

**The Immaterial Territoriality of Outer Space: Reconstructing
Territorylessness in Modern Space Governance**

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ABSTRACT

This thesis studies the sociolegal development of space law in the context of modern space activities, with emphasis on the role of private actors in shaping the legal and extra-legal normativities of space law. At the core of this thesis lies a disagreement with the existing discourse on space law that understands space activities as permissible or prohibited through a *letter-of-law* approach to the international space law regime. That is, this thesis critiques the insufficient approaches taken in the existing space law literature as lacking context and relationality. This discourse does not only consist of scholarship, but it also contains modern space policies and nationally or locally produced space laws.

Particularly, this thesis disagrees with the conventional narrative of the space law discourse that locates outer space as a material place of the cosmos rather than as an organic ecosystem composed of sociopolitical relationships. This thesis also responds to the existing (scholarly and policy) approaches in the modern development of space law that tend to promote the future of space law as one that needs to be adjusted to the technocratic condition of the private space industry. To overcome these approaches, this thesis proposes that we recognize their biases and seek a more inclusive and pluralistic approach for the governance of space activities that is not tailored to the power structures and interests of private space actors alone.

First, this thesis examines the anticolonial theoretical foundations of international space law, which argue for a territoryless – materially and socially – outer space. Second, the analysis draws on the current state of the space industry and its impact on the modern development of space law, which often tends to argue for a territorial exploration of outer space. Last, this thesis imagines the future of space law, arguing for an approach of pluralism and inclusivity in the use and exploration of outer space. In doing so, this thesis often uses as a case study the example of existing legal frameworks for the exploitation of space natural resources.

RÉSUMÉ

Cette thèse étudie le développement sociologique du droit de l'espace dans le contexte des activités spatiales modernes, et met l'accent sur le rôle des acteurs privés dans la formation des normativités juridiques et extra-juridiques du droit de l'espace. Il y a, au cœur de cette thèse, un désaccord avec le discours actuel sur le droit de l'espace qui qualifie les activités spatiales comme permises ou interdites au travers d'une approche basée sur la lettre de la loi du droit international de l'espace. Cette thèse critique les raisonnements trop limités de la littérature existante sur le droit de l'espace qui démontre des lacunes en termes de contexte et de relation. Ce discours lacunaire n'est pas seulement présent dans la littérature, mais également dans les politiques spatiales ainsi que dans les lois spatiales domestiques ou locales.

Plus précisément, cette thèse s'oppose au récit conventionnel du discours du droit de l'espace qui définit l'espace extra-atmosphérique comme un lieu matériel du cosmos et non pas comme un écosystème organique composé de relations sociopolitiques. Par ailleurs, cette thèse répond aux approches (académiques et politiques) relatives au développement du droit de l'espace et qui tendent à promouvoir le futur de ce régime juridique comme nécessitant d'être ajusté à la demande technocratique de l'industrie spatiale privée. Afin de surmonter ces approches, cette thèse propose d'identifier leurs biais et a pour objet de proposer une approche plus inclusive et pluraliste pour la gouvernance des activités spatiales qui ne serait pas calquée sur les structures du pouvoir et les intérêts des acteurs spatiaux privés.

Dans un premier temps, cette thèse étudie les fondements théoriques anticoloniaux du droit international de l'espace et plaide pour un espace extra-atmosphérique non-territorial, tant d'un point de vue matériel que social. Dans un second temps, l'analyse est ancrée dans l'état actuel de l'industrie spatiale et de son impact sur le développement moderne du droit de l'espace, qui tend souvent à argumenter en faveur d'une exploration territoriale de l'espace extra-atmosphérique.

Finalement, cette thèse anticipe le futur du droit de l'espace et propose des arguments en faveur d'une approche pluraliste et inclusive dans l'utilisation et l'exploration de l'espace extra-atmosphérique. Pour ce faire, cette thèse utilise, à titre d'illustration, l'exemple des cadres réglementaires existant sur l'exploitation des ressources naturelles spatiales.

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INTRODUCTION

This thesis studies the sociolegal development of space law in the context of modern space activities, with emphasis on the role of private actors in shaping the legal and extra-legal normativities of space law. At the core of this thesis lies a disagreement with the existing discourse on space law that understands space activities as permissible or prohibited through a *letter-of-law* approach to the international space law regime.¹ That is, this thesis critiques the insufficient approaches taken in the existing space law literature as lacking context and relationality. This discourse does not only consist of scholarship, but it also contains modern space policies and nationally or locally produced space policies and laws.²

Particularly, this thesis questions the conventional narrative of the space law discourse that locates outer space as a material place of the cosmos rather than as an organic ecosystem composed of sociopolitical relationships.³ This conventional narrative perceives outer space as a material space the appropriation and territorialization of which are prohibited under the *Treaty on Principles*

¹ United Nations, *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies*, 27 January 1967, 610 UNTS 205, 18 UST 2410, TIAS No 6347, 6 ILM 386, entered into force on 10 October 1967, (hereafter “Outer Space Treaty”); United Nations, *Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched Into Outer Space*, 22 April 1968, 672 UNTS 119, 19 UST 7570, TIAS No 6599, 7 ILM 151, entered into force 3 December 1968, (hereafter “Rescue Agreement”); *Convention on International Liability for Damage Caused by Space Objects*, 29 March 1972, 961 UNTS 187, 24 UST 2389, 10 ILM 965, 1971, entered into force 1 September 1972 (hereafter “Liability Convention”); *Convention on Registration of Objects Launched into Outer Space*, 6 June 1975, 28 UST 695, 1023 UNTS 15, entered into force 15 September 1976 (hereafter “Registration Convention”); and, *Agreement governing the Activities of States on the Moon and Other Celestial Bodies*, 5 December 1979, 1363 UNTS 3, entered into force 11 July 1984 (hereafter “Moon Agreement”).

² This thesis will refer to international space law, that is the five UN Space Treaties and all the United Nations Resolutions that gave rise to them as *traditional space law*, to emphasize that this was the core body of space law that set out its foundations. As opposed to traditional space law, this thesis will use the term *modern space law* to refer to all the domestic space laws that have emerged during the past five years and which regulate the exploration and use of the physical environment of outer space, particularly space natural resources. Modern space law will also include all the relevant efforts that are taking place at the international level, such as the initiative of the Artemis Accords; *The Artemis Accords – Principles for Cooperation in the Civil Exploration and Use of the Moon, Mars, Comets, and Asteroids for Peaceful Purposes*, 13 October 2020, NASA (hereafter “Artemis Accords”).

³ *Outer Space Treaty*, *supra* note 1, Article II: “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.”

Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (hereafter “Outer Space Treaty”).⁴ Indeed, legal and policy interpretations of the Outer Space Treaty rely on a single-faceted understanding of the prohibition entailed in Article II of the treaty, that is, the prohibition of “national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.”⁵ This single-faceted understanding depends on a purely material interpretation of the terms property and sovereignty, that does not take into account their sociopolitical contexts; one that observes these space-centered notions as solely related to their materiality, and ignores their sociopolitical dimension. Simply put, an understanding that locates the lack of appropriation and sovereignty as being fulfilled by the lack of property titles and sovereignty claims over plots of extra-terrestrial land. It is against such an understanding that this thesis suggests recounting all those sociopolitical elements that precede the bordering of land, as part of any space-making processes, including that of appropriation and property.

Secondly, this thesis responds to the existing (scholarly and policy) approaches in the modern development of space law that tend to promote the future of space law as one that needs to be adjusted to the technocratic condition of the private space industry.⁶ For these approaches, the future of space law relies on the promotion of private space actors through the limitation of legal obstacles to the capital-centric vision of the modern space industry that constrain the ability of private actors to appropriate, objectify, and ultimately, commodify the physical environment of outer space. This thesis proposes that we recognize the bias in such approaches and seek a more

⁴ *Outer Space Treaty*, *supra* note 1.

⁵ *Outer Space Treaty*, *supra* note 1, Article II: “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.”

⁶ See analysis in Chapter II, Part 1.

inclusive and pluralistic approach for the governance of space activities that is not tailored to the interests of the private space industry alone.

The self-limiting modern discourse on space law

These mainstream approaches to space law are limited by their own narratives. By adopting a linear understanding of the prohibitions of space law, such as those of property and sovereignty, they oversee a series of sociopolitical considerations that led to such prohibitions. Indeed, taking the example of the exploration and exploitation of space natural resources, the limitations of this mainstream approaches become apparent. Over the past decade, the space law literature has focused on this issue by asking whether the exploitation of space natural resources could be legally feasible or not.⁷ Most scholars are concerned with whether the concept of use or exploitation necessarily bears with it a reality of appropriation or occupation, thus contrasting Article II of the Outer Space Treaty.⁸

By doing so, this approach neglects the theoretical underpinnings that lie in this prohibition and give essence to it. Indeed, the prohibition of property and sovereignty over any parts of outer space is simply a phrase used in the Treaty to seal an entire universe of theorization against the territorialization of outer space.⁹ And even though this vision against the territorialization of outer space as concealed in Article II of the Outer Space Treaty is not new, this mainstream approach to space law views it from a purely material perspective by arguing that so far as the use, exploration,

⁷ See the scholarship that is analyzed in Chapter II, Part 2. For example, Stephen Gorove, “Interpreting Article II of the Outer Space Treaty” (1969) 37 Fordham Law Review 349-354; Manfred Lachs, “The Legal Regime of Outer Space and Celestial Bodies” in Tanja L Masson Zwan & Stephan Hobe, eds, *The Law of Outer Space – An Experience in Contemporary Law-Making* (The Netherlands: Brill Nijhoff, 2010) at 43.

⁸ *Ibid.*

⁹ See theoretical analysis in Chapter I.

and exploitation of outer space, or its resources, does not amount to the establishment of property or sovereignty in outer space, the legal prohibition of Article II is respected.

In reality, the backbone of space law, the Outer Space Treaty, was constructed on the very idea of lack of territoriality in outer space. The *travaux préparatoires* to the Treaty, however, reveal that the prohibition of territoriality was a means towards a broader vision, the achievement of an outer space environment that would be free from any form of colonial relationships. Indeed, often making references to the colonial era and the link between socioeconomic colonialism and the occupation of territories, the Treaty suggests the prohibition of appropriation and sovereignty in outer space as part of a broader vision against territoriality, not only in its material fashion, but a territoriality including the sociopolitical parts of the term.¹⁰

By neglecting to consider the immaterial aspects of territoriality as included in the prohibitions of Article II of the Outer Space Treaty, the modern discourse on space law limits its own narrative to a material perception of outer space. For example, this perception – which is most often shared by major space-faring States and the private space sector – leads to governance schemes that result in the concentration of the majority of space power and dynamic within the jurisdiction of a small number of States and the reach of a small number of private space actors.¹¹ Even though this reality appears to be ostensibly compatible with the letter of the Outer Space Treaty and the ideal against territoriality, as it does not lead to the establishment of sovereignty or acquisition of property in outer space, it does, however, contravene the spirit and objective of the Treaty as well as contradict the non-material dimensions of the prohibited territoriality. That is, instead of leading to a widespread involvement in and benefit from space activities by all States, it leads to a governance

¹⁰ *Ibid.*

¹¹ See examples presented in Chapter II, Part 1.

that privileges only an elite of space actors and, as a result, to a use of outer space in the benefit of few.¹²

Therefore, Article II of the Outer Space Treaty entails a much broader scope and function than the one attributed to it by some States and space law scholars in the existing space law discourse; one that links the lack of territoriality to the idea of actors' pluralism and inclusivity.

An ill-fated hypothesis

As the hypothesis of the conventional narratives on space law responds to the material aspects of the territoriality of outer space – or, to the material aspects of the absence of such territoriality, several dimensions of space exploration – those entailing sociopolitical rather than material elements – remain neglected in the ongoing space law and policy-making processes. This hypothesis is particularly ill-fated as it relates to narratives that perpetuate a pragmatic approach to modern space laws – especially at the domestic level – that eventually leads to phenomena of legal rationalization and instrumentalism, that share little in common with the objectives of international space law, and particularly the Outer Space Treaty.

Indeed, as this thesis shows, the modern approaches to the existing space law regime and the ongoing space law- and policy-making processes, take a pragmatic turn to the territoriality of outer space by considering only its material dimension. Considering that the prohibition of territorial

¹² In contrast with the wording used in Article I of the Outer Space Treaty; *Outer Space Treaty*, *supra* note 1, Article I:

The exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind.

Outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies.

There shall be freedom of scientific investigation in outer space, including the Moon and other celestial bodies, and States shall facilitate and encourage international cooperation in such investigation.

formations in outer space is simply of a material fashion, such approaches seek to reverse the obstacles posed by this prohibition by introducing laws – particularly at the domestic level – that seek to establish property rights over parts of outer space. As a result, the pragmatism of such approaches lies in the fact that they tend to respond to the needs of the private space sector by reversing prohibitions that are known to inhibit private action in outer space. For example, the prohibition of appropriation of outer space is often presented as a disincentive for private space mining companies as it prohibits the establishment of exclusive rights over parts of outer space and, subsequently, it restricts potential profit from the commercialization of outer space and its resources.¹³ Being pragmatic, the current approaches to space law strive to address the needs of the private space industry and treat these disincentives through the production of laws that simply regulate against such prohibition.

Except for the *letter-of-law* contradiction with international space law,¹⁴ however, these approaches promote a legal order not only encouraging *stricto sensu* territorial formations in outer space in the form of land appropriation, but – more importantly – the formation of all those sociopolitical characteristics of territoriality that operate in the immaterial sphere. As the first chapter of this thesis explains, such characteristics can be the concentration of economic or political power in a small group of actors (mostly private actors in this case), the power of the same group of actors to influence and change the legal and governance orders, and, ultimately, the power of such actors to set the rules for the future of space exploration, in a way similar to the trade exploration companies of the colonial era.

¹³ See relevant declarations made by Luxembourg’s Ministry of Economy as analyzed in in Chapter II and in footnote 506.

¹⁴ As these approaches are in contrast with Article II of the Outer Space Treaty; *Outer Space Treaty*, *supra* note 1, Article II: “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.”

Looking at the narrative that these approaches advocate about space law, we observe that they think of it as a technology, or as a means to achieving the participation of an ever-growing number of private space actors in the governance of outer space by excluding less powerful actors. At the same time, we also observe that private space actors take the role of modern norm-makers as their needs appear to direct the future of space law. Therefore, these approaches are ill-fated in that they lead towards the reproduction of the territory-oriented objectives of the private space sector into the modern legal order of space activities, therefore seeking to reverse the space-free and anticolonial dynamic introduced by international space law, particularly through the Outer Space Treaty.

Furthermore, these modern approaches to space law contribute to the general discourse of rationalization and instrumentalism of law, thereby observing the future of space law as a set of rules rationalized in a way compatible to the interests of the private space industry regardless of their proximity with traditional space law, that is, primarily, the Outer Space Treaty.

A new hypothesis: Revisiting the territoriality of space law

Responding to these narratives, this thesis offers a new hypothesis for the legal order and governance of modern space activities, such as the exploration and exploitation of space natural resources. Suggesting that the territoriality of outer space is first sociopolitical and then material, this thesis proposes an understanding of outer space that is not static and fixed, but organic, comprising the subjectivities of all those subjects that act in relation to it. As a result, the hypothesis of this thesis suggests that the prohibition of territoriality in the international space law regime is more than a mere prohibition of private or public titles on extraterrestrial land. Rather, it is a prohibition that includes all those sociopolitical elements that act as precursors to the occupation

of land,¹⁵ thus understanding territoriality as a concept that is linked to the acting subjects rather than the object (in this case the physical environment of outer space).

To achieve this organic understanding of territoriality, the thesis utilises an interdisciplinary research methodology by studying the term through the lens of political geography.¹⁶ Indeed, this discipline offers a wide range of scholarly works on the topic that identify territoriality as the externalization process of human behavior and its ultimate reflection on the natural environment. The use of this scholarship facilitates the hypothesis of this thesis as it helps us understand that territorial formations can exist without the simultaneous material territorialization of land. Therefore, these invisible characteristics of territoriality can only be identified through the observation of the sociopolitical elements that relate to land-centered activities.

Accordingly, this thesis observes the sociopolitical elements linked with the behavior of private and public actors in the exploration and exploitation of space natural resources – activity inherently tied with the physical element of land – in order to understand whether the formation of immaterial territorialities in outer space is already under way.

Furthermore, the narrative of space law that is proposed in this thesis compares the emergence of international space law to the emergence of general international law in an effort to emphasize the sociopolitical elements of territoriality and how they should be considered in modern space activities. Indeed, going back to the origins of international law, this thesis finds its inception and evolution as one centered on the notion of territory – both as a material and sociopolitical concept – and embraces it in its structures.¹⁷ In contrast with such territorial foundations, this thesis finds

¹⁵ See concepts as presented in Stuart Elden, *The Birth of Territory* (Chicago: The University of Chicago Press, 2013) at 16; Philip Steinberg, *The Social Construction of the Oceans* (Cambridge: Cambridge University Press, 2001).

¹⁶ See scholarship analyzed in Chapter I; for example, Elden, *The Birth of Territory*, *supra* note 15; Steinberg, *The Social Construction of the Oceans*, *supra* note 15.

¹⁷ See particularly analysis in Chapter I, Part 1.

the emergence of international space law as a legal order that deconstructs the territoriality of international law despite itself being a subfield of international law. Therefore, this thesis presents the roots and narrative of international space law as a *natural critique to international law*.¹⁸ Moreover, as future space activities, such as space mining, are thought to involve – to some extent – the territorialization of outer space parts, this thesis finds that the narrative of international space law against territoriality should not be disregarded in the regulation of such activities.

Consequently, this thesis suggests a territory-free governance of outer space, with emphasis on the governance of space activities that involve the physical environment of outer space, such as space mining. By considering that the future regulation of outer space should not focus on regulating the object (the physical environment of outer space), but rather the subject (human behavior over outer space), this thesis shifts the weight of the anticolonial and anti-territorial spirit of space law towards the acting subjects, that is, space actors.

An approach of spacelessness

This thesis considers this revised starting point for the regulation and governance of space activities – especially those entailing the physical element of natural exploitation – as a turn to *spacelessness*.¹⁹ This starting point helps us understand which legal concepts and theoretical constructs should be granted a place in the developing legal order of space activities. While concepts and rights of exclusivity, such as that of property or sovereignty, would be incompatible with a governance and regulation of outer space guided by the ideal of any types of spaces, be they material or sociopolitical, concepts and governance approaches that support inclusivity would enable such an ideal.

¹⁸ *Ibid.*

¹⁹ See especially the analysis on *territorylessness* in Chapter I, Part 2.

Accordingly, this thesis suggests that we recognize the exploration and exploitation of outer space as an inclusive mission and accept that the benefits derived therefrom are attributable to all. This understanding will help us to comprehend the current domestic regulatory initiatives towards exclusive rights over parts of outer space as a call to revisit international space law and modernize it while maintaining its mission towards a *spaceless* outer space, rather than as themselves reversing international space law.

This account also helps us understand outer space as a place of a plurality of actors and space law as an inclusive field of international law, where the idea of bordered space and territorial delimitations (at the private level through the institution of property or at the public level through the institution of sovereignty) have no role to play.

To demonstrate such inclusivity at both the social and material levels, this thesis takes the example of the exploration and exploitation of space natural resources. Currently, the regulation and governance of this future activity are limited to a small number of major space-faring nations that regulate either at the domestic level or at a level of limited multilateralism.²⁰ As a result, the inclusivity in the exploration and use of outer space is *ab initio* abandoned as the decision-making process is managed by a limited number of actors. This limitation gives rise to a modern space governance of power, a governance of a *powercene* as this thesis describes it.²¹

Therefore, the understanding of the material and social dimensions of outer space as an inclusive and pluralistic space helps us also understand the place of space actors and their role in cooperating to achieve globality in space exploration and the benefits that are derived from it. This account helps us also detach from the space-centric governance of outer space that is currently led by the

²⁰ For the understanding of the term *limited multilateralism* as used in this thesis, see footnote 716 in Chapter III.

²¹ See relevant analysis in Chapter II, Part 1.3.

power of private space actors and situate them as an important – yet not the only – player in the governance of outer space.

Finally, this approach of *spacelessness* attributes to space governance and regulation an element of diachronicity and perpetual ability to accommodate new entrants in the field of space exploration. For example, by introducing the exploration and exploitation of space natural resources through a scheme that does not lead to property rights – or any other type of exclusive rights over them – the *free exploration of outer space*²² remains always attainable and the capacity for new actors unrestricted.

The outline of the thesis

This thesis is divided into three chapters. Chapter I sets the theoretical underpinnings on which chapters II and III unfold. Taking a postmodern approach to the ways in which space can be created, this chapter focuses on the immaterial aspects of the concept of territory and presents outer space as a social construct, where multiple social territorialities coexist without the simultaneous formation of material territorialities. Building on the scholarship on political geography, this chapter takes an extra-legal look at the development of space law from its inception until today to observe that prohibitions, such as the prohibition of property or sovereignty over parts of outer space, entail a much wider character than that of a simple prohibition over the physical environment of outer space. Therefore, this chapter presents international space law, with emphasis on the Outer Space Treaty, as a field of law inherently anticolonial, which has at its heart the mission to deterritorialize human relationships that are formed and actions that are taken in relation

²² *Outer Space Treaty*, *supra* note 1, Article I, Paragraph 2:

Outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies.

to the exploration and use of outer space. As such, outer space is herein understood as a space that should not be objectified, and thus territorialized, through modern space activities, such as space mining. This chapter provides theoretical guidance with regards to the principles that should accompany modern space governance and the regulation of space exploration, with the main one being the objective to produce rules and policies that do not amount to neither material nor social territorialities in outer space.

Building on the assertions of chapter I, chapter II proceeds with the presentation of the current practice in modern space industry. Starting from chapter I's understanding of territoriality's immaterial aspects, this chapter argues that the space industry, in particular contemporary private space actors, have occupied a normative role in the development of modern space law and governance. The chapter observes that private space actors tend to produce an extra-legal normativity by creating pressure centers that ultimately influence and guide the development of – primarily national, but also global – space policies and laws. This normativity, chapter II finds, is characterized by territory-centered objectives, which are eventually mirrored on national regulations tailored to serve the interests of the private industry.²³ Accordingly, this chapter presents the development of modern space law as one that is characterized by a process of rationalization and instrumentalism of law and serves ideals opposite to the territory-free ideals that emerge from international space law. Finally, this chapter observes that this legal process of rationalization and instrumentalism in the development of modern space law tends to take a reductionist approach to territory, where the organic – sociopolitical – aspects of it are ignored and, therefore, the term is given a purely material dimension.

²³ See examples of such regulations as analyzed in Chapter II, Part 1.

The last chapter of this thesis, chapter III, describes whether and how the extra-legal normativity produced by private space actors has influenced the body of international space law. To do so, this chapter explores whether the emergence of national space laws and recent multilateral initiatives that are in contrast with the principles of international space law are currently used or could be used as a means to change the traditional interpretation of international space law's principles or be considered as *subsequent agreements*. This chapter also investigates whether these national and limited multilateral efforts have the capacity to be considered as custom-forming and what the relevant impact would be on traditional space law. Ultimately, after having answered the current state of international space law's strictly legal normativity, this chapter utilizes the theoretical construct presented in chapter I to suggest guiding lines towards a territory-free space governance, where the private space industry will have its own place without, however, establishing exclusive rights over parts of outer space. The exploration and exploitation of space natural resources will be used as an example of such space governance.

What this thesis does

This thesis sheds light on the way we understand the governance of outer space and the role of modern space actors in it. It proposes a non-mainstream approach first to the realization of how space governance and regulation is shaped and functions today and second to the future of such governance and regulation. Therefore, this thesis suggests a new way of thinking about the development of space law; one that is not only linked to the legal underpinnings of space governance but, most importantly, to its sociopolitical ones. This new way of thinking reveals that if we depart from the rigid way of a *letter-of-law* thinking, we will see beyond the materiality of outer space and we will understand space-centered notions, such as that of appropriation, as a small fraction of a sociopolitical relational *symplegma*.

What this thesis does not do

This thesis does not intend to propose a governance mechanism for human activity over outer space and, particularly as far as the exploration and exploitation of space natural resources is concerned. Rather, the objective of this thesis is to set the theoretical foundations for the future governance of outer space and emphasize the need to deterritorialize the way we think about it. In other words, it is not the objective of this thesis to provide specific rules on how the proposed governance theorization could look like in practice. This would be a highly political task to be undertaken at the international political and legal levels, be it through the decision-making mechanisms of the United Nations or outside.

At the same time, this thesis does not attempt to answer the commonly asked question *could space natural resources be legally appropriated or are property rights in outer space supported by international space law*. The answer to these questions is considered as part of the general non-conventional narrative that this thesis attempts to suggest; a narrative that emphasizes the invisible aspects of territoriality, therefore also including the invisible aspects of appropriation, the latter being considered as part of a broader space-making process.

Conclusion

Keeping all these in mind, this thesis provides an innovative and original narrative about how we perceive outer space as well as its governance and regulation. Thus, the main thrust of the thesis is to deconstruct the private industry-centered accounts of the modern space law scholarship and emphasize that the development of an inclusive and pluralistic governance and regulation of outer space requires the prior understanding that outer space – like any other space – is a relational social

network rather than a complex of material spaces. Therefore, imagining all those relationships that are concealed in a legal rule or a policy statement is key in understanding this writing.

CHAPTER I – THE EMERGENCE OF SPACE LAW AS INTERNATIONAL LAW’S *TERRITORYLESS* MOMENT

*Anyone who wanted to understand current law by confining himself to its explicit, manifest meaning would be guilty of legal cretinism. Law, like politics, religion, etc., can acquire its full and true sense only when it is bound up with a reference to all the other social phenomena of an epoch.*²⁴

INTRODUCTION

International law, like any other field of law, is constructed on narratives; narratives that sometimes reflect more or less afflictive realities, while some others reflect struggles and visions for freedom and independence, yet they are almost always linked to the governance of natural areas and the construction of spaces.²⁵ As a result, the stories of international law are most often developed based on sociopolitical realities,²⁶ space-making processes,²⁷ and the quest for balance amongst multiple geopolitical dynamics.²⁸ In most cases, the sociopolitical narratives of international law are translated from the social into the legal sphere through a process of institutionalization, whereby they are transcribed through law and reflected in legal institutions.²⁹ Ultimately, such institutions tend to reflect – at large – space-negotiating and space-making

²⁴ Cornelius Castoriadis, *The Imaginary Institution of Society*, translated by Kathleen Blamey (Cambridge: Polity Press, 2005) at 22.

²⁵ Bardo Fassbender & Anne Peters, “Introduction: Towards a Global History of International Law” in Bardo Fassbender et al, eds, *The Oxford Handbook of the History of International Law* (Oxford: Oxford University Press, 2012) at 2-3.

²⁶ Eyal Benvenisti, “Legislating for Humanity: May States compel Foreigners to promote Global Interests?” in Rain Livoja & Jarna Petman, eds, *International Law-making – Essays in Honor of Jan Klabbers* (United Kingdom: Routledge, 2014) at 4-6.

²⁷ Franz von Benda-Beckmann & Keebet von Benda-Beckmann, “Places that Come and Go: A Legal Anthropologic Perspective on the Temporalities of Space in Plural Legal Orders” in Irus Braveman et al, eds, *The Expanding Spaces of Law: A Timely Legal Geography* (Stanford: Stanford University Press, 2014) at 31-33.

²⁸ Alexander Orakhelashvili, “International Law and Geopolitics: One Object, Conflicting Legitimacies?” (2008) 39 *Netherlands Yearbook of International Law* 155.

²⁹ Mark Klamburg, *Power and Law in International Society: International Relations as the Sociology of International Law* (United Kingdom: Routledge, 2015) at 41.

processes.³⁰ On this account, I recount the narrative of international law's creation and juxtapose it to a different narrative: that of space law. I argue that space law, despite being a segment of international law, it, nevertheless, shares different visions and sociopolitical dynamics and it serves different functions, which distinguish it from international law, in that space law does not contribute to international law's space-making processes.

This chapter is divided into two parts. In the first part of the chapter, I address international law as a space-making technology. I draw on the theoretical understandings of technology, as a social process rather than as technological technology, to demonstrate a relationship of dialectic between sociopolitical realities and international law, whereby the latter reflects the former and *vice versa*. At a second stage, but still in the first part of this chapter, I present the emergence and development of space law as a natural critique to international law. Space law, I suggest in this part, has produced a legal construct of deterritorialization,³¹ which has the capacity to defeat the colonial systemic biases of international law and, above all, circumvent its construction around the central concept of international law, that is, *territory*. In this first part, I use the ideas of construction and deconstruction³² to understand the elements of international law's coloniality and to demonstrate how the rationale behind the creation of space law deconstructs these elements and reconstructs an anticolonial system both at the physical – material – level and at the sociopolitical level. In that

³⁰Alexander Betts & Phil Orchard, "The Normative Institutionalization-Implementation Gap" in Alexander Betts & Phil Orchard, eds, *Implementation and World Politics: How International Norms Change Practice* (Oxford: Oxford University Press, 2014) at 1.

³¹ For the concept of *deterritorialization*, see Paul Patton, "Deleuze's Political Philosophy" in Daniel W Smith & Henry Somers-Hall, eds, *The Cambridge Companion to Deleuze* (Cambridge: Cambridge University Press, 2012) at 206:

They [*Deleuze and Guattari*] invent concepts such as ... deterritorialization that are not meant as substitutes for existing concepts of equality, freedom, and justice, but that are intended to assist the emergence of another justice, new kinds of equality and freedom, as well as new kinds of political differentiation and constraint.

³² For a general theorization of the concepts of *construction* and *deconstruction* see Jacques Derrida, *Positions* (Paris: Les Editions de Minuit, 1972); Jacques Derrida, *Of Grammatology*, translated by Gayatri Chakravorty Spivak (Baltimore: The Johns Hopkins University Press). These concepts will be analyzed in Part 1.2. of this Chapter.

way, in the first part of this chapter, I present the narrative of space law as one that achieves to reconstruct a system of *spacelssness*, or a system that defeats the creation of exclusive material and metaphorical spaces.

In the second part of this chapter, I focus on the materialities of international law and space law. That is, in this chapter, I seek to understand how international law perceives the natural areas involved in the development of its narrative and, in particular, how the sociopolitical and economic processes regarding the exploration and use of terrestrial lands and resources are reflected in the institutions of international law through a sociopolitical process of territorialization, which has the capacity to institutionalize territories through legal constructs.³³ Part of this process of territorialization is, I argue in this part, the prior process of objectification, where nature is subjected to a process of “cheapening”.³⁴ Through this “cheapening” of nature, the latter is perceived as an object able to become the center of trade and wealth-creating sociopolitical and, subsequently, legal processes.³⁵ Therefore, in this part, I build once more on the idea that space law constitutes a natural critique to international law, and I explore some of the most central principles and concepts enshrined in space law, which shield outer space from the process of objectification and its subsequent territorialization.

³³ Thomas J Basset & Denis Gautier, “Regulation by Territorialization: The Political Ecology of Conservation & Development Territories” (2014) 29 *EchoGéo* 2:

Territorialization refers to specific territorial projects in which various actors deploy territorial strategies (territoriality) to produce bounded and controlled spaces (territory) to achieve certain effects. A common goal of territorialization is to govern people and resources located within and around the territory.

See also James C Scott, *Seeing like a State – How Certain Schemes to Improve the Human Condition have failed* (New Haven: Yale University Press, 1998).

³⁴ Frédéric Neyrat, *The Unconstructable Earth: An Ecology of Separation*, translated by Drew S Burk (Fordham: Fordham University Press, 2019) at 64.

³⁵ *Ibid.*

As part of this problematic, I discuss current efforts to restore the connection between human and nature and restructure a non-hierarchical relationship between the two. Accordingly, I also discuss the theoretical construct of environmental/Earth stewardship,³⁶ a concept that has recently been used in legal mechanisms – and has also been suggested in the space law scholarship – as a construct capable of locating nature as equal – or even superior – rather than inferior to human activity.³⁷ Within this context, I argue for the failure of this construct to rebuild the relationship between human and nature. Instead, I suggest that the deconstructive and reconstructive force of space law to foundationally break the systemic colonial biases of international law and rebuild a deterritorialized regime could – if considered with caution – reveal a sufficient theoretical foundation for an anticolonial regulation of the relationship between the human being and outer space as part of nature. Accordingly, in this part, I critique the erroneous understanding that space law – particularly the Outer Space Treaty – regulates outer space as an area;³⁸ rather, I suggest that space law regulates human behavior with respect to outer space and imposes limits to it,³⁹ thus

³⁶ Nathan A Bennet, “Environmental Stewardship: A Conceptual Review and Analytical Framework” (2018) 61 *Environmental Management* 597.

³⁷ Christy Collis, “Territories Beyond Possession? Antarctica and Outer Space” (2017) 7:2 *The Polar Journal* 287-302 at 287; Pascale Ehrenfreund et al, “Responsible Space Exploration and Use: Balancing Stakeholder Interests” (2013) 1:2 *New Space* 60-72 at 60.

³⁸ Bin Cheng, *Studies in International Space Law* (Oxford: Oxford University Press, 2004) at 230.

³⁹ See for example, *Outer Space Treaty*, *supra* note 1, Articles II, IV, VI and IX:

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. (Article II)

States Parties to the Treaty undertake not to place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner. (Article IV, Paragraph 1)

States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the Moon and other celestial bodies, ... (Article VI)

... States Parties to the Treaty shall pursue studies of outer space, including the Moon and other celestial bodies, and conduct exploration of them so as to avoid their harmful contamination and also adverse changes in the environment of the Earth resulting from the introduction of extraterrestrial matter and, where necessary, shall adopt appropriate measures for this purpose ... (Article IX)

eliminating the process of objectification and territorialization, in contrast with the traditional institutions of international law.

Therefore, the thesis of this chapter is centered around the capacity of space law to – primarily through the Outer Space Treaty – defeat the territory-based colonial development and institutions of international law and introduce a moment of *territorylessness* in the history of international law.

1. POSTCOLONIAL THINKING IN A PRECOLONIAL SPACE AND TIME⁴⁰

My first task in this chapter is to unveil one of space law’s most critical characteristics that is often ignored, underexplored, or simply not observed: its radical faculty to deterritorialize law and the system within which it emerged. I use *deterritorialize* as opposed to *territorialize* to locate space law as a segment of international law that figures beyond a territorial *diamorphosis*.⁴¹

For conventional international legal scholars, characterizing a segment of international law as having an effect of deterritorialization may be wrong, contradictory, or, at the least, confusing.⁴²

For them, the foundations of international law concur with the territorial institutionalization of the nation-State as a sovereign, geographically defined, and bordered entity made possible through a

⁴⁰ [An earlier version of this part was presented at the 7th Annual Cambridge International Law Conference organized by Cambridge University. The author would like to thank the conference participants for their constructive feedback and comments.]

⁴¹ The term *diamorphosis* (from the Greek *dia* + *morfi* (form), which refers to the way in which something takes form or the way in which something is constructed) is used instead of the term *development* as the purpose of this segment is not to demonstrate how space law developed but what constructive form it took over the years and through sociopolitical influences. Therefore, *diamorphosis* is chosen as a term showing an organic and dynamic progression of space law which took a form (*morfi*) able to reconstruct a new socio-legal system.

⁴² See for example James Crawford, *Brownlie’s Principles of Public International Law* (Oxford: Oxford University Press, 2008) at 3-4; Malcolm N Shaw, *International Law* (Cambridge: Cambridge University Press, 2017) at 2, 4; Stephen C Neff, “A Short History of International Law” in Malcolm D Evans, *International Law* (Oxford: Oxford University Press, 2014) at 3-28; Samantha Besson & Jean D’Aspermont, “The Sources of International Law: An Introduction” in Samantha Besson & Jean D’Aspermont, *The Oxford Handbook on the Sources of International Law* (Oxford: Oxford University Press, 2017) 1-39.

positive treaty-making legal process.⁴³ Based on such a Kelsian understanding of law as identical to the State, or necessarily emerging from it,⁴⁴ it would be impossible to imagine law as detached from a fixed territorial entity, as separated from the idea of sovereign borders, and as disconnected from the State, the latter being an institutionalized space.

It is, however, through an unconventional understanding of international law – and not necessarily through a purely legal one – that the deterritorializing effect of space law can be thought as something exceptional rather than impossible. International law, in this case, may not be thought as an institutional territorialization of the Earth’s surface into sovereign and geographically defined segments. Rather, international law may be thought as the form that gave legal hypostasis and institutional trestle to the colonial encounter by translating the sociopolitical realities into juridical institutions constructed on geographical fixity, that is, the territorial State.⁴⁵ It is this function of territorialization that constitutes the object of a critique inherent to the *genesis* of space law. It is, at the same time, this same function of territorialization through and against which space law – itself constituting a critique to its own genre, international law – emerged. In other words, it is the territorial system of sovereign States of international law – a system constructed based on the colonial encounter⁴⁶ – that space law came to deconstruct by bringing to the fore an anticolonial

⁴³ For instance, Shaw notes that: “... the international system is horizontal, consisting of over 190 independent states, all equal in legal theory (in that they all possess the characteristics of sovereignty) and recognizing no one in authority over them. The law is above individuals in domestic systems, but international law only exists as between the states;” Shaw, *International Law*, *supra* note 42 at 4-5.

⁴⁴ Hans Kelsen, *General Theory of Law and State*, translated by Anders Wedberg (Massachusetts: Harvard University Press, 1945).

⁴⁵ Nicholas K Blomley & Joel C Bakan, “Spacing Out: Towards a Critical Geography of Law” (1992) 30:3 Osgoode Hall L J 661-690 at 663.

⁴⁶ John Reynolds, *Empire, Emergency and International Law* (Cambridge: Cambridge University Press, 2017) at 55, 105, 107.

ideal⁴⁷ entailing both material and social dimensions. Hence the ability of space law to deterritorialize both international law itself and its ruled object, that is, a natural area.

In that sense, the genesis of space law, as it may be drawn through the history and creation of the Outer Space Treaty, achieved to provide an anti-colonial vision despite its emergence within a system and institutions infused with and born through the colonial dynamic. In the same sense, space law was counter-inspired by international law's colonial roots, therefore producing a logic that has much in common with the parlance of the *critique* of international law,⁴⁸ mainly as presented in the postcolonial legal scholarship.⁴⁹

As a result, the radicality of space law, or its state of being “fundamental”⁵⁰ within the discourse of international law, lies in its ability to locate and defeat outer space – physically and socially –

⁴⁷ United Nations, General Assembly, *International co-operation in the peaceful uses of outer space: reports of the Committee on the Peaceful Uses of Outer Space*, 20th Sess, agenda item 31, official records, 1st committee, 1421st meeting, 18 December 1965; United Nations, General Assembly, *Provisional Verbatim Record of the Fourteen Hundred and Ninety-Ninth Plenary Meeting*, 21st Sess, A/PV.1499, 19 December 1966; United Nations, General Assembly, *International co-operation in the peaceful uses of outer space: report of the Committee on the Peaceful Uses of Outer Space, Conclusion of an international treaty on principles governing the activities of States in the exploration and use of outer space, the Moon and other celestial bodies*, 21st Sess, agenda items 30, and 89, official records, 1st committee, 1493rd meeting, 17 December 1966.

⁴⁸ Susan Marks, “Preface to a Critique of International Legal Ideology” in Susan Marks, *The Riddle of All Constitutions: International Law, Democracy, and the Critique of Ideology* (Oxford: Oxford University Press, 2010) at 8-11; Anthony Carty, “Critical International Law: Recent Trends in the Theory of International Law” (1991) 2 EJIL 1-27 at 2-3; According to Carty, as critique to international law or critical approach to international law has been defined an approach that

recognises the absence of a central international legal order as an impartial point to which state actors can refer, i.e. the simple meaning to be given to the phrase, ‘the disappearance of the referent’. At the same time it favours a mature anarchy in international relations, the recognition of states as independent centres of legal culture and significance, which have to be understood, in relation to one another, as opposing to one another very fragile, because inevitably partial, understandings of order and community.

⁴⁹ See for example Prabhakar Singh & Benoit Mayer, eds, *Critical International Law* (Oxford: Oxford University Press, 2014); Sanjay Seth, *Postcolonial Theory and International Relations: A Critical Introduction* (New York: Routledge, 2013); Eve Darian-Smith & Peter Fitzpatrick, eds, *Laws of the Postcolonial* (Michigan: The University of Michigan Press, 1999); Anne Orford, ed, *International Law and its Others* (Cambridge: Cambridge University Press, 2006); Brawen Gruffydd Jones, ed, *Decolonizing International Relations* (UK: Rowman & Littlefield Publishers, 2006); Anthony Anghie, *Imperialism, Sovereignty and the Making of International Law* (Cambridge: Cambridge University Press, 2004); Olivia Rutazibwa & Robbie Shilliam, eds, *Routledge Handbook of Postcolonial Politics* (Oxon: Routledge, 2018).

⁵⁰ Francis Lyall & Paul B Larsen, *Space Law – A Treatise* (Oxon: Routledge, 2018) at 52-54.

as a space susceptible to becoming a theater of a colonial encounter similar to the terrestrial one, both in its material and social magnitudes. The recognition of outer space as being, spatially and temporally, at a precolonial stage and, therefore, requiring a juridical understanding transcending international law's colonial origins and institutions is what enabled space law's *detritorializing* ability.

1.1. TECHNOLOGY, *TECHNE*, AND THE COLONIAL THREAT: A MOMENT OF LAWLESSNESS

*It is a lawless time. Crime syndicates compete for resources - food, medicine, and hyperfuel. On the shipbuilding planet of Corellia, the foul lady proxima forces runaways into a life of crime in exchange for shelter and protection. On these mean streets, a young man fights for survival, but yearns to fly among the stars...*⁵¹

As a lawless time, filled with competition for resources and survival, is described the moment in the Star Wars saga when the use of technology as a means of domination has overpowered the galaxy by destroying life, social structures, and nature all at once. Technology, thus, one would think, has the capacity to overpower law and bring to the fore a normativity beyond the legal rule; a normativity drawn by political objectives and materialized through the application of knowledge.⁵²

Technology, however, is not only technological, that is, technology is not limited to technological features. Rather, technology can be thought as a metaphor; a metaphor of transformation of a

⁵¹ Opening text from the movie *Solo: A Star Wars Story*, directed by Ron Howard, 2018.

⁵² David Skrbina, *The Metaphysics of Technology* (New York: Routledge, 2015) at 9-19.

purpose into an action; an intention into a fact; a plan into reality.⁵³ “Technology,” Jasanoff writes, “is a means to an end – or, in the modern era, the application of expert knowledge to achieve practical goals.”⁵⁴ This, however, she continues, “implies that the ‘ends’ of technology are known in advance.”⁵⁵ This definition bespeaks technology as a term with dual subsistence: one material, object-centered, and one immaterial, subject-centered, or simply sociopolitical. It was, for instance, not only the material element of technology that transformed the seas into a space with social functioning.⁵⁶ Had it not been for the shipbuilding and navigational technologies of the 17th century, the seas would not have acquired a social and subsequently juridical⁵⁷ dimension, as they would have remained beyond human, and therefore sociopolitical, reach. More importantly, it was not the technology as an object itself that contributed to this social functioning but the manner in which it was used by the subject, the trading companies of that time, and the pre-known “end of technology,”⁵⁸ which, in this case, was the objective of colonial expansion.⁵⁹

Therefore, technology, may be defined as *the means that enables the planned reach*, the means that brings life to the *prototype* (i.e. the idea of the planned reach)⁶⁰ and, in that way, can be understood as political. In that sense, technology entails a transformative function: it capacitates the subject to transform physical places into sociopolitical spaces. Heidegger characteristically uses the ancient Greek perception of *space* as something social rather than material.⁶¹ It is, he

⁵³ Oren Ben-Dor, *Thinking about Law: In Silence with Heidegger* (Oxford: Hart, 2007) at 47-50.

⁵⁴ Sheila Jasanoff, *The Ethics of Invention: Technology and the Human Future* (New York: W W Norton & Company) at Chapter 2.

⁵⁵ *Ibid.*

⁵⁶ Philip Steinberg, *The Social Construction of the Oceans*, *supra* note 15 at 20-26.

⁵⁷ *Ibid* at 98-109.

⁵⁸ Jasanoff, *The Ethics of Invention: Technology and the Human Future*, *supra* note 54.

⁵⁹ James Kraska, *Maritime Power and the Law of the Sea* (Oxford: Oxford University Press) at 29-30.

⁶⁰ Martin Heidegger, *Introduction to Metaphysics*, translated by Gregory Fried and Richard Polt (New Haven: Yale University Press, 2014) at 72.

⁶¹ *Ibid.*

writes, “what is taken up and occupied by what stands there”⁶² that transforms a place into space and, in that way, the essence of *space* is shifted from the object towards the subject. In this relationship between place and space, technology has historically played a transformative role. In other words, technology has played the role of the means towards the *prototype*’s coming into existence. To take it even further, technology may even be thought as space in itself given that without the *means*, the *prototype* – the idea – would not have reached the stage of existence.

It is no accident that the largest part of space law scholarship links space law’s narrative with the launch of Sputnik I, one of humanity’s most important technological achievements.⁶³ It was, they say, this launch that “took the attention of the world”⁶⁴ and it was also this same launch that urged earlier “abstract or academic ideas”⁶⁵ to receive a sociopolitical and juridical substance. Similarly, it was the *launch* of the European colonial trading companies, more precisely of the Dutch East India Company, towards the East accompanied by the Dutch naval forces of the era and those of its rival Spanish trading companies that gave rise to the sociopolitical dimension of the seas and prompted its juridical understanding.⁶⁶ For Grotius, in his defense of the Dutch expansionism towards the Indies, the seas were, in a somehow natural way, meant to be free for exploration by

⁶² *Ibid.*

⁶³ See for example Lyall & Larsen, *Space Law – A Treatise*, *supra* note 50 at 1; Tanja Masson-Zwaan & Malhulena Hofmann, *Introduction to Space Law* (The Netherlands: Wolters Kluwer, 2019), Chapter 5; Marcia S Smith & Jonathan F Galloway, “Eilene M. Galloway” in Stephan Hobe, ed, *Pioneers of Space Law: A Publication of the International Institute of Space Law* (Leiden: Martinus Nijhoff, 2013) at 127; Yun Zhao, *National Space Law in China: An Overview of the Current Situation and Outlook for the Future* (Leiden: Brill Nijhoff, 2015) at 1; Cornelia Riess, “International Cooperation Patterns and Trends of Future Space Regulations” in Marietta Benko & Kai-Uwe Schrogl, eds, *Space Law: Current Problems and Perspectives for Future Regulation* (The Netherlands: Eleven International Publishing, 2005) at 175.

⁶⁴ Stephen E Doyle, “Nasdasiri Jasentuliyana Keynote Address on Space Law – A Concise History of Space Law” in Corinne M Jorgenson, ed, *Proceedings of the International Institute of Space Law – 53rd Colloquium on the Law of Outer Space* (Washington: American Institute of Aeronautics and Astronautics, 2011) at 3.

⁶⁵ *Ibid.*

⁶⁶ Edgar Gold, *Maritime Transport: The Evolution of International Marine Policy and Shipping Law* (Lexington: Lexington Books, 1981) at 1-23, 25-34.

all.⁶⁷ However, in the title of his work he identifies “The Freedom of the Seas”⁶⁸ as “The Right which belongs to the Dutch to take part in the East Indian Trade,”⁶⁹ thus founding his understanding of the seas’ juridical dimension on his nation’s sociopolitical perceptions. Accordingly, it can largely be argued that Grotius’s understanding of the freedom of the seas was, in essence, an effort towards the juridical justification of the Dutch idea, or *prototype*, to conquer and monopolize the East Indian trade.⁷⁰ In this case, therefore, both, the juridical writing and the naval technological capacities of the Dutch, can be defined as technologies: one technological and one juridical, but both sociopolitical; or, to use Jasanoff’s definition, both involving the “application of expert knowledge to achieve practical goals”⁷¹ as well as an “end ... known in advance,”⁷² an end sociopolitical in substance. Therefore, on the one hand, the Dutch East India Company used the application of expert *naval technology* to enable the factual routing and subsequent occupation, while, on the other hand, it used the expert *juridical technology* (the writings of the influential jurists of that era) to support its practices. Both *technologies* served the

⁶⁷ Hugo Grotius, *The Freedom of the High Seas or the Right which belongs to the Dutch to take Part in the East Indian Trade* (New Jersey: The Lawbook Exchange, 2001) at 7:

Chapter 1: By the Law of Nations navigation is free to all persons whatsoever

...

