a French-like possibility for the authorities to waive certain requirements depending on which state will be overseeing the launching activities).

However, the draft act, quite unfortunately, does not stop there, but instead requires the operator to conclude "an agreement indicating which state shall be deemed the launching state, in case that status could be attributed to more than one".⁴¹⁶ This provision is peculiar both from the perspective of international law, as well as Polish domestic legislation. The peculiarity from the PIL standpoint stems from the fact that - in general - operator as defined in the discussed draft will not have the legal capacity to conclude any sort of international or inter-governmental agreement, between the Republic of Poland on one side, and whichever state will be serving as the host for the launch on another. In the event that according to VCLT, such powers would be conveyed to the operator by the Republic of Poland, the solution - while technically valid from the legal standpoint - would be quite bizarre practically, as the Polish state would ultimately leave the negotiations of a rather sensitive nature, to what most likely would be a private company. The same reasoning can be applied in terms of Polish domestic legislation, as polish act on international treaties does not convey the power to conduct negotiations and sign such agreements on behalf of the Polish government by the operator in question. In fact, without any additional decision or action on part of the Polish authorities, should the act be signed into law, it would have been impossible for the operator to comply with the requirement in question.

⁴¹⁶ Polish Draft, art. 4.2.

The authorization is granted only after the operator applies for it.⁴¹⁷ The application in question should contain all of the documentation previously indicated in article 4 point 2, as well as data enabling identification of owner and operator such as name, seat and address, and entrepreneur ID if applicable. The granting or refusal to grant the authorization is ultimately up to the president of the Polish Space Agency to grant or refuse to grant an authorization, which it does by means of an administrative decision.⁴¹⁸ The granting of authorization should happen no later than 6 months from the day of filing of the application by the operator.⁴¹⁹ The President of Polish Space Agency consults, during the review of the application, with the Minister of National Defense, Minister of Foreign Affairs, and President of Internal Security Agency to adopt a position regarding impact of space activity in question on national interest and safety, as well as on the upholding by the Republic of Poland of its international obligations.⁴²⁰ Likewise, it is possible for the President of Polish Space Agency to introduce any additional terms and conditions for conducting the space activity in question in order to safeguard national safety and security, safety of persons and property as well as compliance with PIL.⁴²¹ President of Polish Space Agency is capable, on its own motion, to change the scope and terms of authorization, if - during the supervision of space activity - inconsistency is found between factual state of affairs, and conditions that served as a basis for authorizing space activity, or if circumstances require such changes to be made.

Article 8 of the Draft concerns a possibility for the operator to change over the course of the space object's life cycle. However, the way in which the draft manages the process of the change of operator may appear somewhat peculiar. Firstly, article 8 provides for an obligation on part of the new operator, to obtain relevant authorization, in conformity with section 1. Secondly, the new operator, in order to obtain the authorization, has to provide documentation supporting the change of operator. What appears to happen in this instance is the change in the operator happening before the authorization to the new operator is being granted. Additionally, the new operator becomes the operator of the space object in question, basing on the provided definition, by the mere fact of intending to execute space activity, therefore before any agreement is being concluded and apparently concurrently with the original operator who wishes to pass the space object to another one. Moreover, the act does

⁴¹⁷ Polish Draft, art. 6.

⁴¹⁸ Polish Draft, art. 5.

⁴¹⁹ Polish Draft, art. 5.1.

⁴²⁰ Polish Draft, art. 5.2.

⁴²¹ Polish Draft, art. 5.3.

not indicate what type of agreement has to be reached between the former and the new operator of the space objects, nor whether there are any necessary elements that such an agreement has to contain in order to be valid. It appears that there is no control or oversight over the passing of "operatorship" or preliminary review of any kind, with the Polish Space Agency being able solely to refuse granting the authorization to the new operator. At the same time, the authorization of the former operator is not being revoked ex lege, therefore it is entirely possible that a single space object would have two operators, both of them equally authorized under the provisions of the draft. Finally, the act does not take into account the possibility for the new operator to be exempted from some of the authorization requirements, should he or she already be authorized by the Polish Space Agency to conduct space activities utilizing different space objects. This will undoubtedly impose a significant administrative burden on both the industry as well as Polish Space Agency, and lead to the same aspects of operation of an operator being reviewed multiple times, even though they may not have any tangible impact increasing the safety of the operation of transferred space object. With that said it is outright bizarre, that the act does not limit, nor mandate a review, and not even require a notification, of the space object in question being sold, even though it is the owner of the space object who is obligated to insure its activity. Of course, it can be argued that all - or at least a majority - of the points raised above are either of little significance as the practice will undoubtedly devise an ingenious way of interpreting the provisions of the draft, or that while perhaps inconvenient, the draft offers a somewhat functional framework for space activities in the Republic of Poland. This may be the case in both instances, however there is no reason for an act that is still being drafted, and can be easily changed, amended or outright rewritten, to already require extensive interpretational endeavors.

1. Authorization and control

The draft does include a section covering the supervision of outer space activities. The supervision is exercised in two types of activities.

Firstly, the law provides the President of the Polish Space Agency can request information concerning either an ongoing or planned space activity⁴²², as well has the possibility to change

⁴²² Polish Draft, art. 36.

the contents of the authorization "if while supervising space activity following rules contained in chapter 8, inconsistency is found between factual state of affairs, and conditions that served as a basis for authorizing space activity, or if circumstances require such changes to be made."⁴²³ Based on the provisions of article 11, it is also possible for the President of the Polish Space agency, to request the operator to remedy any non-conformities that might have taken place, should the operator conduct the space activity in violation of article 5 of the draft. Once such a request has been made, a deadline for implementation of corrective actions is communicated. Failure to adhere to the request made by the President of the Polish Space Agency may lead to withdrawal of said authorization as well as banning the given operator from obtaining future authorization for a period from 1 to 5 years.

Secondly, the President of the Polish Space Agency, as well as authorized employees of the agency, can carry out inspections of the space activity, at any given time,⁴²⁴ however if the inspection is being carried out by an authorized employee of the Polish Space Agency, said authorization has to outline inter alia the rationale for conducting the inspection, timeframe in which it will be conducted as well as the subject-matter scope of inspection. The inspectors have the right to access both immovable properties, installations and other objects as well as documents pertaining to space activity.⁴²⁵ It has to be noted that the inspection conducted by the Polish Space Agency is not subject to rules enshrined in article 79 & 82 of polish Freedom of Commercial Activity Act, which mandate informing the entrepreneur in question ahead of the inspection being conducted, and prohibit conducting of more than a single inspection at any given time.

2. Liability

Chapter 6 of the draft introduces rudimentary provisions on the liability of the Republic of Poland for damages stemming from outer space activity. Firstly, Article 22 states that "the Republic of Poland is liable for damage, as provided by international law". Secondly, article 23 provides that the Republic of Poland has a recourse against the owner of the space object,

⁴²³ Polish Draft, art. 10.

⁴²⁴ Polish Draft, art. 37 - the only exception to this, would be the sites managed by the Polish Armed Forces, which would require approval of the Chief of General Staff of Polish Army.

⁴²⁵ Polish Draft, art. 38.

if it has furnished a compensation for a damage indicated in article 22, up to the sum of insurance obtained in accordance with article 27. The limiting clause does not apply in case that the damage was due to the fault of the operator or a result of the operator breaching the conditions of the authorization. The only exception to the right to recourse is the exclusion to the extent that the space object is utilized "for purposes of scientific research and education".⁴²⁶

It has to be stated that the Polish approach to the issue of liability for outer space activity may appeal to some due to its shortness and apparent simplicity. However it also introduces a plethora of issues, both legal and logical. Firstly, it has to be stated that article 22 of the draft does introduce the entirety of rules on international responsibility and liability to the polish legal system, thus making PIL directly applicable in domestic courts of the Republic of Poland. Article 22 does not specify which particular part of PIL is applicable, nor does it reference any treaty, instead referring broadly to any and all rules of PIL that may be binding on the Republic of Poland in cases of damage being done by an outer space object. This by no means limits the scope of applicable law solely to *corpus iuris spatialis*. For instance, if the damage would have been done to a state that is not a party to any of the state treaties, the claim for damage could be based - inter alia - on the Chorzów Factory case principles, thus effectively extending the scope of potential liability previously limited to corpus iuris spatialis parties. Secondly, the same article manages to limit the liability only to claims presented by other states or international intergovernmental organizations, thus excluding the concept found in other discussed regulations, where it is the launching state that serves as a guarantor of claims made against the operator and takes over the liability after it surpasses a certain amount. The draft law does not mention that the owner himself is responsible for his activity in any way, other than general rules on liability included in Polish civil code. At the same time, the act itself excludes the possibility for limiting the amount of redress claims should the Republic of Poland pay any amount as satisfaction, rather than compensating for a financial or physical damage. The amounts paid as "satisfaction" would still be subject to a full redress from the state, should the total claims exceed the insurance limit. Therefore, not only does the drafted Polish regulation, not provide for a possibility for the Republic of Poland, to limit the potential liability of the owner in case of 3rd party losses, nor does it require any cross-waivers of liability, it does not even introduce the concept of 3rd party losses or cross-waivers of liability in the first place. Based on the draft, the owner's liability would be limitless, with the state - unlike in the

⁴²⁶ Polish Draft, art. 28.2.

case of the USA or France - not participating in compensation in any way. The only limiting factor would be indirectly introduced in cases of inter-state damage, claimed by another state directly from the Republic of Poland. This in itself constitutes a practically impossible scenario, since it could occur only in cases of other states' property being damaged, or presenting a claim through the institution of diplomatic protection.