I shall base my argument on the following most specific and unimpeachable axiom of the Law of Nations, called a primary rule or first principle, the spirit of which is self-evident and immutable, to wit: Every nation is free to travel to every other nation, and to trade with it.

⁶⁸ *Ibid*, cover page; see also the analysis developed in Ram S Jakhu, “Developing Countries and the Fundamental Principles of International Space Law” in Rafael G Girardot et al, eds, *New Directions in International Law* (Frankfurt, New York: Campus Verlag, 1982) 351-373.

⁶⁹ *Ibid*.

⁷⁰ This is evident not only through the choice of subtitle in Grotius’ work, but also through the justification bases on which he suggests free navigation on and trade through the seas; see Grotius, *The Freedom of the High Seas or the Right which belongs to the Dutch to take Part in the East Indian Trade*, *supra* note 67 at 7:

My intention is to demonstrate briefly and clearly that the Dutch – that is to say, the subjects of the United Netherlands – have the right to sail to the East Indies, as they are now doing, and to engage in the trade with people there.

⁷¹ Jasanoff, *The Ethics of Invention: Technology and the Human Future*, *supra* note 54.

⁷² *Ibid*.

same “end,” which was “known in advance:”⁷³ the domination over Indian trade and its monopolization.

From this perspective, technology is understood as a function of the subjective, the acting subject, rather than as a set of knowledge or know-how. A similar understanding is attributed to technology in works that distinguish between the objective and subjective elements of the term. For several critical theorists, technology entails the subject-centered characteristic of *techne*.⁷⁴ For Heidegger, for example, *techne* is an element of human action that “belongs to bringing-forth, to poiesis.”⁷⁵ Poiesis, deriving from the Greek verb *poiéō* (ποιέω), refers to the transformation of an idea into action, or, the act of realizing something that until then existed in the sphere of ideas, intentions, and plans.⁷⁶ Accordingly, *techne* is this element of technology that enables the use of the object of technology (the knowledge, the know-how, the expertise) according to and guided by the subject’s rationality.⁷⁷ In a similar manner, *techne* is used – although less often – in Foucault’s work to mean “a practical rationality governed by a conscious aim.”⁷⁸

Furthermore, Marx, Habermas and Husserl attribute an ideological dimension to technology seen as term encompassing both the *techne* and the logic – the reason – behind its use, a “scientific-technological rationality”⁷⁹ of *techne* therefore linking *techne* to the source of production, that is, the subject. A similar approach to the meaning of *techne* is also presented in the Greek mythology

⁷³ *Ibid.*

⁷⁴ See for example Martin Heidegger, *The Question Concerning Technology* (New York: Harper and Row, 1977); Edmund Hesserl, *The Crisis of the European Sciences and Transcendental Phenomenology: An Introduction to Phenomenological Philosophy* (Chicago: Northwestern University Press, 1970); John B Thompson, *Habermas: Critical Debates* (London: The Macmillan Press, 1982).

⁷⁵ Heidegger, *The Question Concerning Technology*, *supra* note 74 at 13.

⁷⁶ Eric Schatzberg, *Technology: Critical History of a Concept* (Chicago: The University of Chicago Press, 2018) at 21.

⁷⁷ Andrew Feenberg, *Heidegger and Marcuse: The Catastrophe and Redemption of History* (New York: Routledge) at 13.

⁷⁸ Clare O’Farrell, *Michel Foucault* (London: SAGE Publication, 2005) at 158.

⁷⁹ David Ingram, *Habermas: Introduction and Analysis* (Ithaca: Cornell University Press, 2010) at 42, 310.

and philosophy, mainly in the works of Aeschylus, Plato, and Sophocles. In their quest to understand and define what *techne* means (of course, technology was a concept not yet developed) they inquire into the choice made by the subject about the manner in which they decide to use their expertise. For Aeschylus, in his *Prometheus* myth, *techne* is presented as an expertise used “to master the world in which we live”⁸⁰ and *knowledge* in the sense of *expertise* is presented as a common characteristic of all *technai* (*techne* in plural).⁸¹ Similarly, Sophocles, in his work *Antigone*, attributes to the term a dimension of subjectivity linked to a rational choice: the choice to use the knowledge in a certain way. Creon, for example, who considers himself as possessing the *knowledge* to lead a city, comes to realize that his choice to use his knowledge in a certain way brought sorrow and injustice to his city.⁸² In that way, Sophocles emphasizes the subjective element of *techne*, that is, the ability to make a rational choice about the manner in which the object of *techne*, that is, the knowledge – the expertise – is used. Plato, in his *Dialogues* as well as in his *Republic* presents the term *techne* in a similar manner, but attributes to it the additional characteristic of morality by linking *techne* to a rational choice of using one’s expertise towards the betterment of the *techne*’s object, thus connecting *techne* to the value of good.⁸³

The meaning of *techne* has, therefore, a strong connection with the idiosyncratic characteristics of its subject. Technology, which entails, from both a philological and philosophical-ontological point of view, the idea of *techne*, links *techne* to *logos* (*techne* + *logos* = technology). Accordingly, *logos* is a concept that first appeared in the pre-Socratic and stoic philosophers. Heraclitus, the main such philosopher, in his work *Of Nature*, understood *logos* as connected to a divine, natural

⁸⁰ David Roochnik, *Of Art and Wisdom: Plato’s Understanding of Techne* (Pennsylvania: The Pennsylvania State University Press) at 58.

⁸¹ *Ibid.*

⁸² *Ibid* at 59.

⁸³ John R Wallach, *Platonic Political Art: A Study of Critical Reason and Democracy* (Pennsylvania: The Pennsylvania State University Press, 2001) at 236-237.

and common to all understanding of the *cosmos* that is inherent to every human being.⁸⁴ Such understanding of *logos* could be made as to support good, but also harm, to the *cosmos*, the nature.⁸⁵ Later on, in the Socratic era, the word appears to mean *the rational*, the latter referring to what is good for the city, this time making links not with a divine and natural logic but with a personal logic, yet always directed towards the good.⁸⁶

The origins, both linguistic and philosophical, of the term *technology* therefore reveal a concept far from a merely technological understanding of technology. “The essence of technology,” as Stuart Elden notes in using Heidegger’s words, “is not, itself, technological. Rather, it is a way of grasping and conceiving the world,”⁸⁷ or, it is the *logic* through which we understand the world.

Technology, therefore, can be anything. It can be all sorts of means that lead to the achievement of a purpose. Such an understanding of technology is useful in understanding the technological function of international law. As noted earlier, international law emerged first through a sociopolitical production of normativity and was later institutionalized through legal structures.⁸⁸ Therefore, international law constituted a technology of legal realization of the 17th, 18th, and 19th centuries’ *prototypes*, that is, the colonial dynamics of trade and conquest. Similarly, international law constituted a technology of space, as it transformed the globe into geographically fixed and bordered areas each one reflecting different sociopolitical dynamics that gave rise to its existence. Space law, on the contrary, following a diametrically opposite anticolonial *prototype*, that is, to create a legal construct preventing the colonization of outer space, could be considered as a

⁸⁴ Heraclitus, *Peri Physeos* (in Greek) (Athens: Papadema Publishers, 1987) at 130.

⁸⁵ *Ibid.*

⁸⁶ Richard Parry, “Episteme and Techne” in *Stanford Encyclopedia of Philosophy* (Stanford: Stanford University, The Metaphysics Research Lab, 2014) at 1-5.

⁸⁷ Elden, *The Birth of Territory*, *supra* note 15 at 16.

⁸⁸ The concept of normativity will be further developed in Chapter II, Part 1.4.

technology that deconstructs space. In reality, the vision and objectives behind the creation of space law were developed during a time of lawlessness. The rationale of space law emerged through the spirit of disarmament of the 1950's when the uses of outer space were not yet regulated.⁸⁹ At the same time, the ever more sophisticated military technologies of the time, a large part of which could potentially necessitate the use of outer space, were feared to create a normativity beyond law.⁹⁰ Therefore, the lack of *nomos*,⁹¹ or the presence of *anomia*⁹² – lawlessness – of that time combined with a fear of war that could take place through the use of outer space gave rise to the first seeds of the regulation of the uses of outer space through a series of disarmament resolutions,⁹³ which, as I analyze later, entailed restrictions to the use of outer space rather than a framework enabling its use. As such, space law emerged within a precolonial (with regards to outer space) time. Indeed, history has shown that the colonization of spaces is almost always initiated through military narratives.⁹⁴ Therefore, the restrictions of the use of outer space for peaceful purposes through these first disarmament resolutions constituted at the same

⁸⁹ Ivan A Vlasic, “Disarmament Decade, Outer Space, and International Law” (1981) 26:2 McGill Law Journal 135-206 at 147-153.

⁹⁰ *Ibid* at 147. Vlasic notes:

Three years after the beginning of the space age, President Eisenhower warned the U.N. General Assembly that it faced a vital decision:

Will outer space be preserved for peaceful use and developed for the benefit of all mankind? Or will it become another focus for the arms race - and thus an area of dangerous and sterile competition? The choice is urgent.

During the intervening two decades, despite Eisenhower's warning, outer space has been transformed into a new arena of the global arms competition.

⁹¹ The term *nomos* is used instead of the term *law* because the former entails a dimension of distributive justice. It derives from the Greek verb *νέμω*, whose literal meaning is *to distribute*, or *to allocate*. Therefore, *nomos* is used instead of *law* to demonstrate not only the lack of specific written regulations, but also the lack of an order distributing rights and obligations to the potential subjects/users of outer space. For the etymological observations on *nomos* see Platon, *Nomos*, 631b-632d.

⁹² *Anomia* is used to express a situation opposite to the functions of *nomos* as defined above.

⁹³ For example, United Nations, General Assembly, *Regulation, Limitation and balanced Reduction of all armed Forces and all Armaments; Conclusion of an international Convention (Treaty) on the Reduction of Armaments and the Prohibition of Atomic, Hydrogen and other Weapons of Mass Destruction*, 12th Sess, 716th plenary meeting, Res 1148 (XII), A/RES/XII/1148, 14 November 1957; see also Chapter I, Part 2.1.

⁹⁴ Philip T Hoffman, *Why did Europe conquer the World?* (Oxford: Princeton University Press, 2015) at 64, 194.

time a realization of a possible colonialism of outer space, had the lawlessness of the time remained untreated. As a result, space law can be considered as a technology restricting human action and, consequently, as a technology restricting *de facto* colonial normativity that potential uses of outer space could create.

Consequently, space law, as a legal technology, carried out a deconstructive function: it defeated the colonial technology of international law and introduced the construction of a sociopolitical system based on peace as both a normative and performative objective. In other words, space law managed to *technologize* from the outset a system centered on the ideal of peace, contrary to international law the vision of which was built as a reaction to a series of wars and global misfortunes. This deconstructive force of space law is, as I argue in the following section, what gave rise to the heart of space law's diachronicity and to its temporal as well as spatial relationality.

1.2. DECONSTRUCTING COLONIALITY AND THE SYSTEMIC BIAS

Deconstruction, Derrida writes, is a “problematization of the foundation of law, morality, and politics.”⁹⁵ Such a problematization is centered on the rejection of the Western philosophies that locate the idea of an existing universal truth in the midst of law's formation.⁹⁶ According to the idea – or better methodology – of deconstruction, such universal truth cannot exist, as justice is neither a determinate nor a certain notion;⁹⁷ rather, it constantly changes. Therefore, by critiquing the acceptance of justice as a static referent, the idea of deconstruction equally offers a critique to

⁹⁵ Jacques Derrida, “Force of Law: The Mystical Foundation of Authority” in Drucilla Cornell, *Deconstruction and the Possibility of Justice* (New York: Routledge, 1992) at 8.

⁹⁶ Ronald T Michener, *Engaging Deconstructive Theology* (London: Routledge, 2016) at 66.

⁹⁷ Jacques Derrida, *Positions* (Chicago: University of Chicago Press, 1982) at 41.

the institutionalization of justice.⁹⁸ Derrida theorizes law as a positive institution and nature as justice, the former seeking to transcribe the latter.⁹⁹ Given, however, the indeterminate character of nature and justice and the absence of a certain universal truth, it is, according to Derrida, impossible to consider law and justice as separate from each other.¹⁰⁰ For him, it would be a reductionist trap to consider justice as reflected on law alone, as justice is also reflected on all other spheres of social function.¹⁰¹ It is, for that reason, necessary to consider the perception of justice viewed through the lens of law as only one of justice's facets. For the same reason, the idea of deconstruction rejects the static character of institutions and accepts a constant change in the essence of their existence and understanding. In taking the example of *rights* as positive institutions, Derrida writes:

Everything would still be simple if this distinction between justice and droit were a true distinction, an opposition whose functioning was logically regulated and permitted mastery. But it turns out that droit claims to exercise itself in the name of justice and that justice is required to establish itself in the name of a law that must be "enforced." Deconstruction always finds itself between these two poles.¹⁰²

This deconstructive force that "finds itself" between law and justice is critical in understanding the core of space law's rationale as a segment of law which constitutes a critique to international law. Space law's deconstructive force lies in its faculty to outdistance the conventional institutions of international law, that is, mainly the institutions of sovereignty and the nation-State as its fixed

⁹⁸ Derrida critiques the authority that is given to institutions through the crystallization of our juridico-political understanding of the world and its functions as fixed institutions. His deconstructionist view of institutions lies in his belief that there is always a "relation between the force and the form." In that sense, the formalism that characterizes the fixity of institutions must be questioned and rejected to adapt to new realities, new "truths;" Derrida, *Positions*, *supra* note 95 at 7.

⁹⁹ Jacques Derrida, *Of Grammatology*, translated by Gayatri C Spivak (Baltimore: Johns Hopkins University Press, 2016) at 49.

¹⁰⁰ *Ibid* at 355, 357.

¹⁰¹ Derrida, *Positions*, *supra* note 95 at 22.

¹⁰² *Ibid*.

and defined subject.¹⁰³ Unlike international law – a traditionally and historically State-centric construct¹⁰⁴ – space law rejects such fixed State-centrism by placing humanity and the environment in the center of its creation, as I argue later in this chapter.¹⁰⁵ However contradictory this may seem, it is indeed this deconstruction of international law’s State-centric systemic bias that is defeated through the structure of space law. From the history of space law’s main legal instrument, the Outer Space Treaty, to the specific language used in that Treaty, and to the politics that gave rise to space law, State-centrism is far from the basic construct around which space law revolved. In doing so, space law offers a tool of critique to the traditional structures of international law and a basis for deconstructing a conventional understanding of international law, its structures, and institutions. The contradiction in this statement is apparent: how could a segment of international law, that is, space law, defeat the system within which it emerged, the system of the sovereign nation-State and, in what capacity has it been able to make of itself a tool deconstructive of the structure to which it is systemically part.

To conceptualize the deconstructive force of space law, the colonial emergence of international law and the reproduction of coloniality within the international legal system must first be understood. Historically, international law emerged as a colonial project that crystalized the geographically expressed expansionism and imperialism of the European nations towards the rest of the world.¹⁰⁶ First through the Westphalian institutions of sovereignty and the nation-State and later on through the United Nations and the subsequent institutions, international law crystalized

¹⁰³ See generally Ivan A Vlasic, “The Growth of Space Law 1957-1965: Achievements and Issues” in René H. Mankiewicz, ed, *Yearbook of Air and Space Law 1965* (Montreal: McGill University Press, 1965).

¹⁰⁴ Susan Marks, “State-Centrism, International Law, and the Anxieties of Influence” (2006) 19 *Leiden J of Int’l L* 339-347.

¹⁰⁵ See Chapter I, Parts 2.3. and 2.4.

¹⁰⁶ Anthony Anghie, “Finding the Peripheries: Sovereignty and Colonialism in Nineteenth-Century International Law” (1999) 40:1 *Harvard Int’l L J* 1-71 at 2-4.

the power relations that had developed during the colonial era and the two World Wars.¹⁰⁷ International law, as a law very much positive in its essence, followed the process of institutionalization through law by adopting concepts and institutions that would seemingly defeat the colonial character of international law's past through the idea of independent sovereign States.¹⁰⁸ At first, the colonial nature of the international legal system can be traced back to the 15th century Spanish, Portuguese, and Dutch imperialism conducted through the means of trade and conquest.¹⁰⁹ Grotius, for instance, by writing his famous *Mare Liberum*,¹¹⁰ set the foundations of the freedom of the seas, a juridical construct that could be regarded in two opposite ways: either as the freedom (right) of all to access and explore the high seas (*freedom of the seas*) or as an opportunity for monopolization of the East Indies trade by the Dutch colonial companies, whose interests Grotius was mandated to protect.¹¹¹ Many scholars believe this event to be the birth of positive international law by alluding to the fact that international law emerged through the trade sea routes that were formed as a means to and result of the colonial trade practices of the Portuguese, Spanish, and Dutch colonial trade companies.¹¹² Similarly, the *Treaty of Tordesillas* of 1494,¹¹³ which drew a geographical demarcation line between the Portuguese and Spanish

¹⁰⁷ Nico Krisch, "International Law in Times of Hegemony: Unequal Power and the Shaping of the International Legal Order" (2005) 16:3 EJIL 369-408.

¹⁰⁸ John Gerard Ruggie, "Multilateralism: The Anatomy of an Institution" (1992) 46:3 International Organizations 561-598.

¹⁰⁹ Jose-Manuel Barreto, "Cerberus: Rethinking Grotius and the Westphalian System" in Martii Koskeniemi et al, eds, *International Law and Empire* (Oxford: Oxford University Press, 2017) 149 at 165.

¹¹⁰ Grotius, *The Freedom of the High Seas or the Right which belongs to the Dutch to take Part in the East Indian Trade*, *supra* note 67.

¹¹¹ Christopher R Rossi, *Sovereignty and Territorial Temptation – The Grotian Tendency* (Cambridge: Cambridge University Press) 49.

¹¹² Benedict Kingsbury, "A Grotian Tradition of Theory and Practice?: Grotius, Law, and Moral Skepticism in the Thought of Hedley Bull" (1997) 17:3 Q L R 3-33.

¹¹³ *Treaty of Tordesillas*, 7 June 1494; The Treaty of Tordesillas is mentioned as an example of instrument which is specifically referred to in the preparatory documents of the Outer Space Treaty in drawing a parallel between the exploration during the colonial era and the exploration of outer space. The Treaty will be mentioned again in Part 1.3 of this Chapter.

expansionism,¹¹⁴ constructed and translated geographically – and, therefore, spatially – the two nations’ possession rights over the East African territories which they had respectively discovered. Law, therefore, was used in this case as a constructive power of what the Portuguese and Dutch thought as just, identifying, in this way, law as being justice in itself.

Later on, when the vision of independence was approaching at a faster pace, the Peace of Westphalia of 1648 and the institutions they brought with them “denoted the right of a state to establish its own system of government within its territory.”¹¹⁵ Despite the termination of the Thirty Years’ War and the promise for independence, however, the colonial rule was still very much present in the non-European territories, where the establishment of an internal governance system had to comply with the presence of a European authority within the territories,¹¹⁶ thus facilitating even further the colonial dynamic over these areas.

One more example that illustrates the idea of coloniality as inherent to the international legal system can be traced back to the 19th century’s “apogee of imperial expansion,”¹¹⁷ when a series of *concession contracts* were signed between “Western capital-exporting countries”¹¹⁸ and territories rich in mineral resources which were under the colonial rule.¹¹⁹ In this case, such non-European territories and native peoples were granted by international lawyers a “quasi-sovereignty”¹²⁰ status “for the purposes of enabling them to *transfer* rights, property and sovereignty.”¹²¹ The institution of sovereignty, or *quasi-sovereignty*, was, therefore, constructed

¹¹⁴ David J Bederman, *Globalization and International Law* (New York: Palgrave MacMillan, 2008) at 13.

¹¹⁵ Antony Anghie, “The Evolution of International Law: Colonial and Postcolonial Realities” (2006) 27:5 Third World Quarterly 739-753 at 745-746.

¹¹⁶ Martti Koskeniemi, “The Politics of International Law – 20 Years Later” (2009) 20:1 EJIL 7-19.

¹¹⁷ Anghie, “The Evolution of International Law: Colonial and Postcolonial Realities,” *supra* note 115 at 745.

¹¹⁸ Jörg Fisch, “Peoples and Nations” in Fassbender et al, eds, *The Oxford Handbook of the History of International Law* *supra* note 25 at 59.

¹¹⁹ *Ibid.*

¹²⁰ Anghie, “The Evolution of International Law: Colonial and Postcolonial Realities,” *supra* note 115 at 745.

¹²¹ *Ibid.*

in this case to be used as a device towards an instrumentalized exploitation. The colonial territories were given “just that degree of sovereignty necessary to make the concessions binding,”¹²² even though the contracts were most often drafted in foreign languages and contained cultural and legal terms that could not be understood by local populations.¹²³ Therefore, they constituted, in essence, unilaterally established realities rather than bilateral contracts as they were imposed by the colonial rulers rather than consciously negotiated with local populations. Yet, such contracts have existed as a legitimate instrument of international law.

This is important in comparing the colonial narrative of international law to the anticolonial narrative of space law. In particular, one should consider the production of the aforementioned *de facto* unilateralism as compared to the current production of a *de facto* unilateralism as it relates to the intended future uses of outer space. Although the analysis of normativity beyond law in the realm of space activities will be discussed in the second chapter of this thesis, it is interesting to note at this point the effect of the concession contracts of the colonial area and juxtapose them to the effect of unilateral – that is, at the domestic level – production of laws regulating the exploitation of space natural resources.¹²⁴ In this case, it is necessary to depart from theory and consider the practical implications of the scenario. In particular, the dependence of humanity on outer space and space natural resources¹²⁵ and the simultaneous dependence of humanity on the unilateral decision of public and private entities to exploit and appropriate space resources would create a relationship of dependence between humanity and the action of private entities and,

¹²² Anghie, *Imperialism, Sovereignty and the Making of International Law*, *supra* note 49 at 220.

¹²³ Yilma Makonnen, “State Succession in Africa: Selected Problems” in *Collected Courses of The Hague Academy of International Law – Volume 200* (Leiden: Brill, Nijhof, 1986) at 128.

¹²⁴ See for example *United States Commercial Space Launch Competitiveness Act*, 2015, HR 2262, 114th Congress; *Luxembourg Law on the Exploration and Use of Celestial Bodies*, 2017, Le Gouvernement du Grand-Duché de Luxembourg, Ministère de l’Économie.

¹²⁵ Ethan Siegel, “Why Exploring Space and Investing in Research is Non-Negotiable” (26 October 2017), online: Forbes <<https://www.forbes.com/sites/startswithabang/2017/10/26/even-while-the-world-suffers-investing-in-science-is-non-negotiable/#5b4c15da1647>>.

therefore, a leveraging advantage of private entities over humanity. Such unilateral decision is – as of now – a result of domestic laws unilaterally regulating the use of outer space¹²⁶ and of the subsequent contractual relations drawing their legitimacy from these domestic laws. In 2014, for instance, the National Aeronautics and Space Administration (hereafter “NASA”) contacted two private space mining companies “to prepare for and ultimately execute missions to land on and mine asteroids for valuable resources,”¹²⁷ based on a recent – at that time – domestic law providing for private companies’ property rights of space resources.¹²⁸ In drawing a parallel between the space mining contracts and the concession contracts of the past one would observe a similar relational dynamic. In the case of concession contracts, the local land resources (nature linked with the existence of local populations) were exploited by the colonial rulers based on a contractual relationship, which, however, was achieved in a *de facto*, as discussed above, unilateral manner. As a result, the local populations were dependent on the colonial rulers in order to use resources originally and spatially linked to them and their activities. In the case of the space mining contracts, space resources (nature linked with the existence of humanity) could be exploited by private companies based on a contractual relationship, which finds its legal underpinnings in domestic laws unilaterally governing the use of a global commons – outer space. Therefore, humanity, the future existence of which is often linked to the uses of outer space,¹²⁹ would equally be dependent on the unilaterally constructed action of private companies over outer space. In the first case, the concession contracts are part of international law, whereas in the second case, the space mining

¹²⁶ *United States Commercial Space Launch Competitiveness Act; Luxembourg Law on the Exploration and Use of Celestial Bodies*, *supra* note 124.

¹²⁷ Brooks Hays, “NASA contracts two Firms to work on Asteroid Mining” (24 November 2014), online: UPI <https://www.upi.com/Science_News/2014/11/24/NASA-contracts-two-firms-to-work-on-asteroid-mining/5301416856690/>.

¹²⁸ *The American Space Technology for Exploring Resource Opportunities in Deep Space (ASTEROIDS) Act*, 2014, HR 5063, 113th Congress, 2d Session.

¹²⁹ See for example Federico Yaniz, “Outer Space and the Future of Humanity” in J Martin Ramirez & Bartolome, *Security in the Global Commons and Beyond* (Switzerland: Springer, 2020) 69-84.

contracts could be considered void, based on the anticolonial provisions of space law – in particular article II of the Outer Space Treaty.¹³⁰

The coloniality of international law can be further witnessed in the mandate system of the League of Nations, which placed the territories that had been occupied by the defeated powers of WWI under the mandate system.¹³¹ In doing so, the League of Nations subjected these territories, which were now characterized as “backwards”¹³² due to their slower economic development, under the rule of Western European nations, the mandate powers, mainly Britain and France, which were mandated with fostering the development of these areas according to their own “advanced” economic standards.¹³³ It was, however, more the economic and cultural colonialism of the populations and the institutions of these areas that took place, rather than their economic development.¹³⁴

The later intensified efforts of the international community to achieve “equal rights and self-determination of peoples”¹³⁵ through the system of the United Nations was to a much larger extent more successful than the efforts of the past. With the decolonization movement of the 60’s,¹³⁶ the

¹³⁰ *Outer Space Treaty*, *supra* note 1:

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.

¹³¹ Susan Pederson, *The Guardians: The League of Nations and the Crisis of Empire* (Oxford: Oxford University Press, 2015) at 17-44.

¹³² Anghie, “The Evolution of International Law: Colonial and Postcolonial Realities,” *supra* note 115 at 746.

¹³³ *Ibid.*

¹³⁴ Quincy Wright, *Mandates under the League of Nations* (Chicago: University of Chicago Press, 1930) vii.

¹³⁵ United Nations, *Charter of the United Nations*, 24 October 1945, 1 UNTS XVI, Article I, Paragraph 2:

The Purposes of the United Nations are:

...

2. To develop friendly relations among nations based on respect for the principle of equal rights and self-determination of peoples, and to take other appropriate measures to strengthen universal peace.

¹³⁶ See United Nations, “Decolonization,” online: United Nations
<<https://www.un.org/dppa/decolonization/en/history/1974-1993-publications-decolonization>>.

Declaration on the Granting of Independence to Colonial Countries and Peoples,¹³⁷ and the establishment of the Special Committee on Decolonization,¹³⁸ the deconstruction of the international legal system's coloniality seemed to be under way. Nevertheless, the self-determination of less developed States, as well as their independence, was achieved only at the political level rendering them independent parts of the international system.¹³⁹ However, with a number of concession contracts still being in effect and an increased interest of the West in the natural resources of the less developed world, an ever-growing economic interventionism started to take place in the formerly colonized and newly independent States. With the realization by the newly independent States that political autonomy was only a matter of form, they sought the substance of their independence on economic grounds, through the movement for a *New International Economic Order*¹⁴⁰ and the doctrine of *Permanent Sovereignty over Natural Resources*,¹⁴¹ both resulting either in complete or in partial failure.¹⁴²

These historical examples illustrate how international law emerged through practices of colonialism and despite the efforts towards spatial decolonization and decolonization of the institutions, its colonial roots remain present. All the examples presented above constitute points of reference in the history of international law and they all share one thing in common: they

¹³⁷ United Nations, General Assembly, *Declaration on the Granting of Independence to Colonial Countries and Peoples*, 15th Sess, 947th plenary meeting, Res 1514 (XV), 14 December 1960.

¹³⁸ See "The United Nations and Decolonization – Committee of 24 (Special Committee on Decolonization)," online: UN <<https://www.un.org/dppa/decolonization/en/c24/about>>.

¹³⁹ Alice Farmer, "Towards a Meaningful Rebirth of Economic Self-determination: Human Rights Realization in Resource-rich Countries" (2006) 39 *International Law and Politics* 418 – 453.

¹⁴⁰ United Nations, General Assembly, *Declaration on the Establishment of a New International Economic Order*, 6th special Sess, agenda item 7, Res 3201 (S-VI), A/RES/S-6/3201, 1 May 1974.

¹⁴¹ United Nations, General Assembly, *Permanent Sovereignty over Natural Resources*, 17th Sess, 1194th plenary meeting, Res 1803 (XVII), A/RES/XVII/1803 (1962).

¹⁴² Nico J Schrijver, "Fifty Years Permanent Sovereignty over Natural Resources" in Marc Bungenberg & Stephan Hobe, eds, *Permanent Sovereignty over Natural Resources* (Switzerland: Springer, 2015) 15 at 18-21; Sundhya Pahuja, "Conserving the World's Resources?" in James Crawford & Martti Koskenniemi, eds, *The Cambridge Companion to International Law* (Cambridge: Cambridge University Press, 2012) 398-420 at 402.

demonstrate that the mechanisms that formed international law through time tend to formalize an *a priori* social construction of space and to translate it into law through the construction of juridico-political institutions. In other words, the development of international law has at its core the idea of space as translated not only into land, but also into the social element over it. In the examples presented earlier, the *de facto* formation of space, whether it be through occupation and conquest, or trade, or both, tends to precede the formation of legal institutions. Therefore, the sociopolitical action over a space seems to have a constructive effect on the legal institutions that follow. As a result, international law seems to have often played the role of formalization and institutionalization of the sociopolitical formation of spaces, borders, and geographical depictions. Accordingly, taking into account that the sociopolitical formation of spaces and borders has historically emerged through colonial practices either directly targeting land, or the people and cultures of the land, the construction of international law has most often produced a separation between a superior actor who guides the creation of norm, and the Other:¹⁴³ actors with less political, economic or technological power. Therefore, the construction of international law has historically been led by a hierarchy of the acting subjects, thus reflecting a *justice of hierarchy*, a *subjective justice*, an *approximate justice*, yet a justice not *inclusive*, an *unjust* justice.

International law, it could therefore be said, has always followed a reactive approach to the regulation of space as it is constructed based on the events that precede its legal treatment. Being reactive, instead of proactive, has rendered international law to perpetuate its own systemic bias

¹⁴³ The term *Other* is used in the sociological sense of the concept of *otherness* as a condition produced through a hierarchical understanding of the subjects; see Bryan S Turner, *Classical Sociology* (London: SAGE Publication, 1999) at 22:

Modernization, as Weber recognized, involved standardization and normalization; it precluded any sensitivity to an empathy for personal and social difference. Postmodernism follows liberalism in its responsibility towards otherness, but whereas liberalism tolerated individual differences, postmodernism celebrates, fosters and encourages difference.

of a justice of hierarchy. Finally, the understanding of such justice as the product of a colonial dynamic that is inherent to the structure and core institutions of international law would render possible the subsequent understanding that the deconstruction of the international legal system's coloniality would result in a justice less hierarchical and in a more just system.

The idea of deconstruction was used in this part to identify the elements that constitute the making of international law as a historical and political project, whose structures and institutions have crystalized routes of trade and conquest and have institutionalized a coloniality not merely physical but also of and over a land's subject. As Derrida puts it, in international law, "the risks of diversion or perversion for the benefit of individual interests (whether those of a state or not) require an infinite vigilance, all the more so as these risks are inscribed in its very constitution."¹⁴⁴ And as he continues, "after the ceremony of war, the ceremony of peace signifies that the victory establishes a new law. And war, which passes for ordinary and archetypal violence in pursuit of natural ends, is in fact a violence that serves to found law or right."¹⁴⁵ It is, therefore, the rejection of such normative violence that space law has at the core of its reconstructive force.

1.3. SPACE LAW AND SPATIAL TRANSFORMATION: RECONSTRUCTING AN ANTICOLONIAL SYSTEM

Despite international law's colonial past and the reflection of it on its current structures and institutions, space law was rooted in a deeply anticolonial rationale. The anticolonial essence that inspired the letter and spirit of space law are primarily linked to the most important characteristic of space law: the prohibition of establishing property and sovereignty rights over outer space and

¹⁴⁴ Derrida, *Positions*, *supra* note 95 at 39.

¹⁴⁵ *Ibid* at 40.

its parts.¹⁴⁶ Unlike international law, whose emergence was very much territorial as it transcribed human behavior over *terrae*, the emergence of space law can be traced down to a vision for a *spaceless* use of outer space. By doing so, space law achieved to overcome international law's spatial character and reconstruct a system that uses international law's structures and institutions, yet its rationale was not formed to facilitate or legitimize action of a subject over an object, or action of an acting entity over land. Therefore, space law, as mentioned earlier¹⁴⁷ and as it will often be mentioned in this thesis, constitutes a natural critique of international law. Yet, it is the *spacelessness* that space law prescribes which renders such a critique possible.

Although many approaches have been presented in the legal scholarship as to what a *critique* to international law may consist of, a characteristic common to all is that they locate the relationship between power and the creation of space in the midst of their inquiry as a question of hegemonic discourse.¹⁴⁸ "A whole history remains to be written of *spaces*," writes Foucault, "which would at the same time be the history of *powers*."¹⁴⁹ As *spaces* here seem to be the product, or construct, of *powers*, the critique to international law evaluates the relationship between the two and locates international law's colonial past and present in the relationship between the two: how the *power* of a subject creates *spaces*, whether they be physical or metaphorical. Thus, on the one hand, the critique to international law challenges the relationship of dialectical construction between subject and object, or actor and space, in which case space seems to be constructed based on the actions

¹⁴⁶ See *Outer Space Treaty*, *supra* note 1, Articles I, Paragraph 2, and II combined:

Outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies. (Article I, Paragraph 2)

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. (Article II)

¹⁴⁷ See Chapter I, Part 1.1.

¹⁴⁸ Ian Hurd, *How to do Things with International Law* (New Jersey: Princeton University Press, 2017) at 129-138.

¹⁴⁹ Michel Foucault, *Power/Knowledge: Selected Interviews and Other Writings, 1972-1977*, translated by Colin Gordon et al (New York: Pantheon Books, 1980) at 149.

of the subject. On the other hand, space law offers a different type of dialectic: a *reconstructive* dialectic between subject and object, or a *reconstructive* dialectic of *spacelessness*.

To better conceptualize the meaning and use of the word *spacelessness* here, it suffices to juxtapose the concept of *border* as a foundational concept of international law; a concept that space law rejected from the outset. Critical geography scholarship approaches the concept of border as one of organic and multidimensional substance with “physical,” “territorial,” “social,” “personal,” and “symbolic” aspects.¹⁵⁰ In most cases the idea of borders is linked to the social construction of spaces, where the social effect precedes the material and physical representation of the border.¹⁵¹ As already discussed, international law emerged through the idea of the action of a subject over an object. Indeed, a large part of the 19th century cartography has demonstrated that the military and trade routes constructed by the colonial empires of the era were translated into physical borders, therefore, producing both social and physical spaces.¹⁵² “Cartography, the scientific representation of land” Ian Barrow says, “was ... an indispensable tool in the acquisition of knowledge about India, ... [it] imbricated with other colonial modes of knowing and methods of control, ... it was complicit in the practices of subjugating space by its transformation into place.”¹⁵³ In other words, the concept of border and its translation into the physical representation through space or place, can be directly associated with the idea of sovereignty not as an institution of international law alone, but in its generic conceptualization. In particular, whereas in terms of international law

¹⁵⁰ Harald Bauder, “Toward a Critical Geography of the Border: Engaging the Dialectic of Practice and Meaning” (2011) 101:5 *Annals of the Association of American Geographers* 1126-1139 at 1133.

¹⁵¹ Saskia Sassen, “When National Territory is Home to the Global: Old Borders to Novel Borderings” (2005) 10:4 *New Political Economy* 523 at 532-535; Saskia Sassen, “When Territory deborders Territoriality” (2013) 1:1 *Territory, Politics, Governance* 21-45.

¹⁵² Thomas J Bassett, “Cartography and Empire Building in Nineteenth-Century West Africa” (1994) 84:3 *Geographical Review* 316-335.

¹⁵³ Ian J Barrow, “Moving Frontiers: Changing Colonial Notions of the Indian Frontiers” (1994) 1:2 *South Asian Graduate Research Journal* 3 at 9.

sovereignty would be defined as the “supreme authority within a territory,”¹⁵⁴ in more generic terms the notion would be closer to its linguistic analysis as the action of someone who *reigns over* something.¹⁵⁵ According to Foucault, “sovereignty is not exercised on things, but above all on a territory and consequently on the subjects who inhabit it.”¹⁵⁶ In the Greek language, for instance, the word *κυριαρχία* is used to express the meaning of sovereignty. *Κυριαρχία* (κύριος (power) + ἄρχω (guide)) refers to the imposition and exclusivity of an entity’s leading power over a social group.¹⁵⁷ Similarly, Skinner suggests that sovereignty is comprised of “the power to legislate, the make war and peace, ... coin money, regulate weights and measures and impose taxes,”¹⁵⁸ whereas Bodin defines sovereignty as “the absolute and perpetual power vested in a republic.”¹⁵⁹

It is, therefore, evident that both in international law and in the theoretical perceptions of the term, sovereignty appears as the absolute and exclusive action of a subject over a bordered object, with the social dimension of the object prevailing to the material one. As a result, the concept of border and that of sovereignty are inter-defined in that the idea of border delineates the spatial effect of sovereignty while sovereignty describes the action taking place within a bordered space.

The reconstructive force of space law lies upon the rejection of either concept and, more importantly, the rejection of the two concepts combined. In contrast with international law, which is constructed based on the concepts of sovereignty and border, and, consequently, that of the State,

¹⁵⁴ Samantha Besson, “Sovereignty” in Rüdiger Wolfrum, ed, *Max Planck Encyclopedia of Public International Law* (Heidelberg: Max Planck Foundation for International Peace and the Rule of Law, 2011) at Point 2.

¹⁵⁵ Elden, *The Birth of Territory*, *supra* note 15 at 198.

¹⁵⁶ Michel Foucault, “Governmentality” in Graham Burchell et al, eds, *The Foucault Effect: Studies in Governmentality* (Chicago: The University of Chicago Press, 1991) at 93.

¹⁵⁷ H G Liddell & R Scott, *Επιτομή του μεγάλου λεξικού της ελληνικής γλώσσας* (in Greek) (Athens: Pelekanos, 2007) at 739.

¹⁵⁸ See Elden in quoting Skinner; Elden, *The Birth of Territory*, *supra* note 15 at 264.

¹⁵⁹ *Ibid* at 262.

space law is constructed on the idea of absence of borders and sovereignty, while considering the State on a *spaceless* basis.

The *travaux préparatoires* and historical background of the Outer Space Treaty emphasize the social character of both concepts, sovereignty and border, and reject it based on an analogy with the colonial era.¹⁶⁰ Indeed, the negotiators of the Treaty attribute special emphasis to the colonial era and often tend to use direct analogies between the era of discoveries and that of space exploration in fearing that space exploration would lead to a new era of imperial expansion if based on Earth-derived standards. Arthur Clarke was one of the first authors to foresee outer space as a space susceptible to human imperialism and “observed that action would be needed to forestall extraterrestrial imperialism and consequent conflict.”¹⁶¹ Similarly, the preparatory documents of the Treaty often make references to the Peace Treaties that terminated wars by dividing the world into geographically bordered segments over which sovereignty was exercised. By referring to Peace Treaties and the subsequent gradual division of the world, the *travaux préparatoires* remind us of the performative effect of borders, which from a mere physical delimitation can lead to the construction of entire (legal) system. For this reason, the *travaux préparatoires* of the Treaty emerge a strong reluctance as far as the transplantation of Earth-based legal institutions into the realm of outer space is concerned.

It is, therefore, apparent throughout the preparatory documents that the negotiators of the Treaty (despite their political and ideological differences) sought to establish a regime that does not address the governance or regulation of outer space, but the governance and regulation of human activity over outer space. In other words, the demand was not to govern and regulate the object,

¹⁶⁰ See for example United Nations, General Assembly, *Provisional Verbatim Record of the Fourteen Hundred and Ninety-Ninth Plenary Meeting*, 21st Sess, A/PV.1499 at 58.

¹⁶¹ Lyall & Larsen, *Space Law – A Treatise*, *supra* note 50 at 6.

outer space, but the subject, the human. As a result, the Outer Space Treaty could be characterized as an instrument of international law that defeats and reconstructs the traditional characteristics and biases of the system within which it emerged by rejecting international law's spatial histories and foundations.

Exemplary of space law's *spacelessness* is the wording used in article II of the Outer Space Treaty, which provides: "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."¹⁶² As it is evident, the prohibition to extend Earth-based territorial controls through appropriation of outer space parts is not only restricted to the means of "sovereignty," "use," and "occupation" but it takes a generalized form through the wording "by any other means." The largest part of scholarship on space law views this prohibition through a material and space-oriented approach by excluding from the prohibition all actions that do not amount to material appropriation of outer space and its parts.¹⁶³ In that manner, the scholarship reduces the sociopolitical meaning of property and sovereignty to its material dimensions, as I discuss in details in the second chapter of this thesis.¹⁶⁴ The drafting history of the Treaty, however, reveals a more organic understanding of this prohibition. More precisely, the political community during the negotiations of the Treaty sought to establish a regime that would hinder imperial individual activity of States and phenomena of nationalism. The Italian delegate's (Mr. Vinci) words in

¹⁶² *Outer Space Treaty*, *supra* note 1, Article II.

¹⁶³ See Kurt A Baca, "Property rights in outer space" (1993) 58 J Air L & Com 1041; Carl Q Christol, "Article 2 of the 1967 Principles Treaty Revisited" (1984) 9 Ann Air Space Law 217; Carl Q Christol, "Article 2 of the 1967 Principles Treaty revisited" (1984) 9 Ann Air & Space L 217; Steven Freeland & Ram S Jakhu, "Article II" in Stephan Hobe et al, eds, *CoCoSL – Cologne Commentary on Space Law – Volume I – Outer Space Treaty* (Luxemburg: Carl Heymanns Verlag, 2009); Stephen Gorove, "Property Rights in Outer Space: Focus on the Proposed Moon Treaty" (1974) 2 J Space L 27; Virgiliu Pop, "Appropriation in Outer Space: The Relationship between Land Ownership and Sovereignty on the Celestial Bodies" (2000) 16 Space Policy 275; Stephan Hobe & Kuan-Wei Chen, "Legal Status of Outer Space and Celestial Bodies" in Ram S Jakhu & Paul Stephen Dempsey, eds, *Routledge Handbook of Space Law* (New York: Routledge, 2016) 25.

¹⁶⁴ See Chapter II, Part 2.4.

expressing the hope that space exploration would not be guided by the colonial and nationalist encounter very accurately reflect this vision. According to Vinci,

Almost five centuries ago, shortly after Columbus' first voyage across the Atlantic, two of the main Powers of those times dealt with the division of their spheres of influence in a Treaty that was officially concluded in Tordesillas in 1494. Only two years had elapsed since the discovery of the New World. That Treaty comes naturally to mind when one considers the Treaty on Outer Space now before this world Assembly. For the first time in the history of mankind all countries, and in the first instance the two world Powers of the day, are not searching for new territorial conquests or for the expansion of their sovereign rights. On the contrary, they aim only at scientific and technological conquests in the new continents of outer space, which become not the provinces of single Powers, but the province of mankind as a whole. For the first time in the wake of our first space explorations, national, religious and ideological concepts are put aside, and in their place the ideas of peace and of the unity of all men, regardless of their religion, creed or colour, are solemnly affirmed.¹⁶⁵

By calling upon the example of the Treaty of Tordesillas, which geographically divided the 15th century colonies of Spain and Portugal between the two colonial powers and established peace,¹⁶⁶ the delegate points to the pro-activeness of the Outer Space Treaty. Indeed, the Treaty of Tordesillas, and many more Peace Treaties in the history of international law, translated into legal terms the geographical acquisitions of the colonial powers and, as a result, institutionalized them, thus ending conflicts among the powers and re-establishing peace. However, even though these Treaties were a result of negotiation, the negotiation did not take into account the discovered, or

¹⁶⁵ United Nations, General Assembly, *Provisional Verbatim Record of the Fourteen Hundred and Ninety-Ninth Plenary Meeting*, 21st Sess, A/PV.1499 at 58.

¹⁶⁶ Fabian O Raimondo, "The Sovereignty Dispute between Argentina and the UK over the Falklands (Malvinas): A Preliminary Assessment of the Competing Claims" in Jure Vidmar et al, *Hague Yearbook of International Law* (Leiden: Brill Nijhoff, 2015) 3 at 12; Thomas Duve, "Spatial Perceptions, Juridical Practices, and Early International Legal Thought around 1500" in Stefan Kadellbach et al, eds, *System, Order, and International Law: The Early History of International Legal Thought from Machiavelli to Hegel* (Oxford: Oxford University Press, 2017) at 426.

explored areas and their peoples; rather, they were decided among the colonizing powers alone.¹⁶⁷ The Treaties were, therefore, space-making instruments constructed and used by the colonial entities. As a result, the Peace Treaties can be considered as instruments reacting to an already space-making sociopolitical process. Accordingly, what the delegate aims at by drawing a reverse analogy between the Treaty of Tordesillas and the Outer Space Treaty, is to emphasize that the latter is not a Treaty of distribution of space. On the contrary, it rejects the institutionalization of space-making processes that could result from the exploration of outer space as paralleled to the exploration of new lands during the colonial era.

Furthermore, in drawing an analogy between the era of discoveries and outer space and the manner in which they were approached through law, one would notice that the treaties regulating the colonial discoveries adopt a profoundly territorial and spatial language. In the Treaty of Tordesillas, for example, it is provided that the representatives of Spain and Portugal

described, covenanted and agreed that a boundary or straight line be determined and drawn north and south, from pole to pole, on the said ocean sea, from the Arctic to the Antarctic pole. ... All lands which have been discovered ... on the western side of the said bound ... belong to, and remain in the possession of, and pertain forever to ...¹⁶⁸

On the contrary, the Outer Space Treaty, aiming to regulate human exploration of outer space *a priori* and, as the delegate noted, to set aside “national, religious and ideological concepts,”¹⁶⁹ it does not entail a distributive character, neither a character of border- or space-making. Interestingly, the word *right* is not mentioned in the body of the Outer Space Treaty once, which renders the Treaty into a legal construct negating the establishment of all types of borders:

¹⁶⁷ H Michael Tarver & Emily Slape, *The Spanish Empire – A Historical Encyclopedia* (California: ABC-CLIO, 2016) at 62.

¹⁶⁸ *Treaty of Tordesillas*, *supra* note 113, Item 1.

¹⁶⁹ United Nations, General Assembly, *Provisional Verbatim Record of the Fourteen Hundred and Ninety-Ninth Plenary Meeting*, 21st Sess, A/PV.1499 at 58.

“physical,” “territorial,” “social,” “personal,” and even “symbolic.”¹⁷⁰ In that way, the Treaty achieves to – at least foundationally – question and reject the idea of bordered space as constitutive of international action.

2. UNDERSTANDING SPACE LAW’S *TERRITORYLESSNESS*¹⁷¹

The formation of territories is not a material process; its materiality is only symptomatic. As Elden suggests, territory seems to be rather the “basic vital instinct” of geopolitical strategies than their result.¹⁷² As such, the notion of territory contains aspects that are present even though they cannot be identified visibly as they involve sociopolitical and economic processes and, consequently, they entail a non-physical fashion. The second part of this chapter focuses on the immateriality of territory as a state not always linked to the fixed element of land. To do so, it first addresses the concept of territoriality beyond the context of law and legal scholarship, to find that the concept refers rather to a sociopolitical process of spatial transformation than to the juridically interpreted control over a spatial area. Moreover, by framing this imaginary conceptualization of territoriality, the second part of the chapter discusses as necessary element of the territorialization process the prior objectification of the spaces that are subjected to the process. Even though both processes have taken place in the formation of international law and have rendered the spaces governed by it into objects, space law has achieved to prevent the objectification and territorialization of outer

¹⁷⁰ Bauder, “Toward a Critical Geography of the Border: Engaging the Dialectic of Practice and Meaning,” *supra* note 150 at 1133.

¹⁷¹ [An earlier version of this part was presented at the “Power and International Law” workshop organized by the Buffet Institute for Global Studies at Northwestern University (presentation title “Law and Power in the Regulation of Space Activities: A Critical Approach to the Exploitation of Extraterrestrial Natural Resources”). The author would like to thank the workshop participants, and especially Ian Hurd, for their constructive feedback and comments.]

¹⁷² Elden, *The Birth of Territory*, *supra* note 15 at 3.

space and, therefore, it succeeds in establishing a non-hierarchical dialectic relationship between outer space and the human.

The rationale of this part is centered on the realization that human and nature are intrinsically connected and the alteration of the one results in the degradation of the other.¹⁷³ Therefore, this part explains how the concepts and principles of space law – as opposed to those of international law – being anticolonial in a holistic manner, contribute to the prevention of colonial practices over the material and immaterial elements of outer space, including its perception as part of nature. This part concludes the chapter by presenting the spatial inclusivity that is produced through the concepts and principles of space law and its utility in understanding the *territorylessness* of outer space not only in its natural dimension but also in its legal treatment. Ultimately, this part suggests that reactive artificial theoretical constructs, such as the theory of environmental/Earth stewardship,¹⁷⁴ that are often proposed towards the restoration of the relationship between human and nature are neither effective nor necessary in the realm of space law. This is because space law inherently contains the theoretical underpinnings for a governance and regulation of human behavior over outer space that would not lead to its objectification, and, finally, territorialization, both material and sociopolitical.

2.1. THE RE-IMAGINING OF TERRITORIALITY IN SPACE LAW

Most legal texts and mainstream scholarly works understand and present the concept of territoriality as linked to the jurisdiction of a State over a bordered and fixed territory.¹⁷⁵

¹⁷³ See Chapter I, Part 2.4.

¹⁷⁴ According to Neyrat, “Earth stewardship situates science as the discipline that must facilitate the guided management of socioecological changes in view of the well-being of humans and their inherent resilience;” Neyrat, *The Unconstructable Earth: An Ecology of Separation*, *supra* note 34 at 9.

¹⁷⁵ See for example Marcelo G Kohen, *Territory and International Law* (United Kingdom: Edward Elgar, 2016) at introduction.

Territoriality then appears as a static concept and is linked to the exercise of power and authority over a defined part of the *terra*.¹⁷⁶ Accordingly, the core of territoriality's concept is reflected in international law through the *principle of territoriality*, under which, Ryngaert argues, "jurisdiction obtains acts that have been committed within the territory."¹⁷⁷ Therefore, territoriality, as understood in the mainstream international legal scholarship appears as a static relationship between the State and the control of the latter over the territory that exists within its physical territorial borders.

Extra-legal disciplines, however, challenge the concept of territoriality by perceiving it as a process rather than a state. Sassen critiques the understanding of territoriality in international law by observing that "territoriality as a legal construct that marks the state's exclusive authority over its territory has become the dominant mode of understanding territory."¹⁷⁸ However, approaching the concept of territoriality as detached from the fixity of the physical territory of a State allows for a more organic understanding of the term and reveals territoriality as a social process that transforms a space into a socially constructed place. Elden, for instance, uses the example of the Greek *polis* to demonstrate that a physical geographical space is transformed into a political – organic – place due to the action of its subjects, its people, over it.¹⁷⁹ He uses the example of Sophocles' *Antigone*, where Creon is presented by Sophocles to rule over the people and actions that take place over a territory rather than the territory itself in order to illustrate that "a desert island with a single person

¹⁷⁶ Margaret Moore, *A Political Theory of Territory* (Oxford: Oxford University Press, 2015) at 91:

Like Hobbes and most modern international lawyers, Sidgwick defined the state in terms that make control over territory integral: the modern state, he wrote, is 'a determinate and stable group of human beings whose government has a practically undisputed right of regulating the legal relations of human beings over a determinate portion of the earth's surface.'

¹⁷⁷ Cedric Ryngaert, *Jurisdiction in International Law* (Oxford: Oxford University Press, 2015) at 49.

¹⁷⁸ Sassen, "When Territory deborders Territoriality," *supra* note 151 at 24; see also Bonaventura de Sousa Santos, "Law: A Map of Misreading. Toward a Postmodern Conception of Law" (1987) 14:3 J Law Soc 279.

¹⁷⁹ Elden, *The Birth of Territory*, *supra* note 15 at 24-30.

is no *polis*” as, he continues, “it has the site, but no people.”¹⁸⁰ In this example, the detachment of territoriality from territory lies in the fact that Creon would not have had the authority, or *jurisdiction*, to rule over a spatial void, had it not been for the people acting on and over it.

Similarly, during the colonial trade routes of the 17th and 18th centuries, the formation of territoriality appeared as a sociopolitical process of spatial transformation, which, as noted earlier, was institutionalized and formalized through legal constructs and institutions. The formation of territoriality as a social process was linked in this case with an additional element: military power. According to Bruijn, “in 1783, for the first time in its history, Dutch warships were sent to Asia in order to restore the tottering authority of the Company by a display of military might.”¹⁸¹ The same need to establish and fortify the trade acquisitions and territorial control of the Dutch over the East Indies had been understood by Grotius almost a century earlier. The order in which he completed his works attests to the realization of territoriality as a process of social construction of space and as a process of territorial formation.

In the example of Grotius, he first endeavored to present the need for a regime of freedom of navigation as a right of all deriving from nature and, after having established that need, he advocated for the subsequent natural rights, according to him, of individuals and States to protect themselves and their acquisitions by using power. Specifically, in his work of 1609 *The Freedom of the Seas or The Rights which belongs to the Dutch to take Part in the East Indian Trade*,¹⁸² Grotius seeks to establish a right according to wish “every nation is free to travel to every other nation, and to trade with it.”¹⁸³ To further advocate for the protection and defence of the products

¹⁸⁰ *Ibid* at 30.

¹⁸¹ Jaar R Bruijn, *Commanders of Dutch East India Ships in the Eighteenth Century*, translated by R L Robson-McKillop & R W Unger (United Kingdom: The Boydell Press, 2011) at 6.

¹⁸² Grotius, *The Freedom of the High Seas or the Right which belongs to the Dutch to take Part in the East Indian Trade*, *supra* note 67, title page.

¹⁸³ *Ibid* at 7.

of such trade, Grotius, in 1625, when the trade of the Dutch in the East Indies was already well advanced, published his work *De Jure Belli ac Pacis*¹⁸⁴ outlining the right to wage war for the protection of private property resulting from trade. In this example, the relationship between acquisition of property (at the level of the individual) and sovereignty (at the level of the State) and their preservation through military force¹⁸⁵ is part of a social process that leads to the establishment of territoriality over people and activities with the physical element of territory being subsequent. Therefore, from a historical and geopolitical perspective and taking into account that the trade of the Dutch over the East Indies and its preservation through military control ultimately led to the colonial territorial formations, it derives that territoriality is strictly linked to the element of exclusivity and can be thought as a sociopolitical process towards the establishment of authority over a space, or simply put, its utilization towards the purposes of the subject seeking to establish authority.

Therefore, in the above example, the importance of military power and the ability to wage war to establish trade over an area and protect the products of such trade can be considered as precursor to the establishment of authority and jurisdiction over an area, or as part of the social process of territoriality as a process transformative of space.

Even though this example is not directly linked to the patterns that are currently visible in the exploration of outer space, it demonstrates how territoriality – as a social process – can be facilitated through trade and military power, or better, through the combination of both. With that in mind, it is interesting to explore the emergence of the first international documents that treated

¹⁸⁴ Hugo Grotius, *De Jure Belli ac Pacis Libri Tres, in Quibus Jus Naturae & Gentium, item Juris Publici Praecipua Explicantur* (1625).

¹⁸⁵ Laurence Peters, *The United Nations – History and Core Ideas* (New York: Palgrave, 2015) at 59-68.

legally outer space as they reveal a strict link between the rejection of the social process of territoriality as a possibility in outer space and the use of outer space for solely peaceful purposes. More precisely, the first international legal instrument addressing outer space appeared in 1957, only two months after the launch of Sputnik I and was focused on disarmament. Specifically, *Resolution 1148 (XII)*,¹⁸⁶ which addressed the “regulation, limitation and balanced reduction of all armed forces and all armaments,”¹⁸⁷ presented the use of outer space for the first time as “exclusively for peaceful and scientific purposes.”¹⁸⁸ Therefore, it should not be left unnoticed that the regulation and legal understanding of the uses of outer space at a moment when its exploration had just started was first linked with the positive obligation for a peaceful use more than anything else. At the same time, the issue of monopolistic economic benefit through the uses of space and the waging of war for the preservation of the former was a forming concern. The Ukrainian delegate to the 13th session of the General Assembly of 1958 raised the concern, during the discussion of an agenda item dedicated to space exploration with the opportunity of Sputnik’s launch, that “there are still forces in the West, primarily in the United States, to whom the peaceful development of mankind is distasteful. They want conflicts, wars and international tension in order to maintain a war economy and to prevent a fall in the profits of monopolies.”¹⁸⁹ Similar concerns were raised and addressed in 1958 with two resolutions addressing the uses of outer space as a separate matter. The wordings used in the resolutions reveal a connection between territoriality and non-peaceful uses considered within the context of outer space. In particular, the first

¹⁸⁶ United Nations, General Assembly, *Regulation, Limitation and balanced Reduction of all armed Forces and all Armaments; Conclusion of an international Convention (Treaty) on the Reduction of Armaments and the Prohibition of Atomic, Hydrogen and other Weapons of Mass Destruction*, 12th Sess, 716th plenary meeting, Res 1148 (XII), A/RES/XII/1148, 14 November 1957.

¹⁸⁷ *Ibid*, see the title of the Resolution.

¹⁸⁸ *Ibid* at pn 1(f).

¹⁸⁹ United Nations, General Assembly, official records, 13th Sess, 792nd plenary meeting, 13 December 1958 at 13.

resolution, Resolution 1348 (XIII),¹⁹⁰ which established the *Ad Hoc* Committee on the Peaceful Uses of Outer Space,¹⁹¹ is the first document that uses the word *utilization* of outer space, a word that can be grammatically defined as “the action of making practical and effective use of something”¹⁹² or the action of rendering something useful,¹⁹³ thus requiring the link (use) between an object (outer space in this case) and a subject (the acting States in this case). Specifically, the resolution links this physical relationship between subject and space (*utilization* relationship), with the mandate for peace by “*recognizing* the great importance of international cooperation in the study and utilization of outer space for peaceful purposes.”¹⁹⁴ The mandate for a use and utilization of outer space for “peaceful purposes” was reaffirmed in the body of article IV of the Outer Space Treaty¹⁹⁵ this time accompanied by the word “exclusively” – wording, however, not welcomed by all countries – and specifically addressing celestial bodies. Accordingly, the article provides that “the Moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively

¹⁹⁰ United Nations, General Assembly, *Question of the Peaceful Use of Outer Space*, 13th Sess, 792nd plenary meeting, Res 1348 (XIII), A/RES/XIII/1348.

¹⁹¹ *Ibid* at 1:

Establishes the *ad hoc* Committee on the Peaceful Uses of Outer Space ... and requests it to report to the General Assembly at its fourteenth session on the following: (a) The activities and resources of the United Nations, of its specialized agencies and of other international bodies relating to the peaceful uses of outer space; (b) The area of international co-operation and programmes in the peaceful uses of outer space which could appropriately be undertaken under the United Nations auspices to the benefit of States irrespective of the state of their economic or scientific development ...

¹⁹² English Oxford Living Dictionaries, online: <<https://en.oxforddictionaries.com/definition/utilization>>.

¹⁹³ See the definition of the terms *utilize* and *utilization* combined; Oxford English Dictionary, online: <<https://www.oed.com/>>.

¹⁹⁴ *Resolution 1348 (XIII)*, *supra* note 190 at Preamble.

¹⁹⁵ *Outer Space Treaty*, *supra* note 1, Article IV:

States Parties to the Treaty undertake not to place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner.

The Moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes. The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military manoeuvres on celestial bodies shall be forbidden. The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited. The use of any equipment or facility necessary for peaceful exploration of the Moon and other celestial bodies shall also not be prohibited.

for peaceful purposes.”¹⁹⁶ As Setsuko notes, the limitation of the obligation for exclusively peaceful use only to celestial bodies, “has left room for interpretation”¹⁹⁷ as it does not explicitly extend to the outer void space. Many interpretations have been presented on the matter with the main one supporting: firstly, that exclusively peaceful purposes should be interpreted as non-aggressive purposes and extend to celestial bodies only¹⁹⁸ and, secondly, that “as outer space activities should be in any case conducted in accordance with international law including the United Nations Charter (Art. III of the OST), permissible action in the outer void space shall be within the prohibition of ‘threat or use of force’ use, which equates with or is almost identical to ‘non-aggressive’.”¹⁹⁹ Therefore, in both cases, non-aggressive uses of outer space and its parts are prohibited.

This observation leads to the following thoughts. Firstly, the core body of space law explicitly mandates that the utilization of outer space, with special emphasis on the use of celestial bodies – must be conducted for (exclusively) peaceful purposes, the latter being understood as non-aggressive. Secondly, as we saw earlier, in terrestrial examples, the use of land for purposes of trade has historically been accompanied by modes of use of force such as military might. Such modes of use of force appeared linked to the element of a territoriality in the making, that is, they revealed that the sociopolitical process of territoriality – involving the element of exclusivity – had in those cases taken place. Consequently, it results that the process of territoriality cannot harmoniously co-exist with non-aggressive purposes, as it involves the element of *dominium*, or, exercise of exclusive power over an area, an activity, or a social group. As a result, the peaceful,

¹⁹⁶ *Ibid.*

¹⁹⁷ Setsuko Aoki, “Law and Military Uses of Outer Space” in Ram S Jakhu & Paul S Dempsey, eds, *Routledge Handbook of Space Law* (Oxon: Routledge, 2017) 197-224 at 201.

¹⁹⁸ *Ibid* at 202-203.

¹⁹⁹ *Ibid* at 201.

or non-aggressive, *use* of an area, as part of its *utilization*, cannot be compatible with the concept of territoriality, as a social process of space-making. Furthermore, taking into account that the territoriality, as presented above, entails two elements, that of a social process, which is always present, and the subsequent – and not always present – element of a physical (material) expression of the social process over a segment of land, the concept can be understood as one of dual substance: social and physical. Similarly, the mandate for non-aggressive uses of outer space can also be thought as excluding both dimensions of territoriality – the social and the physical – from the uses of outer space as they both entail the capacity to incite non-peaceful, or aggressive, uses. To take this observation one step further, one could also explore the relationship between territoriality, as a social process of space-making, aggressive use, and imperialism. According to Anghie, imperialism is a concept directly linked to colonialism.²⁰⁰ He notes that “‘colonialism’ refers, generally, to the practice of settling territories, while ‘imperialism’ refers to the practices of an empire.”²⁰¹ And he continues to define imperialism through the words of Doyle, according to whom, an empire is

a relationship, formal or informal, in which one state controls the effective political sovereignty of another political society. It can be achieved by force, by political collaboration, by economic, social or cultural dependence. Imperialism is simply the process or policy of maintaining an empire.²⁰²

This definition is critical in understanding the relationship between non-aggressive uses of outer space and the space-making process. To do so, one needs to consider once more that, historically, colonization processes were initiated and controlled by empires and involved two elements: the physical element of land occupation, and the social element of control over activities and peoples,

²⁰⁰ Anghie, *Imperialism, Sovereignty and the Making of International Law*, *supra* note 49 at 11.

²⁰¹ *Ibid.*

²⁰² *Ibid.*

both elements forming the process of territoriality. Accordingly, as already explained earlier, force – in the form of naval and military powers – was used to maintain the empires and their colonial conquests, or to complete and maintain the process of territoriality. Therefore, the purpose of non-aggressive sociopolitical and juridical understanding of the uses of outer space would be defeated, should practices of territoriality take place as far as such uses are concerned, as, in this manner, a territorial environment susceptible to the initiation of force would be created. Moreover, considering that *force* is an element common to both the social process of territoriality and that of imperialism, it derives that non-aggressive uses of outer space would not be realizable in either case.

Therefore, as both the process of territoriality and that of imperialism have in common the social element of space-making as primary and its material expression into land as subsequent – given that both processes are historically linked to the practice of colonialism, it can be said that the mandate for uses of outer space for non-aggressive purposes rejects the duality of the two concepts’ substance: at a first level, it rejects any practice by any entity amounting to the sociopolitical element of exclusivity found in the concepts of territoriality and imperialism; while, at a second level, the expression of the two processes through practices of physical exclusivity over outer space must also be rejected.

The role of the developing countries in forming this anticolonial dynamic was also substantial. Although developing countries were not heavily involved in the negotiations of the Outer Space Treaty from the very beginning of the formation of the *ad hoc* Committee on the Peaceful Uses of Outer Space,²⁰³ their role in the development of the inclusive principles of the Treaty was critical.

²⁰³ United Nations, General Assembly, *Question of the Peaceful Use of Outer Space*, 13th Sess, 792nd plenary meeting, Res 1348 (XIII), A/RES/XIII/1348.

For example, one of the key principles in securing an anticolonial exploration and use of outer space is the principle that outer space should be used “for the benefit and in the interests of all mankind”²⁰⁴ on a basis of equality and without discrimination of any kind.²⁰⁵ This principle was introduced with the *Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space*,²⁰⁶ where a small number of developing countries advocated for these principles to be included as core principles for the exploration and use of outer space. After important pressure from especially the delegations of Peru and Brazil, as well as through the support of the Italian delegate to the negotiations that preceded the adoption of the Declaration, these principles became part of the Declaration.²⁰⁷ In addition, the principles were coupled with a broad interpretation of the principle of international cooperation in space activities which was then understood to include special scientific and technological assistance to less developed countries that did not possess their own means to follow the advancements of space-faring nations.²⁰⁸

As a result, developing countries were given a special place in the exploration and use of outer space, even though the majority of these countries did not actively participate in the negotiations of the Declaration,²⁰⁹ whose principles were later transferred into the body of the Outer Space

²⁰⁴ *Outer Space Treaty*, *supra* note 1, Article I.

²⁰⁵ *Ibid.*

²⁰⁶ United Nations, General Assembly, *Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space*, Res 1962 (XVIII), 18th Sess, 1280th plenary meeting, 13 December 1963.

²⁰⁷ United Nations, General Assembly, *Official Records – Summary Records of the Meetings – 17 September – 11 December 1963*, 18th Sess, 1st Committee (1965).

²⁰⁸ United Nations, General Assembly, *Official Records – Summary Records of the Meetings – 20 September 1961 – 15 February 1962*, 16th Sess, 1st Committee (1962); United Nations, General Assembly, *Official Records – Summary Records of the Meetings – 17 September – 11 December 1963*, *supra* note 207; see also Cheng, *Studies in International Space Law*, *supra* note 38 at 92 ff; Manfred Lachs, “The Law-Making Process” in Masson Zwan & Hobe, eds, *The Law of Outer Space – An Experience in Contemporary Law-Making*, *supra* note 7 at 125-134.

²⁰⁹ The developing countries that played a central role in the development of these principles were Brazil and Peru, supported by the Philippines and the United Arab Republic as well as by several non-space-faring European countries; see generally United Nations, General Assembly, *Official Records – Summary Records of the Meetings – 17 September – 11 December 1963*, *supra* note 207; see also Nandasiri Jasentuliyana, *International Space Law and the United Nations* (The Netherlands: Brill, 1999) at Chapter 4.

Treaty and became integral part of international space law. This led to the overall perception of the exploration and use of outer space as a common matter of the international community, the latter being understood as the ensemble of all international actors irrespective of how advanced they are economically or technologically. Accordingly, the benefits deriving from outer space, from telecommunication benefits to space resources benefits, were thought to be a common goal for humanity.²¹⁰ The two superpowers of the era, the former Soviet Union and the United States, supported the enhanced inclusion of the developing countries in the space law framework. On the one hand, the former Soviet Union supported the importance of guaranteeing the interests of all countries that compose the international community, while, on the other hand, the United States were supportive on the account that a balance between the interests of all was central in the successful exploration and use of outer space.²¹¹ Therefore, while advocating for their own interests and fair part in the exploration and use of outer space, the involvement of the developing countries in the development of space law significantly contributed to principles that would later form the basis of international space law's anticolonial dynamic and inclusivity of actors.

As a result, both through the first disarmament resolutions that addressed the legal treatment of outer space and through the role of the developing countries in the negotiation of the core principles of international space law, space law has offered a contextual re-imagining of the concept of territoriality as one of dual substance comprised of sociopolitical and physical elements, rather than as a static concept expressing authority over a fixed area of land. This re-imagined dual

²¹⁰ United Nations, General Assembly, *Official Records – Summary Records of the Meetings – 20 September 1961 – 15 February 1962*, *supra* note 208; United Nations, General Assembly, *Official Records – Summary Records of the Meetings – 17 September – 11 December 1963*, *supra* note 207; see also United Nations, *Exchange of Views – United Arab Republic*, A/AC.105/C.2SR.62 (24 October 1966); see also Jakhu, “Developing Countries and the Fundamental Principles of International Space Law,” *supra* note 68 at 357 ff.

²¹¹ United Nations, General Assembly, *Official Records – Summary Records of the Meetings – 20 September 1961 – 15 February 1962*, *supra* note 208; United Nations, General Assembly, *Official Records – Summary Records of the Meetings – 17 September – 11 December 1963*, *supra* note 207.

substance will remain deconstructed, and ultimately, rejected, should the vision for a peaceful use of outer space remain intact.

2.2. THE *TERRITORY* OF OUTER SPACE AS OBJECT

Similar to the concept of territoriality, international law as well as most of international legal scholarship perceive the meaning and substance of territory as something static and most often identical to the existence of States. Shaw notes that “without territory there can be no state, and without states there would be no international system,”²¹² and he continues by observing that “since such entities [*states*] have been historically formulated on the basis of dominant control of a defined area, the rules of territorial sovereignty have inevitably evolved at the heart of the system.”²¹³ This understanding, however, inevitably leads to a process of objectification of the concept of territory for two reasons: first, territory appears as the physical representation of borders and defines the geographical extent of a State and; second, it is presented as controlled by an entity, namely the State. A more theoretical inquiry into the essence of territory would, however, lead to different conclusions that do not consider territory as intrinsically linked to the concept of State. Lefebvre, for instance, understands territory – including its perception as fundamental part of the State – as a space like all others: socially constructed. “Since such entities [i.e. States] have been historically formulated on the basis of dominant control of a defined area, the rules of territorial sovereignty have inevitably evolved at the heart of the system,” he writes, “secretly that society’s space; it propounds and presupposed it, in a dialectical interaction; it produces it slowly and surely

²¹² Malcolm Shaw, *Title to Territory* (Oxon: Routledge, 2005) at xi.

²¹³ *Ibid.*

as it masters and appropriates it.”²¹⁴ Similarly, Castoriadis includes the concept of territory in a category of spaces that consist of a network of social relations rather than of the physical space on which they exist.²¹⁵ Castoriadis links the concept of territory with the concept of *teukein*, a Greek term that “signifies: assembling-adjusting-fabricating-constructing.”²¹⁶ The process of *teukein*, that is *techne* or *technique*, he says, “is implied in instituting”²¹⁷ social spaces. Therefore, territory as produced through the *technique* of society reflects rather the essence of the society that led to its production produced than the geographical, or, in general, physical, space within which the production process took place.

Accepting this organic, rather than geographical, understanding of territory is essential in “debordering”²¹⁸ the notion and liberating it from its material determinacy. This detachment of the concept of territory from its physical expression is also critical in imagining territorialities over areas beyond physical dimensions. Accordingly, given that territory is not necessarily something physical, its objectification process could also take place in the sphere of the sociopolitical as long as the process of *territorialisation* takes place. “Space,” Elden writes, “is, for Raffestin, the anterior term, because territory is generated from space, through the actions of an actor, who ‘territorialises’ space.”²¹⁹

The same is demonstrated in the example used by Steinberg in his work *The Social Construction of the Oceans*,²²⁰ where the author starts his inquiry by reference to the *Hansa Carrier* ship incident

²¹⁴ Henri Lefebvre, *The Production of Space*, translated by Donal Nicholson-Smith (Oxford: Blackwell, 1991) at 38.

²¹⁵ Castoriadis, *The Imaginary Institution of Society*, *supra* note 24 at 265.

²¹⁶ *Ibid* at 260.

²¹⁷ *Ibid*.

²¹⁸ The term is used in the same sense as the one used by Sassen in his article “When Territory deborders Territoriality” to emphasize that material and social elements of territory and territoriality do not always coincide. The social element of territoriality often extends beyond the fixity of territory’s materiality; Sassen, “When Territory deborders Territoriality,” *supra* note 151.

²¹⁹ Elden, *The Birth of Territory*, *supra* note 15 at 5.

²²⁰ Steinberg, *The Social Construction of the Oceans*, *supra* note 15.

that took place 600 miles south of Anchorage, during which twenty-one containers of Nike sneakers were lost overboard during heavy storms and travelled to the closest shores, where they were collected, paired, and sold by McLeon, a beachcomber.²²¹ This example illustrates how the process of social construction of a space can occur. “For the Nike Corporation,” Steinberg observes, “the sea represented the least expensive means of transporting commodities, ... for Leonhardt & Blumberg, the Hamburg-based shipping firm that operated the *Hansa Carrier*, the sea also was a surface to be crossed.”²²² “For residents of the West Coast, including beachcombers like McLeod and his customers” he continues “the sea was a provider.”²²³ Therefore, one could argue that, each actor turned the oceans into an object useful for their respective activities and purposes. Accordingly, even though the oceans cannot be considered as territories in the physical dimension of the term, they can be thought as having constituted different types of territories for each one of the actors in this example.

The objectification process and the perception of space as object can also be observed as far as outer space is concerned not in the juridical sphere, but in the sociopolitical. The most characteristic example that illustrates this process of objectification is the example of maps. Outer space, for instance, in its first cartographic depictions appears as an intrinsic part of nature, and as being in a relation of unity with the Earth. Alexander von Humboldt’s *Kosmos* demonstrates the universe as something scientifically understood by the human mind but not yet accessible by human activity.²²⁴ A similar understanding of the Earth and outer space as part of the universe had already taken place in the cartography and cosmography of the 16th century and continued until

²²¹ *Ibid* at 1-2.

²²² *Ibid* at 2.

²²³ *Ibid* at 2.

²²⁴ Alexander von Humboldt, *Cosmos: A Sketch of a Physical Description of the Universe – Vol I*, translated by E C Otte (London: Henry G Bohn, 1864) at ix.

the human reach to outer space appeared more realistic during the 20th century.²²⁵ At that moment, charts of cosmic exploration started to project possible exploration routes that do not illustrate only the physical characteristic of outer space but also its sociopolitical understanding by States. During the 21st century this representation of sociopolitical objectification of outer space intensified even more. It was then that outer space started to appear in charts as representative of economic and trade values.²²⁶ Similarly to the example of the Nike sneakers mentioned earlier, this time outer space is represented as divided into two segments: the economic segment, that is primarily celestial bodies rich in valuable minerals and planets;²²⁷ and the segment of access, that is, a combination of orbits and void space that can be used as routes towards the value-containing destinations.²²⁸ As already noted, in most recent years, for instance, the mapping of outer space focused more on the minerals and other valuable material contained in the asteroids, celestial bodies, and planets, and in depicting how their use and exploitation can take place via routes other than those of scientific exploration. Thus, outer space started to appear as a space perceived as a source of profit. It should not be ignored, however, that the production of the majority of such maps that represent outer space as a source of profit has been undertaken by private companies seeking to access and

²²⁵ See generally Nick Kanas, *Star Maps: History, Artistry, and Cartography* (United Kingdom: Springer, 2009).

²²⁶ See for example NASA, “Map of Rock Properties at Giant Asteroid Vesta” (6 November 2013), online: NASA <<https://solarsystem.nasa.gov/resources/1687/map-of-rock-properties-at-giant-asteroid-vesta/>>; see also the infographic in Jess Desjardins, “There’s Big Money to be made in Asteroid Mining” (2 November 2016), online: Visual Capitalist <<https://www.visualcapitalist.com/theres-big-money-made-asteroid-mining/>>; infographic in “Asteroid Mining: the Making of a Trillion-Dollar Industry” (10 August 2015), online: Mining Global <<https://www.miningglobal.com/operations/infographic-asteroid-mining-making-trillion-dollar-industry/>>; see also the artistic representation of asteroids in “Mining Asteroids could unlock untold Wealth – Here’s How to get started” (2 May 2018), online: The Conversation <<http://theconversation.com/mining-asteroids-could-unlock-untold-wealth-heres-how-to-get-started-95675>>; “The Asteroid Trillionaires” (11 June 2018), online: Physics World <<https://physicsworld.com/a/the-asteroid-trillionaires/>>; Neel V Patel, “Asteroid Mining could be a Multi-Trillion Dollar Business by 2020” (28 June 2017), online: Inverse <<https://www.inverse.com/article/33556-asteroid-mining-multi-trillion-dollar-business-asteroid-day-2017>>.

²²⁷ Bohumi Dobos, *Geopolitics of the Outer Space – A European Perspective* (Switzerland: Springer, 2018) at 72-80.

²²⁸ James Moltz, *Crowded Orbits: Conflict and Cooperation in Space* (New York: Columbia University Press, 2014) at 11-34, 59-80.

commodify these resources and by space-faring nations sharing the same objectives of commercialization of space natural resources.²²⁹

Many similarities can be observed between the current value-oriented mapping of outer space and the terrestrial mapping of the 16th, 17th, 18th, and 19th centuries cartography of colonial exploration through naval routes, where areas rich in natural resources were depicted as sources of value and the naval routes towards them as routes of transportation, trade, and military power. The similarity in the way in which outer space and the exploitation of its resources is approached in mapping and in the way that the reach and exploitation of areas during the colonial era was depicted in maps is apparent. Most importantly, this observation demonstrates that the objectification process of a space through its consideration as something reachable and exploitable, preceded, in the past, the territorialization of these areas, and ultimately, their transformation into territories in both the social and physical dimensions.

It can, therefore, be observed that even though before human reach to outer space was deemed feasible, outer space appeared as part of a united system together with the Earth, at the time that technological capabilities seemed to enable human access to space its cartographic depiction changed and represented it as an object capable of being used, exploited, and commercialized through human-made technology. Hence, the objectification process of outer space is no different than that of the colonial era with the sociopolitical process of territorialization to have already commenced.

Moreover, this observation reveals that the process of objectification and territorialization results in the formation of borders, a human-made concept that has also been socially produced as a result

²²⁹ See for example the producers of the infographics and maps referenced above, *supra* note 226.

of geopolitics, as discussed earlier in this chapter. The bordering of spaces with economical value due to the sociopolitical activities that are taking place – or are intended to take place – over the natural environment, including outer space, constitutes either an offspring of an objectification that took place historically, primarily during the exploitative colonialism, or is the result of trade-related purposes undertaken or planned by private or governmental entities.

A similar process of objectification and, subsequently, territorialization can be observed in the law of the sea. In particular, the objectification of the sea – which, in this case is also vested in a process of territorialization as well as bordering, can be observed in the provisions of the *United Nations Convention on the Law of the Sea*²³⁰ (hereafter “Law of the Sea Convention”) concerning the territorial sea,²³¹ the exclusive economic zone,²³² the continental shelf,²³³ and the regime addressing the natural resources of the deep seabed.²³⁴ A simple look at the structure of the convention on the issues that it is addressing regarding the territorial sea attests to the objectification that it has been subjected to. “Breadth of the territorial sea,”²³⁵ “outer limit of the territorial sea,”²³⁶ “straight baselines,”²³⁷ “internal waters”²³⁸ are only some of the provisions that illustrate the territorial and spatial language that law uses to describe the use of this part of the environment. Similarly, spatial and territorial language is used for the juridical understanding of the Exclusive Economic Zone (hereafter “EEZ”), one more part of the globe with emerges significant economic value. Language demonstrating bordered dimensions and the arithmetical

²³⁰ United Nations General Assembly, *Convention on the Law of the Sea*, 1833 UNTS 3; 21 ILM 1261, 10 December 1982 (hereafter “Law of the Sea Convention”).

²³¹ *Ibid*, Articles 2, 3-16.

²³² *Ibid*, Part V.

²³³ *Ibid*, Part VI.

²³⁴ *Ibid*, Article 137, Annex III.

²³⁵ *Ibid*, Article 3.

²³⁶ *Ibid*, Article 4.

²³⁷ *Ibid*, Article 7.

²³⁸ *Ibid*, Article 8.

fixity of the EEZ shows once more how the sociopolitical understanding of the area of a source of benefit has contributed to its reflection in law through a fixed and spatial language. Characteristic is the wording used to describe the breadth of the EEZ, which, according to the Law of the Sea Convention, “shall not extend beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is *measured*.”²³⁹ Similarly to the EEZ, the language used to describe the dimensions of the continental shelf emerges a spatial dynamic, as it explains in geographical details the areas, which are contained in it. Accordingly, article 76 of the Law of the Sea Convention provides that,

The continental shelf of a coastal State comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance.

In this case, the objectification and the process of territorialization are even more evident as the continental shelf is explicitly characterized as “natural prolongation of its [i.e. the State’s] land territory,”²⁴⁰ which entails historical justifications and dimensions.²⁴¹ Even more manifestly, the spatial and territorial language as well as the objectification of sea parts is present in the provisions covering the natural resources of the deep seabed. Even though territorial and delineating language is not present in part XI, section 2 of the Convention,²⁴² which specifically addresses the deep seabed and its resources, Annex III of the Convention²⁴³ brings back the missing spatial and territorial language. In fact, article 137, paragraph 1 provides the deep seabed and its resources as

²³⁹ *Ibid*, Article 57.

²⁴⁰ *Ibid*, Article 76.

²⁴¹ John Hannigan, *The Geopolitics of the Deep Oceans* (Cambridge: Polity, 2016) at 4, 12, 50, 55.

²⁴² *Law of the Sea Convention*, *supra* note 230, Part XI “The Area,” Section 2 “Principles Governing the Area,” Articles 136-149.

²⁴³ *Ibid*, Annex III “Basic Conditions of Prospecting, Exploration and Exploitation.”

an area not subjected to “sovereignty or sovereign rights,”²⁴⁴ as it also prohibits their appropriation, while article 137, paragraph 2 attributes “all rights in the resources of the Area [i.e. the deep seabed]” to “mankind as a whole.”²⁴⁵ Nevertheless, Annex III, titled “Basic Conditions of Prospecting, Exploration and Exploitation,” uses a highly territorial language by using terms such as “title to minerals” (article 1),²⁴⁶ “exploitation” (article 3),²⁴⁷ “commercial terms and conditions”²⁴⁸ (article 5, paragraph 3 (a)), and area “sufficiently large and of sufficient estimated commercial value”²⁴⁹ (article 8). Therefore, from a linguistic point of view it appears that the juridical perception of these areas is close to a status of *object*, thus enabling its treatment as such. “Space,” Foucault writes, “transports language - and in space the very being of language is metaphorized.”²⁵⁰ Indeed, in the case of the law of the sea, the social construction of ocean space is “metaphorized” in the Convention’s spatial language and *vice versa*.

²⁴⁴ *Ibid*, Article 137, Paragraph 1:

No State shall claim or exercise sovereignty or sovereign rights over any part of the Area or its resources, nor shall any State or natural or juridical person appropriate any part thereof. No such claim or exercise of sovereignty or sovereign rights nor such appropriation shall be recognized.

²⁴⁵ *Ibid*, Article 137, Paragraph 2:

All rights in the resources of the Area are vested in mankind as a whole, on whose behalf the Authority shall act. These resources are not subject to alienation. The minerals recovered from the Area, however, may only be alienated in accordance with this Part and the rules, regulations and procedures of the Authority.

²⁴⁶ *Ibid*, Annex III, Article 1, title: “Title to Minerals.”

²⁴⁷ *Ibid*, Annex III, Article 3, title: “Exploration and Exploitation.”

²⁴⁸ *Ibid*, Annex III, Article 5, Paragraph 3 (a):

3. Every contract for carrying out activities in the Area shall contain the following undertakings by the contractor:

(a) to make available to the Enterprise on fair and reasonable commercial terms and conditions, whenever the Authority so requests, the technology which he uses in carrying out activities in the Area under the contract, which the contractor is legally entitled to transfer. This shall be done by means of licences or other appropriate arrangements which the contractor shall negotiate with the Enterprise and which shall be set forth in a specific agreement supplementary to the contract. This undertaking may be invoked only if the Enterprise finds that it is unable to obtain the same or equally efficient and useful technology on the open market on fair and reasonable commercial terms and conditions.

²⁴⁹ *Ibid*, Annex III, Article 8, “Reservation of Areas”: “Each application, other than those submitted by the Enterprise or by any other entities for reserved areas, shall cover a total area, which need not be a single continuous area, sufficiently large and of sufficient estimated commercial value to allow two mining operations. ...”

²⁵⁰ Michel Foucault, “The Language of Space” in Georges B Benko & Ulf Strohmayr, eds, *Geography, History and Social Sciences* (Netherlands: Springer, 1995) 51-55 at 52.

Finally, there is one more element in the language used in the Law of the Sea Convention that reveals the spatial and territorial understanding of the seas. The Convention often uses wordings that emphasize the legal regulation and governance of areas of the seas, instead of regulating and governing the *use* of these areas by States and individuals. Specifically, in articles 2, 34, 49, 78, 135, and 137, the Convention provides respectively: “legal status *of the territorial sea, of the air space over the territorial sea and of its bed and subsoil* [emphasis added]” “legal status *of waters forming straits used for international navigation* [emphasis added],” “legal status *of archipelagic waters, of the air space over archipelagic waters and of their bed and subsoil*,” “legal status *of the superjacent waters and air space and the rights and freedoms of other States* [emphasis added],” “legal status *of the superjacent waters and air space* [emphasis added],” and “legal status *of the Area and its resources* [emphasis added].” The objectification, even if only viewed from a linguistic perspective, is therefore evidently present as far as the legal treatment of these areas is concerned.

Undeniably, the law of the sea, having been deeply influenced by the various stages of the history of the seas, expresses the social construction of the seas, which has been formed through a history beset with trade, wars, and conquest. Therefore, it forms one more example of how the objectification and value-oriented approach to a space contributes to its territorialization and delimitation.

In contrast to the law of the sea, the law of outer space, as I discuss in the following section, neither regulates nor governs outer space.²⁵¹ Rather, it regulates the *human activity* over and *use* of it.

²⁵¹ Even though one could say that Article II, which prohibits the establishment of property and sovereignty in outer space regulates and governs outer space, in fact, this provision regulates human behavior in outer space by providing that space exploration should take place in a way that does not lead to property, sovereignty, or occupation.

Language referring to the “use” and “exploration” of outer space²⁵² rather than outer space itself is often present. “The use and exploration of outer space, ..., shall be carried out in the interests of all countries”²⁵³ (article I), “States parties to the Treaty shall ...”²⁵⁴ (article III), “States parties to the Treaty undertake not to ...”²⁵⁵ (article IV), “States parties to the Treaty shall regard ...”²⁵⁶ (article V) “States parties to the Treaty shall be guided ...”²⁵⁷ (article IX) are only a few of the expressions used to emphasize that the regulation focuses on the acting subject – States in this case – and does not objectify outer space and its parts by using language akin to space and territory.

²⁵² This is evident, for instance, from the very title of the Outer Space Treaty: “Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies;” *Outer Space Treaty*, *supra* note 1.

²⁵³ *Outer Space Treaty*, *supra* note 1, Article I, Paragraph 1:

The exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind.

²⁵⁴ *Outer Space Treaty*, *supra* note 1, Article III:

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, in the interest of maintaining international peace and security and promoting international cooperation and understanding.

²⁵⁵ *Ibid*, Article IV, Paragraph 1:

States Parties to the Treaty undertake not to place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner

²⁵⁶ *Ibid*, Article V:

States Parties to the Treaty shall regard astronauts as envoys of mankind in outer space and 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. When astronauts make such a landing, they shall be safely and promptly returned to the State of registry of their space vehicle. (Paragraph 1)

...

States Parties to the Treaty shall immediately inform the other States Parties to the Treaty or the Secretary-General of the United Nations of any phenomena they discover in outer space, including the Moon and other celestial bodies, which could constitute a danger to the life or health of astronauts. (Paragraph 3)

²⁵⁷ *Ibid*, Article IX:

In the exploration and use of outer space, including the Moon and other celestial bodies, States Parties to the Treaty shall be guided by the principle of cooperation and mutual assistance and shall conduct all their activities in outer space, including the Moon and other celestial bodies, with due regard to the corresponding interests of all other States Parties to the Treaty. States Parties to the Treaty shall pursue studies of outer space, including the Moon and other celestial bodies, and conduct exploration of them so as to avoid their harmful contamination and also adverse changes in the environment of the Earth resulting from the introduction of extraterrestrial matter and, where necessary, shall adopt appropriate measures for this purpose. ...

Furthermore, the only provisions that refer to outer space as having a certain status are those attributing to it a status that protects it from sociopolitical activity. Indeed, provisions such as those included in articles I and II reveal the same rationale: “outer space ... shall be free for exploration and use by all States”²⁵⁸ (article I) and “outer space ... is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means”²⁵⁹ (article II).

It is, therefore, an interplay of inter-formation that takes place between law and the sociopolitical economy of spaces, which, more often than not results in natural spaces being objectified through social processes and, consequently, juridically treated as objects. Taking after the example of the law of the sea once more, Steinberg accurately observes that,

while the United Nations Convention on the Law of the Sea has been hailed for “irrevocably transform[ing]” international law and constituting “a fundamental revision of sometimes age-old institutions” ..., it also can be interpreted as the codification and institutionalization of a multifaceted ocean-space construction developed over the precious 200 years of industrial capitalism.²⁶⁰

2.3. THE *TERRITORY* OF OUTER SPACE AS SUBJECT

The critique of objectification of space through law and its institutionalizing language has also been associated in the literature with structures of economic capitalism that are vested in the modern governance of spaces, whether they be individual, national, international, or global spaces.²⁶¹ As noted earlier, the objectification of space, and its subsequent territorialisation,

²⁵⁸ *Ibid*, Article I.

²⁵⁹ *Ibid*, Article II.

²⁶⁰ Steinberg, *The Social Construction of the Oceans*, *supra* note 15 at 149.

²⁶¹ David Harvey, *Spaces of Global Capitalism: A Theory of Uneven Geographical Development* (London: Verso, 2019); Peter Lothian Nelson & Water E Block, *Space Capitalism: How Humans will Colonize Planets, Moons, and Asteroids* (Switzerland: Springer, 2018).

through the institutional function of (international) law can historically be explained as a process rooted in the colonial practices of the 16th, 17th, 18th centuries that culminated during the 19th century. The major part of scholarship on political sciences, critical and political geography, as well as non-mainstream scholarship on legal history, that address colonialism identify a strong link between the historical emergence of colonialism and the economic systems that were structured at that time, in the form of mercantilism at first and capitalism at a later stage.²⁶² For many scholars, the influence of economic systems – capitalism utmost – in the making of space, whether it be physical or social, is tremendous, especially as far as areas governed by international law are concerned, thus reaffirming the coloniality of international law's structures and institutions. In Braudel's words

To discuss civilization is to discuss space, land and its contours, climate, vegetation, animal species, and natural and other advantages. It is also to discuss what humanity has made of these basic conditions: agriculture, food, shelter, clothing, communications, industry, and so on.²⁶³

More recent scholarship addressing the impact of capitalism on the sociopolitical structuring and legal understanding of the environment refer to capitalism as a *sociogenetic* source,²⁶⁴ in that it adjusts the sociolegal structuring of space to meet the standards of capital-driven purposes. It was, for instance, no other than wealth-creation trade routes that led to the emergence of legal and political institutions during the 19th and 20th centuries tasked with adjusting the sea and its resources to the capitalist objectives of modernity. Consequently, it was the same routes that

²⁶² Ines Valdez, *Transnational Cosmopolitanism: Kant, Du Bois, and Justice as a Political Craft* (Cambridge: Cambridge University Press, 2019); Griet Verneesch et al, eds, *The Uses of Justice in Global Perspective, 1600-1900* (Oxon: Routledge, 2019); Warren Carter, ed, *Art after Empire: From Colonialism to Globalisation* (Oxford: Oxford University Press, 2018); Alessandro Stanziani, *Eurocentrism and the Politics of Global History* (Switzerland: Springer, 2018); M A R Habib, *From Postcolonialism to Globalism* (Switzerland: Springer, 2017).

²⁶³ Ferdinand Braudel, *A History of Civilizations*, translated by Richard Mayne (New York: Penguin Books, 1994) at 7.

²⁶⁴ Neyrat, *The Unconstructable Earth: An Ecology of Separation*, *supra* note 34 at 64-65.

initiated a process of perceiving the sea and its resources as objects subjected to exclusive forms of use and, ultimately, exploitation. The linguistic examples analyzed earlier in the context of the law of the sea, for instance, reflect exactly the same: the objectification and space institutionalization of sea parts through the production of legal mechanisms corresponding to a socioeconomic capitalism. Neyrat suggests the term *capitalocene* to “demonstrate that the capitalist economy is first and foremost a ‘way of organizing nature’”²⁶⁵ and to present this process of spatial production as a “mode of organization of nature that consists in reducing the nature to almost nothing at all.”²⁶⁶ Therefore, the social, legal, and political structuring of regulatory and governance regimes that address spaces, at all levels, can be understood through the socioeconomic as well as political processes of their spatial production.

The legal mechanisms followed by space law are no exception to this economic and sociopolitical functioning and justification of the law. However, this thesis earlier presented space law as a segment of international law that constitutes a natural critique to the colonial structures and institutions of international law due to its deconstructive and reconstruction functions. This deconstructive and reconstructive faculty of space law as well as the structures that it introduces have a limiting effect on the objectification of the environment – outer space in this case – as space law manages to shield outer space from the effects of the *capitalocene*. Many space law commentators, for instance, erroneously observe that the Outer Space Treaty does not include a governance or regulatory mechanism with regards to the legal status of space natural resources and the use, exploration, and exploitation thereof, as it was due to the lack of advanced space technology at the time of the Treaty’s creation that relevant provisions were not considered

²⁶⁵ *Ibid* at 63.

²⁶⁶ *Ibid*.

essential. “When the Outer Space Treaty was drafted,” notes Tronchetti, “the future development of space technologies and their applications could not be foreseen.”²⁶⁷ On the contrary; the lack of such regulation was not accidental but intentional. The future development of space technology, especially as far as access and exploitation of space resources were at stake, had well been foreseen and imagined not only during the 60’s when the Treaty was negotiated and drafted, but long before. Works in literature and science fiction present a multitude of examples where space mining takes a dominant role in the future of space exploration.²⁶⁸ Despite the inability of science fiction and literature to prove the foreseeability of space technology’s future advancement within a legal context, the example of technological development regarding the use of outer space reveals that the possibility of human reach to spaces, such as the celestial bodies, was within the span of human imagination. Indeed, such possibility can be identified in the *travaux préparatoires* of the Treaty, where it was observed that

the progress of science and technology has been so great and so rapid that the frontiers between the present and the future are being rolled back. The exploration of the moon, of the solar system, of interplanetary space which ten years ago belonged to the realm of science fiction today has become part of reality.²⁶⁹

Similarly, the *travaux préparatoires* of the Treaty contain lengthy analyses and debates over the establishment of a regime either facilitating or prohibiting property rights over celestial bodies. Despite the fact that the issue was primarily discussed within the disarmament context of the era and linked to military installations over these natural areas, the mere fact that terms such as

²⁶⁷ Fabio Tronchetti, *The Exploration of Natural Resources of the Moon and Other Celestial Bodies – A Proposal for a Legal Regime* (Leiden: Martinus Nijhoff, 2009) at 223.

²⁶⁸ See for example Garrett P Serviss, *Edison’s Conquest of Mars* (California: Carcosa House, 1947); Robert A Heinlein, *Space Cadet* (United States: Charles Scribner’s Sons, 1948); Robert A Heinlein, *The Rolling Stones* (United States: Charles Scribner’s Sons, 1952); Harold L Goodwin, *Rip Foster Rides the Grey Planet* (1952); Robert A Heinlein, *The Moon is a Harsh Mistress* (United States: G P Putnam’s Sons, 1966).