Additionally the draft places the burden of liability on the owner of the satellite, not the operator. Not only is that counter intuitive, it is also illogical, as it is the operator who is authorized by the Polish Space Agency, and has to prove financial capability to conduct the activity in question. However, the draft law goes as far as to claim that the owner's liability may be affected if the damage did occur due to the fault of the operator, in which case the recourse claim available to the Republic of Poland would not be limited by the insurance amount.⁴²⁷ This is a rather novel and a borderline brave solution that will hopefully undergo a more scrutinized review in future attempts of drafting a law governing space activities in Poland.

3. Insurance

Chapter 7 of the draft of the Polish space regulation obligates the owner of the space object to obtain relevant insurance covering the liability for damages caused in the course of performing space activities. However, similarly to the rules governing liability for space activities, this part also does feature a couple of original solutions to problems and conundrums that cannot be found in other space legislations.

Article 25 creates an obligation for the owner of the space object in question, to obtain relevant insurance before the application for authorization is filed, with the State Treasury being indicated as the insured party. Such insurance should "cover liability for damage done in relation to performed space activity during the insurance coverage period, as well as one year after the end of mentioned period".⁴²⁸ Moreover, article 26 states that the insurance company cannot contractually limit indemnity. The minimum insurance amount per event

⁴²⁷ Polish Draft, art. 23.2.

⁴²⁸ Polish Draft, art. 26.

covered by insurance, according to the draft's article 27, shall be determined in a decree of the Prime Minister. The Prime Minister, while establishing the minimum insurance amount, shall take into consideration types of the space objects as well as potential threats and risks linked with their operation. This however points to said decree establishing "tiers" of space objects rather than making it possible for the minimum insurance amount being calculated on a caseby-case basis. The remedy for this "rigidness" is supposed to be amended by what appears to be a quite lengthy list of exclusions from the obligation to obtain insurance coverage. The exclusions from the mandatory insurance regime is not automatic - the owner has to request such exclusion from the Ministry competent in the field of science. The administrative decision granting the waiver of insurance obligation is granted if and only if both the space object in question as well as its owner fulfill criteria set in article 28 points 2 & 3. The space object for which the insurance waiver is seeked has to jointly fulfill the criteria of remaining a scientific equipment, that is bound to have significant impact for scientific research, its launching will constitute an important step of the R&D program implementation, the scientific data gathered by the space object in question will be used for education and science promoting activities and finally any potential commercial utilization of the space object in question will have supporting character. At the same time the owner has to be one of the entity types listed in article 28 point 3.

4. The case of ICEYE

In 2014 the ICEYE company has been founded, focusing its business on radar and optical imaging services delivered by means of both a constellation of microsatellites, as well as larger space objects of up to 100 kg of payload weight. The company itself, while incorporated in Finland, has its satellite command center in Warsaw, Poland, and remains part of the Polish Society of Space Industry Employers as well as closely cooperates with the Polish Space Agency. Services of ICEYE have proven to be instrumental in both industrial and defense applications. I believe it is worthwhile to ask a question, why a company that is conducting the bulk of its operations from Poland, who was founded by a Polish engineer and whose CEO is the same engineer, a company whose capabilities in aiding defense sector have been proven effectively priceless during the (as of the time of writing this dissertation) ongoing war in Ukraine due to an illegal attack by Russian Federation, why such a company is being

incorporated in Finland, and all of its space objects remain under Finnish jurisdiction. It would be of course foolish to assume that this is solely due to the Republic of Poland not having a domestic regulation on outer space activities. At the same it would be equally foolish to conclude that this fact did not come into analysis, or remained indifferent to investors as well as to the executives of the company in question. Much like with the Netherlands, the Finnish outer space regulation came into force roughly concurrently with the outgrow of domestic industry, with the act in question being signed into law merely 6 months after the first Finnish satellite was placed in orbit.⁴²⁹ At the same time - much unlike the draft of space activities act draft of the Republic of Poland - the Finnish regulation included the concept of 1st and 3rd party damage from the outset.⁴³⁰ The state is deemed liable for all damage,⁴³¹ not just basing on the rules of public international law. The entity that the state has the right to recourse is the operator of the satellite rather than the owner.⁴³² The insurance requirement has a clear upper cap of 60 million euro per incident, however, the responsible ministry has more flexibility when waiving this requirement, going as far as having the possibility of relying on the insurance of the entity that physically launches the object, thus lowering the costs for the Finnish operator. All of the remarks should not be understood nor read as Finnish authorities having managed to deliver a perfect legislation that has zero flaws and enables a streamlined and efficient process of space object authorization or resolving liability issues. Far from it in fact. It rather goes to show how little time and effort is required to draft a law that would create the most basic of rules, and manage to cover the most important parts of the legislation from the perspective of industry. Because - as it has been stated throughout this dissertation - domestic regulations for outer space activities are created for the industry to grow and prosper at the possible expense of somewhat increasing the financial risk for the launching state. However, by not having such a legislation, the Republic of Poland is facing just as big of a risk, since the international rules have not been changed, but has zero gain in terms of industry growth to show for it.

In conclusion, one would be hard pressed to find any novel or even particularly useful provisions in said draft, as it appears to be merely conforming to international obligations

⁴³¹ Finnish Act on Space Activities, op. cit., art. 7.

 ⁴²⁹ Timeline of Finnish legislation is available at <u>https://tem.fi/en/spacelaw</u> (accessed: 24.06.2023)
⁴³⁰ Finnish Act on Space Activities, 64/2018, available at: <u>https://tem.fi/documents/1410877/3227301/Act+on+Space+Activities/a3f9c6c9-18fd-4504-8ea9-</u>
bff1986fff28/Act+on+Space+Activities.pdf?t=1517303831000 (accessed: 24.06.2023), art. 8.

⁴³² While it is true that the concept of owner being ultimately liable for damage inflicted by the space activities conducted from the territory of Poland was quickly scrapped, and during inter-department consultations it has been promised that the draft will be amended, the act itself was never amended to incorporate this change.

undertaken by Poland, without as much as a trace of an attempt at either trying to facilitate any form of outer space activity, let alone introducing tailor-made solutions to accommodate the capacity of outer space industry in Poland. As it stands right now, it simply cannot be compared to any of the domestic legislations already discussed. It features an underwhelmingly top down approach, in itself remaining vastly different from the legislations of USA, France, Australia or New Zealand. This has - for a lack of better term - an unwanted side effect of simply regulating a market that in itself does not exist in sufficient quantities or qualities in Poland, while not attempting to leverage the strengths of domestic industry.

PARTTHREE.NEWOUTERSPACECOOPERATION SCHEME: Artemis Accords.

I. Introduction

On 13th of October, 2020, NASA represented by its administrator as well as representatives of 8 other space agencies signed the NASA-developed Artemis Accords (hereinafter AA)⁴³³ in order to cooperate in execution of the Artemis program. At the moment of writing of this dissertation, Artemis Accords no less than 20 agencies signed the document, featuring both the well-established space faring nations as well as countries whose space capability is either in the process of developing or even yet to be developed in any meaningful capacity. Taking into account the turbulent political climate of the second decade of 20th century, as well as their rather progressive character in certain aspects, the AA spurred a heated debate as to their compatibility with currently present rules of international space law.

However, in order to correctly assess and analyze provisions of AA and draw any conclusions as to their impact on the current state of outer space law, it is crucial to briefly discuss the character of the accords themselves, as well as briefly touch upon the subject of the nature of the Artemis program itself.

Artemis program, announced in 2017, is touted as a return of humanity in general, and the United States of America in particular, to the Moon. Moreover, the long term plans involve not only an Apollo-style landing of astronauts on the surface of the Moon, but also development and utilization of a small orbital space station (the so called Lunar Gateway), a facility on the surface of the Moon, as well as various rovers and landers that could be deployed subsequently from the gateway. While this may be regarded as a purely science-fiction-esque proposal, the first mission of the Artemis program is due to launch in the August of 2022.

Regardless of any professional or private evaluation of the feasibility or even probability of Artemis achieving its goals, its nature remains an important factor of the AA's

⁴³³ Artemis Accords, as adopted on 13th of October 2020, available at: <u>https://www.nasa.gov/specials/artemis-accords/img/Artemis-Accords-signed-13Oct2020.pdf</u> (accessed: 24.06.2023)

analysis. Artemis remains a gargantuan endeavor that requires ongoing cooperation not only in terms of adopted policies and regulations, but most importantly in terms of technical assistance mutually rendered by NASA, ESA and JAXA. Therefore, the provisions and nature of AA itself need to be reviewed and read in line with the ultimate goal of executing a program aimed at outer space exploration, conducted by some of the most capable space-faring nations.