²⁶⁹ United Nations, General Assembly, *Verbatim Record of the Fourteen Hundred and Ninety-Second Meeting*, 21st Sess, 1st Comm, A/C.1/FV.1492, 27 January 1967 at 67.

appropriation and *occupation* were considered and ultimately adopted as part of a prohibition, rather than possibility,²⁷⁰ reveals the acceptance by the international community that technology would indeed advance to such an extent as to enable appropriation of such areas and the latter should, therefore, be protected. Thus, the acceptance of the possibility of activities involving the *taking* of land and the legal framing of a prohibition over it attest to an intention of shielding outer space from its objectification.

Moreover, the Outer Space Treaty presents outer space as a subject as it opens a spatial dialectic between outer space and humankind. Despite the fact that (hu)mankind, similar to States, often appears as a beneficiary of space uses, the limitations provided in the Treaty are what render this spatial dialectic possible. Indeed, the *Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space*,²⁷¹ and the preambles of the five United Nations space Treaties,²⁷² as well as almost the entire range of Resolutions and Declarations addressing the use of outer space, present the exploration and use of outer space as for the “benefit” of States.²⁷³ The fact, however, that this benefit is restricted and delineated through the prohibitions of the Treaty reveals a restraining effect on human action. For this very reason, space law differs

²⁷⁰ See *Outer Space Treaty*, *supra* note 1, Article II.

²⁷¹ United Nations, General Assembly, *Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space*, Res 1962 (XVIII), 18th Sess, 1280th plenary meeting, 13 December 1963.

²⁷² See *supra* note 1.

²⁷³ See for example United Nations, General Assembly, *Question on the Peaceful Use of Outer Space*, Res 1348 (XIII), 13th Sess, 792nd plenary meeting, 19 December 1958; United Nations, General Assembly, *International Co-operation in the Peaceful Uses of Outer Space*, Res 1472 (XIV), 14th Sess, 856th plenary meeting, 12 December 1959; United Nations, General Assembly, *International Co-operation in the Peaceful Uses of Outer Space*, Res 1721 (XVI), 16th Sess, 1085nd plenary meeting, 20 December 1961; United Nations, General Assembly, *International Co-operation in the Peaceful Uses of Outer Space*, Res 1802 (XVII), 17th Sess, 1192nd plenary meeting, 14 December 1962; United Nations, General Assembly, *International Co-operation in the Peaceful Uses of Outer Space*, Res 1963 (XVIII), 18th Sess, 1280th plenary meeting, 13 December 1963; United Nations, General Assembly, *International Co-operation in the Peaceful Uses of Outer Space*, Res 2130 (XX), 20th Sess, 1408th plenary meeting, 21 December 1965; United Nations, General Assembly, *Report of the Committee on the Peaceful Uses of Outer Space*, Res 2223 (XXI), 21st Sess, 1499nd plenary meeting, 19 December 1966; United Nations, General Assembly, *United Nations Conference on the Exploration and Peaceful Use of Outer Space*, Res 2221 (XXI), 21st Sess, 1484th plenary meeting, 5 December 1966.

from general international law and, even more, from other segments of international law that regulate global commons. The freedom of the high seas for examples, as historically founded on Grotius' writings, under his role as advocator for exploration and exploitation rights of the Dutch,²⁷⁴ was thought as a freedom without restrictions. As a permissive concept, it was at that time, therefore, capable of justifying any action of exclusive use over the seas, and, as such, provide an effective framework for the Dutch to establish their monopolistic trade and exploitation practices over the East Indies. Evidently, and in contrast with the initial idea of the freedom of the seas, the rules-based modern framework governing the use of the seas²⁷⁵ has been developed through a wide range of well determined rights and restrictions. These rights and restrictions, however, are yet reflective of a territoriality in the making, as noted earlier. Even though the example of Grotius' influence on the use of the seas has only historical value, it is still suitable in thinking how unrestricted freedom over the use of an area can result in monopolies and exclusivities, thus defeating the purpose of freedom.

Nevertheless, contrary to a rationale of unrestricted freedom, the Outer Space Treaty tends to be a treaty restrictive rather than permissive. This is evidenced by the way in which the prohibitions or restrictions on the use of outer space are framed within the Treaty. Accordingly, the majority of permissive provisions are framed in vague terms and the language that is used is general and inclusive. This is, of course, to be expected as the Treaty is considered to be setting out the principles of exploration and use of outer space²⁷⁶ rather than regulating in detail the *per se* exploration and use of it. A comparison, however, between the language used in the permissive provisions of the Treaty, as opposed to the language used in the restrictive ones, demonstrates that

²⁷⁴ Benjamin Straumann, *Roman Law in the State of Nature – The Classical Foundations of Hugo Grotius' Natural Law*, translated by Belinda Cooper (Cambridge: Cambridge University Press, 2015) at 24.

²⁷⁵ *Law of the Sea Convention*, *supra* note 230.

²⁷⁶ Cheng, *Studies in International Space Law*, *supra* note 38 at 156.

the Treaty's drafters strove to ensure clarity as to the limitations regarding the use of outer space and avoided the institutionalization of positive action through detailed permissive provisions or defined rights. To give an example, article I of the Outer Space Treaty, which contains permissive provisions, uses a generalized language to provide for the freedom of exploration and use of outer space and the freedom of scientific investigation.²⁷⁷ Article II of the Outer Space Treaty, on the other hand, being a restrictive provision, uses a much more precise and explicit language as the prohibited uses of outer space are introduced more exhaustively.²⁷⁸ To the same fact attests also the drafting history of both articles and the evolution of the text of the Treaty until its final adoption, as the agreement on the wording of article I seems to have been a much easier task than the agreement on the wording of article II, which was discussed, altered, and finalized after a series of linguistic changes in its text.²⁷⁹

²⁷⁷ *Outer Space Treaty*, *supra* note 1, Article I:

The exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind.

Outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies.

There shall be freedom of scientific investigation in outer space, including the Moon and other celestial bodies, and States shall facilitate and encourage international cooperation in such investigation.

²⁷⁸ *Ibid*, Article II: "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."

²⁷⁹ United Nations, General Assembly, *Report of the Legal Sub-committee on the Work of its Fifth Session (12 July – August and 12-16 September 1966) to the Committee on the Peaceful Uses of Outer Space*, Committee on the Peaceful Uses of Outer Space, A/AC.105/35, 16 September 1966; United Nations, General Assembly, *Report of the Legal Sub-committee on the Work of its Fifth Session (12 July – August and 12-16 September 1966) to the Committee on the Peaceful Uses of Outer Space*, Committee on the Peaceful Uses of Outer Space, USSR Proposal A/AC.105/35 WP.32, 16 September 1966; United Nations, General Assembly, *Report of the Legal Sub-committee on the Work of its Fifth Session (12 July – August and 12-16 September 1966) to the Committee on the Peaceful Uses of Outer Space*, Committee on the Peaceful Uses of Outer Space, UAR Proposal, A/AC.105/35 WP. 31, 16 September 1966; United Nations, General Assembly, *Report of the Legal Sub-committee on the Work of its Fifth Session (12 July – August and 12-16 September 1966) to the Committee on the Peaceful Uses of Outer Space*, Japan Amendment, Committee on the Peaceful Uses of Outer Space, A/AC.105/35 WP. 28, 16 September 1966; United Nations, General Assembly, *Report of the Legal Sub-committee on the Work of its Fifth Session (12 July – August and 12-16 September 1966) to the Committee on the Peaceful Uses of Outer Space*, United Kingdom Proposal, Committee on the Peaceful Uses of Outer Space, A/AC.105/35 WP. 17, 16 September 1966; United Nations, General Assembly, *Report of the Legal Sub-committee on the Work of its Fifth Session (12 July – August and 12-16 September 1966) to the Committee on the*

Ultimately, even though the Outer Space Treaty does not explicitly characterize outer space, as a subject, it does, however, through its general provisions of permissiveness and detailed provisions of restrictiveness, structure the spatial dialectic between outer space and its uses by the human in a way as to not objectify outer space. Consequently, space law manages to set out the theoretical underpinnings for a regime that will liberate outer space from the constructivist dangers of the *capitalocene*.²⁸⁰

2.4. A SPATIAL REMAKING IN SPACE LAW

The analysis of the Outer Space Treaty's understanding of the relationship between humans and space, *or* between human action and outer space, is, it seems, telling a story of spatial transformation. It renders outer space from void to a deterritorialized construct, one that restricts, rather than permits, human action over it. It can, therefore, be argued that the mechanisms of space law, have, to a certain extent and up to now, managed to preserve the natural state of outer space as beyond territorial controls in both a physical and legal dimensions. Had it not been for a legal construct detaching outer space from territorial standards, the natural tendency of the human to objectify and territorialize its surrounding natural environment would have, perhaps, converted outer space – at least the tangible parts of it²⁸¹ – into objectified plots of nature.

Peaceful Uses of Outer Space, USA Amendment, Committee on the Peaceful Uses of Outer Space, A/AC.105/35 WP. 3, 16 September 1966; United Nations, General Assembly, *Draft Treaty Governing the Exploration of the Moon and other Celestial Bodies* – Letter dated 16 June 1966 from the Permanent Representative of the United States of America addressed to the Chairman of the Committee on the Peaceful Uses of Outer Space, Committee on the Peaceful Uses of Outer Space, A/AC.105/32, 17 June 1966.

²⁸⁰ The concept will be further elaborated in Chapter II, Part 1.3.

²⁸¹ Such resources can include surface material, subsurface material, such as mineral resources, solar power energy, and orbits; see Philip De Man, *Exclusive Use in an Inclusive Environment – The Meaning of the Non-Appropriation Principle for Space Resource Exploitation* (Switzerland: Springer, 2016), Chapter 5.

The problem of the objectification of natural areas has caused significant concern in many disciplines; a concern that is expressed in the scholarship. The problem, however, was not realized during the process of the sociogenetic structuring of environment and the institutionalization through law of such sociogenetically produced spaces. As the degradation of the environment and the ever-alarming scarcity of resources has been occurring in recent years,²⁸² scholars have been focusing on the issue by suggesting legal solutions for the governance of global commons.²⁸³

Accordingly, the problem of objectification of natural areas and that of their structuring according to and subjected to the sociopolitical territorial standards of each era's *capitalocene*, has often been addressed in law and legal scholarship through the concept of stewardship.²⁸⁴ Historically, the concept finds its roots in theology and considers the relationship between people and the world as a relationship of protection whereby people must accomplish all they can to protect and preserve nature from degradation and alteration due to sociopolitical, or simply human, habits and needs.²⁸⁵ According to this concept, the relationship that connects nature and human is based on a bound of trust, where the human is, by nature or God, entrusted with the responsibility to use natural spaces in a way as not to disturb and unbalance the ecosystem's natural state.²⁸⁶ The concept has also

²⁸² United Nations, "Rate of Environmental Damage Increasing Across Planet but still Time to reverse worst Impacts" (19 May 2016), online: UN <<https://www.un.org/sustainabledevelopment/blog/2016/05/rate-of-environmental-damage-increasing-across-planet-but-still-time-to-reverse-worst-impacts/>>.

²⁸³ Paul G Harris, *Climate Change and Ocean Governance: Politics and Policy for Threatened Seas* (Cambridge: Cambridge University Press, 2019); Dorothea Wehrmann, *Critical Geopolitics of the Polar Regions: An Inter-American Perspective* (Oxon: Routledge, 2019); Fanny Thornton, *Climate Change and People on the Move: International Law and Justice* (Oxford: Oxford University Press, 2018); Claude Henry & Laurence Tubiana, *Earth at Risk: Natural Capital and the Quest for Sustainability* (New York: Columbia University Press, 2018); Klaus Bosselmann, *Earth Governance: Trusteeship of the Global Commons* (United Kingdom: Edward Elgar, 2015); Samuel Cogolati & Jan Wouters, *The Commons and a New Global Governance* (United Kingdom: Edward Elgar, 2018).

²⁸⁴ Neyrat, *The Unconstructable Earth: An Ecology of Separation*, *supra* note 34 at 64-65; Kathryn Milun, *The Political Commons: The Cross-Cultural Logic of the Global Commons* (Oxon: Routledge, 2011); F Stuart Chapin et al, eds, *Principles of Ecosystem Stewardship: Resilience-Based Natural Resource Management in a Changing World* (New York: Springer, 2009); Martin J Clifford et al, eds, *Extracting Innovations: Mining, Energy, and Technological Change in the Digital Age* (Florida: Taylor & Francis, 2018).

²⁸⁵ Lisa Sideris, "Environmental Ethics, Ecological Theology and Natural Selection" in Ribert James Berry, ed, *Environmental Stewardship – Past and Present* (London: T&T Clark International, 2006) at 519-173.

²⁸⁶ *Ibid.*

been suggested at the Earth scale where the capacities – at all levels – of the Earth must be protected from alteration rendering the human responsible for achieving this purpose. The scholarship that addresses the environmental/Earth stewardship theory, for instance, considers the entrustment of the human with this mission as a natural consequence given that the well-being of nature is directly affecting the well-being of human life in it. “The goal of Earth Stewardship is” according to a multi-authored study, “not to protect nature from people; it is to protect nature for human welfare.”²⁸⁷

Furthermore, the concept was recently used in domestic laws for the protection and preservation of natural areas and resources, such as rivers and mountains, where natural areas and resources are attributed legal personality, while their management is entrusted to a board of trustees, who are mandated to respect and protect the interests of the natural areas and resources. Specifically, Ecuador initiated the adoption of the concept in a legal mechanism by recognizing nature as a subject with rights emerging from the country’s constitution. “Nature ...,” provides the Constitution, “where life is reproduced and created, has the right to integral respect for her existence, her maintenance and for the regeneration of her vital cycles, structure, functions and evolutionary processes.”²⁸⁸ Based on this provision, a juridical provincial decision recognized the right of river Vilcabamba and ruled the termination of the river’s dumping in 2011.²⁸⁹ New Zealand also adopted a similar legal practice for the protection of a densely forested area and a river, the Te Urewera area and the Te Awa Tupua/Whanganui river, respectively.²⁹⁰ In the first case, the Te Urewera area, which is considered a spiritual area, was recognized as a legal person

²⁸⁷ F Stuart Chapin et al, “Earth Stewardship: Science for Action to sustain the Human-Earth System” (2011) 2:8 *Ecosphere* 1-20 at 1.

²⁸⁸ Ecuador Constitution, title II, Chapter 7, Articles 71-74.

²⁸⁹ *Sentence No 11121-2011-0010*, Provincial Court of Justice of Loja (30 March 2011).

²⁹⁰ Benjamin J Richardson, *Time and Environmental Law: Telling Nature’s Time* (Cambridge: Cambridge University Press, 2017) at 379.

with “all the rights, powers, duties, and liabilities of a legal person”²⁹¹ through the *Te Urewera Act* of 2014.²⁹² The Act protects the “natural and cultural values”²⁹³ of the area as well as its “indigenous ecological systems and biodiversity, and its historical and cultural heritage.”²⁹⁴ The representation of the area takes place through a board tasked with the management of the area towards the protection of the area’s interests.²⁹⁵ In the second case, the Te Awa Tupua/Whanganui river received legal personality with the *Te Awa Tupua Act* of 2017,²⁹⁶ in which the river is described as an “indivisible and diving whole, comprising the Whanhanui River from the mountains to the sea, incorporating all its physical and metaphysical elements,”²⁹⁷ and to be “a legal person [with] all the rights, powers, duties, and liabilities of a legal person.”²⁹⁸ The river is

²⁹¹ New Zealand, *Te Urewera Act*, 2014, Public Act 2014 No 51, Part 1, Subpart 3, Article 11 “The Urewera declared to be legal entity”:

- (1) Te Urewera is a legal entity, and has all the rights, powers, duties, and liabilities of a legal person.
- (2) However,
 - (a) the rights, powers, and duties of Te Urewera must be exercised and performed on behalf of, and in the name of, Te Urewera— (i) by Te Urewera Board; and (ii) in the manner provided for in this Act; and
 - (b) the liabilities are the responsibility of Te Urewera Board, except as provided for in section 96.

²⁹² *Ibid.*

²⁹³ *Ibid.*, Part 1, Subpart 1, Article 4 “Purpose of this Act”:

The purpose of this Act is to establish and preserve in perpetuity a legal identity and protected status for Te Urewera for its intrinsic worth, its distinctive natural and cultural values, the integrity of those values, and for its national importance, and in particular to

- (a) strengthen and maintain the connection between Tūhoe and Te Urewera; and
- (b) preserve as far as possible the natural features and beauty of Te Urewera, the integrity of its indigenous ecological systems and biodiversity, and its historical and cultural heritage; and
- (c) provide for Te Urewera as a place for public use and enjoyment, for recreation, learning, and spiritual reflection, and as an inspiration for all.

²⁹⁴ *Ibid.*

²⁹⁵ *Ibid.*, Part 2, Subpart 1, “Te Urewera Board,” Articles 16-49.

²⁹⁶ New Zealand, *Te Awa Tupua (Whanganui River Claims Settlement) Act*, 2017, Public Act 2017 No 7, 20 March 2017.

²⁹⁷ *Ibid.*, Part 1, Subpart 2, Article 12 “Te Awa Tupua recognition.”

²⁹⁸ *Ibid.*, Part 1, Subpart 2, Article 12 “Te Awa Tupua declared to be legal person”:

- (1) Te Awa Tupua is a legal person and has all the rights, powers, duties, and liabilities of a legal person.
- (2) The rights, powers, and duties of Te Awa Tupua must be exercised or performed, and responsibility for its liabilities must be taken, by Te Pou Tupua on behalf of, and in the name of, Te Awa Tupua, in the manner provided for in this Part and in Ruruku Whakatupua – Te Mana o Te Awa Tupua.

represented by an office jointly composed of a representative of the Crown and one of the Whanganui Maori people, an indigenous community that has historically centered its living and activities on the waters of the river.²⁹⁹ According to the Act, the office is mandated to be “the human face”³⁰⁰ of the river and act on its behalf and in its interests and values.³⁰¹ A similar logic was followed in India, when the rivers Ganga and Yamuna were recognized as legal persons through a regional High Court decision in 2016.³⁰² The Court found that the preservation of the natural environment of the rivers and their cultural value would be protected by rendering them “juristic/legal persons/living entities having the status of a legal person with all corresponding rights, duties and liabilities of a living person.”³⁰³ Through the judgement regional officials were appointed as *in loco parentis*³⁰⁴ for the areas and their natural characteristics similarly to the cases in New Zealand and Ecuador. However, the decision was later annulled.³⁰⁵

These regulations and provisions imply the application of the concept of environmental/Earth stewardship by subjectifying natural areas and resources through the formation of entities entrusted with their protection and preservation. It seems, therefore, that the concept of stewardship and its application over natural areas and resources through legal means would terminate the

²⁹⁹ *Ibid*, Part 1, Subpart 3, Article 18 “Establishment, purpose, and powers of Te Pou Tupua”:

- (1) The office of Te Pou Tupua is established.
- (2) The purpose of Te Pou Tupua is to be the human face of Te Awa Tupua and act in the name of Te Awa Tupua.
- (3) Te Pou Tupua has full capacity and all the powers reasonably necessary to achieve its purpose and perform and exercise its functions, powers, and duties in accordance with this Act.

³⁰⁰ *Ibid*.

³⁰¹ *Ibid*, Subpart 3, Article 19 “Function of Te Pou Tupua,” Paragraph 2:

Without limiting subsection (1), Te Pou Tupua, in performing its functions,

- (a) must act in the interests of Te Awa Tupua and consistently with Tupua te Kaw. ...

³⁰² *Salim v State of Uttarakhand*, High Court of Uttarakhand, No 126 of 2014, 5 December 2016.

³⁰³ *Ibid* at paragraph 19.

³⁰⁴ *Ibid* at paragraphs 19-20.

³⁰⁵ BBC, “India’s Ganges and Yamuna rivers are ‘not living entities’” (7 July 2017), online: BBC <<https://www.bbc.com/news/world-asia-india-40537701>>.

objectification of natural areas and resources through space-constructive and institutionalizing mechanisms of law.

However, the approach has faced a lot of skepticism, especially in the scholarship on indigenous communities and by indigenous scholars. The main argument that formed negative response to the practice was based on the practical incapacity of the mechanism to terminate this process of objectification. First, entrusting the future of a natural area to an entity composed of humans would not assure objectivity regarding the true interests of the natural areas and resources. Despite the attribution of legal personality to these areas, their management is still subject to the decisions of humans, thus creating a relationship of hierarchy between the natural areas and resources and their management, whereby the natural areas are inferior to their decision-makers. According to the rationale of the laws the issue of subjectivity in the decision-making process is addressed with the involvement of representatives of indigenous communities who depend on the preservation and conservation of these natural areas and resources; therefore, they would never take decisions with harmful implications to the resources as they depend – and have traditionally depended – on them. The composition of the representative entities, however, includes also non-indigenous persons, thus rendering the decisions over the future of the natural areas and resources product of negotiation among the members of the representative entities and, as a result, influenced by sociopolitical and economic interests. Therefore, the application of the concept of environmental/Earth stewardship in law does not resolve the issue of objectification – except to a very limited extent – neither at the theoretical nor at the practical levels. Indigenous voices support that they do not wish to manage, and consequently preserve and conserve, the nature as they consider themselves as part of it and, therefore, they are not superior to the nature in order to be

able to govern its future.³⁰⁶ Consequently, the mere acceptance that an area can be governed and regulated by an entity recounts once more the discourse on colonialism, and the social processes of objectification, and territorialization of space.

Furthermore, even if one accepts that this concept would, to a certain extent, be effective at the local level, it would be difficult to think as possible the impartial management of global areas, such as outer space, through a board of trustees given the magnified scale of sociopolitical and economic tensions as well as of geopolitics at the international and global levels. As a result, the value of the concept in eliminating the objectification and territorialization of natural areas would be limited, let alone at a global – or even more cosmic scale.

The concept of stewardship has, indeed, been suggested in the literature as a concept appropriate to be reflected in the regulation of outer space for over thirty years.³⁰⁷ More specifically, the concept has been proposed in the context of the management of outer space as a resource for humanity.³⁰⁸ The problem, however, in applying the concept to the regulation of outer space would be multifaceted: first, it would be incompatible with the current international space law, particularly with the Outer Space Treaty; second, as this thesis discussed earlier, it would facilitate a process of objectification and territorialization of outer space, and; third, it would create a

³⁰⁶ Anne Ross et al, *Indigenous Peoples and the Collaborative Stewardship of Nature – Knowledge Binds and Institutional Conflicts* (Oxon: Routledge, 2016) at Chapter 5.

³⁰⁷ Robin Attfield, “Environmental Sensitivity and Critiques of Stewardship” in Ribert James Berry, ed, *Environmental Stewardship – Past and Present* (London: T&T Clark International, 2006) 76-91 at 86; Joseph J Ward, “Black Gold in a White Wilderness – Antarctic Oil: The Past, Present and Potential of a Region in Need of Sovereign Stewardship” (1998) 13 J Land Use & Env’tl L 363-397; National Research Council, Division on Earth and Life Studies, Polar Research Board, Committee on Principles of Environmental Stewardship for the Exploration and Study of Subglacial Environments, *Exploration of Antarctic Subglacial Aquatic Environments: Environmental and Scientific Stewardship* (Washington: The National Academies Press, 2007), at 105; R B Jain, *Environmental Stewardship and Sustainable Development* (Friedrich Ebert Stiftung, 1997); Michael Meltzer, *When Biospheres Collide: A History of NASA’s Planetary Protection Programs* (United States: NASA, 2010); National Research Council, Division on Engineering and Physical Sciences, Aeronautics and Space Engineering Board, Space Studies Board, Committee on the Rationale and Goals of the U.S. Civil Space Program, *America’s Future in Space: Aligning the Civil Space Program with National Needs* (Washington: The National Academies Press, 2009).

³⁰⁸ *Ibid.*

hierarchical relationship between human and outer space, therefore, offering the machinery for exploitation, rather than protection, preservation, and conservation of outer space. The incompatibility of the concept with the letter and spirit of the Outer Space Treaty lies in the foundational provision of the latter, which states that:

The exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind.³⁰⁹

With this provision, space law rejects any future regime that would potentially govern and regulate outer space as such. Instead, it welcomes regulation of the human behavior over outer space, thus eliminating the possibility that a hierarchical structure between outer space as a natural area and its use by the human, with the latter being superior, be created.

Particularly important is the characterization of the use of outer space as the “province of all mankind.”³¹⁰ This provision is most often misunderstood in the space law literature in two ways. First, scholars often misread the article, which results in the wrong understanding of its essence. Indeed, most often the characterization “province of all mankind” is interpreted and understood as addressing outer space itself. It has been observed, for instance, that “the notion of states sharing a common interest in the exploration and use of outer space has led the international community to declare outer space to be the ‘province of all mankind’.”³¹¹ In that way, the understanding of outer space itself, as a natural area, as the “province of all mankind” is automatically initiating its consideration as an object available to all mankind; hence a process of objectification in the legal perception of outer space begins. Second, a large part of scholarship understands the exploration

³⁰⁹ *Outer Space Treaty*, *supra* note 1, Article I, Paragraph 3.

³¹⁰ *Ibid.*

³¹¹ David Tan, “Towards a New Regime for the Protection of Outer Space as the Province of All Mankind” (2000) 25:1 *Yale Journal of Int’l L* 146-194 at 146.

and use as being the province of all mankind in the literal sense of the term province.³¹² In that way, outer space is perceived as a natural extension of the Earth and, therefore, as an object whose use naturally belongs to humankind.

Both misconceptions ignore the original rationale of this provision. In fact, the provision was included in the Outer Space Treaty to “add ... a little gloss to the freedom of exploration and use in para. 2 of Art. I,”³¹³ as Lyall and Larsen note. Indeed, the provision was enshrined in the first article of the Treaty in order to emphasize the obligation for inclusivity in the exploration and use of outer space, thus ruling out unilateral or monopolistic space exploration and use practices. As a result, outer space is here presented as a natural area, the use of which should not benefit only a part of humankind. In the same logic, and by simultaneously accepting that nature is also intrinsically connected to humanity and humankind, the exploration and use of outer space could not benefit human activities with simultaneously burdening nature, part of which is outer space itself. Furthermore, the provision, if read contextually and together with article II of the Outer Space Treaty,³¹⁴ which prohibits any human action that amounts to exclusivity over areas of outer space, would lead to the conclusion that the use of outer space, being the “province of all mankind,” should not be made in a way as to enable patterns of unilateral benefit with simultaneous exclusion

³¹² See for example J I Gabrynowicz, “The ‘Province’ and ‘Heritage’ of Mankind reconsidered: A New Beginning” in W W Mendell, ed, *The Second Conference on Lunar Bases and Space Activities of the 21st Century, Proceedings from a conference held in Houston, TX, April 5-7, 1988* (Washington: NASA, 1992) 691-695; Sarah Coffey, “Establishing a Legal Framework for Property Rights to Natural Resources in Outer Space” (2009) 41:1 Case Western Reserve Journal of Int’l L 119-148; Carl Q Christol, “The Common Heritage of Mankind Provision in the 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies” (1980) 14:3 The International Lawyer 429-483; Henry R Hertzfeld & Frans von der Dunk, “Bringing Space Law into the Commercial World: Property Rights without Sovereignty” (2005) 6:1 Chicago J of Int’l L 81-99; Brandon C Gruner, “A New Hope for International Space Law: Incorporating nineteenth Century first Possession Principles into the 1967 Space Treaty for the Colonization of Outer Space in the Twenty-first Century” (2004) 35 Seton Hall L Rev 299-357.

³¹³ Lyall & Larsen, *Space Law – A Treatise*, *supra* note 50 at 62.

³¹⁴ *Outer Space Treaty*, *supra* note 1, Article II: “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.”

of parts of humankind. Therefore, the combination of the two articles could be interpreted as deconstructing a use of exclusivity and reconstructing it into a participatory and inclusive use.

From a linguistic and historical point of view, the word “province” might be confusing as it entails an imperialist connotation being historically linked to the notion of *imperium*. The word was used, for instance, in the expansion of the Roman Empire and, as Elden notes, “a *provincial* [emphasis added] meant a role or task, but came to mean the area under the control of a magistrate.”³¹⁵ To better illustrate the geographical and sociopolitical function of provinces, he continues with the observation that “islands, such as Sicily, Corsica, or Sardinia were *provinciae* [emphasis added], but they also existed within the peninsula and certainly in newly conquered lands.”³¹⁶

This historical and imperial dimension of the term is, however, eliminated in the context of the Outer Space Treaty, first based on the contextual reading of the provision as linked to the restrictions of article II and, second, as the provision does not place the control of the area under the exclusivity of one entity alone, but the exploration and use of it as holistically benefiting humanity.

Ultimately, what the Outer Space Treaty achieves, not only through the “province of all mankind” characterization but also through all the provisions and linguistic choices analyzed above, is to introduce legal institutions that defeat the delineation, objectification, and, at a final level, territorialization of outer space. In that way, the Treaty produces a spatial remaking in the exploration and use of outer space, which rejects the idea of bordered and exclusive action and, therefore, the idea of both physical and metaphorical borders in the exploration and use of outer space.

³¹⁵ Elden, *The Birth of Territory*, *supra* note 15 at 82.

³¹⁶ *Ibid.*

2.5. A WORLDVIEW WITH RECONSTRUCTIVE FUNCTIONS

The connection between land – as part of nature – and human action, or the interaction between humans and land, has particularly concerned the scientific, legal and philosophical communities – not only with regards to outer space but regarding all potentially wealth-producing areas – especially in view of the Earth’s more and more depleting resources and their irrational use and consumption through human activity.³¹⁷ The reflection of human activity on land, as this thesis mentioned earlier, has initiated sociopolitical processes over land – and, therefore, over nature – and has been subjected to a process of objectification, thus transforming nature into a source of wealth-producer. Indeed, recent interdisciplinary scholarship has observed that the transformation and social construction of nature in order to meet human made standards is perilous for the future of nature, including the Earth system as one comprising human beings.³¹⁸ A large part of scholarship identifies the need to construct socio-legal systems that would reverse the destruction of our natural environment and bring it back to a sustainable, as they call it, state.³¹⁹ For instance, we have seen over the past decade the emergence of the concept of social corporate responsibility – a concept inspired by the idea of sustainability – aimed at reconciling the manner in which the nature is used and the objectives of economic, as well as industrial, development.³²⁰ It is also true, however, that the idea of sustainability has also been critiqued by many as a solution of form rather

³¹⁷ See generally Edward O Wilson, *Half-Earth – Our Planet’s Fight for Life* (New York: W W Norton & Company, 2016).

³¹⁸ Neyrat, *The Unconstructable Earth: An Ecology of Separation*, *supra* note 34 at 65-67.

³¹⁹ Paul Anderson, *Reforming Law and Economy for a Sustainable Earth: Critical Thought for Turbulent Times* (Oxon: Routledge, 2015); David Grinspoon, *Earth in Human Hands: Shaping our Planet’s Future* (New York: Grand Central Publishing, 2016); Thaddeus R Miller, *Reconstructing Sustainability Science: Knowledge and Action for a Sustainable Future* (Oxon: Routledge, 2015); Robert B Northrop & Anne N Connor, *Ecological Sustainability: Understanding Complex Issues* (London: CRP Press, 2013).

³²⁰ Braden Allenby, *Reconstructing Earth: Technology and Environment in the Age of Humans* (Washington: Island Press, 2005).

than substance. In the place of sustainability, they argue, the concept of sensitivity over nature should be considered.³²¹

Some of these approaches are inspired by scholarship in indigenous studies, where the relationship between human and nature is understood as one of unity. The indigenous worldview, this part of the scholarship argues, is composed of four characteristics: a normative, a collective, a relational, and a spiritual, all interconnected.³²² According to this view, all natural areas must be considered as united with the human and, as a result, the protection, preservation, and conservation of the former would ensure the protection and preservation of the latter. All elements, the normative, the collective, the relational, and the spiritual, are presented as intrinsically linked with each other to the extent that it is often hard to distinguish barriers among them. The spirituality of nature, for example, by way of a divine power is considered to have the capacity to lead human action in a relational and collective manner.³²³ The relationality is, according to this view, an intersubjective relationality, whereby as subjects are not considered only the human actors, but also the nature. Therefore, based on this worldview of unity, a relationship of relationality exists between all subjects of nature, human and non-human. Therefore, adopting practices incompatible with the divinity of the environment and destructive towards nature would have an effect of colonization – in the sense of unilateral exercise of power over an entity, the natural area. Similarly, the collective action is an essential element in the indigenous worldview in that it enables a mechanism of

³²¹ See generally W M Adams & Martin Mulligan, *Decolonizing Nature: Strategies for Conservation in a Post-colonial Era* (United Kingdom: Earthscan Publications, 2003); John Borrows, *Law's Indigenous Ethics* (Toronto: University of Toronto Press, 2019). See also Christian N Madu & Chu-Hua Kuei, eds, *Handbook of Sustainability Management* (Singapore: World Scientific Publishing, 2012) at 303.

³²² Neil H Kessler, *Ontology and Closeness in Human-Nature Relationships: Beyond Dualisms, Materialism and Posthumanism* (Switzerland: Springer, 2019) at 99-106, 123-124, 142, 147. See also Gleb Raygorodetsky, *The Archipelago of Hope: Wisdom and Resilience from the Edge of Climate Change* (New York: Pegasus Books, 2017); Douglas Nakashima et al, *Indigenous Knowledge for Climate Change Assessment and Adaptation* (Cambridge: Cambridge University Press, 2018).

³²³ See John Studley, *Indigenous Sacred Natural Sites and Spiritual Governance: The Legal Case for Juristic Personhood* (Oxon: Routledge, 2019) at Chapter 3.

common decision making, which would have a reconciling force between nature-protective and nature-destructive practices.³²⁴ As a result, the last element, the normativity that such a mechanism would produce would be a normativity of the collective, a normativity reflecting a harmonious relationship of unity between nature and human, thus reproducing the harmonious coexistence of both.

Based on this approach, the indigenous worldview, a view that is also very close to the rationale of the Outer Space Treaty, rejects the concept of sustainability, as a concept ineffective to regulate human action over natural areas. Instead, the concept of sensitivity towards nature is suggested as a concept closer to the functions of the environment than to those of human societies. In particular, it is suggested that this concept must replace our thinking in international law especially as it regards global commons and natural areas of global importance.³²⁵ In contrast to sustainability, which is a concept reflecting an element of reconciliation between a value-based understanding of nature and its initial – natural – state, the concept of sensitivity towards nature focuses on understanding global values emerging from the functions of nature and reproducing them into the legal sphere, especially into regimes that govern human action over natural global areas. In this manner, the concept of sensitivity, suggests that law transcribes natural values and uses the institutionalization processes of law to reconstruct the relationship between human and nature.

The regulation and governance of the use of outer space, could fall within the scope of the same approach, not only as outer space is considered to be a global commons, *or* an area of global

³²⁴ Harvey A Feit, “Neoliberal Governance and James Bay Cree Governance: Negotiated Agreements, Oppositional Struggles, and Co-Governance” in Mario Blaser et al, eds, *Indigenous Peoples and Autonomy: Insights for a Global Age* (Vancouver: UBC Press, 2010) at 49-79.

³²⁵ Kessler, *Ontology and Closeness in Human-Nature Relationships: Beyond Dualisms, Materialism and Posthumanism* *supra* note 322; Nakashima et al, *Indigenous Knowledge for Climate Change Assessment and Adaptation*, *supra* note 322; *Disrobing the Aboriginal Industry: The Deception behind Indigenous Cultural Preservation* (Canada: McGill-Queen’s University Press, 2008) at 218.

interest, but simply as it is part of nature. As discussed earlier, human action over areas, such as outer space, has gradually been influenced by socioeconomic realities to such an excessive extend that the relationship between human and nature is now considered to be ruled by the function of a *capitalocene*.³²⁶ For many interdisciplinary scholars the distortion of the relationship between human and nature is now at a stage where the “historical timeline” has reached the “geological timeline” of the Earth,³²⁷ therefore revealing the continuation of current resource exploration and exploitation not only unsustainable but, most importantly, lacking sensitivity towards nature. Despite the fact that the “historical timeline” has not yet reached the “cosmic timelines,” it is headed to the same direction, given the aggressiveness of the currently planned exploitation activities of outer space, especially the natural resources of planets, comets, and asteroids,³²⁸ as the second chapter of the thesis will discuss.

Space law, indeed, takes part in this debate through the environmental provisions contained in the Outer Space Treaty. However, in this case the Outer Space Treaty, despite its deterritorializing and anticolonial visions and function, lacks behind. The sole article that regulates the relationship between human activity and outer space as part of nature, article IX,³²⁹ focuses on an

³²⁶ Neyrat, *The Unconstructable Earth: An Ecology of Separation*, *supra* note 34 at 63.

³²⁷ Dipesh Chakrabarty, “The Anthropocene and the Convergence of Histories” in Clive Hamilton et al, eds, *The Anthropocene and the Global Environmental Crisis: Rethinking modernity in a New Epoch* (Oxon: Routledge, 2015); J R McNeill, “The Advent of the Anthropocene” in W John Kress & Jeffrey K Stine, eds, *Living in the Anthropocene: Earth in the Age of Humans* (Washington: Smithsonian Institution, 2017).

³²⁸ See generally Natalie Starkey, *Catching Stardust: Comets, Asteroids and the Birth of the Solar System* (London: Bloomsbury, 2018) at 197-225.

³²⁹ *Outer Space Treaty*, *supra* note 1, Article IX:

In the exploration and use of outer space, including the Moon and other celestial bodies, States Parties to the Treaty shall be guided by the principle of cooperation and mutual assistance and shall conduct all their activities in outer space, including the Moon and other celestial bodies, with due regard to the corresponding interests of all other States Parties to the Treaty. States Parties to the Treaty shall pursue studies of outer space, including the Moon and other celestial bodies, and conduct exploration of them so as to avoid their harmful contamination and also adverse changes in the environment of the Earth resulting from the introduction of extraterrestrial matter and, where necessary, shall adopt appropriate measures for this purpose. If a State Party to the Treaty has reason to believe that an activity or experiment planned by it or its nationals in outer space, including the Moon and other celestial bodies, would cause potentially harmful interference with activities of other States Parties in the peaceful exploration and use of outer space, including the Moon and other celestial bodies, it

intersubjective relationship between States, rather than a dialectic relationship between human and nature. In other words, although the Treaty opens the dialectic between human action and space in the generic notion of the term, it does not consider the relationship between human and outer space as intersubjective and as an intrinsic part of nature. The focus on intersubjectivity of States can be revealed through the wording that is used in the Treaty to describe the relationship between human activity and outer space. Article IX provides that “[i]n the exploration and use of outer space including the Moon and other celestial bodies, States Parties to the Treaty shall be guided by the principle of cooperation and mutual assistance.”³³⁰ Both the principle of cooperation and that of mutual assistance focus on the construction of peaceful and anticolonial correlations among States as users of outer space. Nevertheless, as discussed earlier, the lack of sensitivity towards the environment could lead to a colonization of the environment itself. In that way, outer space is presented as an entity receiving the effects of human activity, whereas the States as producers of these effects. States Parties, the Treaty continues, “shall conduct all their activities in outer space, including the Moon and other celestial bodies, with due regard to the corresponding interests of all other States.”³³¹ Considering that part of the interests of States is the preservation and conservation of nature, as an element prerequisite to their own preservation, this provision could be thought as an indication towards an approach of unity between nature and human-made activity. However, the link is neither direct nor clear. Therefore, further clarification through more elaborate provisions based on an approach of sensitivity towards nature is needed.

shall undertake appropriate international consultations before proceeding with any such activity or experiment. A State Party to the Treaty which has reason to believe that an activity or experiment planned by another State Party in outer space, including the Moon and other celestial bodies, would cause potentially harmful interference with activities in the peaceful exploration and use of outer space, including the Moon and other celestial bodies, may request consultation concerning the activity or experiment.

³³⁰ *Ibid.*

³³¹ *Ibid.*

The integration of such provisions in the body of space law are essential especially taking into account the emerging interest in the exploitation of space natural resources, as I discuss in the next chapter. The potential of this activity to cause change to the natural environment, to deteriorate the state of nature, and to convert outer space into an object with wealth-producing capacities,³³² are some of the most fundamental justification bases for this need. Therefore, the capacity of law to take the role of *technology*, as presented in the beginning of this chapter, should, in this case, be considered as one technologizing the missing sensitivity in the relationship between human and outer space. Despite the anticolonial character of the Outer Space Treaty and its objective to maintain a state of equality among States, this anticolonial dynamic has not been successfully and explicitly extended to the relationship between human and nature. Consequently, the lack of further rules addressing the relationship between human activity over outer space with special emphasis on the exploitation of space natural resources are emerging colonial dangers not only with regards to the human behavior over outer space (nature) but also among States and other actors involved. That is, given that the interest in the preservation of the natural environment and its resources is of global nature, the change or deterioration of this environment would entail consequences on all the actors concerned.

Therefore, unregulated human behavior towards the exploitation of outer space and its natural resources would create a dual normativity. On the one hand, a normativity created through the human action over outer space and its resources *per se*. On the other hand, a normativity reflected on the relationships among all actors involved, whether they be States, private entities, or simply, the human being. This type of unregulated normativity, which is not based on legal rules, but rather

³³² See generally Martin Elvis & Tony Milligan, “How much of the solar system should we leave as wilderness?” (2019) *Acta Astronautica* (in press – only press copy available).

on performative actions, would have the capacity to reproduce the colonial dynamics of international law and bring space law many steps back. In other words, given the fast pace in which space resources exploitation activities are currently advancing – on all fronts, technological, economic, political, legal – the facts will precede the law and lead to a non-legal normativity which will not be easily reversed reactively through the means of law.

Finally, the difficulty in the construction, and even more implementation, of a legal framework ensuring the sensitivity of human actors towards the use of nature – as far as human activities over space natural resources are concerned – would undoubtedly prove to be without precedent. This is due to the economically and politically strategic importance entailed in the access to outer space and its resources³³³ and to the consequent difficulty in taming the human nature and reversing the phenomenon of the *capitalocene* through principles and laws that would not see nature and natural wealth as meant to be subjected to human-made processes of objectification.

CONCLUSION

“So, the great Herakles, your fame precedes you.” Antaeus, when he finally met him, was surprisingly smooth. ... His attitude was too-self-assured. Nor was his build at all a wrestler’s – in fact, he was scrawny, observed Herakles. There must be a secret. He began to suspect that Antaeus had some hidden help. But by the next morning, when the match began, Herakles had not yet discovered what the secret was. The two men eyed one another. Herakles was the first to make his move. Using a weight-shifting trick ... he quickly threw Antaeus and pinned him. “This is going to be easy, after all,” he thought. But as he held his opponent to the ground, he began to feel something like a minor earthquake. It was Antaeus himself, quivering, his muscles. ... Before Herakles could change position, Antaeus erupted, tossing off the hero as though he were an insect atop a volcano. ... It was Earth, obviously, that gave Antaeus strength. Once Herakles thought this through logically, the solution began to come to him. The opposite of wrestling was what was needed. At the next clench, instead of doing what the first rule called for ..., Herakles lifted Antaeus off the ground, hefting him

³³³ Malcolm Davis, “China, the US and the Race for Space” (12 July 2018), online: The Strategist <<https://www.aspistrategist.org.au/china-the-us-and-the-race-for-space/>>.

*on high like a sack of barley. He could feel the power draining from the tyrant's limbs. The longer he held him, the lighter and weaker he seemed, until, with a final toss, Herakles could hurl him like a shot put. Antaeus hit a nearby hillock and cracked in two.*³³⁴

In the Greek myth quoted above, Antaeus, a giant and son of Gaia, the goddess of Earth, and Poseidon, the god of the Sea, draws his strength from nature (Earth) and manages to defeat all the strangers who attempt to pass through the area that he guards. Each time Antaeus is losing his strength and is about to be defeated, he touches the Earth and regains his powers. Herakles, having discovered his secret source of power, detaches Antaeus' body from the Earth and, in that way, manages to defeat the giant. This myth demonstrates the importance of understanding how the relationship between human and nature is a critical element to our existence. At the same time, the myth reflects the dependence of our survival on nature and, consequently, the importance of crafting laws that do not locate sociopolitical realities and needs above nature. However, whether it be through sociopolitical and economic processes alone, or through their reflection in law, parts of nature, international law has shown, are transformed and adjusted to sociopolitical and economic standards, thus rendering the human *de facto* superior to nature. Consequently, the emergence of international law as regulating areas of nature *per se*, has led – to a significant extent – to their objectification and, through sociolegal processes, to their territorialization and transformation into a humanized environment.

Space law, on the other hand, despite being a product of geopolitics, has achieved to protect outer space – excluding the production of space debris, which is, once more, a result of an objectification and territorialization process³³⁵ – from human activity to a significant extent. In this chapter, I discussed how legal constructs, as space-making technologies, contributed to both processes: the

³³⁴ Richard P Martin, *Myths of the Ancient Greeks* (New York: The New American Library) at Chapter 34.

³³⁵ The term *territorialization* is used to refer to the spatial fixity of satellites in outer space as they physically occupy specific orbital slots and constitute the main source of space debris.

colonial and territorial international law and the a-territorial and anticolonial space law. The main difference between the two legal constructs, this chapter found, is, in the case of international law, the direct reflection of sociopolitical and economic dynamics on the regulation of the involved natural space; whereas, in the case of space law, the reflection of the same dynamics on the regulation and governance of the human activity over outer space rather than on outer space as an object itself. Accordingly, containing more restrictions to the human activity than freedoms, space law, has achieved, thus far, to deconstruct the territorial and colonial biases of international law and critique its power-derived structures and institutions.

In the next chapter, I will demonstrate how this vision of space law – which, despite its idealistic and romantic character was successful in protecting outer space from the colonial dynamic – is now at the verge of transformation through the economic, political, and legal attempts that introduce new space activities and could – if not treated – enable the reoccurrence of the terrestrial colonial dynamics of territorialization and objectification in the realm of outer space this time. In the following chapter, I will, therefore, demonstrate in what manner domestic legal mechanisms, as well as the function of legal scholarship as a source of knowledge production, have the capacity to defunction the original objectives of space law and render its initial force of sociopolitical reconciliation void before the wealth-promising space resource exploitation realities of our times. After all, whether normativity is constructed through law or factual realities, is a question with a long past and an even longer future. Thus far, the reconstructive concepts and principles of space law have well maintained a harmonious intertwinement between the two. It remains to see whether and in what manner should the existing legal mechanisms be adjusted to face the territory-driven challenges of tomorrow's space activities without transforming outer space into a theater of trade, conquest and, subsequently, even war.

CHAPTER II – THEORIZING THE IMMATERIAL TERRITORIALITY OF OUTER SPACE

*Territory has sometimes been understood
as a political form of abstract space,
but while that can be helpful in understanding its history,
this understanding potentially masks some of the complexities
of relations between people, power, and place.*³³⁶

INTRODUCTION

This chapter constitutes a bridge between the ideal and the real; that is, a bridge between the theoretical space law framework as outlined in the first chapter of this thesis, and the contemporary policies followed by the space industry. While the first, the ideal, is characterized by the innovative legal theoretical construct of a *spaceless* exploration and use of outer space detached from the fixity of *territory*, the second, the real, is characterized by an ever-increasing territory-centered space governance led by the private space industry. This chapter undertakes the role of a bridge between the two and will set the ground for the search of a governance framework for the use, exploration and exploitation of space natural resources striking the balance between theory and practice.³³⁷ As such, this chapter juxtaposes the ideals of *territorylessness* and *spaceness*, as they were first inspired by the vision of the Outer Space Treaty, to today's reality, where these concepts are often considered obsolete by the majority of private and several public space actors, as well as by several space law scholars.

To demonstrate the difference between the ideals of space law and the current reality in the space industry, the concept of normativity is central to this chapter. This concept is used to emphasize

³³⁶ Stuart Elden, "Terrain, Politics, History" (2021) 11:2 Dialogues in Human Geography 170-198 at 171.

³³⁷ This is the focus of the last chapter of this thesis, Chapter III.

that the current economic and sociopolitical dynamics in the space industry and the power-relationships that emerge from them form a new type of norms; norms that exist beyond the sphere of law. This understanding of normativity, which is borrowed from the critical legal scholarship,³³⁸ helps to highlight the dynamism of the subjects (actors) and how such dynamism can be reflected over the object (outer space), thus transforming it into a mirror of the sociopolitical and economic realities that form such normative relationships.

Therefore, this chapter aims to shed light on the extra-legal normative relationships that govern the use of outer space and, consequently, identify their power to form extra-legal frameworks of governance that can ultimately also be transformed into legal ones. This chapter views the property-focused and value-based relationships that currently drive the space industry as having the capacity to transform the *spaceless* and *territoryless* ideals of international space law into property-based and territory-forming new legal realities.

The chapter is divided into two parts. The first part explains how the modern development of space law deviates from the initial space law structures of globality as it is primarily produced unilaterally or at the level of domestic laws. Such deviation, this part of the chapter argues, is characterized by an industry-led pragmatism that significantly diverges from international space law's initial objective to achieve *spacelessness*. Therefore, this part emphasizes the link between such pragmatism and a technocratic space industry that produces a powerful extra-legal normativity, and ultimately a pragmatic modern space law and space law scholarship.

The second part of this chapter goes beyond the formation of such normative relationships to narrate how modern space law is deeply influenced by such relationships and is undergoing a

³³⁸ See Chapter II, Part 2.4.

process of rationalization and instrumentalization. Such a process, the second part of this chapter finds, is indicative of a change in the ideology of both the substance and the procedural production of space law that is now heading towards a space-based normative and legal future for the exploration and use of outer space.

This chapter often uses the example of the regulation of the use, exploration, and exploitation of space natural resources to demonstrate this normativity and change in ideology. The use, exploration, and exploitation of such resources constitutes an ideal example as they involve both the physical element of land use, exploration, and exploitation (material element) as well as the underpinning sociopolitical relationships. Therefore, this example allows us to perceive this normativity and ideological change not only from the perspective of the material element of physical use, exploration, and exploitation, but also at the level of the immaterial territorialities of outer space.³³⁹

1. TECHNE, CRATOS, AND INTERNATIONAL SPACE LAW'S IDEAL OF *SPACELESSNESS*³⁴⁰

This thesis often claimed that the genesis of international space law functioned as a natural critique to the territorial concepts upon which international law was constructed. This was presented as a moment in the history of international law, where States achieved to agree on an exploration and use of an area beyond national jurisdiction through a legal framework that promotes a borderless

³³⁹ See also Chapter I, Part 2.

³⁴⁰ [An earlier version of this part was presented at the conference "Law in Global Political Economy: Heterodoxy Now" organized by the Institute for Global Law and Policy Conference at Harvard Law School in 2018 (presentation title "The Global Power of Corporations in the Governance of Outer Space: A New Empire in the Making?"). The author would like to thank the conference participants for their constructive feedback and comments.]

and inclusive use; a framework that does not even once utilize the term *right*, as the right of one would imply the limitation of another. This part of the chapter debunks this theoretical construct that characterizes international space law as one that is also present in modern space activities. It claims that modern space actors, with emphasis on the private space sector, act in a normative way that creates a parallel order, partly composed of the actions of space actors and partly composed of legal structures (for example, recent domestic space laws) that are driven by such actors.

Therefore, this part of the chapter suggests that the particulars of modern space governance are actor-centered, rather than rule-centered and the modern patterns of space law's creation follow and reflect, rather than contain, the actions of space actors, thus forming a governance of outer space, rather than a governance of the actors that act within it.

1.1. THE PATHOGENESIS OF A PRAGMATIC MODERN SPACE LAW

International space law, as the first chapter of this thesis observed, was built upon the very idea of anticolonialism and the deterritorialization of space.³⁴¹ Understood as a natural critique to the territoriality of international law, the ideology³⁴² of space law was situated as one against the construction of material, or metaphorical, territorialities. The reason that led to such a legal ideology was the urge of the international community to produce a rules-based international legal regime able to halt the colonization of the material and immaterial – sociopolitical – dimensions

³⁴¹ See Chapter I, Part 1.2.

³⁴² The term *ideology* is used to put emphasis on the understanding of law – space law in this instance – as a system of principles and ideals. The term derives from the Greek *idea* (the perception about the material world, or simply, an ideal, a concept, or an archetype) and *logos* (discourse) and refers to a system of principles, concepts, and ideals through which the world is perceived; see “Ideology” in Peter Childs & Roger Fowler, *The Routledge Dictionary of Literary Terms* (United Kingdom: Routledge, 2006) at 114. See also generally Herman Schmid, “On the Origin of Ideology” (1981) 24:1/2 *Acta Sociologica* 57-73.

of outer space.³⁴³ As a result, international space law has emerged as a proactive international legal order against coloniality.

Nevertheless, in contrast with the proactiveness of this *a priori* established anticolonial character, modern space law locates itself within a diametrically opposed ideology: an ideology of pragmatism. Pragmatism, Wellen observes, “display[s] considerable faith in science as a tool for informing the experience and decisions of human beings in their attempts to coordinate means and ends within a shared way of life.”³⁴⁴ A pragmatic legal episteme, then, not only appears as a tool that informs human decision-making but that also contains the capacity to construct the social structures and systems within which the decision-making occurs. Indeed, as Posner writes, legal pragmatism connotes “a determination to use law as an instrument for social ends.”³⁴⁵ And he continues, “legal pragmatism, it is feared, breeds cynicism about law, which in turn induces intellectual laziness.”³⁴⁶ Consequently, pragmatism refers to a methodology “limited in import to issues of specifically philosophical concern”³⁴⁷ and regards law as a means towards the satisfaction of social goals, where the “ideals of direction for human action, posited from a particular historical standpoint, are reshaped as the conditions from which they were originally articulated are transformed.”³⁴⁸ Therefore, pragmatism answers the practicality of law rather than its philosophical underpinnings. Sharing a similar position, Hubbs observes that “a real pragmatism, one worthy of the name, would have to be an everyday pragmatism, focused on the practicalities of quotidian existence.”³⁴⁹ Pragmatism, that is, is inherent to a legal philosophy of reactivity on

³⁴³ See Chapter I, Part 1.3.

³⁴⁴ Richard Wellen, “The Politics of Intellectual Integrity” (2001) 2:1 Max Weber Studies 81-101 at 82.

³⁴⁵ *Ibid.*

³⁴⁶ Richard A Posner, *Law, Pragmatism, and Democracy* (Massachusetts: Harvard University Press, 2003) at 94.

³⁴⁷ Brian Z Tamanaha, *Realistic Socio-legal Theory: Pragmatism and a Social Theory of Law* (Oxford: Oxford University Press, 1997) at 34.

³⁴⁸ Michael Sullivan, *Legal Pragmatism: Community, Rights, and Democracy* (Bloomington: Indiana University Press, 2007) at 36.

³⁴⁹ Graham Hubbs & Douglas Lind, eds, *Pragmatism, Law, and Language* (New York: Routledge, 2014) at 1.

topical and temporal needs of a given society. The ability to react to temporality, however, the critique to pragmatism concludes, converts law into a self-powered authority, or a “menace” as “thanks to its positive image, pragmatism tends to give harmful ideas a good name, bestowing them with the misplaced aura of reason.”³⁵⁰

In legal pragmatism, it would be, therefore, the objectivist appearance of law as truth that could render a pragmatic law into a menace to the social groups it affects. Even more, the belief of the affected group in the objectivism – unquestionability – of the law conceals the power dynamics leading to law’s creation. In other words, pragmatic law functions as *a strategy* or a *technique* that objectifies a reality and institutionalizes ruling authority on it. Dewey describes this relationship – between reality and its conversion into law – as a “relation of reciprocal guidance and enlightenment between the production of techniques and strategies on the one hand and the value orientations of interested groups on the other could be realized within the unquestionable horizon of common sense and an uncomplicated public realm.”³⁵¹

Against such an objectivism of law, traditional space law fought the *menace* of pragmatism by crystalizing principles and ideals, instead of the interests of temporal actors. Accordingly, traditional space law, and principally the Outer Space Treaty, did not undertake the role of *a strategy* or a *technique* converting realities into institutions. For the same reason, the language of traditional space law is one of generalized terminology of freedoms and restrictions both connected to the ideal of *spacelessness* and anticolonialism.³⁵² For example, the Treaty provides freedoms

³⁵⁰ Tara Smith, “The Menace of Pragmatism” (2008) The Objective Standard, online: The Objective Standard <theobjectivestandard.com/2008/08/menace-of-pragmatism/?add-to-cart=10381>.

³⁵¹ Jürgen Habermas, *Toward a Rational Society: Student Protest, Science, and Politics* (Cambridge: Polity Press, 1987) at 69.

³⁵² See Chapter I, Part 2.2.

instead of providing rights.³⁵³ The language of the Treaty remains proactive by constitutionalizing the principles for the exploration and use of outer space rather than institutionalizing occurring realities, or “value orientations of interested groups.”³⁵⁴ For instance, the inclusion of rights in international agreements in the context of human rights law has often been accused of a pragmatic reactivity to occurring realities and, subsequently, for the conversion of reality into an institution. “Human rights,”³⁵⁵ for example, Douzinas writes, “have not been successful in resisting the endless objectification of humanity,”³⁵⁶ in that their role is closer to the reduction of the human being to a ruled object than to an active subject of the order in which it exists.

Contrary to the language of traditional space law, modern space law appears pragmatic in that its ideology is inspired by the crystallization into law of “valued orientations of interested groups,”³⁵⁷ the principal being the group of private space actors and their interests which are understood as rights. Therefore, the rise of modern space law also signals the rise of a system of rights in it. “The

³⁵³ See for example the terminology used in the Outer Space Treaty and, in particular, the language used in Articles I, II, and IX of the Treaty, which provide the foundational freedoms and obligations of the States for the exploration and use of outer space. See also Chapter I, Part 1.4.; *Outer Space Treaty*, *supra* note 1:

The exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind.

Outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies.

There shall be freedom of scientific investigation in outer space, including the Moon and other celestial bodies, and States shall facilitate and encourage international cooperation in such investigation. (Article I)

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. (Article II)

In the exploration and use of outer space, including the Moon and other celestial bodies, States Parties to the Treaty shall be guided by the principle of cooperation and mutual assistance and shall conduct all their activities in outer space, including the Moon and other celestial bodies, with due regard to the corresponding interests of all other States Parties to the Treaty. ... (Article IX)

³⁵⁴ Habermas, *Toward a Rational Society: Student Protest, Science, and Politics*, *supra* note 351 at 69.

³⁵⁵ Costas Douzinas, *The End of Human Rights: Critical Thought at the Turn of the Century* (Oxford: Hart Publishing, 2000) at 214.

³⁵⁶ *Ibid.*

³⁵⁷ Habermas, *Toward a Rational Society: Student Protest, Science, and Politics*, *supra* note 351 at 69.

right of United States citizens to engage in commercial exploration for and commercial recovery of space resources,”³⁵⁸ provides the *United States Commercial Space Launch Competitiveness Act* of 2015,³⁵⁹ while the *United States Executive Order on Encouraging International Support for the Recovery and Use of Space Resources* of 2020³⁶⁰ (hereafter “United States Executive Order of 2020”) refers to “the right to recover and use space resources,”³⁶¹ and the “rights to commercial recovery and use of lunar resources.”³⁶² Similarly, Japan’s *Act on Promotion of Business Activities Related to the Exploration and Development of Space Resources*³⁶³ (hereafter “Japan Space Resources Act”) provides that “the person who obtained the permit owns the space resources that the person exploits in accordance with the approved activity plan.”³⁶⁴ These linguistic examples point to a legal language changing from a language of freedoms to a language of rights.³⁶⁵ And this is where the pathogenesis of pragmatism in modern space law is shaped.

I use the term pathogenesis, to emphasize the suffering that the interest-based modern space law causes to the principle-based older one; the battle between the old and the new, the ideal and the pragmatic, the *spaceless* and the space-centered, a law of principles and a law of rights. I use this word – pathogenesis – to emphasize the gradual forming of an unsustainable sociolegal order for the human approach to outer space. A pathogenesis concealed in a law “focused on the practicalities of quotidian existence”³⁶⁶ of private space actors. I use pathogenesis – as opposed to

³⁵⁸ *United States Commercial Space Launch Competitiveness Act*, *supra* note 124, paragraph 51302.

³⁵⁹ *United States Commercial Space Launch Competitiveness Act*, *supra* note 124.

³⁶⁰ United States, *Executive Order on Encouraging International Support for the Recovery and Use of Space Resources*, 6 April 2020 (hereafter “Executive order of 2020”)

³⁶¹ *Ibid*, Section 1.

³⁶² *Ibid*.

³⁶³ *Act on Promotion of Business Activities Related to the Exploration and Development of Space Resources*, Act No 83 of 2021, 23 June 2021, Official Gazette of Japan (hereafter “Japan Space Resources Act”).

³⁶⁴ *Ibid*, Article 5.

³⁶⁵ In contrast to the general language of principles of the Outer Space Treaty, both the United States Commercial Space Launch Competitiveness Act and the Executive Order of 2020 use a terminology of defined rights. See also *Executive order of 2020*, *supra* note 360 and Chapter I, Part 1.4.

³⁶⁶ Hubbs & Lind, eds, *Pragmatism, Law, and Language*, *supra* note 349 at 1.

pathology³⁶⁷ – to emphasize the genesis of the suffering as synchronous with the genesis of pragmatism in space law and pragmatism as the root of space law’s unsustainable turn.

This pathogenesis of pragmatism has introduced space law into a new era of modernity. An era where, similar to other fields of law, modern space law takes the role of a law that “becomes the absolute or transcendent force, ... expressed in the theory of the sublime.”³⁶⁸ A law where “the immanence of the divine in history ... becomes the immanence of law,”³⁶⁹ or a space law where the immanence of the ideals of traditional space law becomes the immanence of an interest-institutionalizing modern space law.

Indeed, the traditional space law regime, mainly the Outer Space Treaty, has often been characterized in the modern space law scholarship as non-pragmatic enough and, therefore, as lacking the ability to respond to the needs of modern space activities. On the contrary, this scholarship welcomes pragmatic legal approaches to the modern uses of outer space, such as unilateral approaches tailored to the interests of private space actors. “The executive order,”³⁷⁰ Johnson comments, “should not be understood as a unilateral approach, but rather as a strong signal that the United States intends to seek pragmatic and practical resolution of space resources governance questions,”³⁷¹ in his analysis of the Order, which takes a space-based approach to the uses of outer space by promoting private property and commercialization of parts of outer space.³⁷²

³⁶⁷ I use the term *pathogenesis* to emphasize the *genesis* rather than the development of modern space law’s problematic aspects. As opposed to a metaphorical understanding of the term *pathology* – that is the sequence of causes and effects during the development of a problematic situation – pathogenesis only refers to the roots, or causes, that activate the problem.

³⁶⁸ Costas Douzinas, “Prosopon and Antiprosopon” in Costas Douzinas & Lynda Nead, eds, *Law and the Image: The Authority of Art and the Aesthetics of Law* (Chicago: The University of Chicago Press, 1999) at 56.

³⁶⁹ *Ibid* at 57.

³⁷⁰ Ian A Christensen & Chris Johnson, “Putting the White House executive order on space resources in an international context” (27 April 2020), online: The Space Review <<https://www.thespacereview.com/article/3932/1>>.

³⁷¹ *Ibid*.

³⁷² *Executive Order of 2020*, *supra* note 360, Section 1: “Americans should have the right to engage in commercial exploration, recovery, and use of resources in outer space, consistent with applicable law.”

As opposed to the ideals of *spacelessness* and to the principle of cooperation embedded in traditional space law, this Order is one example of the pathogenesis of pragmatism in modern space law. The Order constitutes a reaction to the “uncertainty regarding the right to recover and use space resources, including the extension of the right to commercial recovery and use of lunar resources,”³⁷³ which “has discouraged some commercial entities from participating in this enterprise.”³⁷⁴ The Order, as a corollary to the preestablished domestic space laws on space resources of States such as the United States,³⁷⁵ Luxembourg,³⁷⁶ and Japan, follows the approach of its predecessors. Masked with the pretext of contribution to international cooperation and to the benefits of humanity,³⁷⁷ these juridical realities constitute archetypal examples where the power of groups of actors is institutionalized through legal machinery and is transformed into the power

³⁷³ *Executive Order of 2020*, *supra* note 360.

³⁷⁴ *Ibid.*

³⁷⁵ *United States Commercial Space Launch Competitiveness Act*, *supra* note 124.

³⁷⁶ *Luxembourg Law on the Exploration and Use of Celestial Bodies*, *supra* note 124.

³⁷⁷ See for example the rationale behind the Luxembourg Law on the Exploration and Use of Celestial Bodies as presented by Luxembourg’s Ministry of Economy, according to which “the aim is to stimulate economic growth on Earth and offer new horizons in space exploration.” See The Government of the Grand Duchy of Luxembourg, Ministry of Economy, press release, “Luxembourg to Launch Framework to Support the Future Use of Space Resources” (3 February 2016), online: Luxembourg Space Agency <<https://space-agency.public.lu/en/news-media/press-release.html>>. See also Luxembourg’s Deputy Prime Minister and Minister of the Economy Étienne Schneider, according to which, Luxembourg’s

aim is to open access to a wealth of previously unexplored mineral resources on lifeless rocks hurling through space, without damaging natural habitats. We will support the long-term economic development of new, innovative activities in the space and satellite industries as a key high-tech sector for Luxembourg. At first, our aim is to carry out research in this area, which at a later stage can lead to more concrete activities in space.

See also the comments of the CEOs of private space companies in the same document.

of law.³⁷⁸ And when this power involves a space-based interest,³⁷⁹ then it is the same law that transforms the *spaceless* outer space into a Giddensian “bordered power-container.”³⁸⁰

Therefore, the genesis of pragmatism in national juridical space law environments appears synchronous with the genesis of modern space law’s experience of *pathos*.³⁸¹ It appears synchronous with the rise of an order of unilateralism that replaces multilateralism; with the advent of a modern space law guided by a nationalism that replaces global cooperation; with the dawn of both a structural and substantial fragmentation that appears to replace the Outer Space Treaty’s values of unification.

Indeed, the rise of unilateralism in modern space law is temporally coincidental with the development of the private space industry’s projects for the commercial exploitation of space natural resources, which has led a number of space faring nations to adopt a pragmatic approach to space law.³⁸² Before that, the law-making processes of space law had always maintained a global

³⁷⁸ For instance, see the statement by Scott Pace, the Executive Secretary of the National Space Council of the United States, in which the interests of private space actors are presented as sufficient grounds to change the legal status of outer space. “Outer space,” mentioned Pace, “is not a ‘global commons,’ not the ‘common heritage of mankind.’ Not ‘res communis,’ nor is it a public good” and that “the U.S. private sector must have confidence that it will be able to profit from capital investments made to develop and utilize in-situ resources, commercial infrastructure, and facilities in outer space. Furthermore, certain types of rights and obligations typically associated with exclusive use and private property are needed.” See Scott Pace, “Space Development, Law, and Values,” IISL Galloway Space Law Symposium, 13 December 2017, online: Space Policy Online

<https://spacepolicyonline.com/wp-content/uploads/2017/12/Scott-Pace-to-Galloway-FINAL.pdf?utm_content=buffer66778&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer>.

³⁷⁹ See *United States Commercial Space Launch Competitiveness Act*, *supra* note 124, paragraphs 51302 and 51302. Especially paragraph 51302, which provides that “[a] United States citizen engaged in commercial recovery of an asteroid resource or a space resource under this chapter shall be entitled to any asteroid resource or space resource obtained, including to possess, own, transport, use, and sell the asteroid resource or space resource obtained.” See also the *Luxembourg Law on the Exploration and Use of Celestial Bodies*, *supra* note 124, Article 1, according to which “space resources are capable of being appropriated.”

³⁸⁰ Anthony Giddens, *A Contemporary Critique of Historical Materialism – Vol I* (London: Macmillan, 1981) at 120.

³⁸¹ The term *pathos* is used here to refer to a condition of suffering or problematic state; see “Pathos” in Thomas O Sloane, ed, *Encyclopedia of Rhetoric* (Oxford: Oxford University Press, 2001) at 554 *et seq.*

³⁸² Such States include the United States, Luxembourg, Japan, the United Arab Emirates, and China; *United States Commercial Space Launch Competitiveness Act*, *supra* note 124; *Executive Order of 2020*, *supra* note 360; *Luxembourg Law on the Exploration and Use of Celestial Bodies*, *supra* note 124. See also, “UAE Space Law Details Announced to Facilitate Space Sector Development” (24 February 2020), online: Spacewatch Global <<https://spacewatch.global/2020/02/uae-space-law-details-announced-to-facilitate-space-sector-development/>>; Eleanor Warnock, “Japan Joins Race for Space Resources” (16 December 2016), online: The Wall Street Journal

character and been produced through the channels of multilateralism.³⁸³ Specifically, even though since its inception, international space law has been negotiated by a small number of space-faring nations, with the two main ones being the United States and the former Soviet Union,³⁸⁴ the produced treaties have achieved, in most cases, a world-wide approval due to the inclusive nature of their provisions.³⁸⁵ Similarly, the development of space law – primarily the drafting of the Outer Space Treaty – has often been thought as one guided by the two superpowers of the Cold War era, whereas, at the same time, the Outer Space Treaty is also recognized as one of the most global treaties both structurally, as it is accepted by almost all States,³⁸⁶ and substantially, as it crystalizes global values.³⁸⁷ In addition, the multilateralism of space law has often been thought as having ceased with the production of the Moon Agreement, which entered into force in 1984 and was

<<https://www.wsj.com/articles/japan-joins-race-for-space-resources-1481874269>>; Jacob Gershman, “The Moon is a huge potential resource. But who owns it?” (14 July 2019), online: <<https://www.wsj.com/articles/the-moon-is-a-huge-potential-resource-but-who-owns-it-11563152580>>.

³⁸³ An exception to multilateralism in the development of space law could be bilateral agreements on arms control, including the Strategic Arms Control Limitation (SALT) Agreements of 1972 and 1979 and the Strategic Offensive Reductions Treaty (SORT) Agreement of 2002 between the United States and the Soviet Union. However, these bilateral agreements entail a strategic character and do not address the use of outer space as a resource.

³⁸⁴ Hobe et al, eds, *CoCoSL – Cologne Commentary on Space Law – Volume I – Outer Space Treaty*, *supra* note 163 at 105-151.

³⁸⁵ As of 1 January 2021, the Outer Space Treaty counts 111 States that have ratified it and 23 signatory States. See United Nations Office for Outer Space Affairs, “Status of International Agreements Relating to Activities in Outer Space as at 1 January 2021,” online: UNOOSA

<https://www.unoosa.org/res/oosadoc/data/documents/2021/aac_105c_22021crp/aac_105c_22021crp_10_0_html/A_C105_C2_2021_CRP10E.pdf>.

³⁸⁶ *Ibid.*

³⁸⁷ The Treaty, for example, is built on the values of international cooperation, the common interest of humanity, and the benefit of all peoples irrespective of their scientific and economic status. See Points 2, 3, 4, and 5 of the Preamble of the Treaty:

- (2) *Recognizing* the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes,
- (3) *Believing* that the exploration and use of outer space should be carried on for the benefit of all peoples irrespective of the degree of their economic or scientific development,
- (4) *Desiring* to contribute to broad international cooperation in the scientific as well as the legal aspects of the exploration and use of outer space for peaceful purposes,
- (5) *Believing* that such cooperation will contribute to the development of mutual understanding and to the strengthening of friendly relations between States and peoples ...

ratified by only a limited number of States.³⁸⁸ Nevertheless, the multilateralism of space law did not cease at that moment. A series of soft law legal documents³⁸⁹ and bilateral agreements³⁹⁰ have been concluded since then. And even though soft law does not have a binding effect on States, it signifies, however, an inclusive effort towards global values and standards.

Unilateralism in modern space law, on the other hand, appears temporally linked to the interest of national legal orders in attracting private space investment for the commercial exploitation of space natural resources.³⁹¹ Not long after the first announcements regarding the private space sector's space mining projects, the rise of unilateralism in the regulation of the uses of outer space emerged and brought with it the doubting of the principles embedded in international space law. In other

³⁸⁸ 18 States have ratified, and 4 States have signed the Moon Agreement as of 1 January 2021. See United Nations Office for Outer Space Affairs, "Status of International Agreements Relating to Activities in Outer Space as at 1 January 2021," *supra* note 385.

³⁸⁹ Examples of soft law instruments addressing space activities are: the *Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space* (United Nations Office for Outer Space Affairs, *Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space*, Res 62/217, 22 December 2007), the Inter-Agency Space Debris Coordination (IADC) Committee Space Debris Mitigation Guidelines (*IADC Space Debris Mitigation Guidelines*, IADC-02-01, Rev 1, September 2007, online: UNOOSA <https://www.unoosa.org/documents/pdf/spacelaw/sd/IADC-2002-01-IADC-Space_Debris-Guidelines-Revision1.pdf>), the *Hague Code of Conduct against Ballistic Missile Proliferation* (HCOC) (see Letter dated 30 January 2003 from the Permanent Representative of the Netherlands to the United Nations addressed to the Secretary-General, A/57/724, 57th Sess, Agenda item 66, 6 February 2003), and the *Draft International Code of Conduct for Outer Space Activities* (European Union, Draft International Code of Conduct for Outer Space Activities, European Union, 31 March 2014).

³⁹⁰ See for example SALT and SORT Agreements, *supra* note 383.

³⁹¹ For example, the link between the private space companies and the adoption of space laws regulating the use of outer space at the national, and therefore, unilateral level is apparent in the comments made by Etienne Schneider, Luxembourg's Minister of Economy, in a press release announcing the adoption of the draft Luxembourg Law on the Exploration and Use of Celestial Bodies:

Deep Space Industries and Planetary Resources, two renowned U.S. companies with visionary ambitions for exploration and use of space resources, have already both established their European subsidiary in the Grand Duchy, with Luxembourg to become one of the main shareholders of Planetary Resources, Inc. Both companies started hiring highly qualified workers to build up economic and technological substance to firmly anchor their presence in Luxembourg.

See The Government of the Grand Duchy of Luxembourg, Ministry of Economy, press release, "Luxembourg's new space law guarantees private companies the right to resources harvested in outer space in accordance with international law" (11 November 2016), online: Luxembourg Space Agency <<https://space-agency.public.lu/en/news-media/press-release.html>>.

words, the rise of unilateralism was simultaneous to a rise of disbelief in these principles³⁹² and their capacity to accommodate modern space activities. The same disbelief led to the introduction – at the national level – of principles opposing those of international space law, or simply put, principles introducing space-based rights as opposed to international space law’s *spacelessness*. Consequently, the pragmatism of modern space law lies in its self-assumed role as *a strategy or a technique* to answer the disbelief in the principles of the old. Therefore, the pragmatism of modern space law shares Posner’s definition of legal pragmatism in that it rejects “the idea that law is something grounded in permanent principles and realized in logical manipulations of those principles.”³⁹³ Instead, it attempts to introduce new principles conflicting with the existing ones. Ultimately, this pragmatic unilateralism in modern space law has brought with it the construction of a nationalist law-making subject as opposed to the global law-making subject of traditional space law. “Luxembourg,”³⁹⁴ reports Schneider, Luxembourg’s Minister of Economy, “is the first adopter in Europe of a legal and regulatory framework recognizing that space resources are capable of being owned by private companies.”³⁹⁵ And he continues, “The Grand Duchy thus reinforces its position as a European hub for exploration and use of space resources.”³⁹⁶ At the same time, one of the objectives for the introduction of *Luxembourg’s Law on the Exploration and Use of Celestial Bodies* of 2017, which focuses on the exploration and use of space natural resources, is

³⁹² The disbelief in these principles becomes evident through the content of national space laws regarding the exploration and use of space natural resources as the principles that they introduce conflict with the principles of international space law. For example, the introduction of the institution of private property over space natural resources in the *United States Commercial Space Launch Competitiveness Act* (*supra* note 124) and in the *Luxembourg Law on the Exploration and Use of Celestial Bodies* (*supra* note 124) is conflictual with the prohibition of appropriation as provided in Article II of the Outer Space Treaty.

³⁹³ Richard A Posner, *Overcoming Law* (Cambridge: Harvard University Press) at 405.

³⁹⁴ The Government of the Grand Duchy of Luxembourg, press release, “Luxembourg is the First European Nation to Offer a Legal Framework for Space Resources Utilization” (13 July 2017), online: <<https://space-agency.public.lu/en/news-media/press-release.html>>.

³⁹⁵ *Ibid.*

³⁹⁶ *Ibid.*

the support to “research and development projects of some leading players in the space mining industry that have already set up their European operations in Luxembourg.”³⁹⁷ Therefore, the national interest of economic growth appears as one of the most important underpinnings of Luxembourg’s space law, when, traditionally, the “exploration and use of outer space should be carried out for the benefit of all peoples irrespective of the degree of their economic or scientific development.”³⁹⁸ At the same time, Luxembourg’s legal pragmatism appears to position the national economic interest of a State before the interests of humanity. In a space economy currently estimated at USD 350 billion,³⁹⁹ Luxembourg predicts its law to have a leading effect in a market that is estimated to reach EUR 170 billion over the 2018-2045 period.⁴⁰⁰ Similarly, flecks of nationalism can be observed in the United States Commercial Space Launch Competitiveness Act as one of the Act’s objectives is to facilitate the United States’ citizens in the exploration and commercial recovery of space resources.⁴⁰¹ However, “unilateralism,” Dupuy writes,

has a strong pejorative connotation. A little as in football, the state regarded as guilty of unilateralism is the one that does not play the collective game; the one that ‘plays personally’; in short, the one that puts the triumph of its interests before that of the collective interest, without even speaking of the ‘common good’.⁴⁰²

Consequently, the globality in the law-making process of international space law has now been replaced by a nation-centered locality and the vision to benefit humanity through the uses of outer

³⁹⁷ The Government of the Grand Duchy of Luxembourg, press release, “Luxembourg is the First European Nation to Offer a Legal Framework for Space Resources Utilization,” *supra* note 394.

³⁹⁸ *Outer Space Treaty*, *supra* note 1, Preamble.

³⁹⁹ See for example OECD, *The Space Economy in Figures – How Space Contributes to the Global Economy* (Paris: OECD Publishing, 2019) at 32.

⁴⁰⁰ “A Luxembourg Space Agency Study predicts a Market Revenue of up to 170 Billion Eur generated by the Space Resources Utilization Industry over the 2018-2045 Period” (20 December 2018), online: Luxembourg Space Agency <<https://space-agency.public.lu/en/news-media/news/2018/opportunities-for-space-resources-utilization-future-markets-and-value-chains.html>>.

⁴⁰¹ *United States Commercial Space Launch Competitiveness Act*, *supra* note 124, Section 51302, Paragraphs 1, 2, and 3.

⁴⁰² Pierre-Marie Dupuy, “The Place and Role of Unilateralism in Contemporary International Law” (2000) 11 *European Journal of International Law* 19-29 at 20.

space by a vision seeking to reinforce national economies. Accordingly, this nation-based approach to modern space law has led to a fragmentation of structure and of substance, or a “normative parallelism.”⁴⁰³ That is, the unilateral and nationalist juridical tendencies of modern space law reveal the existence of two parallel – yet conflicting – law-making subjects: the States in modern space law through their unilateral acts, and the global community in traditional space law through its collective achievements of the past. Accordingly, the interests and objectives of these two simultaneously existing subjects shape a paradoxical legal order; one where different legal subjects produce different coexisting – and conflictually – legal rules, thus leading to an anarchic legal order, or simply put, to an order without *arches*,⁴⁰⁴ that is, principles.

1.2. PRIVATE ACTORS AND THE SPATIALITY OF A TECHNOCRATIC LEGAL ORDER

The advent of pragmatism in the regulation of space activities, the previous part found, is a distinctive moment in the history of space law. This moment was observed as corollary to the emergence of private space actors and their power-based capacity to achieve national space laws tailored to their interests and objectives. Therefore, pragmatism in law, it seems, constitutes a *strategy* or a *technique* able to convert an actor-based power structure into a legal construct, while in modern space law this legal construct appears to reflect the empowered place of the private

⁴⁰³ Tomer Broude & Yuval Shany, “The International Law and Policy of Multi-Sources Equivalent Norms” in Tomer Broude & Yuval Shany, eds, *Multi-Sourced Equivalent Norms in International Law* (Oxford: Hart, 2011) at 1.

⁴⁰⁴ The term *anarchy* is not used here in relation to an anarchic political system, i.e. a decentralized system. The term is rather used in its literal meaning (*a* + *arches* (αρχές = principles) to refer to a potential order without *arches*, that is, without principles, without rules). For the definition and etymology of the term see Μπαμπινιώτης, *Ετυμολογικό Λεξικό της Νέας Ελληνικής Γλώσσας – Ιστορία των Λέξεων* (Etymological Modern Greek Language Dictionary – History of the Words) (Athens: Κέντρο Λεξικολογίας, 2010) 129: “χωρίς κανόνες και αρχές, αυθαίρετος” (transl: without rules and principles, arbitrary). See also Reiner Schürmann, “‘What Must I Do?’ at the End of Metaphysics: Ethical Norms and the Hypothesis of a Historical Closure” in Wililam Leon McBride & Calvin O Schrag, eds, *Phenomenology in a Pluralistic Context – Volume 9* (SUNY Press, 1983) 49-64 at 58.

space actors in modern space activities. “The Luxembourg Government,” mentions one of press releases of Luxembourg’s Ministry of Economy, “has just adopted a draft law ensuring that private operators working in space can be confident about their rights to the resources they extract in outer space.”⁴⁰⁵ This empowerment of a social group, or its ability to control or influence the political scene (law in this instance), could also be thought as sharing many characteristics with the concept of technocracy.

Indeed, the discourse on legal pragmatism has often been associated with technocracy, or with a technocratic law-making process.⁴⁰⁶ “Technocracy,” Gunnell observes, “has been taken to mean the government (or control) of society by scientists, technicians, or engineers.”⁴⁰⁷ Another definition of technocracy points out to “a political system in which the determining influence belongs to the technicians of the administration and the economy.”⁴⁰⁸ From the perspective of terminology, *technocracy* derives from the Greek terms *kratos* and *techne*. *Techne*, as the first chapter of this thesis mentioned, refers to the subject’s knowledge, or technical ability, to use a craft, a skill, a technological technology.⁴⁰⁹ *Kratos* has a dual definition: it refers simultaneously to both the government and the power, or to the power of a subject to govern. Accordingly, the etymological definition of technocracy refers to the power of a subject who possesses a technological technology⁴¹⁰ (or the knowledge – the means – to use it) to become a governing

⁴⁰⁵ See The Government of the Grand Duchy of Luxembourg, Ministry of Economy, press release, “Luxembourg’s new space law guarantees private companies the right to resources harvested in outer space in accordance with international law” (11 November 2016), online: Luxembourg Space Agency <https://space-agency.public.lu/dam-assets/press-release/2016/2016_11_11PressReleaseNewSpacelaw.pdf>.

⁴⁰⁶ See generally Guy Oakes, “Max Weber on Value Rationality and Value Spheres” (2003) 3 *Journal of Classical Sociology* 15-27.

⁴⁰⁷ John G Gunnell, “The Technocratic Image and the Theory of Technocracy” (1982) 23:3 *Technology and Culture* 392-416 at 392.

⁴⁰⁸ Daniel Bell, *The Coming of Post-industrial Society: A Venture in Social Forecasting* (New York: Basic Books, 1974) as cited in Anders Esmark, *The New Technocracy* (Bristol: Bristol University Press, 2020) 503.

⁴⁰⁹ See Chapter I, Part 1.1.

⁴¹⁰ *Ibid.*

subject. The combination of knowledge and technology, therefore, constitutes the power of actors and makes possible their participation in governance.⁴¹¹

In the sector of space activities, the importance of the private actors who possess – or have the capacity to develop – both these elements, knowledge and technology, has been well documented in the developments of modern space activities and often led to the construction of modern technocratic space laws. “Together with our partners,”⁴¹² Schneider mentions, “we want to further develop knowledge and skills, while encouraging investment, particularly from the private sector, to develop and implement technological, operational and financial solutions,”⁴¹³ when referring to Luxembourg’s joint declaration with Belgium towards the development of the exploration and utilization of space resources.⁴¹⁴ To such development of knowledge and skills, the participation of the private space industry is recognized as crucial and the crafting of laws tailored to answer the interests of this industry are considered essential by modern space Faring nations, such as Luxembourg. As a result, the potential of the private space industry’s *techne* can be observed as enabling this industry with the *kratos* (power) to influence the juridical environment, or simply put to lead to technocratic laws. “We are doing non-traditional space activity,”⁴¹⁵ Kfir, the general counsel for Deep Space Industries says. And he continues,

We need to raise capital. One of the top three questions investors ask us is ‘What regulatory structure is in place to secure our investment? How do we know for a fact that the

⁴¹¹ See generally Zürn, *A Theory of Global Governance: Authority, Legitimacy, and Contestation* (Oxford: Oxford University Press, 2018); for the general link between the concepts see also Michel Foucault, *Discipline and Punish: The Birth of a Prison* (London: Penguin, 1991).

⁴¹² The Government of the Grand Duchy of Luxembourg, Ministry of Economy, press release, “The Grand Duchy of Luxembourg and Belgium join forces to develop the Exploration and Utilisation of Space Resources” (23 January 2019), online: Luxembourg Space Agency <<https://space-agency.public.lu/dam-assets/press-release/2019/2019-01-23-ENG-joint-press-release-BE-LU.pdf>>.

⁴¹³ *Ibid.*

⁴¹⁴ *Ibid.*

⁴¹⁵ Sagi Kfir, “California Space Exploration Company GC Navigates Evolving Industry” (15 February 2020), online: Law.com <<https://www.law.com/therecorder/almID/1202766577594/California-space-exploration-company-GC-Navigates-Evolving-Industry/?slreturn=20200215150000>>.

investments we make in Deep Space Industries and the resources we are going to utilize in space are going to be protected by some regulation?”⁴¹⁶

Similarly, Schneider refers to Luxembourg’s efforts – including the construction of private sector-oriented national space laws – by mentioning that “[they] have managed to forge for the Grand-Duchy a reputation of an innovation-focused and progressive location for commercial space initiatives.”⁴¹⁷ At the same time, the announcement of Luxembourg’s initiative to construct such a national legal environment in 2016 was accompanied by the statement that “amongst the key actions undertaken [was] the establishment of an appropriate legal and regulatory framework for space resource utilization activities to provide private companies and investors with a secure legal environment,”⁴¹⁸ an environment that is indeed embraced by private space companies as “a strong basis for stability and predictability for [their] current and future asteroid mining operations.”⁴¹⁹ As a result, the modern regulatory environment of space activities tends to be very much tailored to accommodate the *techné* of the private space industry, or simply put, has become technocratic. An anti-logos to the theorization of modern space law’s development as a process of technocracy could juxtapose the process of traditional space law’s creation as equally technocratic. “Technological progress,”⁴²⁰ writes Danilenko, “has traditionally exerted particularly strong influence on the formation of space law.”⁴²¹ Indeed, the production of the core international space

⁴¹⁶ *Ibid.*

⁴¹⁷ The Government of the Grand Duchy of Luxembourg, Ministry of Economy, press release, “Three US space companies choose Luxembourg to implement activities in Europe” (27 September 2018), online: Luxembourg Space Agency <<https://space-agency.public.lu/dam-assets/press-release/2018/2018-09-27-Three-US-space-companies-choose-Luxembourg-to-implement-activities-in-Europe.pdf>>.

⁴¹⁸ The Government of the Grand Duchy of Luxembourg, press release, “SpaceResources.lu: New Space Law to provide Framework for Space Resource Utilization” (3 June 2016), online: The Government of the Grand Duchy of Luxembourg <https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2016/06-juin/03-spaceresources.html>.

⁴¹⁹ Jeff Foust, “Luxembourg adopts space resources law” (17 July 2017), online: Space News <<https://spacenews.com/luxembourg-adopts-space-resources-law/>>.

⁴²⁰ Gennady M Danilenko, “Outer Space and the Multilateral Treaty Process” (1989) 4:2 High Technology Law Journal 217-247 at 222.

⁴²¹ *Ibid.*

law instruments, the five United Nations space Treaties,⁴²² with emphasis on the Outer Space Treaty, were primarily negotiated by the space powers of the Cold War era, with the main ones being the United States and the former Soviet Union,⁴²³ as they were the subjects possessing the *techne* of space exploration at that time. The representative of the United States in the negotiations of the Outer Space Treaty by the United Nations Committee on the Peaceful Uses of Outer Space relatedly mentioned that the active participation of “states having the capability to engage in outer space activities”⁴²⁴ is key in securing “real progress in the development of legal norms applicable to the exploration and use of outer space.”⁴²⁵ However, due to the political scenery during the time of the negotiation of the Treaty, the Treaty was the result of political compromises rather than the reflection of interests of individual actors – States in this instance. Consequently, the *diamorphosis*⁴²⁶ of the Outer Space Treaty created a spirit of principles and values with the main one being its anticolonial mandate to deterritorialize human presence in outer space for the benefit of humanity.⁴²⁷ Traditional space law is, therefore, closer to a law of pluralist space than it is to a law of technocrats, or simply put, to an elitist law.

Indeed, the scholarship on technocracy as a sociopolitical, and often legal, phenomenon has frequently associated technocracy to the elite theory as opposed to that of inclusivity and pluralism.⁴²⁸ Gunnell holds that “in circumstances in which political decisions necessarily involve specialized knowledge and the exercise of technical skills, political power tends to gravitate toward

⁴²² See five UN Space Treaties, *supra* note 1.

⁴²³ Hobe et al, eds *CoCoSL – Cologne Commentary on Space Law – Volume I – Outer Space Treaty*, *supra* note 163 at 105-151.

⁴²⁴ Danilenko, “Outer Space and the Multilateral Treaty Process,” *supra* note 420 at 231.

⁴²⁵ *Ibid.*

⁴²⁶ See Chapter I, Part 1, at footnote 41.

⁴²⁷ See Chapter I, Part 2.5.

⁴²⁸ See for example Eri Bertsou & Daniel Caramani, eds, *The Technocratic Challenge to Democracy* (London: Routledge, 2020).

technological *elites*.”⁴²⁹ Accordingly, private actors could be thought as a technological elite in modern political decision and law-making in the realm of space activities.

“I want to see private companies going to the moon,”⁴³⁰ says Bridenstine, the NASA’s administrator. “In order to achieve that, we have to reconsider the very, very stringent kind of requirements that are placed in going to these other planetary bodies,”⁴³¹ he continues during his briefing about NASA’s *Artemis Accords – Principles for Cooperation in the Civil Exploration and Use of the Moon, Mars, Comets, and Asteroids for Peaceful Purposes*⁴³² (hereafter “Artemis Accords”), a set of principles for space exploration that introduces guidelines of bilateral international cooperation taking into special consideration the interests of private space actors.⁴³³ By “stringent” requirements, Bridenstine refers to the prohibition of article II of the Outer Space Treaty to appropriate parts of outer space as he later emphasizes that “when it comes to space resources we need to have an agreement that when you extract resources, you can utilize those resources.”⁴³⁴

As a result, the interests of the technological elite of private space actors appear to guide the political decision-making of space faring countries, while they simultaneously contribute to a change in the ideology of space law. For example, the Artemis Accords were built on the basis of

⁴²⁹ Gunnell, “The Technocratic Image and the Theory of Technocracy,” *supra* note 407 at 397.

⁴³⁰ Michael Sheetz, “NASA unveils ‘Artemis Accords’ as it seeks international partners for 2024 mission to the Moon” (15 May 2020), online: CNBC <https://www.cnbc.com/2020/05/15/nasa-unveils-artemis-accords-international-partnerships-for-2024-mission.html?__source=twitter%7Cmain>.

⁴³¹ *Ibid.*

⁴³² *Artemis Accords*, *supra* note 2. Note regarding choice of grammar: Despite the fact that the Artemis Accords refer to one single text, this thesis considers the Accords as plural (as far as grammar is concerned).

⁴³³ See for example Artemis Accords, Section 8, where the interests of private actors are given particular consideration as opposed to those of States. Although the Accords introduce a principle according to which, “the Signatories are committed to the open sharing of scientific data” (Section 8, Paragraph 2), they also introduce an exception for the private space sector (“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”); *ibid.*

⁴³⁴ Sheetz, “NASA unveils ‘Artemis Accords’ as it seeks international partners for 2024 mission to the Moon,” *supra* note 430.

the United States Executive Order of 2020,⁴³⁵ which denounced the global nature of outer space. “Outer space is a legally and physically unique domain of human activity,”⁴³⁶ provides the Order, “and the United States does not view it as a global commons,”⁴³⁷ while it also specifies that “commercial ... recovery and use of resources in outer space”⁴³⁸ should be the right of Americans. The approach to space law that this Executive Order takes, together with those followed in the earlier United States Commercial Space Launch Competitiveness Act and Luxembourg’s Law on the Exploration and Use of Celestial Bodies, share the criticism by space law scholars that they are in conflict with the non-appropriation principle enshrined in article II of the Outer Space Treaty as the latter prohibits appropriation in outer space, while the former seek to introduce the institution of property. But this is only the obvious antithesis;⁴³⁹ an antithesis of the letter of law. This antithesis, however, locates itself in an underpinning ideological antithesis: an antithesis between the ideology of traditional and modern space law. That is, an antithesis that emerges from the spatiality of the law, or of law’s ability to construct sociopolitical first and, ultimately, material – physical – space.

The scholarship on postmodern human geography can be used here to further explain this ideological difference. This scholarship emphasizes the dual dimension of territoriality by bringing to the fore first the social elements of territoriality – that is, the immaterial ones – and subsequently the material elements of land.⁴⁴⁰ As such, considering the theoretical guidance of this scholarship

⁴³⁵ *Executive Order of 2020*, *supra* note 360.

⁴³⁶ *Ibid.*

⁴³⁷ *Ibid.*

⁴³⁸ *Ibid.*

⁴³⁹ The term *antithesis* is used here to emphasize the difference between the *theses* (*anti-thesi/es*), that is, positions and ideologies in the current and former legal orders for space activities.

⁴⁴⁰ See for example Michael Dear, “The Postmodern Challenge: Reconstructing Human Geography” (1988) 13:3 *Transactions of the Institute of British Geographers* 262-274; Michael Dear & Steven Flusty, eds, *The Spaces of Postmodernity – Readings in Human Geography* (London: Routledge, 2002); Paul Cloke et al, *Approaching Human Geography* (London: Chapman, 1991); Tom Cresswell, *Geographical Thought: A Critical Introduction* (Chichester: Wiley, 2013); Stuart Aitken & Gill Valentine, eds, *Approaches to Human Geography* (London: SAGE, 2006).

is important for this discussion in highlighting that the Outer Space Treaty principles against territoriality – be it via property or sovereignty – entail also a prohibition against all social aspects of these terms. This scholarship understands spatiality as an “attemp[t] to theorize the relations of humans to the natural world.”⁴⁴¹ “The present concern,” Entrikin writes, “is with the social production of space and place, which has been theorized in terms of a mix of structural forces of political economy and human agency.”⁴⁴² Spatiality could, therefore, be thought as the result of sociopolitical processes. Critical legal scholarship takes a similar approach to the term and understands the relationship between law and spatiality as one of abstract materiality and views space as a “concrete abstraction.”⁴⁴³ “Space,” observes Philippopoulos-Michalopoulos, “brings an awareness of (other) spaces, both within and significantly beyond the reach of the law, which, in turning spatial, the law will have to take into consideration.”⁴⁴⁴ Therefore, understanding the relationship between social construction of law and the construction of abstract – or simply non-material – spaces is crucial in understanding the spatiality of the law, that is, the ability of the law to construct such spaces.⁴⁴⁵ Relatedly, Roscosmos, The Russian Federation’s space agency, in identifying the link between the physical and sociopolitical element of space, mentioned that “attempts to expropriate outer space and aggressive plans to actually take over other planets deter

⁴⁴¹ Eric Prieto, *Poststructuralism and the Resistance to Place* (New York: Palgrave Macmillan, 2012) 76.

⁴⁴² *Ibid* at 77.

⁴⁴³ Lefebvre as cited in Andreas Philippopoulos-Michalopoulos, “Law’s Spatial Turn: Geography, Justice and a Certain Fear of Space” (2010) 20:2 Law, Culture and the Humanities 1-16 at 9.

⁴⁴⁴ *Ibid*.