2. The status of Artemis Accords in PIL

In order to properly assess the impact that AA may have on international space law, it is crucial to first establish the nature of AA from the perspective of PIL, as it allows for correct interpretation of the possible outcomes of AA's adoption. This will be achieved by performing a short analysis of whether the AA can be regarded as a binding source of law, and later, on whether it can be treated as a "state practice" for purposes of treaty interpretation.

2.1. Artemis Accords as a source of law

In order to determine whether Artemis Accords can be regarded as a source of binding international obligation, it is necessary to determine whether it is an international treaty or not. This approach largely follows the catalog of sources of PIL contained in article 38.1 of ICJ statute, as it provides one of the most widely accepted lists of PIL sources.

While VCLT is by no means a universal benchmark to ascertain whether a given agreement can be regarded as a treaty between the parties, having its impact is limited to treaties concluded after its entry into force, it remains an important guideline for subsequent analysis, having its drafts deeply rooted in custom.⁴³⁴

Article 2 of VCLT defines a treaty as "an international agreement concluded between States in written form and governed by international law, whether embodied in a single instrument or in two or more related instruments and whatever its particular designation". Thus the very existence of the treaty rests on whether it has been concluded, and whether it is

⁴³⁴ Yearbook of International Law Commission, UN. Doc. A/CN.4/SER. A/1959, 1959, p. 95.

governed by public international law. As it is pointed out in the doctrine "to conclude an agreement is to express consent to be bound by it",⁴³⁵ with due regard being paid to the circumstances of such conclusion as well as the terms of the agreement itself.⁴³⁶ The doctrine goes even further, and proclaims that "interstate treaties must be both binding under international law and (at least partly) subjected to international law".⁴³⁷ It is further elaborated that the intention of the parties has to be evaluated in order to determine whether any binding effect was meant to take place as an effect of any given agreement,⁴³⁸ the absence of which leads to legal relations being established.⁴³⁹

Therefore, in order to determine whether AA are a source of law, and have the capacity to change the rules of *corpus iuris spatialis*, one has to take into account the contents of the AA themselves, as well as the circumstances in which they were created. Preamble of AA indicates that the goal of AA is to "establish a political understanding regarding mutually beneficial practices for the future exploration and use of outer space, with a focus on activities conducted in support of the Artemis Program".⁴⁴⁰ Moreover in its section 13, point 2, it is expressly stated that AA are "not eligible for registration under Article 102 of the Charter of the United Nations", but should nonetheless be communicated to UN SG, and circulated to "all the members of the Organization as an official document of the United Nations."

Moreover, as it outlined in AA's section 2, the manner in which specific activities amounting to parts of Artemis program are to be carried out, should be covered by "specific instruments" that would reference the AA.⁴⁴¹ Such agreements would have to not only superficially refer to AA, but also cover the issues of intellectual property, liability, and with due regard to existing rules of *corpus iuris spatialis*. This points towards an object-oriented character of AA, rather than a "backdoor" attempt at changing the existing rules of public international law, or forcing certain interpretation of said rules on the entirety of the international community. It appears that such outlook is shared by parts of the doctrine, which point out that the "signatories to the Artemis Accords do not intend to amend or modify the

⁴³⁵ M. E. Villiger, *Commentary on the 1969 Vienna Convention on the Law of Treaties*, Martinus Nijhoff Publishers, Leiden, 2009, p. 78.

⁴³⁶ M. E. Villiger, *Commentary*..., op. cit., p. 79.

⁴³⁷ O. Dörr, K. Schmalenbach, *Vienna Convention on the Law of Treaties: A Commentary*, Springer, Berlin, 2012, p. 36.

⁴³⁸ O. Dörr, K. Schmalenbach, Vienna Convention..., op. cit., p. 40.

⁴³⁹ O. Dörr, K. Schmalenbach, Vienna Convention..., op. cit., p. 41.

⁴⁴⁰ AA, preamble.

⁴⁴¹ AA, art. 2.

Outer Space Treaty through conduct".⁴⁴² In fact, such an attempt would run contrary to the VCLT itself. As it is pointed out in article 31 of VCLT, the interpretation of given treaty provisions can take into account "any subsequent agreement between the parties regarding the interpretation of the treaty or the application of its provisions" or "any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation".⁴⁴³ However, AA cannot be considered a "subsequent agreement" to *corpus iuris spatialis*, as none of the listed prerequisites are met. Firstly, AA are not subject to as wide-spread adoption as *corpus iuris spatialis*, as they are strictly focused on enabling the development of a single space exploration program. Thus, only a fraction of the parties to four major outer space treaties are also signatories of the AA. Secondly, as it has been argued above, the aims of AA cannot be described as aspiring to modification of how the OST should be interpreted. As it has been noted by ILC, such a conclusion is not taken if the parties have merely agreed [...] to establish a practical arrangement (modus vivendi)".⁴⁴⁴ AA appear to clearly fall within the "practical arrangement category".

Yet the VCLT does encompass the possibility of a treaty interpretation being affected by the subsequent practice of the state parties, taking place as part of application of said treaty's provisions which establishes an agreement in itself. Therefore the subsequent analysis of AA's provisions will also take into account this avenue of altering the interpretation of the treaties in question. Aforementioned analysis will review provisions of the AA introducing a division between provisions whose sole aim is reiterating the rules introduced in other space treaties, and parts of AA that can be described introducing "new qualities" in regards to outer space endeavors.

 ⁴⁴² R. Deplano, *The Artemis Accords: Evolution or Revolution in International Space Law, International & Comparative Law Quarterly*, vol. 70, issue 3, Cambridge University Press, 2021, p. 806.
⁴⁴³ VCLT, art. 31.3.a&b.

⁴⁴⁴ Report of the International Law Commission on the Work of its Seventieth Session, UN Doc. A/73/10, 2018, p. 43.

2.2. Reiteration of rules already present in *corpus iuris spatialis*

As it has been mentioned above, AA in some of its parts, serves as a confirmation of obligations otherwise stemming from corpus iuris spatialis. Section 3 of AA, reaffirms that any activities that were undertaken in connection with executing the Artemis program are to be conducted "exclusively for peaceful purposes and in accordance with relevant international law." This in itself creates a rather unambiguous reference to OST's article IV, paragraph 2 and article III, with sole difference being the reference to the Artemis program itself. Section 4 of the AA refers to transparency and sharing of information concerning their activities in outer space, in accordance with article XI of OST. While the reference to OST remains merely a confirmation of the manner in which inter-state and scientific communication should be conducted, section 4 of AA additionally mentions that signatories are "committed to transparency in the broad dissemination of information regarding their national space policies and space exploration plans in accordance with their national rules and regulations." This in itself does not introduce a new quality or groundbreakingly different interpretation of OST's article XI from what has been agreed in the doctrine, some members of it do point out that it may help holding each Artemis participant "to a high standard".⁴⁴⁵ Section 6 of AA requires the signatories to take "reasonable efforts to render necessary assistance" to personnel which remain in outer space, and are in distress. The same section in a blanket-fashion reaffirms commitment of the signatories to the fulfillment of obligations stemming from ARRA. At a first glance this provision, much like the previously discussed, does not introduce any changes to the already existing regulations in ARRA or OST article V. At the same time it makes use of the terms "reasonable effort" and "personnel", which deserve closer attention, as AA's approach to both ARRA and OST appears to be somewhat diversified. Firstly AA similarly to ARRA and article VIII of OST utilizes the term personnel. This, in itself points to a rather well established outlook on the vast similarity if not equality of the terms astronaut and personnel of a spacecraft.⁴⁴⁶ Moreover, taking into account Australia's influence and participation in AA, the term personnel has to be analyzed with MOON in mind. Its article 10 states that "States Parties shall adopt all practicable measures to safeguard the life and health of persons on the moon. For this purpose they shall regard any person on the moon as an astronaut within the

⁴⁴⁵ W. A. Smith, *Using the Artemis Accords to Build Customary International Law: A Vision for a U.S.-Centric Good Governance Regime in Outer Space*, Journal of Air Law & Commerce, vol. 86, 2021, available at <u>https://scholar.smu.edu/cgi/viewcontent.cgi?article=4189&context=jalc</u> (accessed: 24.06.2023), p. 680. ⁴⁴⁶ I. Marboe, J. Neumann, K. Schrogl in: CoCoSL II, p. 41.

meaning of article V of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies and as part of the personnel of a spacecraft within the meaning of the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space". With this, as it has been summarized by professor Bin Cheng, article 10 of the MOON "show[s] up the shortcoming of using the term 'personnel of either a space object or of a moon station when in reality the intention is to refer to everyone present".⁴⁴⁷

In itself such an approach does show a rather heavy reliance of AA on already existing jurisprudence concerning the term "personnel". On the other hand, however, the AA does indicate possibility of providing help to said "personnel" in outer space, an obligation previously mentioned in article V of OST. OST's version of the same provision however, did utilize the term astronaut, and - more importantly - called for rendering "all possible assistance" to the astronauts of a contracting party who are in distress, while conducting their space activities, by astronauts of another state party. In comparison, AA requires signatories only to "commit to taking all reasonable efforts to render necessary assistance to personnel in outer space who are in distress."⁴⁴⁸ Textual analysis of both provisions may indicate a rather large discrepancy between OST and AA in terms of what activity is desired from a given state in terms of assistance to personnel in outer space, as the OST's "all possible assistance" is not easily reconcilable with AA's "all reasonable efforts to render necessary assistance" clause. However, the broad interpretation of OST's article V, encompassing any and all assistance to foreign astronauts, was vastly mitigated by the doctrine. As it is stated in Cologne Commentary on Space Law, the main focus of article V of OST is its humanitarian value, hence the requirement should be interpreted with said goal in mind, resulting in article V being applicable to "assist[ance to] fellow humans in outer space in threatening circumstances".⁴⁴⁹ Such an approach is furthermore supported, if we were to compare it to the customary rules governing the assistance to be given on the high seas, and the "good samaritan" principle.