⁴⁴⁵ See the theories of territoriality as developed in Chapter I through the literature of scholars such as Stuart Elden, Philip Steinberg, and Saskia Sassen. See for example Elden, *The Birth of Territory*, *supra* note 15; Steinberg, *The Social Construction of the Oceans*, *supra* note 15; Sassen, “When National Territory is Home to the Global: Old Borders to Novel Borderings,” *supra* note 151; Sassen, “When Territory deborders Territoriality,” *supra* note 151.

international cooperation in the space arena,”⁴⁴⁶ while “the agency’s deputy head in charge of international cooperation, appeared to compare Trump’s order to colonialism.”⁴⁴⁷

The title of this part suggested a relationship between spatiality, technocracy and the private space actors. Law, as this part earlier found, appeared located in the middle as a connecting link between the three. Indeed, the power, or *techne*, of the private space actors was discussed as having the capacity to become institutionalized through (national) space laws, thus leading to a legal order of technocratic theorization of outer space. In turn, this technocratic legal theorization was observed as leading to an elitist structure of space actors opposing the pluralist sociopolitical construct enshrined in traditional space law. The reflection of this technocratic elitism in law also reflects the interests of the technocratic elitist subject, that is, the private space actors. As such interests are tied to the notion of space, their reflection – and institutionalization – through the legal constructs of modern space law appears to also reflect a process of spatiality.

In other words, such reflection appears to “bring awareness”⁴⁴⁸ of *space* to space law by introducing its institutions with concepts such as private over a global space, or a space of exclusivity over a, thus far, pluralistic space, or a space of technocratic construction over a natural space. Consequently, the spatiality of modern space law can indeed be thought as an “attempt to theorize the relations of human to the natural world,”⁴⁴⁹ or – perhaps even – as an attempt to understand the space-making effect of a technocratic modern space law to the material and

⁴⁴⁶ “Russia Compares Trump’s Space Mining Order to Colonialism” (7 April 2020), online: The Moscow Times <<https://www.themoscowtimes.com/2020/04/07/russia-compares-trumps-space-mining-order-to-colonialism-a69901>>.

⁴⁴⁷ *Ibid.*

⁴⁴⁸ Philippopoulos-Michalopoulos, “Law’s Spatial Turn: Geography, Justice and a Certain Fear of Space,” *supra* note 443.

⁴⁴⁹ *Ibid.*

immaterial aspects of outer space and its capacity to reverse the *spaceless* legal order embedded in traditional space law.

1.3. THE *POWERCENE* AND THE *META-SPATIAL* CONSTRUCTION OF OUTER SPACE

Despite the theoretical and practical efficiency of the concept of *spacelessness*⁴⁵⁰ for traditional space activities, this thesis later found that modern space activities tend to seek socioeconomic and juridical approaches closer to the idea of bordered space.⁴⁵¹ Indeed, the earlier parts of this chapter observed that the modern human interaction with outer space, and the development of technocratic modern space laws that seek to answer such interaction, suggest a quest for a new space-making dynamic that has the capacity to significantly alter traditional space law's ideology of *spacelessness*.

Consequently, this new space-making dynamic appears to disrupt the concept of *spacelessness* that is embedded in the ideals of traditional space law and reminds us that law is often outlived by the developments of technology, unforeseen human behaviors and socioeconomic changes.⁴⁵² The disruption of *spacelessness*, however, simultaneously disrupts the ideals of inclusive and pluralistic space of globality that this concept represents⁴⁵³ as opposed to exclusive bordered

⁴⁵⁰ See Chapter I, Parts 2.3. and 2.4.

⁴⁵¹ See The Government of the Grand Duchy of Luxembourg, Ministry of Economy, press release, "Luxembourg's new space law guarantees private companies the right to resources harvested in outer space in accordance with international law" (11 November 2016), online: Luxembourg Space Agency <https://space-agency.public.lu/dam-assets/press-release/2016/2016_11_11PressReleaseNewSpacelaw.pdf>: "Article 1 of the draft law provides that space resources are capable of being appropriated in accordance with international law. Luxembourg is thus the first European country to provide legal certainty as to the ownership of minerals, water and other space resources identified in particular on asteroids."

⁴⁵² See Chapter II, Parts 1.1. and 1.2.

⁴⁵³ See for example, *Outer Space Treaty*, *supra* note 1, Preamble, Article I, II, and IX. See also Hobe et al, eds, *CoCoSL – Cologne Commentary on Space Law – Volume I – Outer Space Treaty*, *supra* note 163 at 105 ff and 151 ff.

spaces of individual subjects and subjectivities.⁴⁵⁴ Simply put, the demand for rights of a material fixity, such as property rights, over outer space simultaneously suggests the advent of an era where outer space is not imagined as a pluralistic natural and socioeconomic space, but rather as an era where outer space is imagined as a resource that can be constructed to reflect modern space law's technocratic spatiality.

I. FROM *ANTHROPOGENIC* TO *CAPITALOGENIC* CHANGES TO THE MATERIAL AND IMMATERIAL TERRITORIALITIES OF OUTER SPACE

The above observation attests to the capacity of socioeconomic and political technocratic aspects of human reality to alter the natural, socioeconomic, and political environments (including those of outer space). This is a topic that has been widely scrutinized in the framework of the Anthropocene, the latter, however, focusing primarily on the environmental impacts of human behavior.⁴⁵⁵ This framework “places the ‘human agency’ ... smack in the center of attention”⁴⁵⁶ and suggests that human reality is considered as a homogenized, collective and unified geological agent whose actions have a direct – most often negative – impact on the environment.⁴⁵⁷ In other words, the framework of the Anthropocene considers the impact of the activities of the *Anthropos* (the human species) on nature from a holistic approach.⁴⁵⁸ This approach takes into special account the new possibilities offered by the development of science and technology as the means enabling this impact, which is most often encountered as a tragedy. “Four centuries after those of

⁴⁵⁴ For the concepts of objectivity and subjectivity as they relate to *space*, see Chapter I, Parts 2.2. and 2.3. These concepts will be further explained in the second part of this chapter, in Parts 2.1. and 2.4.

⁴⁵⁵ Bruno Latour, “Anthropology at the Time of the Anthropocene - a personal view of what is to be studied,” distinguished lecture, American Association of Anthropologists, Washington, December 2014 139AAA1-139AAA16 at 139AAA2.

⁴⁵⁶ *Ibid.*

⁴⁵⁷ Neyrat, *The Unconstructable Earth: An Ecology of Separation*, *supra* note 34 at 13-18.

⁴⁵⁸ See generally, Karen Scott & David Vander Zwaag, eds, *Research Handbook of Polar Law* (Cheltenham/Northampton: Edward Elgar, 2020).

astronomy,”⁴⁵⁹ observes Latour, “facts of geology have become news, so much so that a piece of information about Charles David Keeling’s data at Mauna Loa has shifted from the ‘science and technology section’ of the newspaper to a new section reserved for the damning tragedies of the Earth’,”⁴⁶⁰ to emphasize how the modern era of technological advances and their use by the Anthropos shape, in fact, a burden rather than a facilitation to humanity.

The framework of the Anthropocene, Therefore, depicts the processes of destruction of the natural environment as strictly linked to the action of a unified geological agent most often guided by the power of new technologies. At the same time, this framework has been used in the literature as a warning suggesting that it is the same unified agent upon whom the consequences of the destruction will be reflected. Latour finds that

The point of living in the epoch of the Anthropocene is that all agents share the same shape-changing destiny. A destiny that cannot be followed, documented, told, and represented by using any of the older traits associated with subjectivity or objectivity. Far from trying to “reconcile” or “combine” nature and society, the task, the crucial political task, is on the contrary to distribute agency as far and in as differentiated a way as possible — until, that is, we have thoroughly lost any relation between those two concepts of object and subject that are of no interest any more except patrimonial.⁴⁶¹

Accordingly, Latour observes that the subject as an acting agent (that is, the collective agent of Anthropos) is simultaneously part of the object in which human intervention – and, therefore, natural alteration – occurs. As such, the Anthropos can be identified as both the subject causing

⁴⁵⁹ Bruno Latour, “Agency at the Time of the Anthropocene” (2014) 45:1 *New Literary History* 1-18 at 3.

⁴⁶⁰ *Ibid.*

⁴⁶¹ *Ibid* at 17.

harm and the one bearing the harm. Therefore, the attempt for any separation between subject and object would be impossible.⁴⁶²

The framework of the Anthropocene, or the human epoch, has also been used over the past decade to describe the anthropogenic changes to *geology*,⁴⁶³ or simply to the state of nature, at a cosmic level.⁴⁶⁴ The center of this concept as applied beyond the environment of the Earth reflects the idea that “humans have become the principal agents for the transformation of our planetary systems.”⁴⁶⁵ In other words, the concept refers to an epoch, during which human action was in the center of cosmic transformation. “If the pace of current efforts to send humans to Mars is any indicator,”⁴⁶⁶ Fairén suggests, “the impact of human activities may soon be as quantifiable on Mars as it is on Earth, and the Anthropocene could soon make its debut as the first multiplanetary geological period.”⁴⁶⁷ This is important in observing how sociopolitical changes influence not only the social elements of spaces (such as outer space), but eventually also their material ones.

However, the framework of the Anthropocene does not suffice alone to explain the *anthropoforming* of the Earth and of the cosmos. Latour observes:

The “anthropos” of the Anthropocene is not exactly any body, it is made of highly localised networks of some individual bodies whose responsibility is staggering. ... Such an attribution of responsibility and this dispersion of the “anthropos” into specific historical and local networks, actually gives a lot of weight to the other candidate for naming the

⁴⁶² For the concept of *separatism*, see Neyrat, *The Unconstructable Earth: An Ecology of Separation*, *supra* note 34, at 13-15. See also Chapter I, Part 2.5.

⁴⁶³ The term *geology* is used in a literal sense to emphasize its meaning from a linguistic perspective. That is, the term does not simply refer to the natural environment of the Earth, but also to the *logos* of the *gis* (γῆς-γαῖα/*gaia*), i.e. the *logos* (in the sense of in-depth studying and understanding) of the Earth and its cosmic context.

⁴⁶⁴ See Andreas Malm & Alf Hornborg, “The Geology of Mankind? A Critique of the Anthropocene Narrative” (2014) 1:1 *The Anthropocene Review* 62-69.

⁴⁶⁵ “Approaches to the Anthropocene: A Conversation with Philippe Descola and Bruno Latour,” The University of British Columbia, 25 September 2013, online: YouTube <<https://www.youtube.com/watch?v=MDeGaYkhVSo>>.

⁴⁶⁶ A G Fairén, “The Mars Anthropocene” (4 January 2019), online: EOS <<https://eos.org/opinions/the-mars-anthropocene>>.

⁴⁶⁷ *Ibid.*

same period of geohistory, that of “capitalocene”, a swift way to ascribe this responsibility to whom and to where it belongs.⁴⁶⁸

Similarly, Neyrat locates the alteration of the socioeconomic, political, and natural environment – including that of outer space – as correlated with this contiguous theoretical framework, the framework of the capitalocene.

More precisely, Neyrat, in his work *The Unconstructable Earth*,⁴⁶⁹ questions the human agency relationship that is enclosed in the concept of the Anthropocene. He situates the capitalocene as the social agency that performs a function of construction and destruction over natural space.⁴⁷⁰

According to Neyrat’s theorization, “there is no such thing as an age of Humankind, *there is no Anthropocene*.”⁴⁷¹ He rather supports that “what there is are political, economic, and technological decisions, and social groups, different social bodies that an ideological screen – namely a ‘naturalizing screen’ – has trouble identifying.”⁴⁷² Consequently, he hesitates to group together the “political, economic, and technological decisions, and social groups, [and] different social bodies”⁴⁷³ as anthropogenic. Instead, he describes these concepts as economy-centered and capital-centric and accepts the modern era where capitalism guides human decision and activity as the era of the capitalocene.⁴⁷⁴

From a methodological perspective, Neyrat does not, in fact, reject the idea of the Anthropocene. Instead, he traces back its roots to the era of the capitalocene. Specifically, he qualifies the agency relationship between the Anthropos and his actions as a relationship between human reality and

⁴⁶⁸ Latour, “Anthropology at the Time of the Anthropocene - a personal view of what is to be studied,” *supra* note 455 at 5-6.

⁴⁶⁹ Neyrat, *The Unconstructable Earth: An Ecology of Separation*, *supra* note 34.

⁴⁷⁰ *Ibid* at 62-65.

⁴⁷¹ *Ibid* at 63.

⁴⁷² *Ibid*.

⁴⁷³ *Ibid*.

⁴⁷⁴ *Ibid* at 63; see also Jason W Moore, ed, *Anthropocene or Capitalocene? Nature, History, and the Crisis of Capitalism* (Oakland: PM Press/Kairos, 2016) as cited in Neyrat, *ibid* at 63.

capital. Simply put, he perceives the causes leading to the emergence of the Anthropocene as themselves capitalocentric. Therefore, Neyrat delves into the deeper causes of modern human reality instead of considering human reality as a cause in itself.

The scrutiny of this broader concept locates the understanding of the Anthropocene as one rooted beyond anthropogenic but rather in capitalogenic⁴⁷⁵ factors. Modern space law has also been deeply impacted by such capitalogenic factors. Originating in a technocracy of private space actors, the development of modern space law was earlier observed⁴⁷⁶ as a technocratic process leading to capitalocentric – and simultaneously capitalogenic – legal norms with the capacity to spatially reconstruct the socioeconomic and political – and eventually physical – environments of outer space.

II. BEYOND THE *CAPITALOCENE*: THINKING OF A *POWERCENE* OF CHANGES

In the context of outer space, the concept of the capitalocene could simultaneously be thought as a concept of *powercene*. *Powercene* can be defined as the power of modern space law's emerging subjects, i.e. the private space actors – or in other words, modern space law's emerging subjectivity⁴⁷⁷ – to change the ideology of *spacelessness* of traditional space law and, subsequently, lead to a socioeconomic – and, ultimately, physical – reconstruction of outer space.⁴⁷⁸

The importance of emphasizing this new subjectivity of modern space law and its power-centered capacity to construct a new sociolegal regime for outer space can be found in space law's role as

⁴⁷⁵ The term *capitalogenic* is used here to emphasize all elements that give birth to capital.

⁴⁷⁶ See also Chapter II, Part 1.2.

⁴⁷⁷ For the concept of *subjectivity* see Chapter II, Part 1.4.

⁴⁷⁸ The idea of reconstruction refers to the effort to restructure the sociopolitical reflections into outer space in a way that will not eventually lead to the territorialization of outer space.

a natural critique to international law. Whereas international law was mapped by the action of its subjects,⁴⁷⁹ space law emerged as a reaction against the mapping of preexisting subjectivities.⁴⁸⁰ The presently technocratic power of (private) space actors appears to have the capacity to reverse this dynamic by simultaneously establishing a new capitalocentered – and capitalogenic – as well as space-centered – and *spacegenic*⁴⁸¹ – legal and extralegal orders for new space activities.

Indeed, in the field of modern space activities, it is the *powergenic*⁴⁸² economic system of capitalism that generates the anthropocentric constructivism over outer space. The modern juridical and socioeconomic construction of outer space has shown that it is the blend of the technology and capital-based power of social groups – mainly private space actors – that form the modern epoch of space activities, or the *powercene* of outer space.⁴⁸³ Consequently, the power of the subjects (technology and capital-based power) appears to constitute the *genesis* of this construction as it also constitutes the *genesis* of technocratic modern space law.

Moreover, earlier in this chapter, the relationship between space industry and space law was presented as one of mutual influence and constructivism.⁴⁸⁴ Modern national space laws on the exploration of natural space resources, mainly those of the United States and Luxembourg⁴⁸⁵ – as well as of other States, such as the United Arab Emirates and Japan⁴⁸⁶ more recently – constitute

⁴⁷⁹ See Chapter I, Part 1.

⁴⁸⁰ *Ibid.*

⁴⁸¹ The term *spacegenic* is used to describe the creation (*genesis*) of space and emphasize the process of creation of space (the *genesis* of space).

⁴⁸² Similarly, the choice of the term *powergenic* intends to emphasize the process of creation of power (the *genesis* of power).

⁴⁸³ See for example relevant analysis earlier in this thesis, in the context of the *United States Commercial Space Launch Competitiveness Act*, *supra* note 124, the *Luxembourg Law on the Exploration and Use of Celestial Bodies*, *supra* note 124, and the *Artemis Accords*, *supra* note 2.

⁴⁸⁴ See Chapter II, Part 1.2.

⁴⁸⁵ *United States Commercial Space Launch Competitiveness Act*, *supra* note 124; *Luxembourg Law on the Exploration and Use of Celestial Bodies*, *supra* note 124.

⁴⁸⁶ Sarwat Nasir, “UAE’s National Space Law comes into Effect” (24 February 2020), online: The National News <<https://www.thenationalnews.com/uae/science/uae-s-national-space-law-comes-into-effect-1.983817>>; Jeff Foust, “Japan passes Space Resources Law” (17 June 2021), online: Space News <<https://spacenews.com/japan-passes->

examples of law embracing a constructivist role and intervening in the natural (physical) and sociolegal status of outer space by introducing a technocratic modern legal order with the capacity to reverse the ideal of *spacelessness* through the introduction of space-based institutions, such as that of private property. Simply put, in these cases, law appears as having the capability to technologize space.⁴⁸⁷

At the same time, these examples signal that the construction of modern space law results from the power involved in space technologies – even more in the subjects that possess or have access to them – and their link with capital-centered visions and incentives of private space actors. These examples, however, remain theoretical as no national law on space natural resources has thus far enabled the recovery and commercial use of space resources despite their capacity to concentrate and limit private space investments at the regional level.⁴⁸⁸

space-resources-

law/#:~:text=Japan%20passes%20space%20resources%20law%20by%20Jeff%20Foust,law%20passed%20by%20the%20National%20Diet%20of%20Japan.>; *Japan Space Resources Act*, *supra* note 363.

⁴⁸⁷ For example, the Space resources Act of Japan links the licensing (issue of permit according to the national space law) of a space mining activity at the domestic level with the existence of commercial business plans; see *Japan Space Resources Act*, *supra* note 363:

In addition to items required for the permit under the Space Activities Act (including, among other things, the satellite launch-rocket design and the flight path of the satellite), an applicant for the space resources extraction permit must attach a business activity plan to the application. The activity plan must include the purpose of the proposed space resources exploration and exploitation activity; the term, location, method, and other details of the activity; and other matters specified by a Cabinet ordinance. (Article 3, Paragraph 1)

When the prime minister reviews the application, he or she must consult with the minister of economy, trade and industry. (Article 3, Paragraph 3)

When the prime minister grants a permit to the applicant, the prime minister must publicly announce the name of the person receiving the permit and the business activity plan. (Article 4)

The Space Resources Act provides that the person who obtained the permit owns the space resources that the person exploits in accordance with the approved activity plan. (source of translated version: “Japan Space Resources Act Enacted” (Article 5); online: Library of Congress <<https://www.loc.gov/item/global-legal-monitor/2021-09-15/japan-space-resources-act-enacted/>>).

⁴⁸⁸ For example, see The Government of the Grand Duchy of Luxembourg, Ministry of Economy, press release, “Three US space companies choose Luxembourg to implement activities in Europe” (27 September 2018), online: Luxembourg Space Agency <<https://space-agency.public.lu/dam-assets/press-release/2018/2018-09-27-Three-US-space-companies-choose-Luxembourg-to-implement-activities-in-Europe.pdf>>.

Notwithstanding the lack of practical precedent, these examples reflect the power of a subject that projects the capital-based potential of technologies able to alter the natural environment of outer space, and to activate the construction of a space-making law that could potentially alter the physical status of outer space and contribute to its objectification – should the recovery of resources become a reality.⁴⁸⁹ The concept of the *powercene* denotes exactly that: the capacity of a subject’s power (be it economic, technology-based, political, or juridical) to transform a natural environment by forming its social construction before interfering with its physical (re-) construction. Accordingly, the concept of the *powercene* suggests that the natural environment of outer space (the object) tends to be *diamorphosized*⁴⁹⁰ by the subject and is, therefore, reflective of the latter.⁴⁹¹

One example that demonstrates in a more practical manner the space-forming capacity of the subject over the object is the United States Executive Order of 2020.⁴⁹² According to the Order, the United States seek “partnership with commercial entities to recover and use resources, including water and certain minerals, in outer space,”⁴⁹³ with special focus on the Moon. As this chapter earlier mentioned,⁴⁹⁴ the Order emphasizes the “uncertainty regarding the right to recover and use space resources, including the extension of the right to commercial recovery and use of lunar resources.”⁴⁹⁵ This uncertainty, according to the Order, is responsible for “discourag[ing] some commercial entities from participating in this enterprise.”⁴⁹⁶ Indeed, it was the same

⁴⁸⁹ For the concept of objectification and its role in this thesis, see Chapter I, Part 2. See also generally Neyrat, *The Unconstructable Earth: An Ecology of Separation*, *supra* note 34.

⁴⁹⁰ See Chapter I, footnote 41, on how the concept of *diamorphosis* is ideal in describing the sociolegal changes caused by the action of an actor over a natural environment.

⁴⁹¹ See also Chapter I, Part 2.

⁴⁹² *Executive Order of 2020*, *supra* note 360.

⁴⁹³ *Ibid.*

⁴⁹⁴ *Ibid.*

⁴⁹⁵ *Ibid.*

⁴⁹⁶ *Ibid.*

uncertainty that led a number of private space companies to relocate their center of activities from the United States to Luxembourg, where they encountered a juridical environment with the potential to accommodate their commercial objectives.⁴⁹⁷ Space companies such as CubeRover,⁴⁹⁸ Hydrosat,⁴⁹⁹ and Made In Space,⁵⁰⁰ to name a few, transferred to Luxembourg their activities focusing on space robotics, one of the crucial components in future space mining operations,⁵⁰¹ soon after the introduction of Luxembourg's national law on the exploration and use of space natural resources. Consequently, Luxembourg achieved a regional concentration of private space actors, including their capital and technology-based powers.⁵⁰² Had the ideology of modern space law, however, not been transformed into a technocratic legal order and had it preserved the pluralistic character of traditional space law, the development and economic benefits of the capital and technology-based power of the private space actors could have been distributed among a plurality of States or regions. In fact, it has been observed that "as companies such as Planetary Resources prepare for a cosmic land grab, Luxembourg wants to use its tiny terrestrial perch to help send capitalism into space."⁵⁰³ For example, within a year from the introduction of Luxembourg's Law on the Exploration and Use of Celestial Bodies more than \$200 million was

⁴⁹⁷ The Government of the Grand Duchy of Luxembourg, Ministry of Economy, press release, "Luxembourg to Launch Framework to Support the Future Use of Space Resources" (3 February 2016), online: Luxembourg Space Agency <<https://space-agency.public.lu/en/news-media/press-release.html>>; Luxembourg Space Agency, press release, "Three US Space Companies choose Luxembourg to implement Activities in Europe" (27 September 2018), online: Luxembourg Space Agency <<https://space-agency.public.lu/en/news-media/news/2018/three-us-space-companies-choose-luxembourg-to-implement-activities-in-europe.html>>.

⁴⁹⁸ Luxembourg Space Agency, press release, "Three US Space Companies choose Luxembourg to implement Activities in Europe," *ibid*.

⁴⁹⁹ *Ibid*.

⁵⁰⁰ *Ibid*.

⁵⁰¹ See NASA, *NASA Technology Roadmaps – TA 4: Robotics and Autonomous Systems* (May 2015), online: NASA <https://www.nasa.gov/sites/default/files/atoms/files/2015_nasa_technology_roadmaps_ta_4_robotics_autonomous_systems.pdf>.

⁵⁰² Luxembourg Space Agency, press release, "Three US Space Companies choose Luxembourg to implement Activities in Europe," *supra* note 497.

⁵⁰³ Atossa Araxia Abrahamian, "How a Tax Heaven is Leading the Race to Privatise Space" (15 September 2017) online: The Guardian <<https://www.theguardian.com/news/2017/sep/15/luxembourg-tax-haven-privatise-space>>.

streamed towards space mining activities, including their regulation at the domestic level.⁵⁰⁴ At the same time, more than 60 private space companies sought to transfer their activities under the jurisdiction of Luxembourg. Relatedly, the governmental focus on the private space sector attracted more than \$13.3 billion since 2010.⁵⁰⁵ In this respect, Luxembourg has signed a series of Memoranda of Understanding with private companies, such as Deep Space Industries, Planetary Resources, GomSpace, and Kleos Space, promising laws that will follow and facilitate space technology and their commercial space resources plans, by producing laws eliminating the legal obstacles found in the international space law regime.⁵⁰⁶

III. THE UNITED STATES EXECUTIVE ORDER OF 2020 AS AFFIRMING THE *POWERCENE* OF MODERN SPACE ACTIVITIES

Similar to the examples above, the United States Executive Order of 2020 seeks to reroute the interest of the private space industry toward the jurisdiction of the United States by providing the assurance that the United States' juridical environment reflects an ideology favorable to the

⁵⁰⁴ Peter B de Selding, "Luxembourg invests to become the 'Silicon Valley of space resource mining'" (3 June 2016), online: Space News <<https://spacenews.com/luxembourg-invests-to-become-the-silicon-valley-of-space-resource-mining/>>.

⁵⁰⁵ Aliya Ram, "US and Luxembourg frame Laws for New Space Race" (19 October 2017), online: Financial Times <<https://www.ft.com/content/af15f0e4-707a-11e7-93ff-99f383b09ff9>>.

⁵⁰⁶ The Government of the Grand Duchy of Luxembourg, Ministry of Economy, press release, "Luxembourg Government and Deep Space Industries sign Memorandum of Understanding for the exploration and use of space resources" (5 May 2016), online: Luxembourg Space Agency <https://space-agency.public.lu/dam-assets/press-release/2016/2016_05_05PressReleaseMoUDSIand.pdf>; The Government of the Grand Duchy of Luxembourg, Ministry of Economy, press release, "Luxembourg Government and GomSpace partner to develop new space activities in the Grand Duchy" (27 September 2017), online: Luxembourg Space Agency <<https://space-agency.public.lu/dam-assets/press-release/2017/2017-09-27-press-release-mou-gomspace.pdf>>; The Government of the Grand Duchy of Luxembourg, Ministry of Economy, press release, "Luxembourg and Kleos Space sign a MoU to co-operate within the SpaceResources.lu initiative" (24 July 2017), online: Luxembourg Space Agency <<https://space-agency.public.lu/dam-assets/press-release/2017/2017-07-24-press-release-mou-kleos-and-lux.pdf>>; The Government of the Grand Duchy of Luxembourg, Ministry of Economy, press release, "Luxembourg and ispace, a Tokyo-based lunar robotic exploration company, sign MoU to co-operate within the SpaceResources.lu initiative" (2 March 2017), online: Luxembourg Space Agency <https://space-agency.public.lu/dam-assets/press-release/2017/2017_03_02Pressrelease-MoU-iSpace-Lux-Gvt.pdf>; The Government of the Grand Duchy of Luxembourg, Ministry of Economy, press release, "SpaceResources.lu: Luxembourg Government and Planetary Resources sign MoU to develop activities related to space resource utilization" (13 June 2016), online: Luxembourg Space Agency <https://space-agency.public.lu/dam-assets/press-release/2016/2016_05_13PressReleaseMoUPR-LuxGvt.pdf>.

demands of the private space industry. Therefore, the Order appears particularly apologetic by claiming that “Americans should have the right to engage in commercial exploration, recovery and use of resources in outer space.”⁵⁰⁷ It appears apologetic⁵⁰⁸ as it considers essential to need to reassure American private companies that they will be able to commercially exploit space resources. Indeed, the need to emphasize, time and again, that the juridical environment of the United States is focused on enabling private companies to commercially use space natural resources – despite the explicit relevant provision in the United States Commercial Space Launch Competitiveness Act⁵⁰⁹ – could, perhaps, be explained as an attempt to clarify the existing law and provide a reassurance of legal certainty to the private space industry.

The same need simultaneously demonstrates an implicit – or, perhaps, explicit – competition between nations that have already introduced domestic laws governing the commercial exploitation of space natural resources. Indeed, “the United States should strive to be the most attractive jurisdiction in the world for private sector investment and innovation in space activities,”⁵¹⁰ notes Pace, the Executive Secretary of the United States’ National Space Council, while Luxembourg’s Ministry of Economy supports that “as a world renowned financial business

⁵⁰⁷ *Executive Order of 2020*, *supra* note 360.

⁵⁰⁸ This concept is borrowed from Koskenniemi’s work *From Apology to Utopia*, in which the term *apology* is used to describe law’s function as a justification for and means towards sociopolitical goals. The apologetic nature of law in this instance can be observed in the role of the Executive Order of 2020 to serve what was not legally supported yet, i.e. exclusivity over a global commons. Thus, the apologetic nature of the Order comes to emphasize a pre-existing economic and political need (the need for a space-centered (private property-oriented) legal regime that would provide private space companies with the desired legal certainty) and to suggest that the subsequent legal gap be covered. Hence, the apologetic dimension of the Order. For additional explanations of the concept, see Martti Koskenniemi, *From Apology to Utopia – The Structure of International Legal Argument* (Cambridge: Cambridge University Press, 2006):

It is not difficult to see that law is continuously in danger of lapsing into an apology for politics. Critics of any prevailing law regularly accuse it of having done just this. This is natural because just like politics, law is understood to exist for the pursuit of social goals and there is constant disagreement about the correct goals. ... Law creation is a matter of subjective, political choice. (*Ibid* at 17)

⁵⁰⁹ *United States Commercial Space Launch Competitiveness Act*, *supra* note 124.

⁵¹⁰ Scott Pace, “Space Development, Law, and Values,” IISL Galloway Space Law Symposium, 13 December 2017 at 3.

center, Luxembourg offers incentives for private sector companies seeking to develop space mining opportunities, ... our financial regulatory system fully supports venture capital and private equity investment within a wider European framework.”⁵¹¹

Furthermore, the language used in Luxembourg’s Law on the Exploration and Use of Celestial Bodies appears more reassuring compared to that of the United States Commercial Space Launch Competitiveness. While the former provides that “space resources are capable of being appropriated,”⁵¹² the latter provides, in a more descriptive manner, that “asteroid resources obtained in outer space are the property of the entity that obtained them, which shall be entitled to all property rights to them, consistent with applicable federal law and existing international obligations,”⁵¹³ while the relevant laws of Japan and the United Arab Emirates contain similar provisions.⁵¹⁴ Although the two national laws are similar in substance – they both recognize private property over space natural resources – the law of the United States explicitly provides their obligation to abide by the provisions of international (space) law, including the obligation to use outer space in the benefit of all countries,⁵¹⁵ while the law of Luxembourg neglects to mention

⁵¹¹ The Government of the Grand Duchy of Luxembourg, press release, “The Spaceresources.lu initiative raises strong interest among the New York business community” (5 June 2017), online: Luxembourg Space Agency <<https://space-agency.public.lu/dam-assets/press-release/2017/2017-06-05-press-release-the-spaceresourceslu-initiative-raises-strong-interest-among-the-new-york-business-community.pdf>>. See also, Luxembourg Space Agency, press release, “Three US space companies choose Luxembourg to implement activities in Europe” (27 September 2018), online: Luxembourg Space Agency <<https://space-agency.public.lu/dam-assets/press-release/2018/2018-09-27-Three-US-space-companies-choose-Luxembourg-to-implement-activities-in-Europe.pdf>>.

⁵¹² *Luxembourg Law on the Exploration and Use of Celestial Bodies*, *supra* note 124, Article I.

⁵¹³ *United States Commercial Space Launch Competitiveness Act*, *supra* note 124, legislative summary.

⁵¹⁴ *Japan Space Resources Act*, *supra* note 363; Nasir, “UAE’s National Space Law comes into Effect,” *supra* note 486; Foust, “Japan passes Space Resources Law,” *supra* note 486.

⁵¹⁵ *United States Commercial Space Launch Competitiveness Act*, *supra* note 124:

... promote the right of United States citizens to engage in commercial exploration for and commercial recovery of space resources free from harmful interference, in accordance with the international obligations of the United States and subject to authorization and continuing supervision by the Federal Government. (Paragraph 51302(3))

A United States citizen engaged in commercial recovery of an asteroid resource or a space resource under this chapter shall be entitled to any asteroid resource or space resource obtained, including to possess, own,

such obligation.⁵¹⁶ The Executive Order, on the other hand, positions outer space as a regional (national) resource by emphasizing that the United States does not consider outer space as a global commons.⁵¹⁷ This statement, together with the perception that outer space is to be commercially utilized by Americans, situates international law outside of the scope of the Order. Therefore, the Order appears as an attempt to bridge this difference of semantics between Luxembourg's legal approach to the status of outer space and that of the United States.

In fact, the Order aims at the commercial exploration of outer space by stating that “commercial partners will participate in an ‘innovative and sustainable program’.”⁵¹⁸ This statement constitutes an indication of the private space actors' *powercense* and their role not only as one of the reasons that gave rise to this Order but also as a law-directing power. In the case of Luxembourg, what led to a new domestic space law prioritizing the interests of the private space industry was the economic potential that Luxembourg identified in this industry.⁵¹⁹ It is now the same potential that appears at hand giving rise to an Order clarifying that, in essence, the space policy of the United States should be considered by private space actors as no less accommodating than the one of Luxembourg.

The relationship between the power of private actors and their activities over natural areas – terrestrial areas in the past and presently parts of outer space – have historically proved to perform

transport, use, and sell the asteroid resource or space resource obtained in accordance with applicable law, including the international obligations of the United States. (Paragraph 51303)

⁵¹⁶ *Luxembourg Law on the Exploration and Use of Celestial Bodies*, *supra* note 124, Article 1: “Space resources are capable of being appropriated.” In fact, the original text of Article 1 provided that “Space resources are capable of being appropriated, in accordance with international law.” However, the final version of the legislative text did not include the mention to international law.

⁵¹⁷ *Executive Order of 2020*, *supra* note 360.

⁵¹⁸ *Ibid.*

⁵¹⁹ The Government of the Grand Duchy of Luxembourg, press release, “Luxembourg is the First European Nation to Offer a Legal Framework for Space Resources Utilization,” *supra* note 394.

an institutionalizing function over these natural areas.⁵²⁰ The provision of the Artemis Accords for the establishment of safety zones on the Moon is one more example that reveals the same.⁵²¹ The Accords provide that space operations on the Moon justify the establishment of safety zones, that is, the delimitation of the physical areas of the Moon, that can be extended and adjusted according to the nature of space operations as they progress. This provision enables the delimitation of a material space – and, therefore, the formation of a space – despite the deterritorializing function of international space law and its objective of *spacelessness*, and illustrates the space-centered dynamic of modern space law.

Rejecting the understanding of modern space law as a space-making tool, a part of the space law scholarship considers that the rationale behind modern national space laws, such as the laws on space resources exploration and use, is the enablement of international cooperation in the uses of outer space. Indeed, both countries, Luxembourg and the United States, have engaged in a series of collaborative schemes for the commercial exploration of space natural resources.⁵²² Several Memoranda of Understanding between the two countries – always emphasizing the importance of

⁵²⁰ As mentioned in Chapter I, Part 2. The same chapter also observed that the interests and power of private space actors have often given rise to laws bringing areas beyond national jurisdiction under the influence of private companies, ultimately leading to the formation of territories through colonial patterns. The juxtaposition of the two eras, the era of colonialism of the past and the era of modern space activities of the present, is key in understanding the constitutive power entailed in the subjectivity that emerges from the action of the private space actors and, consequently, in understanding this subjectivity as constitutive of the *powercene*. Indeed, as the first chapter observed, the territorial formations of the colonial era were the result of unilateral and nationalist policies of that epoch's empires. Such patterns, however, were underpinned by private companies' exploitation interests and capital-making potential. Similarly, modern space activities – much like the territorial exploration and exploitation activities of the past – are initiated by the power of private space subjects, thus forming a *powercene* of private space actors, which entails the capacity to reform and re-structure the socio-economic and natural environments of outer space.

⁵²¹ *Artemis Accords*, *supra* note 2, Section 11.

⁵²² The Government of the Grand Duchy of Luxembourg, press release, “United States and Luxembourg sign memorandum on space co-operation” (10 May 2019), online: <<https://space-agency.public.lu/dam-assets/press-release/2019/2019-05-10-Press-release-Space-MoU-USA-LUX.pdf>>. The Artemis Accords constitute a similar example as they reflect an agreement of cooperation between the two countries, among others. See *Artemis Accords*, *supra* note 2.

private space actors – and with other space faring nations such as Russia,⁵²³ China,⁵²⁴ South Korea,⁵²⁵ Japan,⁵²⁶ and France,⁵²⁷ as well as agreements for partnerships with private space companies⁵²⁸ have taken place to that account. Nevertheless, the relationships involved are limited to collaborations between space faring nations and private space actors, thus reinforcing rather than reconciling the dynamics of the *powercene*. Therefore, despite the pretext of cooperation, the power dynamics remain unchanged and, in a way similar to the colonial dynamics of the past, private space actors involved in modern space activities extend their interests beyond national jurisdictions.⁵²⁹

⁵²³ China National Space Administration, “China and Russia sign a Memorandum of Understanding Regarding Cooperation for the Construction of the International Lunar Research Station” (9 March 2021), online: China National Space Administration <<http://www.cnsa.gov.cn/english/n6465652/n6465653/c6811380/content.html>>.

⁵²⁴ The Government of the Grand Duchy of Luxembourg, Ministry of Economy, press release, “Luxembourg cooperates with China in the exploration and use of outer space for peaceful purpose, including in the utilization of space resources” (16 January 2018), online: Luxembourg Space Agency <<https://space-agency.public.lu/dam-assets/press-release/2018/2018-01-17-press-release-cooperation-china-luxembourg.pdf>>; The Government of the Grand Duchy of Luxembourg, Ministry of Economy, press release, “Experts from China and South Korea join the Luxembourg Government’s SpaceResources.lu initiative as high-level advisors” (8 March 2017), online: Luxembourg Space Agency <https://space-agency.public.lu/dam-assets/press-release/2017/2017_03_03SPressReleaseMeeting-advisory-board.pdf>.

⁵²⁵ The Government of the Grand Duchy of Luxembourg, Ministry of Economy, press release, “Experts from China and South Korea join the Luxembourg Government’s SpaceResources.lu initiative as high-level advisors,” *ibid*.

⁵²⁶ The Government of the Grand Duchy of Luxembourg, Ministry of Economy, press release, “Luxembourg and Japan agree to cooperate on exploration and commercial utilization of space resources” (29 November 2017), online: Luxembourg Space Agency <<https://space-agency.public.lu/dam-assets/press-release/2017/2017-11-29-press-release-mou-japan-space.pdf>>.

⁵²⁷ Luxembourg Space Agency, press release, “France-Luxembourg Space Cooperation Quadripartite Agreement to focus on Exploration and Space Resources” (13 July 2021), online: Luxembourg Space Agency <<https://space-agency.public.lu/dam-assets/press-release/2021/LoI-Luxembourg-finalGB.pdf>>.

⁵²⁸ The Government of the Grand Duchy of Luxembourg, Ministry of Economy, press release, “SpaceResources.lu: Luxembourg Government and Planetary Resources sign MoU to develop activities related to space resource utilization,” *supra* note 506; Adam Gabbatt, “Jeff Bezos offers Nasa \$2bn in exchange for moon mission contract” (27 July 2021), online: The Guardian <<https://www.theguardian.com/science/2021/jul/26/jeff-bezos-nasa-blue-origin-space>>; Raphael Satter et al, “‘NASA rules,’ Musk says as SpaceX wins \$2.9 billion moon lander contract” (16 April 2021), online: Reuters <<https://www.reuters.com/technology/spacex-wins-us-contract-spacecraft-send-astronauts-moon-washington-post-2021-04-16/>>.

⁵²⁹ The Government of the Grand Duchy of Luxembourg, Ministry of Economy, press release, “SpaceResources.lu: the Luxembourg Government becomes a key shareholder of Planetary Resources, Inc., the U.S.-based asteroid mining company” (3 November 2016), online: Luxembourg Space Agency <https://space-agency.public.lu/dam-assets/press-release/2016/2016_11_03PlanetaryResourcesAgreement.pdf>. This press release reveals how the private companies of space faring nations occupy the market, *de facto* excluding other actors and States.

IV. FROM THE *POWERCENE* OF MODERN SPACE ACTORS TO THE META-SPATIALITY OF OUTER SPACE

The *powercene* of private space actors also attests to the immaterial dimension of spatiality, or, put otherwise, to a *meta-spatiality*. I use the prefix *meta* to demonstrate the relationship of reflection between material and immaterial territoriality. That is, a relationship where the idea of spatiality as detached from the physical space follows a formation and reformation processes similar to those followed for the formation of material spaces. The prefix *meta* can, according to linguists, serve many semantical purposes, often meaning “*trans-*, or changed in position or form ...; *post-*, or after ...; behind...; beyond...; alternating...; later ...; transcending ...; reversed ...; higher; between; with; over.”⁵³⁰ I use this prefix as one that refers to a process of imitation, where the process of formation of immaterial spatialities follows the process of formation of spatialities in the physical world. Therefore, I use the prefix *meta* to emphasize the methodological closeness between the formation of physical and non-physical spaces. As such, the concept of *meta-spatiality* refers to the mirroring of the factors that lead to the formation of a physical space on the formation processes of non-physical spaces where the attachment of the physical element is absent. Accordingly, the *meta-spaces* of outer space could be considered as correlated to the subjectivity of territorial formations and are linked to its powergenic subjects, that are the private space actors. Therefore, the understanding of the interconnection between outer space (the object), private space actors (the subject) and the process of the latter transforming the former into a *meta-space* is in place. Elden, borrowing concepts developed by Giddens, describes space as a “bordered power-container.”⁵³¹ As such, he emphasizes the subjective element of space by defining its borders through the understanding of power. Power, however, cannot be addressed through the observation

⁵³⁰ Thomas R Murray, “Mapping Meta-Territoriality” (1984) 13:1 Educational Research 16-18 at 17.

⁵³¹ Elden, *The Birth of Territory*, *supra* note 15 at 3.

of the physical space alone but in conjunction with subjective actions. As Foucault puts it in his discourse on power and the formation of subjects, “it is a form of power that makes individuals subjects.”⁵³² And he continues with the different modes of subjects: “There are two meanings of the word *subject*: subject to someone else by control and dependence, and tied to his own identity by a conscience of self-knowledge. Both meanings suggest a form of power which subjugates and makes subject to.”⁵³³

Consequently, one would observe that the capital- and technology-based power of private space actors (thought as Foucault’s individuals) plays the role of as a border-forming power, transforming the social and natural environments of outer space into “bordered power-containers,”⁵³⁴ that is, *meta-spaces*. Throughout this process, modern space law simply undertakes a function of institutionalization of this power-based governability of outer space, or of an “instrument to govern others,”⁵³⁵ where “others” refers to outer space and actors beyond the borders of the *powercene*. As Foucault observes,

... [G]overnability implies the relationship of the self with the self, meaning that in this notion of governability ... the set of practices through which it is possible to establish, define, organize and instrumentalize the strategies that individuals, in their freedom, may have towards others. These are free individuals trying to control, determine and define the freedom of others and, to do so, they have certain instruments to govern others. This is thus based on the freedom, in the relation of the self with the self and in relation with the other.⁵³⁶

⁵³² Michel Foucault, “The Subject and Power” in Hubert L. Dreyfus & Paul Rabinow, *Michel Foucault – beyond Structuralism and Hermeneutics* (Chicago: The University of Chicago Press, 1983) at 212.

⁵³³ *Ibid.*

⁵³⁴ Giddens, *A Contemporary Critique of Historical Materialism – Vol 1*, *supra* note 380 at 120.

⁵³⁵ Michel Foucault, *The Government of Self and Others – Lectures at the Collège de France 1982-1983* (Hampshire: Plagrove Macmillan, 1984) at 286.

⁵³⁶ *Ibid.*

Therefore, modern space law – especially national space laws regulating the status of space natural resources – arm private actors with such a freedom by ultimately enabling the construction of a physical space and a *meta-space* where the main subjects of governability are the private space actors. In other words, modern space laws enable private space actors to construct a space, be it material or not, which creates a *meta-spatial* relation between private space actors and the “other:”⁵³⁷ all those subjects that remain beyond the power of governability, including outer space as a physical environment.⁵³⁸

1.4. PRIVATE ACTORS AS THE NORMATIVE SUBJECTS IN MODERN SPACE LAW

The previous part presented the emergence of private space actors as central players in the development of modern space law and their technology and capital-based power to steer the ideology of the modern legal order of space activities. Taking an extralegal approach, this part locates private space actors as the normative subjects of modern space law. It also observes the new private subjectivity as intrinsic – and, perhaps even leading – part of the system of space activities. Therefore, this part considers the concept of normative subjectivity as fundamental in understanding the modern social construction of outer space and space law as a modern social construct. The narrative of private normative subjectivity in modern space activities and space law explores the normative – and normatively ruling – dimensions of private actors’ governability⁵³⁹ and its effects in the system of modern space governance.

⁵³⁷ See discussion on the *Other* in Chapter I (footnote 143); Turner, *Classical Sociology*, *supra* note 143; Derrida, “Force of Law: The Mystical Foundation of Authority,” *supra* note 95.

⁵³⁸ Foucault, *The Government of Self and Others – Lectures at the Collège de France 1982-1983*, *supra* note 535.

⁵³⁹ See Chapter II, Part 1.3.

The discourse on legal normativity most often appears as an intrinsic part of the legal discourse itself. Whether it examines the legal frontiers of law or law's function, the question of what legal normativity is and what it symbolizes has traditionally involved the relationship between a theoretical understanding of law and what is understood as law by its subjects.⁵⁴⁰ Similarly, the elements that form the normativity of space law do not differ from those that form the general discourse on legal normativity. Therefore, to understand the normativity of space law, the prior understanding of the relationship between its theoretical underpinnings and practical perception about it is required.

Spacelessness constitutes the foundational basis and theoretical characteristic of space law. What formed international law as territorial, that is, the link between space and the subjects' rights over it, is the very element that established space law as a deterritorializing means of space.⁵⁴¹ Yet, the initial discourse on space law understood space (outer space in this case) through positive space law, as a law with a function that deconstructs space.⁵⁴² Where would the discourse on the normativity of space law be located within this space-centered understanding of space law's prescriptions?

The answer to this question is not single-folded. As law is not static but rather evolving over time, its normativity is also transformed by the changes – socio-economic, political, and cultural – that transform law.⁵⁴³ Therefore, to scrutinize the normativity of law, one needs to consider it as detached from general beliefs and view it through the changing realities that form its living present.

⁵⁴⁰ For the role of the subject in forming legal and extra-legal normativity, see generally Reza Benakar, "Can Legal Sociology Account for the Normativity of Law?" in Matthias Baier et al, eds, *Social and Legal Norms - Towards a Socio-Legal Understanding of Normativity* (United Kingdom: Ashgate Publishing, 2013). See also Stephen P Turner, *Explaining the Normative* (Cambridge: Polity, 2010); Brian Tamanaha, *A General Jurisprudence of Law and Society* (Oxford: Oxford University Press, 2001).

⁵⁴¹ See Chapter I, Parts 2.2. to 2.4.

⁵⁴² See Chapter I, analysis of the Outer Space Treaty, Parts 1.1. to 1.4.

⁵⁴³ See Benakar, "Can Legal Sociology Account for the Normativity of Law?," *supra* note 540.

In the words of Jean-François Lyotard, to understand the real function of law, one needs to search for universalized perceptions about law and disbelieve them, or to apply “incredulity towards metanarratives.”⁵⁴⁴ In other words, one needs to depart from a static understanding of law, or a generalized perception of it, and employ a post-modern scrutiny in search of its non-static characteristics. Similarly, to realize the normativity of space law, one needs to uproot it from theoretical and generalized perceptions and look beyond the visible, the written, and the positive or, simply put, use a postmodern⁵⁴⁵ machinery to understand the changing nature of space law’s normativity.

Therefore, to realize the living normativity of space law, rather than its historical one, an “incredulity towards”⁵⁴⁶ the metanarrative of this *spacelessness* is in place. However, the passage from the foundational and the ideal, to the evidenced and the real, might reveal a simultaneous passage from a normativity of *spacelessness* to a normativity where spatial relations are formed and present; from a normativity of deterritorialization to one of territorialization; from a spatially deconstructive normativity to one of spatial construction.

The Outer Space Treaty tells the story of space law with a dual approach to the use of outer space. An approach that is simultaneously permissive and restrictive. On the one hand, “the exploration and use of outer space, ..., shall be the province of all mankind,”⁵⁴⁷ the Treaty provides. On the

⁵⁴⁴ See generally Jean-François Lyotard, *The Postmodern Condition: A Report on Knowledge* (France, 1984); Linda Hutcheon, “Incredulity toward Metanarrative: Negotiating Postmodernism and Feminisms” in Barbara Godard, ed, *Feminine: Writings on Women and Culture from Tessera* (Toronto: Second Story Press, 1989).

⁵⁴⁵ The reference to postmodernism is made here to emphasize the need to understand the normativity of space activities and the changes that are reflected in space law from a perspective that is not linked to the materiality of outer space, outer space resources, and, generally, the uses of outer space. Postmodernism came as a critique to modernity, that is, to a capital-centered understanding of the world. As a result, a postmodern thinking does not necessitate its relation to a certain epoch, but can be used as a methodology to achieve a non-capitalist socio-legal critique. For further explanations of this concept, see Costas Douzinas, *Postmodern Jurisprudence: The Law of Text in the Texts of Law* (United Kingdom: Routledge, 1991) and Peter Cane & Joanne Conaghan, *The New Oxford Companion to Law* (Oxford: Oxford University Press, 2009).

⁵⁴⁶ Jean-François Lyotard, *The Postmodern Condition: A Report on Knowledge*, *supra* note 544.

⁵⁴⁷ *Outer Space Treaty*, *supra* note 1, Article 1.

other hand, a series of prohibitions limit this exploration and use. The Treaty comfortably situates its mandate between a free and inclusive use of outer space⁵⁴⁸ and restrictions to this use,⁵⁴⁹ without establishing an actor – or actors – or an acting authority as prevalent over others. Accordingly, the Outer Space Treaty does not institutionalize humankind as a subject over outer space to ensure that [hu]mankind’s – or humanity’s in more contemporary terms – access to outer space remains anticolonial, both in terms of the subject and the object.⁵⁵⁰

This absence of a subject over the use of outer space has often been described by the scholarship on space law as a lack of a relevant global administrative mechanisms coordinating, regulating and, generally, governing the uses of outer space.⁵⁵¹ This lack is often presented as a legal gap or a gap of governance.⁵⁵² Several space law scholars present this so-called gap as one necessitating the modernization of space law through the establishment of administrative law mechanisms, such as an international organization to control and coordinate all space-related activities and actors.⁵⁵³ It is, however, precisely against this monopolization of power – against the creation of a hegemon⁵⁵⁴ – that the Outer Space Treaty guides towards a system built on the ideal of inclusivity, where all actors⁵⁵⁵ are considered essential parts for the harmonic function of the system and where

⁵⁴⁸ See *Outer Space Treaty*, *supra* note 1, Preamble; United Nations, General Assembly, *Provisional Verbatim Record of the Fourteen Hundred and Ninety-Ninth Plenary Meeting*, 21st Sess, A/PV.1499 at 58; United Nations, General Assembly, Question of the Peaceful Use of Outer Space, 13th Sess, 792nd plenary meeting, Res 1348 (XIII), A/RES/XIII/1348.

⁵⁴⁹ For example, *Outer Space Treaty*, *supra* note 1, Articles II, IV.

⁵⁵⁰ See Chapter I, Part 2.

⁵⁵¹ See for example Alexander Zyma, “Global Administrative Law and Regulation of Extraction of Minerals in Outer Space” (2019) 4 *Advanced Space Law* 125-136; Larysa Soroka, “Modern Challenges to Establishing Global Law on Sustainable Development of Space Activities” (2020) 6 *Advanced Space Law* 64-71.

⁵⁵² *Ibid.*

⁵⁵³ *Ibid.*

⁵⁵⁴ The concept of hegemony is to express the critique of global administrative theories of governance, according to which the concentration of power to which global administrative governance can lead, can often be thought as similar to hegemonic structures. See Nico Krisch & Benedict Kingsbury, “Introduction: Global Governance and Global Administrative Law in the International Legal Order” (2006) 17:1 *European Journal of International Law* 1-13.

⁵⁵⁵ As such actors can be States, private entities, the human being, and outer space itself; *Outer Space Treaty*, *supra* note 1, Preamble, Articles I, II, IX. See the relevant analysis in Chapter I, Part 2.

the object of use, outer space, is considered as an actor of itself⁵⁵⁶. Therefore, it is against a system of exclusive subjects (or actors) that the normativity of this Treaty is to be understood.

Wallerstein, one of the most eminent scholars in the literature on world systems theories, in his book *The Modern World-System: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century*,⁵⁵⁷ observes that “what characterizes a social system ... is the fact that life within it is largely self-contained, and that the dynamics of its development are largely internal.”⁵⁵⁸ That is, according to Wallerstein, the core of a system’s existence is its ability to function and survive independently of other systems. “If the system, for any reason, were to be cut off from all external forces,”⁵⁵⁹ he says, “the system would continue to function substantially in the same manner.”⁵⁶⁰ Through his definition of a world system, Wallerstein debunks the formalistic understanding of social systems as linked to institutionalized functions of the society, such as nation-States, or the economy and the role of private actors therein, yet he appreciates the significance of these elements in the construction and functioning of the systems. The role of private actors as forming such a system can be identified in the selection of eleven private space companies by NASA in the context of their Artemis Moon Program,⁵⁶¹ thus demonstrating the extend of the dependence of State-led space exploration on the private system.

Wallerstein’s theoretical definition of a social system appears relevant in understanding the normativity formed through the action of private space actors in modern space law. The system of

⁵⁵⁶ See the relevant analysis in Chapter I, Parts 2.3 to 2.4.

⁵⁵⁷ Immanuel Wallerstein, *The Modern World-System: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century* (New York: Academic Press, 1976).

⁵⁵⁸ *Ibid* at 229.

⁵⁵⁹ *Ibid*.

⁵⁶⁰ *Ibid*.

⁵⁶¹ NASA, “NASA Taps 11 American Companies to Advance Human Lunar Landers” (16 May 2019), online: NASA <<https://www.nasa.gov/press-release/nasa-taps-11-american-companies-to-advance-human-lunar-landers>>; NASA, “Artemis Moon Program Advances – The Story So Far” (31 May 2019), online: NASA <<https://www.nasa.gov/artemis-moon-program-advances>>.

space actors could be understood in two ways. First, the system of space actors could be thought as envisioned in the Outer Space Treaty: an inclusive and pluralistic system where all space actors (including outer space as one of them) occupy an essential role in the exploration and use of outer space by humanity.⁵⁶² Nonetheless, a second system could simultaneously be observed: a normative system constructed on the basis of the actors' performance.⁵⁶³ Reflecting the role of space actors in the modern space activities, this system could be thought as a fragmented system composed of a series of subsystems, with some prevailing. One of the main elements in Wallerstein's earlier definition of a social system is the self-sufficiency of the system – its ability to “continue to function substantially in the same manner”⁵⁶⁴ – even if it were to be detached from all other systems.

As subsystems that coexist in the system of space actors and space activities could be observed the subsystem of States, the subsystem of private space actors, the subsystem of field and region-specific organizations, the subsystem of individuals (as recipients of space-derived goods and services), and the subsystem of outer space as the object of exploration and use. Despite the inclusive character of the Outer Space Treaty and its role in preserving the essential contribution of all these subsystems to a unique and inclusive pluralistic system, modern space activities reveal a different reality.

Specifically, modern space activities demonstrate that the subsystems compose the overall system of space actors and space activities and share one characteristic in common: the prevailing role of

⁵⁶² *Outer Space Treaty*, *supra* note 1, Preamble, Articles I, II, IX. See the relevant analysis in Chapter I, Part 2.

⁵⁶³ The concept of performance is used to emphasize the power of (space) actors to lead the political and legal scene of space activities and to form pressure centers or group themselves into governance centers. For further explanations of the concept, see Sandra Laugier, “Performativity, Normativity and Law” (2004) 16:4 *Archives de Philosophie* 607-627.

⁵⁶⁴ Wallerstein, *The Modern World-System: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century*, *supra* note 557 at 229.

the subsystem of private space actors and its vital intervention within all other subsystems. This reality transforms the subsystem of private space actors into an independent system; one that could “continue to function substantially in the same manner”⁵⁶⁵ even if “it were to be cut off from all external forces.”⁵⁶⁶

Indeed, within the world space economy of \$350 billion,⁵⁶⁷ the private space industry alone represents the biggest part⁵⁶⁸ while most space activities require the vital participation of the private space sector⁵⁶⁹ and are sometimes led by it. Therefore, the transformation of the private space actors from a subsystem to the system itself transcends the limits of law and moves towards the normative sphere of performance.

This normatively performative aspect of system formation can be thought in conjunction with the occupation of space and the distribution of wealth resulting from the economic organization of space. According to Wallerstein’s theory,

thus far there have only existed two varieties of such world-systems: world-empires, in which there is a single political system over most of the area, however attenuated the degree of its effective control; and those systems in which such a single political system does not exist over all, or virtually all, of the space. ... [P]rior to the modern era, world-economies were highly unstable structures which tended either to be converted into empires or to disintegrate. It is the peculiarity of the modern world-system that a world-economy has survived for 500 years and yet has not come to be transformed into a world-empire--a peculiarity that is the secret of its strength. ... This peculiarity is the political side of the form of economic organization called capitalism. ... Capitalism is based on the constant

⁵⁶⁵ *Ibid.*

⁵⁶⁶ *Ibid.*

⁵⁶⁷ See OECD, *The Space Economy in Figures – How Space Contributes to the Global Economy*, *supra* note 399.

⁵⁶⁸ *Ibid.*

⁵⁶⁹ *Ibid.*

absorption of economic loss by political entities, while economic gain is distributed to “private” hands.⁵⁷⁰

The interconnection among space, economy – and its distribution – and the rise of private actors with the simultaneous downfall of the role of public actors is of utmost importance. The understanding of this interconnection as the power that has the capacity to produce a social system superior to all others shares much in common with the theory of the capitalocene and the theory of the *powercene*. All theories perceive economy – in particular, capitalism (the *powercene* theory translating into the main source of *power*) – as the thread uniting all other systems and setting their motion and, subsequently, as the sole system-creating power. This overarching power is “based on the fact that the economic factors operate within an arena larger than that which any political entity can totally control.”⁵⁷¹ Consequently, “this gives capitalists a freedom of maneuver that is structurally based.”⁵⁷²

For Neyrat, for example, the structure that gives power to the world system of capitalism, or capitalocene, is the organization and transformation of nature into an economic system produced within the same system.⁵⁷³ The commonality between this structuring and world empires is apparent: they have in action their action towards the division and structuring of nature based on capital-centered objectives. Similarly, according to Wallerstein’s systems theory such produced structuring involves economic gain, or capital, that is ultimately distributed to “‘private’ hands.”⁵⁷⁴ This observation is relevant to this thesis taking into account the key role of private actors in such

⁵⁷⁰ Wallerstein, *The Modern World-System: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century*, *supra* note 557 at 229.

⁵⁷¹ *Ibid.*

⁵⁷² *Ibid.*

⁵⁷³ Neyrat, *The Unconstructable Earth: An Ecology of Separation*, *supra* note 34 at 14ff.

⁵⁷⁴ Wallerstein, *The Modern World-System: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century*, *supra* note 557 at 229.

a structuring, ultimately heading from the capital-centered visions of the colonial companies of the 18th and 19th centuries to the geographical division of the world and the system of nation-States.⁵⁷⁵

The systemic structuring of outer space did not occur in a normative manner. It was rather structured on an *a priori* rules-based approach of deterritorialization as opposed to the normatively created territorial system of international law. Therefore, the colonially constructed system of the nation-States differs from the anticolonially constructed system of outer space in that it is not founded on the basis of a bordered space but rather based on a global pluralistic – or even cosmic – space, that is currently threatened by the – not necessarily strictly legal – norms⁵⁷⁶ created by private space actors.

Butler, who has focused her post-structural and postmodern approaches on the concept of normativity, locates the real architecture of things beyond the known and accepted societal structures and beliefs and suggests that it is rather the performance than the preexisting norm that constructs the real architecture of the world.⁵⁷⁷ Butler's theory on normativity and performance refers to gender, sexuality, and the human body, where the preexisting societal beliefs about the architecture of these elements do not coincide with their real – performative – architectural identity.⁵⁷⁸ The latter is only formed in a post-structural manner disregarding preexisting norms and setting new ones through the means of performance.

⁵⁷⁵ See Chapter I, Parts 1.1. to 1.3.

⁵⁷⁶ The concept of normativity is here understood as referring to extra-legal normativities, that is, those constructed through sociopolitical dynamics, rather than legal constructs.

⁵⁷⁷ See generally, Judith Butler, *Gender Trouble – Feminism and the Subversion of Identity* (New York: Routledge, 1990).

⁵⁷⁸ *Ibid.*

Despite the difference between the subject that Butler's work scrutinizes and the subject of this thesis, the theoretical concept that Butler's work suggests is of relevance to understanding the performative construction of normativity through the performance of actors rather than law.

The preexisting law-based architectural norms that structure human action in relation to outer space lead to the ideal of a global and deterritorialized space. However, new performative norms are currently transforming this dynamic from global to regional. Such performative norms depart from, and are crafted through, the actions of the subjects of this new performative normativity set by private space actors. For example, the introduction of the institution of property in the modern domestic regimes that were built *a posteriori* and following this performative normativity came to seal the new norm and transfer it from the sphere of performance to that of legal institutions.

As a result, the globally – or cosmically – structured architecture of outer space, which has traditionally deviated from international law's bordered-space concept, that is, territoriality, has now been transformed into an actor-specific architecture. This actor-specific architecture, however, is simultaneously a space-centered architecture as it is through the subjects that the spatiality – or *meta-spaces* – of outer space and space law can be understood, as this chapter earlier found.⁵⁷⁹ Accordingly, the traditional perception about the *spacelessness* of outer space is presently replaced by an understanding of an actor-based space, thus transforming globality into a series of private subjectivities or “bordered power-containers,”⁵⁸⁰ whereby power is produced through the acting subjects, primarily the private actors in modern space activities.⁵⁸¹

⁵⁷⁹ Thomas R Murray, “Mapping Meta-Territoriality” (1984) 13:1 Educational Research 16-18. See also Chapter II, Part 1.3.

⁵⁸⁰ Giddens, *A Contemporary Critique of Historical Materialism – Vol 1*, *supra* note 380 at 120.

⁵⁸¹ For relevant data demonstrating the ability of private space companies to exercise influence on the space law and policy-making processes, see information contained herein: Luxembourg Space Agency, “UNOOSA and Luxembourg Launch New ‘Space Law for New Space Actors’ Project” (13 November 2019), online: <https://space-agency.public.lu/en/news-media/news/2019/UN_and_Luxembourg_sign_project.html>; the Government of the

To harmoniously translate and integrate this new normativity of performance of private space actors as the new subjects of space law, the revival of the pluralistic spirit of the Outer Space Treaty is required. As private actors constitute an essential part of modern space activities and their presence is intrinsic to humanity's capabilities in relation to outer space, failure to consider the normative character of their presence would only further the features of modern space law's pathogenesis. Such pathogenesis is also criticized in the *Vancouver Recommendations on Space Mining*, a letter sent to the Government of Canada by a group of renowned scholars, professionals, and diplomats, following the United States Executive Order of 2020. The recommendations present the element of inclusivity as essential for the future of humanity in outer space. This set of recommendations, condemn unilateralism and promote the need for the return to multilateralism. The group of experts emphasizes that they "consider the unilateral adoption of national legislation to be an inadequate response to the need to ensure that Space mining, wherever and whenever it occurs, does so in a safe and sustainable manner,"⁵⁸² while also recommending multilateral

Grand Duchy of Luxembourg, press release, "Luxembourg and Japan agree to cooperate on exploration and commercial utilization of space resources" (29 November 2017), online: Luxembourg Space Agency <<https://space-agency.public.lu/dam-assets/press-release/2017/2017-11-29-press-release-mou-japan-space.pdf>>; Clive Cookson, "Private Sector navigates Outer Space ahead of International Law" (13 January 2020), online: Financial Times <<https://www.ft.com/content/73145372-1b74-11ea-81f0-0c253907d3e0>>; the Government of the Grand Duchy of Luxembourg, press release, "Luxembourg and the United Arab Emirates to cooperate on space activities with particular focus on the exploration and utilization of space resources" (10 October 2017), online: Luxembourg Space Agency <<https://space-agency.public.lu/dam-assets/press-release/2017/2017-10-10-press-release-mou-space.pdf>>; the Government of the Grand Duchy of Luxembourg, press release, "Luxembourg and the European Space Agency enhance cooperation on asteroid missions, related technology and space resources exploration and utilization" (20 June 2017), online: Luxembourg Space Agency <https://space-agency.public.lu/dam-assets/press-release/2017/2017_06_21%20Press%20Release%20ESA%20LeBourget.pdf>; see emphasis given to the role of private actors in the policy-making processes of States. The Government of the Grand Duchy of Luxembourg, press release, "Experts from China and South Korea join the Luxembourg Government's SpaceResources.lu initiative as high-level advisors" (8 March 2017), online: Luxembourg Space Agency <https://space-agency.public.lu/dam-assets/press-release/2017/2017_03_03SPressReleaseMeeting-advisory-board.pdf>; see here how the policy-making process at the level of the State takes into direct account private space companies and involves them in the process itself.

⁵⁸² Outer Space Institute, *Vancouver Recommendations on Space Mining* (20 April 2020), online: Outer Space Institute <http://www.outerspaceinstitute.ca/docs/Vancouver_Recommendations_on_Space_Mining.pdf>.

negotiations open to all States, with specific emphasis on non-spacefaring States and developing States.⁵⁸³ A similar approach is proposed by one more letter sent to the Government of Canada by a group of renowned academics in an effort to deter the Government of Canada from following the policy proposed by the United States Executive Order of 2020. By reference to the Vancouver Recommendations on Space Mining, the letter promotes multilateralism as the only sustainable solution for the regulation of the exploration and use of outer space and its natural resources and emphasizes that, as opposed to the approach taken by the Executive Order,

there has ... been a long-standing consensus among states that the recovery and use of space resources should be governed by an international agreement, as has been done in other ‘areas beyond national jurisdiction’ where resources are recognized as constituting ‘global commons’, for example the deep seabed, international airspace, and the radio frequency spectrum.⁵⁸⁴

Therefore, the values of globality and inclusivity that are characteristic of traditional space law could only be harmoniously spurred in the modern governance of space activities through a rules-based pluralistic global system for space activities. Indeed, to construct a rules-based governance of inclusivity and globality, one needs to first accept the pluralistic normativity of both old and new, rule-based and norm-based subjects within a given legal or extralegal order – that of space activities in this case – as “the center of legal development ... from time immemorial has ... lain ... in society itself, and must be sought there at the present time.”⁵⁸⁵

⁵⁸³ *Ibid.*

⁵⁸⁴ Institute of Air and Space Law, McGill University, *Letter to the Honourable François-Philippe Champagne on the US Executive Order on Recovery and Use of Space Resources* (20 April 2020), online: McGill Institute of Air and Space Law <https://www.mcgill.ca/iasl/files/iasl/open_letter_on_us_executive_order_on_space_mining.pdf>.

⁵⁸⁵ Eugen Ehrlich, *Fundamental Principles of the Sociology of Law* (Cambridge: Harvard University Press, 1936) at 390 as cited in Gunther Teubner, “Global Bukowina: Legal Pluralism in the World-Society” in Gunther Teubner, ed, *Global Law without a State* (1997) 3-28 at 3.

2. A DYSTOPIAN NORMATIVITY

Having observed the power of modern space actors and their capacity to drive modern space governance, law, and scholarship, the second part of this chapter attempts to characterize this normativity of the actors as one that is problematic for the human condition. Therefore, this part finds that the space-centered and capitalocentric path that modern space law and governance have followed can only cause an unsustainable distortion of international space law's ideology, thus rendering the reinvention of a rules-based space law order essential.

This *dystopia*,⁵⁸⁶ as the following part explains, has led to a new legal order that is guided by and created through the means of instrumentalism and rationalization, where newly produced space laws – especially at the unilateral/domestic level – appear to be used as instruments towards the normalization and institutionalization of the private space industry's space-centrism.

2.1. FROM THE IDEAL OF *SPACELESSNESS* TO A DYSTOPIAN SPACE-CENTERED REAL

This thesis often presented the emergence of space law as a critique to international law; a critique that inspired a deeply anticolonial dynamic opposing the concept of bordered spaces and *meta-spaces*.⁵⁸⁷ The second chapter, however, showed that contemporary normative standards of space technology and economy as well as the political scene of space activities do not seem compatible with the ideology of *spacelessness*.⁵⁸⁸

⁵⁸⁶ As this chapter explains later, the concept is used to express the *dys-* (hard, difficult) *topos* (place in the sense of *thesis* – see footnote 601) in which space law finds itself today. See Part 2.1.

⁵⁸⁷ Chapter II, Part 1.3.

⁵⁸⁸ Chapter II, Part 1.

The divergence between the ideals that were crafted in the core body of space law and the current state of the space industry has often been discussed in the space law scholarship and constitutes a topic of concern within the political and legal discourses on space law. Accordingly, these discourses locate the roots of such divergence in the lack of a contemporary international space legal regime and are often described as legal gaps. Some scholars believe that these gaps have been caused by the advent of novel and unforeseen space activities and rendered the space law of the '50s and '60s outdated, while the Outer Space Treaty has even been characterized as “relic of the Cold War”.⁵⁸⁹ Froehlich, for example, observes that

while various new issues at the time of negotiation of these treaties, the recent development of telecommunications and the promise of new prospects for the exploration and exploitation of outer space (space tourism, deep space mining, etc.) reveal the gaps left by States during the first Space Race and the need for an update of international space law.⁵⁹⁰

At the same time, several countries consider that “the Outer Space Treaty is outdated and no longer reflects the situation in space, particularly the number of participants, emphasizing that until recently, outer space activities were based on the norms and principles of international space law.”⁵⁹¹ Further queries are raised about the ways in which such gaps can be filled. While a part of the scholarship in space law and policy supports that these so-called gaps can be addressed through the production of a new international legal framework covering a wide range of modern

⁵⁸⁹ Annette Froehlich, *Space Security and Legal Aspects of Active Debris Removal* (Switzerland: Springer, 2019) at 15.

⁵⁹⁰ *Ibid.*

⁵⁹¹ United Nations General Assembly, press release, “First, Fourth Committees Jointly Consider Military Activities in Outer Space as Delegates Call for Legally Binding Way to Bridge Gaps in Existing Treaty,” GA/DIS/3638, 1st Committee, 47th Session, 20th Meeting (AM), 31 October 2019, online: UN <<https://www.un.org/press/en/2019/gadis3638.doc.htm>>.

space activities, other scholars believe that such gaps can be answered through the regulation of space activities at the national level.⁵⁹²

However, regardless of the reality that traditional space law – particularly the Outer Space Treaty – was not tailored to address modern space activities and, consequently, could be thought as containing legal gaps, the question remains whether the ideals that led to the creation of traditional space law are presently followed or are overridden by space-centered realities; in other words, whether they are successful in “giv[ing] regard to the political context of law.”⁵⁹³ If the ideals embedded in these texts are found to be obsolete within the contemporary context of space activities, has the normativity produced by such activities emancipated itself from them? And if it has, what has replaced the spaceless ideals of space law?

The ideological gap between the legal expression of the vision of *spacelessness* through the articles of the Outer Space Treaty – especially the systemic and contextual interpretation of articles I, II and IX of the Treaty⁵⁹⁴ – and the development of the space-based ideology of modern space law

⁵⁹² See for example Katherine L Martinez, “Lost in Space: An Exploration of the Current Gaps in Space Law” (2021) 11:2 Seattle Journal of Technology, Environmental & Innovation Law 323-349; Peter van Fenema, “Legal Aspects of Launch Services and Space Transportation” in Frans von der Dunk & Fabio Tronchetti, eds, *Handbook of Space Law* (Cheltenham: Edward Elgar) 382-453 at 407; Christian Brünner & Alexander Soucek, *Outer Space in Society, Politics and Law* (Vienna: Springer, 2012).

⁵⁹³ Koskenniemi, *From Apology to Utopia – The Structure of International Legal Argument*, *supra* note 508 at 21.

⁵⁹⁴ *Outer Space Treaty*, *supra* note 1:

The exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind. Outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies. There shall be freedom of scientific investigation in outer space, including the Moon and other celestial bodies, and States shall facilitate and encourage international cooperation in such investigation. (Article I)

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. (Article II)

In the exploration and use of outer space, including the Moon and other celestial bodies, States Parties to the Treaty shall be guided by the principle of cooperation and mutual assistance and shall conduct all their activities in outer space, including the Moon and other celestial bodies, with due regard to the corresponding interests of all other States Parties to the Treaty. States Parties to the Treaty shall pursue studies of outer space, including the Moon and other celestial bodies, and conduct exploration of them so as to avoid their harmful contamination

reveals first a change in the system of space actors, or, in the system of subjectivities that direct the development of legal norms for outer space, as the previous part of this chapter observed. Accordingly, the ideal of a peaceful and *spaceless* exploration of outer space is now questioned by a new space race; not one among the traditional subjects of space activities and space law, that is, States, but one among the new normative subjectivities of space activities, with the main ones being the private space actors whose investment objectives are linked to the idea of exclusive, and therefore bordered, space.⁵⁹⁵ This space-based objective, despite not being linked to the materiality of outer space – as technology has not yet reached the required level to enable activities directly linked with private use and occupation of extraterrestrial land, such as space mining – it is, however, connected with the immaterial fashions of outer space.

Therefore, one could say that the ideal of *spacelessness* and the rules-based international order that frame it appear lacking modernization in that they do not “give regard to the [modern] political context of law,”⁵⁹⁶ as they do not enable the concept of bordered – private – space sought by the private space actors in modern space activities. That is, the rules-based normativity of traditional space law appears as insufficient, where its insufficiency is located in an ideology, a thesis, a position that is under question by the modern space industry.

and also adverse changes in the environment of the Earth resulting from the introduction of extraterrestrial matter and, where necessary, shall adopt appropriate measures for this purpose. If a State Party to the Treaty has reason to believe that an activity or experiment planned by it or its nationals in outer space, including the Moon and other celestial bodies, would cause potentially harmful interference with activities of other States Parties in the peaceful exploration and use of outer space, including the Moon and other celestial bodies, it shall undertake appropriate international consultations before proceeding with any such activity or experiment. A State Party to the Treaty which has reason to believe that an activity or experiment planned by another State Party in outer space, including the Moon and other celestial bodies, would cause potentially harmful interference with activities in the peaceful exploration and use of outer space, including the Moon and other celestial bodies, may request consultation concerning the activity or experiment. (Article IX)

⁵⁹⁵ See Chapter II, Parts 1.2. and 1.4.

⁵⁹⁶ Koskenniemi, *From Apology to Utopia – The Structure of International Legal Argument*, *supra* note 508 at 21.

As earlier noted, this ideology of *spacelessness* is questioned through the effort by space actors to fill the gaps of the space legal regime and create a new normativity for space activities that is not rules-based. This questioning is situated in modern space law's extralegal normativity, that is, a normativity of subjects rather than written norms. The effects of this modern normativity can be identified on two levels: as a factual normativity and as a juridical one. Therefore, the concept of normativity in the modern order of space activities can be here understood as twofold. On the one hand, normativity is associated with the order produced by the actions of space actors, be they in accordance with law or not (factual normativity). This kind of normativity, for example, would be identified in space mining missions for commercial purposes in contrast with the provisions and spirit of international space law. On the other hand, normativity can be understood as a *quasi*-legal normativity. In this case, the philosophical underpinnings and theoretical justifications of space law – as they have formed the international rules-based order of space activities – are sought to be replaced by a parallel legal order: the national legal orders that regulate modern space activities, such as the earlier discussed examples of the national legal orders of the United States, Luxembourg and, more recently, Japan, which build the legal status of space resources around the institution of private property.⁵⁹⁷

The ideological and practical difference between the two normativities, that of traditional – (international/multilateral) and modern (national/unilateral) space law is important as it draws attention to a new emerging normativity, which relocates the focus from the international to the national and from the public to the private. It is also important to observe that this change of focus,

⁵⁹⁷ *United States Commercial Space Launch Competitiveness Act*, *supra* note 124; *Luxembourg Law on the Exploration and Use of Celestial Bodies*, *supra* note 124; *Japan Space Resources Act*, *supra* note 363.

which can be thought as both juridical and societal, is the result of a State-specific effort to replace the ideal of *spacelessness* within a new space-making legal order.

As often noted in this thesis, the making of territories – or, generally, space – can occur through multiple functions within a society, including the production of institutions, such as law, which, ultimately, can lead to the construction of spaces by attributing exclusive rights to some actors while excluding others.⁵⁹⁸ The advent of new national space laws confirms this assertion. Especially in the example of space resources, the introduction of modern space laws at the national levels performs this very function, that is, such laws institutionalize space through the production of space-making rights of a private nature.

This novel space-making environment, however, has replaced traditional space law's *spacelessness* ideal with a dystopian real. Indeed, if the *spacelessness* can be thought as an ideal not allowing space law to progress and adjust to a new reality – thus remaining stagnant and causing legal uncertainty to the private space industry – the newly brought dystopias could reveal a future even more conflictual and uncertain.

The ideal of *spacelessness* might not be sufficient to address the space-seeking challenges of modern space activities. The dystopia of modern space law, however, leads to something worse: the replacement of a rules-based order with a normative actors-based order. In turn, such an order could lead to the earlier discussed order without principles, or *arches*, an anarchic order,⁵⁹⁹ and, consequently, cause a higher degree of uncertainty, not only to the private space actors but also to States, and even humanity.

⁵⁹⁸ Chapter II, Part 1.

⁵⁹⁹ For the concept see Chapter II, Part 1.1. at footnote 404.

However, both the *spacelessness* of traditional space law and the dystopian normative reality of modern space law share in common the fact that they express the ideologies of their own times.⁶⁰⁰

This means that the *topos* (space) constructed in each case is linked to their *topos* (*thesis* – also understood as *ideology*).⁶⁰¹ Moreover, this thesis presented earlier the concept of space (*topos*) as linked to the subject rather than the object, with the latter often being non-essential for the production of space. In the case of outer space, for example, it is not its physical environment that constructs it into a space, but rather the socioeconomic and political subjectivities that act in relation to it. Accordingly, the existence of an ideology (the second meaning of *topos*) and the subjects that construct it are interconnected. Consequently, to construct an order that combines both kinds of *topos*, one needs to move from the norm itself to the subject and consider a scheme able to harmonize the coexistence of both traditional and modern subjectivities in space law and space activities. That is, a pluralistic legal scheme is needed. A rules-based scheme that recognizes the normative existence of all coexisting subjectivities that act in relation to outer space and attributes to each one of them a place of their own, thus providing legal certainty for all actors.

Further indications for such need constitute the currently observed phenomena of rationalization,⁶⁰² instrumentalism⁶⁰³ and spatial reductionism⁶⁰⁴ in modern space law caused by the *spacelessness* of traditional space law combined to the unsustainable space-centred dystopias of the modern legal and extralegal normative orders.

⁶⁰⁰ *Topos* can also mean *thesis*, position over something; see the way in which the term was presented in Aristotle's *Rhetoric* (1403a18–19)).

⁶⁰¹ *Ibid*; deriving from ancient Greek, the term *topos* means simultaneously *thesis* (*θέση*), i.e. the position of an object in relation to physical space, as well as the position of a subject over a topic; here the term is not used to refer to its spatial meaning, that is, the position of an object within a given space, but to its metaphorical one, that is, the position of a subject regarding a specific topic; for the etymology and definition of the term see Γ Μπαμπινιώτης, *Ετυμολογικό Λεξικό της Νέας Ελληνικής Γλώσσας – Ιστορία των Λέξεων* (Etymological Modern Greek Language Dictionary – History of the Words), *supra* note 404, 1435.

⁶⁰² See Chapter II, Part 2.2.

⁶⁰³ See Chapter II, Part 2.3.

⁶⁰⁴ See Chapter II, Part 2.4.

2.2. THE PROCESS OF RATIONALIZATION IN MODERN SPACE LAW

The earlier observations about the rise of private actors as central players in the capitalocene and the *powercene* of space activities speak to a process of rationalization that characterizes both a Wallerstenein understanding of space activities as a system⁶⁰⁵ and the modernization of space law. Gane observes that for Weber, the founding father of the theoretical concept of rationalization, any “transition to modernity is driven by a process of cultural rationalization, one in which ultimate values rationalize and *devalue themselves*, and are replaced increasingly by the pursuit of materialistic, mundane needs.”⁶⁰⁶ Rationalization, as a concept, “involves ‘an increasingly theoretical mastery of reality by means of increasingly precise and abstract concepts’,”⁶⁰⁷ whereas in more practical terms it involves the “methodical attainment of a definitely given and practical end by means of an increasingly precise calculation of adequate means.”⁶⁰⁸ According to Weber, as well as for other theorists such as Levinas, rationalization refers to the process of adjusting one’s behavior, reality, and actions towards a pre-given or pre-decided purpose.⁶⁰⁹ Through this process the purpose appears to be the pole that directs and gives form to such behavior, realities, and actions. That is, the sought purpose, the goal, functions as the gravity of all actions and decisions.

⁶⁰⁵ Wallerstein, *The Modern World-System: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century*, *supra* note 557 at 229.

⁶⁰⁶ Nicholas Gane, *Max Weber and Postmodern Theory: Rationalization versus Re-enchantment* (United Kingdom: Palgrave Macmillan, 2002) 15.

⁶⁰⁷ George Ritzer, “The Weberian Theory of Rationalization and the McDonaldization of Contemporary Society” in George Ritzer & Douglas J Goodman, eds, *Classical Sociological Theory* (McGraw-Hill, 2004) at 42.

⁶⁰⁸ *Ibid.*

⁶⁰⁹ See generally Max Weber, *Economy and Society* (California: The University of California Press, 1978) and Michael L Morgan, ed, *The Oxford Handbook of Levinas* (Oxford: Oxford University Press, 2019).

The process of rationalization, which, according to Weber and Levinas, is intrinsically linked to the functions of modern – mainly Western – societies,⁶¹⁰ shares a methodological commonality with the theory of the capitalocene, which was discussed in the first part of this chapter. In the theory of the capitalocene, the world is thought to be directed and restructured by its gravitation towards modern societies' ultimate goal, that is, capitalism and, subsequently, profit.⁶¹¹ As such, this theory suggests that the nature has been “cheapened” and objectified to serve the capital-centered needs of modern societies.⁶¹² This process of transformation can also be explained through Weber's observation about the rationalization processes that characterize the institutions of modern Western societies, including law.

Indeed, Gane points out that the effect of rationalization, can be understood as “a process of devaluation.”⁶¹³ “The process of devaluation,”⁶¹⁴ he notes, “gives rise to a condition of cultural nihilism in which the intrinsic value or meaning of values or actions are subordinated increasingly to a ‘rational’ quest for efficiency and control.”⁶¹⁵

In Weber's theory of rationalization, the result of the transformation is the cultural and ideological devaluation of the world and its values. A condition much like the weakening of values that occurs through the rationalization of the societal functions and structures, is observed in the theory of the capitalocene, this time focusing more on nature than on society. Neyrat, for example, observes that the so-called cheapening of nature, its objectification and restructuring based on capitalism-centered models, is a result of human, yet capitalism-centered, intervention.⁶¹⁶ Comparing the

⁶¹⁰ *Ibid.*

⁶¹¹ See generally Neyrat, *The Unconstructable Earth: An Ecology of Separation*, *supra* note 34.

⁶¹² *Ibid.*

⁶¹³ *Ibid.*

⁶¹⁴ *Ibid.*

⁶¹⁵ *Ibid.*

⁶¹⁶ Neyrat, *The Unconstructable Earth: An Ecology of Separation*, *supra* note 34 at 55 ff.

devaluation of the world in Weber's theory with the cheapening and objectification of nature in the theory of the capitalocene, one would observe that both states, devaluation and cheapening or objectification, constitute the result of a process: that of centering societal functions on capitalism, the latter being considered as the main ideal. The cheapening of nature and its reduction into an object – as the first chapter of this thesis discussed –⁶¹⁷ could, in fact, be considered as a fashion of the world's devaluation – perhaps even its most important one.

Weber's theory of rationalization, however, is not a theory in itself. Instead, it constitutes a critique of the modern functioning of Western societies. The theory of the capitalocene could also be characterized as a critique to the same. Both theories critique the modern capital-centered structuring and functions of modern societies and consider them responsible for the world and the nature losing their enchanting features.

The observations about societies' rationalities and the process of rationalization extend to law. According to Weber, law constitutes one more societal function that can be used as a means towards rationalization by first being itself rationalized.⁶¹⁸ The rationalization of law involves, therefore, two processes: first the self-rationalization of the law following the trends and policies that are taking effect in the system within which it exists and, subsequently, the rationalization of the system itself through the institutionalizing power of law. Consequently, in the first process law appears as a field impacted by the changes that surround it, whereas, at the same time, the second process utilizes law as a means to institutionally effectuate such changes.

This dual process of rationalization of, and through, the law characterizes the development of modern space law. This thesis often presented law as a technology that can be used to achieve an

⁶¹⁷ *Ibid* at 64.

⁶¹⁸ Gane, *Max Weber and Postmodern Theory – Rationalization versus Re-Enchantment*, *supra* note 606.

end or as “a means to an end – or, in the modern era, the application of expert knowledge to achieve practical goals.”⁶¹⁹ The similarities between regarding law as a technology and understanding it as susceptible to a process of rationalization are apparent as in both cases it is the practical goals – the ends – that structure law and, ultimately, it is through law that the achievement of these ends is *technologized*.⁶²⁰

The development of space law – or, in more precise words, its process of modernization – is one of the most characteristic examples that have followed this process of rationalization. This thesis emphasized, time and again, how international space law’s *spacelessness* functioned as a balancing ingredient to the very much space-centered system within which it was created, that of international law. However, this thesis later observed that the rise of private space actors and their normatively constituted subjectivity aims to reverse the *spacelessness* – and it has already done so regarding the immaterial aspects of space⁶²¹ – and to transform the system into a space-based system where borders (material or metaphorical) are to be structured on the basis of private individualism and State-centric unilateralism.⁶²²

The rationalization of space law towards the achievement of these goals has taken effect on two fronts, that is, at the national and at the international levels. At the national level, one can observe the process of the self-rationalization of space law. At the international level, the second side of the process is taking effect: the institutional rationalization of the system through the means of law as a rationalizing technology.⁶²³

⁶¹⁹ Jasanoff, *The Ethics of Invention: Technology and the Human Future*, *supra* note 54 at Chapter 2.

⁶²⁰ *Ibid.*

⁶²¹ See Chapter II, Part 1.

⁶²² *Ibid.* For example, through the *United States Commercial Space Launch Competitiveness Act* (*supra* note 124), the *Luxembourg Law on the Exploration and Use of Celestial Bodies* (*supra* note 124), and the *Japan Space Resources Act* (*supra* note 363).

⁶²³ See also Chapter I, Part 1.1.

At the national level, the process of space law's self-rationalization takes place through legislation, where laws such as those of Luxembourg and the United States (Luxembourg's Law on the Exploration and Use of Celestial Bodies and the United States Commercial Space Launch Competitiveness Act) attempt to adapt legal prescriptions of international law to normative realities produced within individual States and led by private actors.⁶²⁴ As such, the development of modern space law appears to take place at the national level. As a result, this development is rationalized on the basis of the context within which it occurs, that is, the national context of space faring nations and the capitalocentric context of its new normative subjects, the private space actors. Consequently, modern space law becomes fitting part of the modern system of space activities, led by this new normative subjectivity and often disregarding traditional space law's ideology of inclusivity and *spacelessness*. For instance, the Luxembourgish space agency, which was founded in 2018, was established in order to follow and facilitate the commercial demands of the space industry and to build "on the country's deep understanding of the legal and infrastructure requirements for space entrepreneurs to achieve their commercial ambitions."⁶²⁵ The activities of the agency follow the rationale introduced by the Spaceresources.lu initiative, part of which was to establish a legal framework facilitating space mining and introducing private property in outer space as permissible, that is, Luxembourg's Law on Space Natural Resources.⁶²⁶ Therefore, this could be thought as one example of institutionalization of the modern space industry's capitalocentric approach, where the objectives of the private space industry form and tailor State institutions.

⁶²⁴ *United States Commercial Space Launch Competitiveness Act*, *supra* note 124; *Luxembourg Law on the Exploration and Use of Celestial Bodies*, *supra* note 124; *Japan Space Resources Act*, *supra* note 363.

⁶²⁵ The Government of the Grand Duchy of Luxembourg, Ministry of Economy, press release, "Luxembourg launches business-focused national space agency" (12 September 2018), online: Luxembourg Space Agency <<https://space-agency.public.lu/dam-assets/press-release/2018/2018-09-12-Press-release-Launch-Lux-Space-Agency.pdf>>.

⁶²⁶ *Ibid.*

The institutionalizing effects of the self-rationalization of space law at the national level appear also in the modern scene of international space law. The introduction of national space laws that prescribe as permissions the prohibitions of international space law⁶²⁷ in several jurisdictions forms a tendency at the international level. Following the approaches of the United States and Luxembourg, for example, the United Arab Emirates are

setting regulations and laws with the future in mind. This will help inspire investor confidence and allow companies to clearly understand the rights a state could grant them when domiciled in that country. ... Materials and resources mined on celestial bodies such as the moon or asteroids could be utilised in space for manufacturing or if the economics make sense be brought back to earth and monetized.⁶²⁸

Similarly, the influence of the private sector in the formation of modern space law can also be observed in the proposed *Building Blocks for the Development of an International framework on Space Resource Activities*⁶²⁹ produced by the International Space Resources Governance Group in 2019. Supported and significantly sponsored by the private space industry,⁶³⁰ this initiative promoted a private property-centered approach to the use, exploration, and exploitation of space natural resources, thus disregarding the *spaceless* dynamic of the Outer Space Treaty. The Building Blocks suggest that an international framework be established ensuring “that resource rights over

⁶²⁷ See for example *Japan Space resources Act*, *supra* note 363, Article 5 “The Space Resources Act provides that the person who obtained the permit owns the space resources that the person exploits in accordance with the approved activity plan;” *United States Commercial Space Launch Competitiveness Act*, *supra* note 124, Paragraphs 51302 and 51302. Especially, Paragraph 51302, which provides that “A United States citizen engaged in commercial recovery of an asteroid resource or a space resource under this chapter shall be entitled to any asteroid resource or space resource obtained, including to possess, own, transport, use, and sell the asteroid resource or space resource obtained;” *Luxembourg Law on the Exploration and Use of Celestial Bodies*, *supra* note 124, Article 1, according to which “space resources are capable of being owned,” as opposed to *Outer Space Treaty*, *supra* note 1, Articles I and II.

⁶²⁸ Kelsey Warner, “UAWE looks to regulate Asteroid mining as it aims to lure Private Space Sector” (27 November 2019), online: The National News <<https://www.thenational.ae/uae/science/uae-looks-to-regulate-asteroid-mining-as-it-aims-to-lure-private-space-sector-1.943028>>.

⁶²⁹ The Hague International Space Resources Governance Group, *Building Blocks for the Development of an International framework on Space Resource Activities*, November 2019, online: Leiden University <<https://www.universiteitleiden.nl/binaries/content/assets/rechtsgeleerdheid/instituut-voor-publiekrecht/lucht--en-ruimte-recht/space-resources/bb-thissrwwg--cover.pdf>>.

⁶³⁰ *Ibid.*

raw mineral and volatile materials extracted from space resources, as well as products derived therefrom, can lawfully be acquired through domestic legislation, bilateral agreements and/or multilateral agreements,”⁶³¹ therefore bringing exclusive rights as linked to the concept of territorial attachment to the fore. The Building Blocks further suggest that the “international framework should enable the mutual recognition between States of such resource rights.”⁶³² As a result, they present the role of international law as a safeguard for rights over the resources, rather than as a security towards an outer space liberated from any rights of exclusivity and territoriality. Accordingly, the introduction of space laws and relevant proposed frameworks that allow the appropriation of space natural resources creates a juridical trend – followed by an ever-growing number of spacefaring nations⁶³³ and other entities – that normatively suggests the traditional international space law as outdated, or simply insufficient.⁶³⁴ Consequently, the so-thought legal obstacles set out by the prohibitions of traditional space law, mainly the Outer Space Treaty, are overridden by the normativity created at the national level. As a result, self-rationalized national space laws have an effect of normative – or even *de facto* – rationalization of the juridical thinking in an ever-growing number of jurisdictions, thus leading to a generalized and superseding juridical tendency opposing the ideals of traditional and rules-based space legal order.⁶³⁵

⁶³¹ *Ibid*, Article 8:

8.1 The international framework should ensure that resource rights over raw mineral and volatile materials extracted from space resources, as well as products derived therefrom, can lawfully be acquired through domestic legislation, bilateral agreements and/or multilateral agreements.

8.2 The international framework should enable the mutual recognition between States of such resource rights.

8.3 The international framework should ensure that the utilization of space resources is carried out in accordance with the principle of non-appropriation under Article II OST.

⁶³² *Ibid*.

⁶³³ Such as the United States, Luxembourg, Japan, Russia, China, the United Kingdom, and France. See Chapter II, Part 1.

⁶³⁴ See for example the comments in Ram, “US and Luxembourg frame Laws for New Space Race,” *supra* note 505 and Foust, “Luxembourg adopts space resources law,” *supra* note 419.”

⁶³⁵ See for example “UAE Space Law Details announced to facilitate Space Sector Development,” online: Space Watch <<https://spacewatch.global/2020/02/uae-space-law-details-announced-to-facilitate-space-sector->

Therefore, the rationalization of space law at the domestic level can be thought as transforming a rules-based legal regime into a flexible collection of regionally fragmented policies crafted into law through this process. Ultimately, the institutionalizing power of law⁶³⁶ can be thought as having the capacity to transform the underpinnings of *spacelessness* of international space law into the private industry-led space-making rationales that are captured in the modern national space laws and policies relating to space resource exploration and exploitation. “Simultaneously to steps taken on the national level, Luxembourg will strive to promote a legal regulatory framework on the international level supporting investments and growth opportunities for private ventures targeting the utilization of space resources,”⁶³⁷ notes Xavier Bettel, Luxembourg’s Prime Minister. As a result, the traditionally inspiring international space law, its prescriptions, its purposefully general and inclusive language, and the ideals suggesting outer space as a segment of nature inconvertible into an objectified space⁶³⁸ appear overruled amidst this process of rationalization. Simply put, the *enchanted* elements of space law that enabled its role as a critique to international law and its space- and territory-based foundations, are now normatively outlived by the reverse foundations of national legal orders.

development/”; Jack H Burke, “China’s New Wealth-Creation Scheme: Mining the Moon” (13 June 2019), online: National Review

<<https://www.nationalreview.com/2019/06/china-moon-mining-ambitious-space-plans/>>.

⁶³⁶ See Chapter II, Parts 1.1.-1.4.

⁶³⁷ The Government of the Grand Duchy of Luxembourg, Ministry of Economy, press release, “SpaceResources.lu: New space law to provide framework for space resource utilization” (3 June 2016), online: Luxembourg Space Agency <https://space-agency.public.lu/dam-assets/press-release/2016/2016_06_03PressRelease_MeetingAdvisoryBoard.pdf>.

⁶³⁸ See Chapter I and Chapter II, Part 1.

2.3. THE NORMATIVE INSTRUMENTALISM OF MODERN SPACE LAW

The advent of rationalization in the legal fields is most often accompanied by the simultaneous advent of instrumentalism.⁶³⁹ Accordingly, the rationalization of modern space law is not the result of its self-rationalization at the national level and its effect at the international level alone. Rather, instrumentalism has also appeared in the course of the modern space law-making processes, especially as far as the (national) laws governing the exploration and exploitation of space natural resources are concerned.

Instrumentalism in law, according to the theorists of the concept, refers to a methodology of constructing law based on “specific substantive goals.”⁶⁴⁰ Instrumentalism, therefore, considers law as a tool towards social purposes much like in a way similar to technological perceptions about the law. The concept, or methodology, of instrumentalism in law is often linked to the concept of maximization of law, in that it seeks to maximize the functional efficiency of the instrument, that is, law, towards a given purpose.⁶⁴¹ The close relation between rationalization and instrumentalism has been widely identified in the scholarship on legal theory.⁶⁴² The concept, however, has not been suggested in the scholarship of space law as one that can be used to describe the development of modern space law. Instrumentalism, together with rationalization, constitute two theoretical

⁶³⁹ See generally Hans Gerth et al, eds, *From Max Weber: Essays in Sociology* (London: Routledge, 2009) and Stephen P Turner & Regis A Factor, *Max Weber and the Dispute Over Reason and Value* (London: Taylor & Francis, 2014).