Section 5 of the AA reiterates the obligation taken upon by the signatories, to ensure international as well as national registration of outer space objects that are operated in the course of Artemis program execution. It remains in compliance and alignment in provisions of

⁴⁴⁷ B. Cheng, *Studies* ..., op. cit., p. 508.

⁴⁴⁸ AA, section 6.

⁴⁴⁹ F. G. von der Dunk, G. M. Goh in: CoCoSL I, p. 100.

OST and REG, underlining the importance of bilateral and multilateral cooperation in cases of space operations being conducted jointly, especially when multiple states (both being part of Artemis program and 3rd states) can be regarded as launching states.

3. The issue of Australian simultaneous participation in Artemis Accords

Australia is one of 18 parties to the Moon Agreement (hereinafter MOON), which was aimed at replacing OST and expanding upon its foundation. History, however, performed a rather harsh review of these aims, with MOON not becoming nearly as popular and widely acknowledged as OST is. Subsequent accession to Artemis Accords by Australia, while most likely beneficial from a political standpoint, as it strengthens its ties with NASA, can be regarded as rather problematic once read together with the provisions of MOON. This is especially visible in the fields of outer space natural resources exploitation, potential military applications of outer space and environmental protection. Subsequent analysis will be focused on assessing the possible ways to reconcile (if possible at all), requirements flowing from domestic legislation as well as conflicts that appear to emerge in relation to differences between MOON and Artemis Accords. However, as previously mentioned the Artemis Accords are technically - not a treaty, and certainly do not produce any binding obligations nor grant any new rights to the participants. Therefore, while in certain parts they would appear to be incompatible with MOON on a textual basis, Australia by participating in said accords neither became a party to any treaty that would be contrary to MOON, nor did it undertake any binding obligation that would irreconcilable with MOON. Therefore, from a purely procedural point of view, there's no conflict between the instruments as such conflict can never actually take place. However this is not coterminous with Artemis Accords having no factual influence over the development of Australian outer space activities.

With that in mind, the currently most important and widely discussed differences between obligations stemming from MOON, and declared "Artemis goals" of Australia are issues of natural environment, non appropriation of outer space and space mining. Regarding the natural environment, the crux of the issue appears to lie in the infinitely wide gap between the approach presented in MOON and Artemis Accords. While, as it is being observed in doctrine, environmental protection is "One of the most innovative aspects of the Moon Agreement"⁴⁵⁰, the issue of environmental protection of outer space is completely absent, aside from orbital debris mitigation provisions. Thus, even though the MOON does not provide for particularly clear or burdensome obligation on part of the state parties, requiring merely that they "take measures to prevent adverse changes" in the Moon's environment, without specifying whether the probability and "adversesness" of changes in question should be assessed subjectively or objectively.⁴⁵¹ Artemis Accords, as such, does not provide any provisions that would concern environmental protection, nor does the Australian SL&R, referring to natural environment only when discussing the launch facility permit. As much as this might appear to not be a problem at the outset, the environmental aspect of the MOON, and complete lack of it on part of Artemis Accords are especially important taking into account the next point of analysis.

4. Non appropriation of outer space & space mining

Australia remains a party to OST, thus is obligated to observe the non-appropriation principle enshrined in it and described at the beginning of this dissertation. MOON, as such, largely corroborates OST's stance. Article 11 provides that "The Moon is not subject to national appropriation by any claim of sovereignty, by means of use or occupation, or by any other means", which - by extension provided in article 1 - apply to all other celestial bodies within our solar system as well as orbits and trajectories to & around Moon.

Moreover, MOON contains provisions concerning a very futuristic - at the time of the conception of the treaty - concept of space mining. Article 11 in its point 1 detracts from the OST's concept of "province of all mankind" in favor of a more internationally recognized "common heritage" institution, declaring both the Moon and all of its natural resources as falling within this category. However, as it is being stated in the doctrine, the concept of

⁴⁵⁰ F. Tronchetti, H. Liu, *Australia Between the Moon Agreement and the Artemis Accords*, Australian Institute of International Affairs, 2021, available at <u>https://www.internationalaffairs.org.au/australianoutlook/australia-between-the-moon-agreement-and-the-artemis-accords/</u> (accessed 24.06.2023)

⁴⁵¹ S. Freeland in: CoCoSL II, p. 374.

common heritage of mankind should - for the purposes of MOON - not be "determined by its use outside of the agreement".⁴⁵² While this may be regarded as rather sensible on the outset, in practice it hampers the ability to tap into jurisprudence and doctrine concerning the common heritage concept, limiting it to the practice that was put into place while exercising provision of the MOON.

Point 3 of article 11 extends the principle enshrined in point 2, concerning the non-appropriation of the Moon, onto the natural resources contained therein. Moreover, this prohibition encompasses not only states as such or intergovernmental organizations but also non governmental organizations and effectively any natural or juridical person.⁴⁵³

At the same time, MOON, contrary to what might be inferred from the statement above, does introduce a way out of the seemingly absolute ban on the "ownership of outer space resources" issue. According to article 11 point 5 of MOON, state parties can create an agreement concerning exploitation of outer space natural resources once such prospect becomes feasible. Such agreement should be concluded utilizing the procedure provided for in article 18 of MOON (i.e. concerning amendments to be introduced into the treaty). As indicated in article 11 point 7, such international regime should be aimed at providing orderly and safe development as well as Moreover, according to article 11 point 6, state parties to the MOON are obligated to share and disseminate⁴⁵⁴ information concerning natural resources that were discovered on the MOON "to the greatest extent feasible and practicable".

Issues with MOON vs Artemis compatibility begin almost "instantly". Section 8 point 3 of Artemis Accords indicates that "The commitment to openly share scientific data is not intended to apply to private sector operations unless such operations are being conducted on behalf of a Signatory to the Accords." At the same time MOON does not appear to be in any way preoccupied with the nature of the entity actually conducting research or discovering the natural resources in question. In either case, within the current framework of *corpus iuris spatialis*, such activity would be attributable to a given state party, thus triggering the obligation

⁴⁵² R. S. Jakhu, S. Freeland, S. Hobe, F. Tronchetti in: CoCoSL II, p. 394.

⁴⁵³ Ibid, p. 395; This does not impair or prohibit the utilization of natural resources mentioned in article 6 point 2 of MOON, as in that case the resources in question are being used for scientific purposes and in quantities corresponding with such manner of outer space exploitation.

⁴⁵⁴ The MOON requires the states to inform Secretary General of the United Nations, general public as well as the international scientific community without defining the latter two terms.

from article 11 point 6 of MOON. Section 10 of Artemis Accords deepens the differences between it and MOON provisions indicating in its point 2 that "The Signatories affirm that the extraction of space resources does not inherently constitute national appropriation under Article II of the OST, and that contracts and other legal instruments relating to space resources should be consistent with that Treaty." Not only does this introduce a widely and wildly debatable understanding of OST's article II, it remains in striking contrast to the previously discussed provisions of the MOON. In fact the contrast in question renders provisions of both instruments irreconcilable. While MOON clearly forbids extending of ownership rights over natural resources located in the Moon, Artemis Accords simply reiterates the USA-originated outlook, according to which the application of the global commons doctrine is limited at best towards the natural resources of outer space, and any extraction of said resources is regarded as merely "utilization" rather than a national appropriation mentioned in article II of OST and article 11 point 2 of MOON (since both article's operative part remains essentially the same).⁴⁵⁵ At the same time, even though MOON provides for a possibility to conclude an agreement that would settle the details of future exploitation of outer space's natural resources, the Artemis Accords in current shape undermine the very rationale for such agreement to be drafted and adopted, since - apparently - article II of OST and article 11 of MOON do not prohibit natural resource exploitation "as such". This effectively turns Australia's foreign obligations and policies more and more akin to a paradox.

One of the only ways of at least attempting to put Australia's policy in regards to the outer space resources into perspective, is realizing that Artemis Accords, albeit widely advertised and a bit more narrowly acceded to, are not binding as such, being more of a proposed policy set, rather than a new treaty designed to supersede MOON and OST. With this in mind, one may imagine MOON states concluding an agreement on utilization and exploitation of outer space natural resources, that would effectively copy the provisions of Artemis Accords. However, this appears to be as much of a science fiction subject, as the space mining itself currently remains.

⁴⁵⁵ F. Tronchetti, H. Liu, Australia Between..., op. cit.

5. New concepts in AA

The second type of provisions contained in AA, concerns what can be described as concepts new to the *corpus iuris spatialis*, either in a for of a completely new proposals to how the states should conduct their activities in outer space, within the boundaries of Artemis program. These include release of scientific data, preservation of heritage sites, utilization of natural resources in outer space and deconfliction rules. This shows two main points of potential non-compatibility with currently binding rules of international space law - the scope of scientific information sharing and non-appropriation principle. Those will be addressed in turn.

The issue of releasing and dissemination of scientific data, appears to be the least controversial of the ones listed above. Section 8 of AA, comprising 3 points, mostly reiterates concepts already enshrined in article XI of OST. According to point 1, signatories of AA retain the right to "communicate and release information to the public regarding their own activities". However, should the information in question relate to endeavors of other signatories, concerned states should "coordinate with each other" details of the release of the information in order to "provide appropriate protection for any proprietary and/or export-controlled information". Apart from data concerning the activities themselves, section 8 in its point 2, provides for a "commitment" of signatories to make the scientific results of "cooperative activities under these Accords" available for the general public. However such a commitment cannot be, according to point 3, extended on to private sector endeavors, unless they are procured "on behalf of a Signatory to the Accords". Moreover, the commitment in question does not provide for any timeframe of the data sharing other than "as appropriate, in a timely manner". Such approach largely mirrors that of OST's article XI, which merely requires state parties to release and disseminate such information "on their own discretion [...] as there is no obligation to supply such information in advance, or promptly or in full".⁴⁵⁶ While this might be regarded as a counter effective "non-commitment", in terms of its compatibility with remaining parts of corpus iuris spatialis, one cannot help but observe a striking compatibility in their uselessness.

Contrary to the AA's provision described above, the proposed approach on utilization of outer space resources, treatment of historically important sites in outer space as well as

⁴⁵⁶ B. Cheng, *Studies* ..., op. cit., p. 253.

proposed set of "deconfliction rules", yielded a rather heated debate as to their potential incompatibility with article II of OST. Section 9 of AA voices an "intent" of the signatories to develop "standards and practices" in order to preserve sites of historical importance to outer space exploration such as "landing sites, artifacts, spacecraft, and other evidence of activity on celestial bodies". To achieve these goals, signatories "intend" to enter into multilateral efforts in order to develop relevant international practices. This concept in itself is not entirely new, as proposals of such an initiative were voiced in doctrine at least since 2004.⁴⁵⁷ While OST does not contain any similar provisions, MOON, in the paragraph 3 of article 7 hints that certain parts of celestial bodies that are of "special scientific interest" can be designated as international scientific preserves which would entail necessity to adopt "special protective arrangements are to be agreed upon in consultation with the competent bodies of the United Nations". This however, does not amount to a confirmation that certain areas of the Moon and other celestial bodies might be singled out merely on the basis of their historical importance,⁴⁵⁸ as the same article of MOON does indicate that consideration of labeling parts of a celestial body in such a manner will remain "without prejudice to the right of other States Parties".⁴⁵⁹ It is due to this reasons that, while appearing novel at a first glance, or even somewhat menacing due to the vast majority of possible heritage sites on the Moon being of USA origin,⁴⁶⁰ the concept enshrined in section 9 of AA does not appear to be in opposition to any of the rules of corpus iuris spatialis. On the contrary, the states which did conduct historically important outer space activities still do enjoy the right to property of the space objects sent, as well as retain jurisdiction over any device that has been entered into their national registry. Moreover, some of the sites of such activities are still being utilized for scientific purposes, as it is the case with the lunar laser ranging reflector, left on the moon by Apollo 11 mission, and being utilized to this day,⁴⁶¹ thus falling under the protection and scope of OST's article IX.

However the remaining two issues, namely that of natural resource extraction and deconfliction rules, prove to be more controversial as they directly relate to exploitation of natural resources in outer space, as well as the issue of maintaining safety of such operation. Section 10 of AA, devoted to the issue of "space resources" is divided into four paragraphs.

⁴⁵⁷ T. F. Rogers, *Safeguarding Tranquility Base: Why the Earth's Moon base should become a World Heritage Site*, Space Policy, vol. 20, issue 1, 2003.

⁴⁵⁸ S. Freeland in: CoCoSL II, p. 377.

⁴⁵⁹ MOON, art. 7.3.

⁴⁶⁰ W. A. Smith, *Using the Artemis Accords...*, op. cit., p. 682.

⁴⁶¹ B. Israel, *Apollo 11 Experiment Still Going After 40 Years*, Space.com, 2009, available at: <u>https://www.space.com/7049-apollo-11-experiment-40-years.html</u> (accessed: 10/06/2023).

The first paragraph voices what can be best described as a joint opinion of signatories, outlining that "the utilization of space resources can benefit humankind by providing critical support for safe and sustainable operations".⁴⁶² Section 10 paragraph 2 contains, what can be considered a self-exclusionary provision,⁴⁶³ stating that any extraction and/or utilization of natural resources located in outer space has to be conducted in such a way as to remain compliant with provisions of OST.⁴⁶⁴ It goes further to state that, as affirmed by signatories, "the extraction of space resources does not inherently constitute national appropriation under Article II of the Outer Space Treaty",⁴⁶⁵ with the same requirement being valid for any bilateral or multilateral agreement concluded between signatories in the process of execution of the Artemis program. Paragraphs 3 & 4 are devoted to dissemination of information concerning activities undertaken in lieu of resource extraction, as well as signaling an "intent" to utilize experience gained "under the Accords to contribute to multilateral efforts to further develop international practices and rules applicable to the extraction and utilization of space resources, including through ongoing efforts at the COPUOS".⁴⁶⁶ As it has been indicated above, the possibility of such provisions having an impact on the interpretation of other parts of *corpus iuris spatialis* has to be evaluated in light of VCLT's article 31 section 3, point b. To this end, ILC has developed a test which consists of two fundamental inquiries: whether the state parties have taken a position regarding the interpretation of the treaty, and whether it is supported by a repetitive state practice over a period of time.⁴⁶⁷

For the sake of clarity of subsequent analysis, the best course of action is to firstly deal with the requirement that is the least likely to be met, i.e. the practice that is both spanning over a period of time while being repetitive in its character. Currently there is no such practice present as to the continuous extraction of space natural resources, with the only examples of collecting any measurable amount of outer space material being done exclusively for scientific purposes. It has to be noted that extraction of extraterrestrial material has been taking place in one capacity or another ever since the dawn of exploration of other celestial bodies. None of the states so far has protested the return of a "comet dust" as an effect of NASA's Stardust

⁴⁶² AA, section 10 p.1.

⁴⁶³ Should the reader adopt a rather orthodox understanding of OST's Article II.

⁴⁶⁴ AA, section 10 p. 2.

⁴⁶⁵ Ibid.

⁴⁶⁶ AA, section 10 p. 4.

⁴⁶⁷ Report of the International Law Commission on the Work of its Seventieth Session, UN Doc. A/73/10, 2018, conclusion 6.
mission⁴⁶⁸ to earth, nor was the return of the moon rocks by Apollo program met with any stern calls for returning the geological material back where it belonged. On the contrary, some authors point out an even further reaching consequence of simultaneous adoption of OST and rejection of MOON by the majority of space faring nations in the world,⁴⁶⁹ that is interpreting article II of OST as concerning solely a claim of sovereignty over a part or entirety of outer space and/or celestial body, not merely extracting and owning resources taken from its surface or subsurface. While such a conclusion may be regarded as far-fetched, it has to be stated that international community - "in the meantime" - proceeded to commercially exploit geostationary orbit, touted as "natural resource"⁴⁷⁰, with significantly more limitations as to the manner in which this particular piece of outer space void is to be utilized, including by not of intergovernmental limited to, involvement organizations (i.e. International Telecommunication Union) destined with assigning "permits" enabling utilization of respective orbital slots. Yet, not a single state in the 21st century appears to treat the geostationary orbit regime in terms of possible violation of article 2 of OST, simply due to the long-lasting timeframe of activities conducted in each respective slot, nor due to the commercial character of the operation in question. Therefore not only do AA refer to a possible future practice of states, which by definition - as well as still somewhat insufficient time travel technology - cannot be treated as a ground for changing the interpretation of the treaty, but more importantly the already existing precedents of states utilizing outer space material appear to be fully in line with provisions of the section 10 of AA.

As for the adoption by the states of certain positions towards the interpretation of the treaty, some scholars, such as professors Tronchetti & Liu, appear to be of the position that AA endorse a view according to which "recovery and commercial use of space resources is allowed under international space law".⁴⁷¹ A premise which according to them is serving the sole purpose of popularization of the USA-centric approach, with the USA themselves "reject[-ing] the global commons nature of outer space but also confer[-ing] to private entities, under US law, the right to collect, use and sale celestial bodies' resources."⁴⁷² In turn, the AA can and should be treated as a "back-door" attempt at circumventing the already existing and well

⁴⁶⁸ The capsule with the samples of – what is believed to be comet material – were returned to earth in 2006.

⁴⁶⁹ J. G. Wrench, Non-Appropriation..., op. cit., p. 447.

⁴⁷⁰ M. J. Finch, *Limited Space: Allocating the Geostationary Orbit*, Northwestern Journal of International Law & Business, vol. 7, issue 4, 1986, p. 789.

 ⁴⁷¹ F. Tronchetti, H. Liu, *Australia's signing of the Artemis Accords: a positive development or a controversial choice?*, Australian Journal of International Affairs, vol. 75, issue 3, 2021, p. 246.
⁴⁷² Ibid

established limitations on the usage and exploration of outer space, to the benefit of a small group of space faring nations and at the cost of the rest of humanity. The two thesis presented above, that is of the AA "commercial facilitating" character, as well as the very existence of any binding agreement concerning PIL interpretation should be dismissed in turn.

AA themselves cannot be considered as an example of such a practice. Firstly, it is because any agreement that would yield the result of being qualifiable under article 31.3.b of VCLT, would have to feature a "a common understanding regarding the interpretation of a treaty which the parties are aware of and accept".⁴⁷³ Such an outlook was further supported by ICJ in its Kasikili-Sedudu Island judgment of 1999.⁴⁷⁴ AA in its section 10 paragraph 2 offers anything but such an agreement, as it lacks the required level of detail or specificity to justify such conclusion.⁴⁷⁵ There are no provisions regarding types of possible extraction or utilization of space resources, no mention of who would be able and under what circumstances to conduct such an activity, nor does the provision itself appear to provide any inherently new quality to the *corpus iuris spatialis*. In fact, AA's section 10 paragraph 2 can serve more as a declaration of an objective fact that remains widely agreed in international law, doctrine and practice - that the states can conduct extraction of outer space material and still remain compliant with article II of OST, as it has been argued above.

Therefore the only remaining "fault" that can be ascribed to AA in regards to the discussed point is that of the possible "commercial nature" of such activities. However, this notion is manifestly absent from the AA themselves, and can be found only within the domestic legislation of the USA. Therefore, in order to draw such a conclusion, one has to take into account both the AA as well as domestic legislation of not all, but only certain countries remaining signatories to it, a process that can hardly be described as a scientific approach to public international law research. Additionally, such understanding does not flow from the purpose of the AA as stipulated in its preamble, but rather is drawn while having in mind possible consequences of certain provisions of AA on outer space activities after the Artemis

⁴⁷³ Report of the International Law Commission on the Work of its Seventieth Session, UN Doc. A/73/10, 2018, conclusion 10; M. E. Villiger, *Commentary...*, op. cit., p. 431.

⁴⁷⁴ Kasikili/Sedudu Island (Botsvana v. Namibia), Judgement of 13 December 1999, I. C. J. Reports, 1999, p. 1087.

⁴⁷⁵ R. Deplano, *The Artemis Accords: Evolution or Revolution in International Space Law, International & Comparative Law Quarterly*, vol. 70, issue 3, Cambridge University Press, 2021, p. 807.

program is finished. The outer space activities in question are, even today, residing more in a realm of well informed but still science fiction, rather than a commercially viable business opportunity. Having in mind that the crux of the issue is the fear of unilateral "occupation" of parts of celestial bodies for purposes of its fully capitalist and commercial exploitation, one has to bear in mind the technical aspects of such an endeavor. Firstly, the observation made earlier and concerning both the lack of wide-spread adoption of MOON, as well as the already present commercial exploitation of geo-stationary orbit, resulting in somewhat limited access to it, is still valid in relation to the currently analyzed issue. Secondly, the Artemis program is the most ambitious one which takes into account utilizing *in-situ* resources, and even it will span at the very least up until early 2030s, pushing the feared commercialization of any sort of moon activity even further in time, thus making it impossible to predict how much of it will be executed in the end, what technological capabilities will be present once the fully private and commercial activities will be realistically available. Currently the state-funded Artemis with over a decade time frame can be described as "courageous" in terms of what it wants to achieve. Comparable opportunities for private entities do not exist right now, nor will they come to fruition before both the humble writer of this dissertation, nor you, dear reader, are turned into dust by the greatest of windmills - time. Thirdly, and finally, such an understanding of article II of OST, as banning any commercially viable operation aiming at extraction of outer space resources has the possibility of achieving the effect contrary to that of the OST itself - that is furthering understanding and exploration of outer space. This is due to the fact that "The reality of any expedition or exploration, in outer space or otherwise, requires living off the land".⁴⁷⁶

Section 11 of the AA, titled "Deconfliction of space activities" introduces the concept of safety zones, indirectly defined as an area concerning which the signatories will "provide notification of their activities and commit to coordinating with any relevant actor to avoid harmful interference".⁴⁷⁷ Having in mind that the this particular part of AA was subject to some criticism within the doctrine, as well as the fact that section 11 of AA is the longest provision included in AA, in order to provide a comprehensive analysis, it is required to present each of the paragraphs of AA in turn. Firstly, paragraph 1 reaffirms the importance and the necessity to fulfill the obligations stemming from OST, with particular emphasis being put on the obligations "relating to due regard and harmful interference".⁴⁷⁸ Paragraph 2 extends this

⁴⁷⁶W. A. Smith, Using the Artemis Accords..., op. cit., p. 676.

⁴⁷⁷ AA, section 11 p.7.

⁴⁷⁸ AA, section 11 p. 7.

notion, by confirming signatories' commitment to operate in outer space with "due consideration" to the United Nations Guidelines for the Long-term Sustainability of Outer Space Activities, as adopted by COPUOS in 2019.⁴⁷⁹ Paragraph 3 makes a direct reference to article IX of OST - a theme which will prove to be quite common in relation to section 11 repeating the importance of the due regard principle, as well as providing the signatories with the possibility to request consultation, if they have a "reason to believe" that harmful interference either may occur or had occurred in connection to their activities. Paragraph 4 expresses commitment of all the signatories to "seek to refrain from any intentional actions that may create harmful interference with each other's use of outer space in their activities under these Accords".⁴⁸⁰ This appears to be in somewhat of a contrast with the remaining provisions of AA, as the prevention of harmful interference between the signatories requires states only to "seek" not to undertake any intentional activity that could have detrimental effect on actions of other signatories. Paragraph 5 on the other hand, states that signatories "commit" to share and provide information concerning the nature of outer space activities (that remain covered by the AA), as well as location of such activities, if the Signatory "has reason to believe" that activities undertaken by other partners to the AA may either cause harmful interference with its activities or otherwise prove to entail a safety hazard. Paragraph 6 expresses an intent of the signatories, to utilize their experience concerning AA execution in order to help further develop the concepts of harmful interference and safety zone in corpus iuris spatialis.

Paragraph 7 covers a more "operative" part of the safety concept. Firstly, it states that signatories shall notify any of their activities covered by the Artemis program, in accordance with OST, to "any relevant actor to avoid harmful interference".⁴⁸¹ As it has been mentioned above, the concept of safety zone is strictly tied to the area on a celestial body that remains subject to an activity covered by the accords. Paragraph 7 provides some guidance as to the meaning of this term. Accordingly a safety zone is an area where the notification mentioned previously, and cooperation should be implemented in order to avoid harmful interference, which can be caused either by "nominal operations" or an "anomalous event".⁴⁸² Furthermore, paragraph 7 lists four principles that should be observed in relation to the safety zones. Firstly,

⁴⁷⁹ Paragraph 2 indicates that some of the principles will have to undergo "appropriate change" in order to correspond to the activities on the celestial bodies, see also *Report of the Committee on the Peaceful Uses of Outer Space*, UN Doc. A/74/20, Annex II, 2019.

⁴⁸⁰ AA, section 11 p. 4.

⁴⁸¹ AA, section 11 p. 7.

⁴⁸² AA, section 11 p. 7.

the size & scope of the safety zone as well as the notice & coordination itself should "reflect" both the environmental conditions of the safety zone as well as the type of operation that is being conducted there. Secondly, the size as well as the scope of the safety zone should be set up in a "reasonable manner" while observing "commonly accepted scientific and engineering principles".⁴⁸³ Thirdly, the safety zones in question are to remain temporary, with their size and scope being adjusted to suit currently conducted activities. Fourthly, whenever a safety zone is established, altered or ceases to exist, the signatories are required to "promptly notify each other as well as the Secretary-General of the United Nations".⁴⁸⁴ Similarly, the importance of cooperation between signatories is underlined in paragraph 8 as well, which requires each signatory that maintains a safety to "commit" to present - upon request - "basis for the area in accordance with the national rules and regulations applicable to each Signatory".⁴⁸⁵ This provision works in tandem with paragraphs 9 & 10. Paragraph 9 clarifies that whenever a safety zone is established, maintained or ended, it should be procured in a manner that "protects public and private personnel, equipment, and operations from harmful interference".⁴⁸⁶ Relevant information concerning safety zones should be disseminated to the public by the signatories " as soon as practicable and feasible, while taking into account appropriate protections for proprietary and export-controlled information".⁴⁸⁷ Moreover, signatories should give prior notification and coordinate activities between each other, in cases of activities being conducted within the safety zone that has been established in accordance with AA. What is important to note is the wording of paragraph 10 of section 11 calling for a commitment to respect "reasonable safety zones". Finally paragraph 11 of section 11, while reiterating most of the previously made observations, while expressing the signatories' commitment to encourage scientific activities and discoveries, sustainable exploration of outer space, which should be supported by utilization of outer space resources. All of the above mentioned activities should be performed in accordance with the principle of free access to celestial bodies as well as the entirety of outer space, and adjust its usage according to the "mutual experiences and consultation with each other and the international community".⁴⁸⁸

⁴⁸³ AA, section 11 p. 7b.

⁴⁸⁴ AA, section 11 p. 7d.

⁴⁸⁵ AA, section 11 p. 8.

⁴⁸⁶ AA, section 11 p. 9.

⁴⁸⁷ Ibid.

⁴⁸⁸ AA, section 11 p. 11.

The deconfliction regime described above became, similarly to the AA in general, subject of criticism regarding the lack of international and multilateral approach to its drafting process, as well as possible issues when juxtaposed with already existing provisions of *corpus iuris spatialis*. I believe that from the purely scientific point of view, only the second point can be assessed and discussed, as the issue of lack of multilateralism appears to be - at least in some regard - motivated by political reasons.⁴⁸⁹ However, one cannot help but notice, that the entire development of *corpus iuris spatialis* has been, to a greater or lesser extent, affected by concepts and motives of political nature from the very beginning, being in itself a yet another "battleground" of cold war rivalry, albeit settled in a formidable fashion given the circumstances.

Having this in mind, our focus should be now turned to the more tangible aspects our analysis, and reflect upon the deconfliction regime through the lens of OST and MOON with emphasis being put on the common heritage of mankind concept introduced in the MOON, as well as the prohibition of national appropriation and the principles of assistance and mutual cooperation indicated in OST.

Firstly, we need to analyze whether states following the provisions of the AA could lead to said states violating the non-appropriation principle as enshrined in article II of OST and article 11 of MOON. First of all it has to be stated that the article II of OST prohibits states from extending a "national appropriation by claim of sovereignty, by means of use or occupation, or by any other means" onto any part of outer space or celestial bodies. For the purposes of this part, the analysis of the concept of national appropriation as such will be omitted, as it has been already discussed in the part concerning outer space treaty, and it has been established well enough that it relates both to the activities of states acting within their own capacity, as well as operations conducted by private entities.⁴⁹⁰ As it is being pointed out in doctrine, it appears that the main point of focus was avoiding any state from extending its territorial and ownership claims over any part of outer space.⁴⁹¹ This notion appears to be further reinforced by the then-current statements made by officials of the only space faring nations in the late 1960s. As it has been state by American delegate to the UN COPUOS,

⁴⁸⁹ See cited works by Tronchetti, and analysis of Australia's accession to AA inter alia through the perspective of Trump's administration policy.

⁴⁹⁰ M. Gerhard in: CoCoSL I, p. 109.

⁴⁹¹ S. Freeland, R. Jakhu in: CoCoSL I, p. 60.

Herbert Reis, "negotiating history of the Treaty shows that the purpose of this provision (i.e. Article II) was to prohibit a repetition of the race for the acquisition of national sovereignty over overseas territories that developed in the sixteenth, seventeenth, eighteenth and nineteenth centuries. The Treaty makes clear that no user of space may lay claim to, or seek to establish a national sovereignty over outer space".⁴⁹² Therefore the "claim of sovereignty, by means of use or occupation, or by any other means" clause found in the article II, for purposes of this analysis, has to be juxtaposed against provisions of AA that may lead to a state effectively either claiming a part of the Moon as it's sovereign land, or allowing for occupation or use in a way that could be reasonably treated as a national appropriation and conversion of an otherwise "province of all mankind" area into one that de facto remains under an ownership of a single or multiple states.

Firstly, it has to be stated that no amount of occupation or use can - by virtue of article II - lead to a state appropriating any part of outer space or a celestial body. While this statement may not appear as particularly ingenious or even necessary at this stage, it effectively blocks any attempts that would be based on prolonged usage of a particular spot of outer space or an area of a celestial body, as sufficient for extending the territory of any given state.⁴⁹³ This has to be understood in light of the generally agreed meaning of occupation within PIL as "continuous and peaceful effective control" over a given territory or an area.⁴⁹⁴ Moreover, the limitation on states ability to extend their territories has to be read together with article I of OST, granting the states the right to free use of outer space and celestial bodies. The "use" clause (indicated in article 1 of OST) is of tremendous importance here, as the OST does impose certain limitation on the possible uses of outer space (i.e. concerning military infrastructure and weapons of mass destruction), but at the same time does not explicitly ban any particular kind of activity as such, rather resorting to singling out certain ways of carrying out that activity (e.g. such that would intentionally cause harmful interference or prevent a state from exercising its right to free use of outer space). Thus the real question that can be posed is how much of a state presence in outer space or a celestial body can lead to occupation, or, how much use of outer space is "too much"? Having in mind the previously described provisions of AA, it is impossible to claim that the deconfliction regime changes the legal landscape in any

⁴⁹² Ibid.

⁴⁹³ S. Freeland, R. Jakhu in: CoCoSL I, p. 54.

⁴⁹⁴ Island of Palmas Case (Netherlands v. United States of America), Arbitration 2 RIIA, 1928, p. 839.

way, by granting the signatories more rights or privileges than those that they have already enjoyed as parties to OST. Not only does the AA remain a non-binding "non-treaty", not only does it merely call upon its signatories to ensure greater cooperation within the framework of a single space program, but more importantly, it does not alter nor provide any new solutions to the age-old conundrum of "what if a state deploys a Moon wide space mission on the entire surface of our natural satellite". To put it in simpler terms, adoption of AA and its deconfliction rules by the signatories, has no bearing on the rights of the non-signatories (by them not being signatories to the AA, thus having exactly zero reason to observe or rely on its provisions), moreover fundamentally it does not change the legal landscape that has otherwise existed. The best illustration on how AA and article II of OST are not only not in direct confrontation, but remain in entirely different realms is asking a hypothetical question of "Would the situation be different if given activity (e.g. permanent base on the surface of the moon) be conducted by a single state without the existence of AA?". In my opinion, it wouldn't, as each and every problem that arises in connection with prolonged state activity in a fixed spot of outer space is connected to the physical nature of such activity. The same conclusions can be drawn from closer analysis of the MOON. Firstly, article 6 in point 2 specifically provides for the possibility for states to "use mineral and other substances of the moon" as long as the usage in question is being done in course of their scientific activities and in "quantities appropriate for the support of their missions". While this provision clearly does not offer any right to commercial exploitation of Moon's resources, at the same time any activity that can be described as scientific will warrant their usage. Secondly, while MOON largely reiterates the notion of any area of the Moon or other celestial body, or outer space as such, not being subject to any claim of sovereignty or ownership, it clearly confirms the right of states not only to explore the Moon, but conduct such exploration also by means of permanent surface and sub-surface structures.⁴⁹⁵ Finally, such activities would in any case be protected by the provisions of the MOON, as article 8 point 3 and article 5 point 2 indicate the necessity to not interfere with the activities of other state parties, and ensure the existence of mutual communication regarding planned or ongoing activities.

Moreover, it appears that the deconfliction rules included in the AA are relating to the greater extent to the provisions indicated in the article IX of OST. As it has been stated in Cologne Commentary to Space Law, article IX is in fact focused on the principles of

⁴⁹⁵ MOON, art. 8.2b, art. 11.3.

cooperation, due interest and free exploration. Without the cooperation between states there can be no free exploration of outer space, as it is being argued that there is no possibility for peaceful space exploration and research "without resorting to some form of international cooperation". ⁴⁹⁶ This principle, should one take the 1996 Declaration on International cooperation in the Exploration and use of outer space for the Benefit and in the Interest of all States, Taking into Particular Account the Needs of Developing Countries 497 into consideration, is extended to encompass activities of private and public entities, including activities of commercial character. Finally, the principle of cooperation in itself, does not constitute a positive obligation, but rather a "general principle" that requires further clarification either by means of a treaty, subsequent practice, custom and other instruments.⁴⁹⁸ While the distinction between the "general principle" mentioned and an outright binding obligation may appear blurry, it is safe to assume that the obligation in question is that of conduct rather than that of effect. It is subsequently argued that states, basing on the provisions of article IX, are obliged to conduct their outer space activities with due regard, i.e. "ensure that the exercise of their rights and freedoms in outer space does not interfere with or compromise the safety of [other] space operations".⁴⁹⁹ At the same time, the concept of due regard has been defined in PIL as requiring the states to "prove beyond a reasonable doubt that everything possible was undertaken to prevent a harmful act from occurring".⁵⁰⁰ Article IX also introduces a consultation mechanism, enabling state parties to either request consultation should they believe that activity of another state party may cause harmful interference with its activities, or - should the state party have a "reason to believe" that it's own activity may be the source of such interference to undertake such consultation on its own.

It appears that both OST and AA refer to and protect the same values of free and uninterrupted usage and exploration of outer space. While some doubts can exist, and surely will continue to exist, regarding the exploitation of outer space natural resources, one has to bear in mind the nature of AA and article II of OST itself. It can be argued that the article II as such cannot ever be subject to any violation, as it is of merely declaratory nature. Every state party to OST agreed that a certain set of activities in relation to outer will not and cannot lead

⁴⁹⁶ S. Marchisio in: CoCoSL I, p. 174.

⁴⁹⁷ Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries, UNGA Resolution A/RES/51/122, 1997.

⁴⁹⁸ Ibid.

⁴⁹⁹ S. Marchisio in: CoCoSL I, p. 175.

⁵⁰⁰ Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion of 8 July 1996, I.C.J. Reports, 1996.

to extending its sovereignty over any part of the "last frontier". Thus any such attempt would undoubtedly lead to violations of remaining provisions of *corpus iuris spatialis*. With that said, there is little doubt - as it has been argued before - that exploitation of natural resources for the purpose of maintaining the operation of a mission is not covered by the prohibition of national appropriation indicated in article II. It also appears that the institution of safety zones would amount to violation of article II. As it has been described by Mike Gold, former associate administrator for space policy and partnerships in NASA, ""it's very important to understand what the Accords aren't, which is in any way, shape, or form a stay-out zone or an exclusionary zone or anything that would hamper the free access on a celestial body, which is required by the Outer Space Treaty".⁵⁰¹ On the contrary, safety zones appear to be nothing but a measure adopted on a bilateral or multilateral basis, serving the same purposes as article IX of OST. In fact, should any consultations take place under the auspices of article IX, they would undoubtedly indicate the same solution to the issue of harmful interference, that is conducting the activities in question in areas and fashion that enables all of the interested parties to achieve their mission goals and ensure the fulfillment of right to free access to outer space. Finally, AA by its nature do not have to be observed, nor require the non-signatories to adhere to its provisions. I find it hard to justify that an alleged violation, be it in merit or in spirit, of any of the provisions of corpus iuris spatialis, takes place when states engaged in the same space program, adopt measures to ensure safe and fruitful cooperation. To further reinforce this argument, the International Space Station's operation is governed by a separate agreement, outlining inter alia the consultation mechanism outlined in article 23 of said agreement, by virtue of which states can and should consult one another prior to introducing changes that may create adverse effects in operations of ISS modules.⁵⁰² Furthermore, the ISS legal framework was supplemented by a series of bilateral agreements, which in turn closely mimics the approach that has been outlined in the AA.⁵⁰³

⁵⁰¹ W. A. Smith, Using the Artemis Accords..., op. cit., p. 686.

⁵⁰² 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, Treaties and other international acts series 12927, 1998, available at https://www.state.gov/wp-content/uploads/2019/02/12927-Multilateral-Space-Space-Station-1.29.1998.pdf (accessed: 24.06.2023).

⁵⁰³ Memorandum of Understanding Between the National Aeronautics and Space Administration of the United States Of America and the Russian Space Agency Concerning Cooperation on the Civil International Space Station, 1998, available at

https://www.nasa.gov/mission_pages/station/structure/elements/nasa_rsa.html (accessed: 24.06.2023).

Taking the aforementioned into account, it is at least premature to declare the AA either a threat to the rules enshrined in *corpus iuris spatialis*, or an outright violation of its provisions, as the AA were not aimed nor intended to be a new standard for the international community. While it is true that certain statements have been made within the doctrine suggesting that the AA can influence future custom, the same can be said of any new type of activity, either due to its technical aspects or the sheer scope of the undertaking in question. Moreover, as the bulk of the final outcome of AA will be determined by the scope and success of said program, and subsequent bilateral agreements, the direction of said "custom development" cannot be predicted as of now, let alone serve as a basis for any analysis.

Conclusions

As this dissertation demonstrates, the answer as to the level of compatibility between domestic regulations on outer space activities and *corpus iuris spatialis* is quite complex. The analysis presented indicates that while the core concepts of the *corpus iuris spatialis* are being introduced into domestic legal regimes in a rather uniform manner, states struggle to maintain this level of "agreement" in regards to more contemporary or nuanced problems. These are attempted to be resolved with state practice, inherently varying not only due to differences between legal regimes but also non reconcilable political choices.

The issue of responsibility and attribution of activities performed in outer space appears to be resolved in a surprisingly uniform manner with all of the regulations analyzed adopting a strikingly similar solutions. There appears to be little doubt as to the interpretation of *corpus iuris spatialis* in this regard in the international context. What is more, as the scope of possible liability for outer space activities traverses the international realm, being quite a real possibility in national context as well, the solutions adopted by states appear to have evolved in the same direction yielding the same results. In all of quoted legislations, states recognize the need to extend its national oversight over such activities by introducing a licensing regime. Without obtaining a given state's approval, no outer space activity can be commenced or continued, with some states going as far as providing a certain level of mutual recognition for licenses and authorizations between each other. This includes not only the "concept" of licensing, but also kinds of activities as well as types of entities that are required to obtain approval prior to commencing outer space activities. Exceptions to this approach are scarce, with the legislation of Netherlands being the most important one. The same remark can be made concerning the responsibility for outer space activities. All of the legislations recognize the need for such regulations, going as far as to extend it to cover liability for damages that could not be characterized as international in scope. Even though corpus iuris spatialis does not mention nor hint the need for insuring the activities or states, or provide any sort of governmental guarantee whatsoever, all of the analyzed legislations contain such requirements, and treat them as conditions for state's approval for carrying out given activity. Of course, this in itself is not an objectively great achievement, as it remains within the realm of common sense to ensure that the liable party has the means to cover damages inflicted by its hazardous activities,

however the uniform way in which the legislation presented did approach this issue shows that a certain practice has most certainly developed.

While authorization and responsibility may be regarded as quite closely following the template of *corpus iuris spatialis* even decades after the treaties were drafted, certain differences appeared in the context of access and appropriation of outer space. These however concern not whether the rights in question exist, or whether any part of outer space can be subject to national appropriation, but rather the interpretation and practical application of the subject matter principles. Prime examples of this process taking place would be the ongoing discussion concerning space mining and introduction of the Artemis Accords. Both challenge the understanding of what the terms of free access and appropriation mean. However, at least in terms of Artemis Accords, it has to be noted that while introducing a new way of organizing outer space activities, it does not attempt nor amount to an amendment of *corpus iuris spatialis*, rather offering a framework for a particular set of activities. In this respect, it does much more resemble the agreement concluded in order to ensure the continuing operation of the International Space Station, than a new treaty on outer space. As for space mining, the only piece of tangible legislation that has a tangible chance of being put into action is present only in the USA. However, it does appear to be more of a reaffirmation of previously voiced interpretation and policy, rather than an actual breach of *corpus iuris spatialis*.

The most challenging part appears to be connected to the issues of registration of space objects, especially in cases of on orbit transfer of ownership over such space objects. This is primarily caused by lack of any valid international regulations in this respect, with *corpus iuris spatialis* not containing any provisions on subsequent re-registrations. This issue, as has been showed above, is being resolved purely on the basis of bilateral agreements concluded between the states in question. However, as the same practice shows, these agreements are not universally concluded in each and every case and can take years to adopt. Consequently, the system of outer space law as a whole is being impacted, as the international institutions, as well as lawyers and scholars, are forced to attempt to resolve cases with legal tools that were never designed nor intended for that purpose, leading to varying interpretations and practical approaches.

All this is not coterminous with *corpus iuris spatialis* becoming obsolete, or state parties to its component treaties willfully disregarding its provisions. In fact, it would appear

that, for a highly specialized and entirely voluntary piece of international legislation, it has achieved a staggeringly high support and uniform adoption, with the cracks showing not in circumstances where its rules are starting to become obsolete, but rather where there is a lack of any concrete provision. The 5 outer space treaties were not designed to provide solutions that are being asked of them by today's practice, with empty legal space being filled by either national or international practice, with all advantages and disadvantages that come with it. Having that in mind, it appears that - as it was often the case - practice of the states most active in outer space has shaped the current legal landscape of outer space activities, and oftentimes improving the template provided by *corpus iuris spatialis*. Therefore there appears to be no need for any expedited revision of *corpus iuris spatialis*.

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