⁶⁴⁰ Robert S Summers, “Pragmatic Instrumentalism in Twentieth Century American Legal Thought - a Synthesis and Critique of Our Dominant General Theory About Law and Its Use” (1981) 66:5 Cornell Law Review 861-948 at 863.

⁶⁴¹ Timothy Meyer, “Instrumentalism” in Jean d’Aspermont & Sahib Singh, eds, *Concepts of International law – Contributions to Disciplinary Thought* (United Kingdom: Edward Elgar, 2019) 486-489.

⁶⁴² See for example Richard A Posner, “Rational Choice Behavioral Economics and the Law” (1997) 50 Stanford Law Review 1551-1575 and Brian Z Tamanaha, *Law as a Means to an End: Threat to the Rule of Law* (New York: Cambridge University Press, 2006).

concepts that have the capacity to explain with accuracy the route that the development of space law has followed during the past decades.

Without posturing that instrumentalism is new to space law, the simultaneous existence of both rationalization and instrumentalism is a newfangled phenomenon and driven by the rise of private space actors as the new normative subjects of the field. Indeed, instrumentalism has characterized space law since the beginning of its existence. Initially, space law served as an instrument to preserve the natural condition of outer space and protect it from the colonial behavior that was known to characterize human exploration and conquest of *terrae nullii* in the past. Thus, space law was an instrument prescribing the nature of outer space as differing from this concept (*terra nullius*), while at the same time remaining open for inclusive and peaceful exploration by all States. As such, the initial instrumentalism of space law was proactive.

On the contrary, the instrumentalism that is observed in the development of modern space law serves as a methodology enabling its rationalization. The difference between the two kinds of instrumentalism lies in the process leading to the production of law. The instrumentalism of traditional space law was founded on a rules-based legal order, whereby the variables were balanced, and the common interests preserved.⁶⁴³ Consequently, this initial instrumentalism functioned as a reconciling power between existing actors and their objectives. The instrumentalism of modern space law, on the other hand, is an instrumentalism produced in a normative, regional, and fragmented manner.

⁶⁴³ See for example *Outer Space Treaty*, *supra* note 1, Article VI, that foresees the action of private actors as essential in space activities, yet such private activities are to be conducted under the umbrella of the State, which is the one ultimately bearing international responsibility for the compliance of private actors with international law.

It is normative as it is not embedded in the law itself. Rather, as this thesis earlier discussed,⁶⁴⁴ the normativity of modern space law consists of a practical and norm-based order, where the pre-established rules-based order is viewed as a parallel – almost historical – legal fact.⁶⁴⁵ It is regional as this new normativity is produced at a spatially limited space, that is, a number of jurisdictions – excluding the international caliber of preexisting international space law. Last, it is fragmented as it is produced through multileveled law-making processes – for example, at the private, national, international levels – that often collide and, more often, even conflict.

Therefore, one could characterize the instrumentalism that modern space law currently witnesses as a counterintuitive instrumentalism whose rationale is to reverse the foundations set out by the preexisting rules-based order. The normative instrumentalism of modern space law, for example, lies in the end sought to be achieved through the production of the domestic space laws on space resources. In turn, the end, that is, the transformation of outer space into an objectified space capable of being appropriated, can be sourced in the policies and investment objectives of the private space industry.⁶⁴⁶ As a result, modern space law in this case appears as an instrument maneuvered by non-traditional subjects of space law, that is, private actors. Therefore, the instrumentalism of modern space law is closer to the idea of a Foucauldian instrumentalism of power,⁶⁴⁷ where the power of the subjects constitutes an instrument with the capacity to produce a social construction reflecting such subjects. Accordingly, the instrumentalism seen in modern space law is an instrumentalism where the *powercense* of private space actors⁶⁴⁸ is reflected upon the modern legal order of space activities through the construction of national space laws with the

⁶⁴⁴ See analysis on the influence of private actors on the development of space law, Chapter II, Part 2.1.

⁶⁴⁵ *Ibid.*

⁶⁴⁶ See Chapter II, Parts 1.2. to 1.4.

⁶⁴⁷ See Foucault, *Power/Knowledge: Selected Interviews and Other Writings, 1972-1977*, *supra* note 149 at 149.

⁶⁴⁸ Chapter II, Part 1.3.

capacity to institutionalize the objectives of the private space industry that are rooted in the idea of bordered space.

2.4. A TERRITORIALITY OF IMAGINATION AND THE SPATIAL REDUCTIONISM OF MODERN SPACE LAW⁶⁴⁹

The previous parts of this chapter presented the developmental trends of modern space laws as situated within its rationalization and instrumentalization by space law's modern subjectivity, that is, the private space actors. These two concepts, rationalization and instrumentalism, were primarily described as linked to the emergence of modern space laws regulating the status of space natural resources at the national level. As this thesis often observed, these laws appear to understand the prohibition of appropriation in outer space as one answering only the material aspects of space ignoring its socioeconomic and political dimensions.

Similarly, a large number of conventional narratives about modern space law engage deeply with the tensions at play in the discourse of resource appropriation in the context of space activities.⁶⁵⁰ The competing claims of private property, sovereign controls, and freedom of exploration and use, are reflected extensively in these conventional narratives. But the conventional narratives

⁶⁴⁹ [An earlier version of this part (combined with parts of Chapter I) was presented at the ICELAW Final Conference organized by Durham University in 2019 (presentation title "An Inquiry into the Social Territories of Outer Space: Territory, Reductionism, and the Risk of State-centrism in the Governance of Outer Space"). The author would like to thank the conference participants, and particularly Stuart Elden and Philip Steinberg, for their constructive feedback and comments.]

⁶⁵⁰ This can be observed, for example, in the *Building Blocks for the Development of an International Framework on Space Resource Activities* (*supra* note 629), which made their way into the Legal Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space, thus generating relevant discourse; see United Nations Committee on the Peaceful Uses of Outer Space, Legal Subcommittee, *Building Blocks for the Development of an International framework on Space Resource Activities*, working paper, A/AC.105/C.2/L.315, 59 Sess, 2 March 2020. See also Fengna Xu & Jinuyan Su, "New Elements in the Hague Space Resources Governance Working Group's Building Blocks" (2020) 53 Space Policy 1-9.

downplay the importance of the non-material dimensions of such claims. The literature on space law understands the provisions that relate to the access and use of space resources as single-faceted by focusing on whether the material occupation or appropriation of outer space and parts of it is allowed or prohibited under the existing legal framework.⁶⁵¹ However, what the literature neglects to take into account is the immaterial dimension that resource exploration and exploitation can take.

As a result, the modern narratives about space law could be characterized as suffering from a fallacious vision, where the fallacy emerges from the focus on the materially visible and the ignorance of the materially invisible. In other words, the fallacy in this case arises through modern space law narratives that scrutinize the relationship between the visible and the permissible rather than on the relationship between the permissible and the whole, that is, material and immaterial – or visible and invisible.

The challenge presented by this fallacious vision in the space law literature is the limited breadth of claims that consider the material aspect of exploitation alone. Such claims focus on the tangible (material) aspects of property, appropriation, and occupation, leaving no space for the imaginary aspects of such concepts. Consequently, these claims are bound by *what can be seen* as opposed to *what can be imagined*. But such an approach can be treacherous in interpreting the provisions of legal fields where practical application of law – precedent – is lacking. It can be treacherous as it can lead to limited legal interpretations – or, perhaps even, understandings – that neither test nor

⁶⁵¹ See for example John G Wrench, “Non-Appropriation, No Problem: The Outer Space Treaty Is Ready for Asteroid Mining” (2019) 51:1 Case Western Reserve Journal of International Law 437-462; International Institute of Space Law, “Position Paper on Space Resource Mining” (20 December 2015), online: ; International Institute of Space Law <<https://iislweb.org/docs/SpaceResourceMining.pdf>>; Abigail D Pershing, “Interpreting the Outer Space Treaty’s Non-Appropriation Principle: Customary International Law from 1967 to Today” (2019) 44:1 The Yale Journal of International Law 149-178.

contest the limits of the legal order. Subsequently, the latter remains stalled and unable to embrace a holistic understanding of legal challenges posed by new space activities.

The example of the legal treatment of space resource exploitation and the space law literature that addresses the issue can successfully prove this fallacy. The majority of space law scholars address the issue as linked to the prohibition to appropriate parts of outer space that is embedded in the non-appropriation principle of article II of the Outer Space Treaty.⁶⁵² The scrutiny of this article appears to be linked with questions centered on the materiality of outer space. To name a few, according to Gorove, to explore the nature and range of the prohibition, one needs to ask questions such as whether “the prohibition extend[s] to the collection of dust particles or other special elements during flight in outer space,”⁶⁵³ “to the appropriation of cosmic rays, gases or the sun’s energy,”⁶⁵⁴ to the “collecting of mineral samples or precious metals on the moon or other celestial bodies,”⁶⁵⁵ or whether “the answer depends on the type of resource involved, or on its availability in unlimited (cosmic rays, meteorites, gases) or limited (minerals, metals) quantities or perhaps on its location.”⁶⁵⁶ For other space law scholars, such as Lachs, the non-appropriation principle extends only to the prohibition to create “titles” over parts of outer space.⁶⁵⁷

Similarly, more modern space law scholarship views the issue of appropriation in outer space as one with solely material dimensions.⁶⁵⁸ For most modern space law authors, the concept of

⁶⁵² *Outer Space Treaty*, *supra* note 1, Article II: “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.”

⁶⁵³ Stephen Gorove, “Interpreting Article II of the Outer Space Treaty,” *supra* note 7.

⁶⁵⁴ *Ibid.*

⁶⁵⁵ *Ibid.*

⁶⁵⁶ *Ibid.*

⁶⁵⁷ Manfred Lachs, “The Legal Regime of Outer Space and Celestial Bodies,” *supra* note 7.

⁶⁵⁸ See for example Wrench, “Non-Appropriation, No Problem: The Outer Space Treaty Is Ready for Asteroid Mining,” *supra* note 651; International Institute of Space Law, “Position Paper on Space Resource Mining,” *supra* note 651; Pershing, “Interpreting the Outer Space Treaty’s Non-Appropriation Principle: Customary International Law from 1967 to Today,” *supra* note 651; Xu & Su, “New Elements in the Hague Space Resources Governance Working Group’s Building Blocks,” *supra* note 650; Lachs, “The Legal Regime of Outer Space and Celestial Bodies,” *supra* note 7.

appropriation is distinct from the concept of use by claiming that use of the resource is permitted as long as it does not lead to the physical appropriation of the resource.⁶⁵⁹

All these approaches to the non-appropriation principle intuitively share the idea of material – tangible – borders. In the first instance, Gorove links the scrutiny of the principle with the physical dimensions of several parts of outer space.⁶⁶⁰ Lachs, brings forward the idea of “titles” of land,⁶⁶¹ the essence of which is linked to a bordered physical space, while the modern space law scholarship discusses the prohibition of appropriation as limited within the physical borders of the use of the resources.

The materially bordered understanding of appropriation in the space law scholarship reveals an approach of limited legal imagination. Exploitation of space natural resources is not yet a fact. Rather, it is legal assumptions that are put forward to address the potential legal implications of a possible appropriation of space resources that could emerge as a result of potential space resources exploitation operations. Yet, such legal assumptions are limited by the materiality of such potential operations, even though the non-material factors involved have already preceded the potentiality of material occupation and are currently in effect.⁶⁶²

The material aspect of space is the obvious, the materially bordered, the visible. But the invisible aspect requires the activation of the imagination and a vision of depth, where the invisible precedes and, ultimately, includes the visible. In the earlier discussed example of Elden’s understanding of the Greek *polis*,⁶⁶³ the invisible and immaterial were presented as existing realities that were

⁶⁵⁹ Stephen Gorove, “Interpreting Article II of the Outer Space Treaty,” *supra* note 7.

⁶⁶⁰ Lachs, “The Legal Regime of Outer Space and Celestial Bodies,” *supra* note 7 at 43.

⁶⁶¹ *Ibid.*

⁶⁶² See analysis in Chapter II, Parts 1.2.-1.3.

⁶⁶³ Elden, *The Birth of Territory*, *supra* note 15, at 24-30.

focused on the political element, that is, the action of subjects over the piece of concerned land.⁶⁶⁴ Consequently, in the same example, the understanding of space as something material and visible (a *polis* with defined and finite borders) starts from something immaterial and invisible. To see this invisible it suffices to imagine it, or to think of the actions of the *political* as the borders of this imaginary space. To achieve this, one needs to follow a methodology that involves the imagination of both the space and the law.

The term imagination here is not used in its literal dimension and does not refer to something that *we think exists or is true, although in fact it is not real*.⁶⁶⁵ Rather, imagination is used as a concept and a methodology able to recount the capturing of invisible spaces.⁶⁶⁶ Indeed, often the insights used to understand one problem are endogenous to the factors that create the problem. For instance, in the example of space natural resources exploitation and whether their appropriation would constitute a violation of the provisions of article II of the Outer Space Treaty,⁶⁶⁷ space law scholars and space policy makers associate the legal challenge of appropriation with the *stricto sensu* meaning of the term appropriation alone.⁶⁶⁸ At the same time, the act of appropriation of a resource or other parts of outer space is strictly thought as tied to the physical elements of the resource or the other parts, such as in the scholarship produced by Gorove and Lachs outlined above.⁶⁶⁹ Accordingly, one would argue that the non-appropriation principle of article II of the Outer Space

⁶⁶⁴ See Chapter I, Part 2.4.

⁶⁶⁵ See generally Murray Bundy, "Plato's View of the Imagination" (1922) 19:4 *Studies in Philology* 362–403; definitions taken from the Cambridge Dictionary (available online).

⁶⁶⁶ Murray, "Mapping Meta-Territoriality," *supra* note 530.

⁶⁶⁷ *Outer Space Treaty*, *supra* note 1, Article II: "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."

⁶⁶⁸ See Wrench, "Non-Appropriation, No Problem: The Outer Space Treaty Is Ready for Asteroid Mining," *supra* note 651; International Institute of Space Law, "Position Paper on Space Resource Mining," *supra* note 651; Pershing, "Interpreting the Outer Space Treaty's Non-Appropriation Principle: Customary International Law from 1967 to Today," *supra* note 651; Xu & Su, "New Elements in the Hague Space Resources Governance Working Group's Building Blocks," *supra* note 650; Lachs, "The Legal Regime of Outer Space and Celestial Bodies," *supra* note 7.

⁶⁶⁹ Gorove, "Interpreting Article II of the Outer Space Treaty," *supra* note 7; Lachs, "The Legal Regime of Outer Space and Celestial Bodies," *supra* note 7.

Treaty could not be infringed unless physical extraction of the resources commences, or parts of outer space are occupied or commercially exploited. This, however, would be an approach aiming to understand the problem from within the same elements that give rise to it. Consequently, this approach would ignore all those exogenous factors that could reveal the visibly hidden dimensions of the problem – in this case all the visibly hidden dimensions of appropriating a space.

In the example of the exploitation of space natural resources and its relationship to article II of the Outer Space Treaty as endogenous factors could be considered the obvious: the occupation and appropriation of the resources. As exogenous factors, on the other hand, could be considered all those political actions – political not in the sense of polity- and policy-related but understood as actions of the *politikon* (the acting subject) –⁶⁷⁰ that lead to the physical exploitation of the resources. Such actions include political agreements of collaboration,⁶⁷¹ the creation of supportive legislative frameworks,⁶⁷² the dimensions of the involvement of public and private actors and, above all, the political and socioeconomic effects of all these and their relationship with the prescriptive underpinnings of space law.⁶⁷³ Given, however, that these actions are not expressed

⁶⁷⁰ For the understanding of the term see Elden, *The Birth of Territory*, *supra* note 15, at 24-30.

⁶⁷¹ Such as the Memoranda of Understanding between Luxembourg and other space faring States, and with the private space industry, as well as among other States, as mentioned earlier in this chapter. See Chapter II, 1.3., 1.4.

⁶⁷² Such as the *United States Commercial Space Launch Competitiveness Act* (*supra* note 124), the *Luxembourg Law on the Exploration and Use of Celestial Bodies* (*supra* note 124), and the *Japan Space Resources Act* (*supra* note 363).

⁶⁷³ See for example The Government of the Grand Duchy of Luxembourg, press release, “Luxembourg and Japan agree to cooperate on exploration and commercial utilization of space resources” (29 November 2017), online: Luxembourg Space Agency <<https://space-agency.public.lu/dam-assets/press-release/2017/2017-11-29-press-release-mou-japan-space.pdf>>; The Government of the Grand Duchy of Luxembourg, press release, “Luxembourg Government and Spire Global signed cooperation agreement to open a European HQ in the Grand Duchy” (15 November 2017), online: Luxembourg Space Agency <<https://space-agency.public.lu/dam-assets/press-release/2017/2017-11-15-press-release-spire.pdf>>; The Government of the Grand Duchy of Luxembourg, press release, “Luxembourg and the United Arab Emirates to cooperate on space activities with particular focus on the exploration and utilization of space resources” (10 October 2017), online: Luxembourg Space Agency <<https://space-agency.public.lu/dam-assets/press-release/2017/2017-10-10-press-release-mou-space.pdf>>; The Government of the Grand Duchy of Luxembourg, press release, “Luxembourg and the European Space Agency enhance cooperation on asteroid missions, related technology and space resources exploration and utilization” (20 June 2017), online: Luxembourg Space Agency <https://space-agency.public.lu/dam-assets/press-release/2017/2017_06_21%20Press%20Release%20ESA%20LeBourget.pdf>; The Government of the Grand Duchy of Luxembourg, press release, “Experts from China and South Korea join the Luxembourg Government’s

through the tangible and material elements of land appropriation, the sole method toward their identification and consideration is that of the imagination; understood as a means to see beyond the materially visible. Especially, in the question on the status of space natural resources, imagination would mean to shift the weigh from the resource, which is the object, to the *political* being which acts or intends to act over it, or in other words, the subject of action, or the subjectivities⁶⁷⁴ that can be identified in modern space activities and in the development of modern space law.

For instance, Luxembourg devised ways of attracting private space actors involved in the planning and financing of space mining technologies and projects.⁶⁷⁵ Enticed by a legal environment facilitating the commercial exploitation of space resources, Luxembourg achieved to concentrate within its jurisdiction capital streamed into space activities.⁶⁷⁶ This practice, however, deprived States with less attractive laws from enjoying the benefits following the influx of private space actors into a country's economy. That is, even though the material aspects of commercial space

SpaceResources.lu initiative as high-level advisors" (8 March 2017), online: Luxembourg Space Agency <https://space-agency.public.lu/dam-assets/press-release/2017/2017_03_03SPressReleaseMeeting-advisory-board.pdf>; The Government of the Grand Duchy of Luxembourg, press release, "Luxembourg and the Republic of Poland agree to cooperate on space activities with particular focus on the exploration and utilization of space resources" (12 October 2018), online: Luxembourg Space Agency <<https://space-agency.public.lu/dam-assets/press-release/2018/2018-10-05-Press-Release-MOU-Luxembourg-Poland-Space.pdf>>; The Government of the Grand Duchy of Luxembourg, press release, "Luxembourg and the Czech Republic cooperate in the frame of space resources exploration and utilization" (10 October 2018), online: Luxembourg Space Agency <<https://space-agency.public.lu/dam-assets/press-release/2018/2018-10-10-Press-release-MoU-Czech-Lux-FINAL.pdf>>; The Government of the Grand Duchy of Luxembourg, press release, "Luxembourg cooperates with China in the exploration and use of outer space for peaceful purpose, including in the utilization of space resources" (16 January 2018), online: Luxembourg Space Agency <<https://space-agency.public.lu/dam-assets/press-release/2018/2018-01-17-press-release-cooperation-china-luxembourg.pdf>>; The Government of the Grand Duchy of Luxembourg, press release, "United States and Luxembourg sign memorandum on space co-operation" (10 May 2019), online: Luxembourg Space Agency <<https://space-agency.public.lu/dam-assets/press-release/2019/2019-05-10-Press-release-Space-MoU-USA-LUX.pdf>>; The Government of the Grand Duchy of Luxembourg, press release, "The Grand Duchy of Luxembourg and Belgium join forces to develop the exploration and utilisation of space resources" (23 January 2019), online: Luxembourg Space Agency <<https://space-agency.public.lu/dam-assets/press-release/2019/2019-01-23-ENG-joint-press-release-BE-LU.pdf>>.

⁶⁷⁴ See Chapter I, Part 1.4.

⁶⁷⁵ See the discussion regarding Luxembourg's law on space natural resources and the examples presented *supra* in footnote 673.

⁶⁷⁶ *Ibid.*

mining did not take place (i.e. the *per se* access to and extraction of the object, the space minerals), the behavior of the subjects (in this case Luxembourg and the private space mining companies) disturbs the invisible aspects of the prohibition of appropriation embedded in article II of the Outer Space Treaty.⁶⁷⁷ More precisely, the first chapter of this thesis presented the appropriation prohibition of article II of the Outer Space Treaty as systemically and contextually linked to article I of the same Treaty,⁶⁷⁸ which provides for free access to all areas of outer space and the celestial bodies. As such, as this futuristic space activity concentrates a large part of space economy and power within the jurisdiction of one – or several, if more examples are considered – State(s), it is opposed to the social deterritorialization and inclusivity of the Outer Space Treaty. The problematic ideological and juridical contrast between this reality and the anticolonial spirit of space law – particularly articles I and II of the Outer Space Treaty – is apparent.

This single-faceted understanding of space in modern space law and space law scholarship is conceptually linked with the concept of reductionism. To understand the essence of reductionism, Elden takes the example of arithmetic and geometry and the misconception of the similarities between the two.⁶⁷⁹ Although the two notions are often conceptualized as serving similar

⁶⁷⁷ *Outer Space Treaty*, *supra* note 1, Article II: “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.”

⁶⁷⁸ *Outer Space Treaty*, *supra* note 1, Article I:

The exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind.

Outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies.

There shall be freedom of scientific investigation in outer space, including the Moon and other celestial bodies, and States shall facilitate and encourage international cooperation in such investigation.

⁶⁷⁹ Elden, *The Birth of Territory*, *supra* note 15 at 46-47:

Just as Aristotle’s understanding of geometry is distinct from that of arithmetic, here too his understanding of political place admits of no easy division. Where Plato’s understanding of civic land is shot through with a crude quantification – a reduction of geometry to a mode of arithmetic – and Kleisthenes’s reforms owe much to mathematical models at the time, Aristotle is providing an understanding based on qualitative

functions, Elden considers the philosophical origins of the measuring of civic land to point to their differences.⁶⁸⁰ While arithmetic is paralleled to a quantitative understanding of space, geometry achieves something more: to conceptualize and depict the qualitative dimension of space.⁶⁸¹ Considering arithmetic and geometry as identical or even similar is, therefore, “a reduction of geometry to a mode of arithmetic,”⁶⁸² or, simply put, “a crude quantification.”⁶⁸³ For, the difference between the two consists of geometry’s ability to portray “a position, an orientation, an order or arrangement”⁶⁸⁴ as opposed to arithmetic’s sole capacity of individual units, unrelated to the dimension of space, or unrelated to a *thesis* – position.⁶⁸⁵ In other words, whereas an arithmetical – quantitative – understanding of things observes the existence, a geometrical – qualitative, or perhaps even spatial – understanding observes the position, sequence, and “mode of connection”⁶⁸⁶ among things.

The previous chapter observed the arithmetical understanding of territorial parts as a mode towards the objectification of land,⁶⁸⁷ towards its territorialisation⁶⁸⁸ and, ultimately, towards its institutionally territorial understanding in law.⁶⁸⁹ Similarly, understanding the materiality of outer

measure. As Vilatte puts it, for Aristotle, “all quantitative definition of the city, of men and space, is defective.”

The difference between arithmetic and geometry is therefore crucial. In Aristotle, it is summarized by bearing in mind that arithmetic is concerned with monas, the unit, geometry with stigmatē, the point. The monas is related to monon, the unique or the sole, and is indivisible according to quantity. The stigmatē is, like monas, indivisible, but unlike monas, it has the addition of a thesis—a position, an orientation, an order or arrangement.

⁶⁸⁰ *Ibid.*

⁶⁸¹ Jonathan Barnes, “Aristotle’s Arithmetic” (1985) 3 *Revue de Philosophie Ancienne* 97-133.

⁶⁸² Elden, *The Birth of Territory*, *supra* note 15 at 46.

⁶⁸³ *Ibid.*

⁶⁸⁴ *Ibid.*

⁶⁸⁵ See generally Hippocrates George Apostle, *Aristotle’s Philosophy of Mathematics* (Chicago: Chicago University Press, 1952).

⁶⁸⁶ Elden, *The Birth of Territory*, *supra* note 15 at 46.

⁶⁸⁷ See Chapter I, Part 2.

⁶⁸⁸ See Chapter I, Part 1.

⁶⁸⁹ See Chapter I, Parts 1.3 and 2.2.

space as part of an arithmetical – quantitative – rather than geometrical – qualitative – theorization would be to disregard the imaginary aspects of the territoriality of outer space and to reduce its subjective normativity to its physical and – perhaps even legal – materiality.

To translate, therefore, this reductionism into the legal perception of outer space would be to ignore the subjectivity of its territoriality, or, to ignore the geometrical gravitation of the material by the subjective. Put differently, to take a reductionist legal approach to understanding the materiality of outer space is to isolate it from the subjective functionality of the law. Similarly, to accept a spatially arithmetical legal portraying of outer space would be to disregard the space-making capacity of law, to disregard territoriality's socioeconomic subjectivity as re-imagined in space law,⁶⁹⁰ and, ultimately, to remain trapped in the danger of pure legalism.

To avoid the trap of reductionism, or, to understand the geometrical and space-making function of law in the sphere of outer space, requires to deviate from a purely legal understanding and move towards a socio-legal positioning of the subjects within their spheres of action.⁶⁹¹ This thesis often presented the emergence of space law and its traditional ideology as a radical moment in the history of international law where space law deconstructed the colonality of international law and rendered itself a technology deconstructive of space.⁶⁹² To preserve this *spacelessness*, therefore,

⁶⁹⁰ See Chapter I, Part 2.1.

⁶⁹¹ See for example Sarah Blandy & David Sibley, "Law, Boundaries and the Production of Space" (2010) 19:3 Social & Legal Studies 275-284:

In considering the need for sociologists to address issues of space and place, Tickamyer [...] points out that 'places defined at different spatial scales may be stacked, overlapped, or nested, sometimes by design ... sometimes more haphazardly as overlapping and even competing jurisdictions ... characterise local government and quasi-governmental agencies'. The same point, but in relation to boundaries of legality, has been made recently by Valverde [...], drawing on de Sousa Santos' concept of interlegality: 'different legal spaces superimposed, interpenetrated' [...]. The term 'boundary' itself has a number of meanings: a frontier or border, a dividing line or threshold; and can as well be used to refer to extremities and confines, limits and peripheries.

⁶⁹² See Chapter I, Part 1.2. For the concepts, see also Jacques Derrida, *Positions* (Paris: Les Editions de Minuit, 1972) and Jacques Derrida, *Of Grammatology*, translated by Gayatri Chakravorty Spivak (Baltimore: The Johns Hopkins University Press).

is to revisit the subjectivities expressed in outer space and re-examine their position from a geometrical – qualitative – rather than arithmetical perspective. To do so, one needs to deviate from the purely legal analysis of the law and move towards a critical pluralistic portraying of its making subjects. “A critical legal pluralism,”⁶⁹³ contends Macdonald, “imagines legal subjects as ‘law inventing’ and not merely ‘law abiding’.”⁶⁹⁴ It is, therefore, through a critical legal pluralistic angle that the geometrical positioning of socioeconomic relations in outer space can be attempted and imagined based on the subject rather than the object. Accordingly, it is not the visible, the material, the *reduced*, that needs to be considered but the normativities that emerge as a result of the acting subjects, the latter viewed as makers of immaterial spaces. A pluralistic analysis, therefore, allows us to consider normativities beyond the formal, beyond the written, and, ultimately, beyond that which is transcribed in law.⁶⁹⁵ In other words, an analysis of the normative plurality of space law would enable a spatially holistic – as opposed to spatially reduced – understanding of the current status of outer space.⁶⁹⁶

Therefore, such a pluralistic angle requires that the geometrical – quantitative – understanding of the socio-legal dimensions of outer space be imagined through the lens of a space-making normativity that extends beyond the visible action of subjects over a segment of material spatiality.

⁶⁹³ Martha-Marie Kleinhans & Roderick A Macdonald, “What is a *Critical Legal Pluralism*?” (1997) 12:2 CJLS/RCDS 26 at 26; the concept of pluralism as presented in the works of Macdonald refers to the inclusion of all actors in the decision-making processes. However, this thesis understands the concept of pluralism as one referring to the inclusiveness and inclusivity of actors in a norm-making process (even if not at the level of decision-making within formal institutions). For example, the pressure of the private space industry to indirectly promote their own interests through State mechanisms (see for instance the reflection of private space companies’ interests in the legislation of Luxembourg as explained earlier) could be thought as an informal process of influence at least at the level of policy, which can later be reflected in the structures of law. Therefore, even though the idea of pluralism is understood somehow differently here, the element of inclusivity of actors is present in both understandings and is what this thesis seeks to emphasize.

⁶⁹⁴ *Ibid.*

⁶⁹⁵ See generally Bonaventura de Sousa Santos, *Toward a New Common Sense: Law, Science and Politics in the Paradigmatic Transition* (Cambridge: Cambridge University Press, 2002).

⁶⁹⁶ This will be further analyzed in Chapter II, Parts 3.1. and 3.2.

It requires the acceptance that the existence of a space is not linked to its materiality,⁶⁹⁷ the latter, however, often being a corollary occurrence.

Such a metaphorical dimension of space can be observed as an essential element of territoriality, whether it be expressed materially, through the use of land, or immaterially, through the action of subjects.⁶⁹⁸ Critical geography defines the notion of territoriality based on this imaginary and geometrical understanding of space, its making by subjects, and the action of subjects in it.⁶⁹⁹ It is “the attempt by an individual or group to affect, influence, or control people, phenomena, and relationships, by delimiting and asserting control over a geographic area,”⁷⁰⁰ opines Sack, that gives territoriality an existence. It is, therefore, the subjectivity that orients the materiality, rather than the opposite. However, the definition of territoriality in Sack’s statement considers in advance the involvement of a geographical area, despite the latter being defined by the subjects that act over it.⁷⁰¹ Evidently, to validate this definition in the environment of outer space, where a *geo*-graphical understanding of space would be misleading, one needs to imagine such a graphical representation of space detached from the *geo* element – the object – and solely attached to the subjects graphing the immaterial space.

Critical geography and its understanding of space as subject rather than object-oriented is, therefore, useful in conceptualizing the vital link between the creation of space and the subject.⁷⁰²

⁶⁹⁷ See generally Saskia Sassen, “Territory and Territoriality in the Global Economy” (2000) 15:2 *International Sociology* 372-393.

⁶⁹⁸ See Chapter I, Parts 2, 2.1, and 2.2.

⁶⁹⁹ Kevin Cox, *Political Geography: Territory, State, and Society* (Oxford: Blackwell, 2002), at 1-32.

⁷⁰⁰ Robert Sack, *Human Territoriality: Its Theory and History* (Cambridge: Cambridge University Press, 1986) at 19.

⁷⁰¹ Sack defines territoriality based on human action over a specific area of land. In that way a twofold relationship is demonstrated: on the one hand the action of the subject (human beings) defines the material territory and its functions, whereas, on the other hand the territory is formed according to the acting subject. Therefore, the material element of land is not absent in Sack’s theory. He emphasizes, however, the role of the acting subject as critical as it is through this that the territory – material or not – is ultimately shaped. See Sack, *Human Territoriality: Its Theory and History*, *ibid.*

⁷⁰² Chris Butler, “Critical Legal Studies and the Politics of Space” (2009) 18:3 *Social & Legal Studies* 313-332.

Despite the materiality of *geo*-spaces, critical geography theories have achieved to demonstrate the critical role of the subject in this social construction of space and in the space-making process itself.⁷⁰³ Given the absence of a material spatiality in outer space resembling the *geo*-material spatiality of terrestrial space-making processes, imagining the subjective and social construction of territoriality in outer space could prove to be a more straightforward process.

Therefore, the relationship between approaching territoriality in such an imaginary dimension, the critical role of subject-emerging normativity, and the idea of inclusivity is apparent: to imagine a space without a place, one needs to explore how the subject can create a normative space and, ultimately, consider the plurality of the co-existing subjects and normativities.

Traditional space law, itself adopting a materially *spaceless* understanding of space,⁷⁰⁴ accords with such an imaginary approach to territoriality, as it is focused on the subject rather than the object to visualize its spatiality. On the contrary, emerging space law, mainly in the national contexts, ignores the possibility of a territoriality beyond the territory and its existence in outer space.⁷⁰⁵ As a result, modern space law understands the notion of territoriality as reduced to its material dimension by obtaining a purely legalistic understanding of the law and, consequently, disregards the dynamic of a law that constructs sociopolitical spaces and is constructed by them. The territorial reductionism in modern space law is especially present when one considers not only its appearance in modern domestic and international space law individually, but foremost the interrelation between the two.

The phenomenon of reductionism in modern space law – mainly national space laws – can be linked to the ideological shift that can be observed in the development of space law between the

⁷⁰³ Neyrat, *The Unconstructable Earth: An Ecology of Separation*, *supra* note 34.

⁷⁰⁴ See Chapter I, Part 1.3.

⁷⁰⁵ See Chapter II, Part 1.

past and the present. As *modern* is a term relevant to capture the difference between the *now* and *then* of space law, a more generic understanding of the term is first required. “The concept of modernity,”⁷⁰⁶ according to Eyerman, “has its roots in the attempt to come to grips with the meaning and significance of the social changes occurring in Europe in the latter half of the nineteenth century, namely, the effects of industrialization, [and] urbanization”⁷⁰⁷ among others. Eyerman continues by observing that “[t]he term ‘modernity’ was coined to capture these changes in progress by contrasting the ‘modern’ with the ‘traditional’.”⁷⁰⁸ Despite the temporal unconformity of the definition with the creation and development of space law, the understanding of what *modernity* signifies, not as a temporally defined term but as a notion stringently linked to the transition from one epoch to another, is essential in understanding the different epochs – and, consequently, the different ideologies – of space law. In Eyermans’ definition of modernity, the term seems to be linked to the social changes, by presenting the cause of such changes as the evolution of technology.⁷⁰⁹ As modernity in history was founded on the social changes brought by the new technological possibilities,⁷¹⁰ the *modernity of space law* was founded on similarly expanding technological potentials.⁷¹¹ That is, the change in the ideology of space law, or the transition from the traditional ideology of the founding space treaties to an ideology of modernity, coincided with the emergence of new space technologies expanding human potential to new resources and socioeconomic as well as political territorialities. In other words, while rocket science was the one that fuelled the emergence of traditional space law and the sociopolitical and

⁷⁰⁶ Ron Eyerman, “Modernity and Social Movements” in Hans Haferkamp & Neil J Smelser, eds, *Social Change and Modernity* (Berkeley: The Regents of the University of California, 1992) 37-55 at 37.

⁷⁰⁷ *Ibid.*

⁷⁰⁸ *Ibid.*

⁷⁰⁹ *Ibid* at 37-39.

⁷¹⁰ See generally Daron Acemoglu & James A Robinson, *Why Nations Fail* (New York: Crown Business, 2013) at 124-182.

⁷¹¹ See generally Steven Freeland et al, “How Technology drives Space Law Down Under: The Australian and New Zealand Experience” (2018) 43:2 *Air and Space Law* 129-144.

legal understanding of outer space as a *territoryless* space “in the interest of all countries,”⁷¹² modern space science, such as space engineering and space robotics (technologies that have the capacity to transform fiction into a possibility) has fuelled the emergence of space law’s modernity. In the modernity of the 19th century, new territorial expansions facilitated by new technologies gave rise to *modern* capital-centered laws.⁷¹³ In a somewhat similar manner, the vision for new human reaches in outer space – territorial, yet not material by all accounts – through new space technologies, has given rise to *modern* capital-centered space laws.⁷¹⁴ In both cases, the expression of modernity in the legal sphere follows a normativity already produced by the respective socioeconomic and political dynamics.

The difference, however, lies in the fact that in the past, the expression of modernity in law meant the direct effect on material territoriality through the space-centered laws and the institution of property.⁷¹⁵ In the case of modern space law, the expression of territoriality remains subtle, whereby the territorial formations are directed towards the subject of socio-economic formations, rather than the land-based territory itself. Therefore, as modern space law considers space in a reduced form, that is, as a purely material formation, and ignores its imaginary features, it signals its own tendency to reduce the sociopolitical form of space and territoriality into its material expressions and to ignore its socially constructed foundations.

⁷¹² *Outer Space Treaty*, Article I.

⁷¹³ See Chapter I, Part 1.2.

⁷¹⁴ *Building Blocks for the Development of an International framework on Space Resource Activities*, *supra* note 629.

⁷¹⁵ For example *United States Commercial Space Launch Competitiveness Act*, *supra* note 124; *Luxembourg Law on the Exploration and Use of Celestial Bodies*, *supra* note 124; *Japan Space Resources Act*, *supra* note 363.

CONCLUSION

This chapter told a space-making story: that of outer space and space law being transformed from a unique *spaceless space* to a social space that reflects the subjects that act in it, that is, primarily private space actors and space-faring States. This chapter also described the narrative of law being used as a space-making technology and being rationalized to serve individual interests, rather than the common interest of all.

Therefore, describing modern space law as one that emerged through private plans rather than global visions, this chapter emphasized the need to return to the inclusive nature of international space law and re-establish it at all normative levels (legal and extra-legal). The following chapter undertakes that role: to reimagine the future of space law on a basis of a pluralistic inclusivity.

To do so, the next chapter translates the performance of actors into legal normativity and asks whether such performance has infused the foundations of international space law and, particularly, the Outer Space Treaty. Thus, the role of this chapter, chapter II, was not only to observe the influence of private space actors in the modern shaping of space law, but also to alert that the story of modern space law's space-centric character is positioned in a larger scenario: one that rejects globality and leans towards individualism; and, at the same time, to display the need to reinvent such globality through existing and new legal and governance orders.

CHAPTER III – TRANSLATING NORMATIVITY INTO LAW: FROM SPACE-MAKING AUTHORITIES TO AN ACTOR-BASED PLURALISTIC ORDER FOR THE EXPLORATION AND USE OF OUTER SPACE

INTRODUCTION

The previous chapter of this thesis presented the emergence of private actors in the realm of space activities as the central power in the normative development of modern space governance. It found that private actors have contributed to the so-called *powercene* of space activities, the effects of which are present in domestic regulatory environments as well as at the global level through efforts of limited multilateralism,⁷¹⁶ such as in the case of the Artemis Accords.⁷¹⁷

Recognizing, however, the importance of private space actors for innovation and for the further development of space activities, this chapter observes this extra-legal normativity produced through the action of private space actors as a result of the lack of a modernized rules-based regime accommodating their interests. Accordingly, it suggests the principles embedded in the *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*⁷¹⁸ (hereafter “Moon Agreement”) as a ground for further regulation balancing the interests of all stakeholders, public

⁷¹⁶ I use the term *limited unilateralism* to emphasize that even though the Artemis Accords appear to be an initiative of more than one States, their content was drafted by the United States with limited input by a small number of space faring States, thus reflecting their interests. As a result, the substance of multilateralism, that is the participation – or possibility for participation – of a wide number of States is not achieved through this initiative. The fact that the Accords reflect and facilitate the most industrialized space activities, the majority of which is beyond the capabilities of non-space faring States and developing States, renders this initiative beyond their reach. For example, the Outer Space Treaty, the development of which involve both the superpowers of that era and the involvement of developing countries achieved true multilateralism by expressing global interests and, thus, attracting a wide number and diversity of States. However, as the Accords have been signed by more than two States, *multilateralism* here is used in a technical manner and it is accompanied by the term *limited* to express that the States that have signed the Accords represent a non-diverse, and therefore *limited*, group of States.

⁷¹⁷ *Artemis Accords*, *supra* note 2.

⁷¹⁸ *Moon Agreement*, *supra* note 1.

and private, and enabling space innovation without replicating forms of territorial or social colonialism of the past.⁷¹⁹

At a first level, this chapter translates the effects of the norm-making power of new space actors into the legal sphere and explores the impact of such power on the core body of international space law by asking whether such authority has led to modern legal interpretations that deviate from international space law's initial rationale,⁷²⁰ and whether such authority has paved the way towards the emergence of international custom.⁷²¹

At a second level, this chapter questions whether the impact of such normativity on the strictly legal sphere is the result of – or the cause for – the failure of the existing international space law framework, before exploring the similar examples of the regulation and governance of the deep seabed and the Antarctic regions and the lessons learned from it.

Ultimately, this chapter considers the emergence of new actors and authorities in space activities as an indication of an actor-based inclusivity in the development of modern space law's normativity and suggests the formation of a modern regulatory regime able to accommodate and express such inclusivity while, at the same time, preserving the anticolonial dynamic of the existing international space law.⁷²² Therefore, as the imagination – as a form of methodology – has played an important role in this thesis, this chapter first imagines the social effect of the plurality of modern space actors and of their normativities,⁷²³ and then translates such plurality

⁷¹⁹ See Chapter I, Part 1.

⁷²⁰ To identify whether the modern interpretation of international space law views its rationale as different from the one that led to its inception, this chapter will examine the possible development of international opposite practice and the role of subsequent relevant agreements in treaty interpretation. To do so, this chapter will often rely on the International Law Commission's *Draft Conclusions on Identification of Customary International Law* and on relevant case law. See United Nations, International Law Commission, *Draft Conclusions on Identification of Customary International Law, with Commentaries*, UN Doc A/73/10 (2018).

⁷²¹ See Chapter I, Part 1.

⁷²² See Chapter I, Part 1.

⁷²³ Chapter II, Part 1.4.

into the need to construct an inclusive rules-based order accommodating all actors, traditional and modern, public and private, norm-generating and less powerful.

1. FROM NORM TO LAW: A TEST TO THE INTERNATIONAL LAW- PRODUCING STRUCTURES AND THE LIMITS OF NORMATIVE POWER IN GLOBAL SPACE GOVERNANCE

“The more authority, the more politicization is the simple formula,” suggests Zürn,⁷²⁴ in claiming that the more power the institution that promotes normativity at the global level has, the higher is the acceptability of such normativity by the public, and the higher the reproduction of authority through it.⁷²⁵ He also claims that the more “legitimation deficits an institution has, the more politicization we can expect of it.”⁷²⁶ Accordingly, the public domain and all of its institutions or institutionalized functions, including law- and policy-forming mechanisms, exist in the center of this process, playing a key role in the formation of global space governance.

Despite the power of public institutions, however, the formation of norms within the global domain is often of private rather than purely public origins. “We are seeing the incipient formation of a type of power and state practice that entails a partial denationalizing of what historically had been constructed as national,”⁷²⁷ writes Sassen. For Fuchs and Lederer, the power of private actors – private companies in their hypothesis – is identical to the concept of instrumental power, that is, one’s ability to confer their interests and objectives into the sphere of politicization and, in that

⁷²⁴ Zürn, *A Theory of Global Governance: Authority, Legitimacy, and Contestation*, *supra* note 411 at 143.

⁷²⁵ *Ibid* at 143ff.

⁷²⁶ *Ibid* at 143.

⁷²⁷ Saskia Sassen, “Neither Global nor National: Novel Assemblages of Territory, Authority and Rights” (2008) 1:1-2 *Ethics & Global Politics* 61-79 at 73.

way, influence decision-making and the formation of policies in the public domain.⁷²⁸ Consequently, to understand the impact of this private power in the sphere of global, requires the acceptance that State practice is – even if partly – representative of the private.⁷²⁹

Considering this account, where private power is politicized through the institution of the State and its mechanisms, this part seeks to understand whether this private actor-rooted power has the capacity to alter international space law and whether this process has already started. Therefore, this part aims at identifying the transformation of norm-making authorities into law-making actors and identify the extent to which such transformation has taken place in the field of international space law.

At a first stage, this part explores whether the norm-making power of private space actors and its expression through the public authority of States allows for a modernized interpretation of international space law that would reveal a territory-centered international legal regime. At a second stage, this part asks whether the norm production that accompanies private actors and their expression through States would qualify as *stricto sensu* international law-forming mechanisms, such as that of custom.

⁷²⁸ See generally Doris Fuchs & Markus ML Lederer, “The Power of Business” (2007) 9:3 Business and Politics 1-20.

⁷²⁹ This is exceptionally important in a discussion about the formation of customary international rules, where the interests of private space actors can be expressed through States mechanisms at the international level and, consequently, make part of the international legal order, should the requirements of customary rule-making processes be present. For the relationship between private actors and the State, see Andreas G Scherer et al, “Global Rules and Private Actors: Toward a New Role of the Transnational Corporation in Global Governance” (2006) 16:4 Business Ethics Quarterly 505-532 and Tony Porter, “Global Governance as Configurations of State/Non-State Activity” in Jim Witman, ed, *Global Governance* (London: Palgrave Macmillan, 2011) 87-104.

1.1. THE EFFECT OF PRIVATE SPACE POWER ON INTERNATIONAL LEGAL INTERPRETATION: BETWEEN LEGAL AND IDEOLOGICAL CHANGE

This part of the thesis is divided into two subparts. The first subpart explores whether the normativity produced through the power of private space actors and its politicization through public mechanisms could be considered as subsequent practice reversing the anti-territorial vision of international space law and lead to a territory-based modern understanding of space law on the basis of the provisions of the *Vienna Convention on the Law of Treaties*.⁷³⁰

The second subpart observes whether the avenue of legislative efforts outside the auspices of the United Nations, such as in the case of the Artemis Accords, qualifies as *subsequent agreement*,⁷³¹ under the Vienna Convention on the Law of Treaties and whether such agreement could eventually change the anti-territorial foundation of international space law.

Consequently, the core of this part focuses on understanding whether the use of international legal interpretation mechanisms could translate the normativity of private space actors into a transformed understanding of existing written international space law.

⁷³⁰ *Vienna Convention on the Law of Treaties*, 23 May 1969, United Nations, Treaty Series, vol 1155.

⁷³¹ *Ibid*, Article 31, Paragraph 3, Point c:

3. There shall be taken into account, together with the context:

(a) any subsequent agreement between the parties regarding the interpretation of the treaty or the application of its provisions;

(b) any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation;

(c) any relevant rules of international law applicable in the relations between the parties.

1.1.1. DOMESTIC LAWS ON SPACE NATURAL RESOURCES AS SUBSEQUENT TREATY PRACTICE?

This thesis demonstrated earlier the development of modern space law as both bordered by the limitations of domestic regulatory processes and influenced – to a large extent – by the agendas of the actions of private space actors.⁷³² As opposed to the traditional space law regime, which was created under the auspices of the United Nations and which, despite the challenges of such a State-centered norm-creation process, achieved to reverse the colonality of international law’s structures, this thesis earlier showed that modern space law has followed a different narrative: one that is often linked to a bordered space and exclusive use.⁷³³

Although this shift from a public to a private approach and from global to local regulatory processes demonstrates the ideological turn of modern space actors’ normativity towards private actor-centered centers of governance and regulation, it may also indicate a shift in the *stricto sensu* legal norms. Such a shift is important in identifying potential *subsequent practice* that may also indicate a change in the understanding and interpretation of the traditional space law norms.

Indeed, the Vienna Convention on the Law of Treaties, provides that “any subsequent practice in the application of the treaty which establishes the understanding of the parties regarding its interpretation,”⁷³⁴ shall be considered in interpreting the meaning of the treaties’ original text.

According to the official commentary of the Vienna Convention on the Law of Treaties,⁷³⁵ “the

⁷³² See Chapter II and Chapter III, Part 1.

⁷³³ See analysis on social and material territorialities in Chapter I.

⁷³⁴ *Vienna Convention on the Law of Treaties*, *supra* note 730.

⁷³⁵ International Law Commission, *Draft Articles on the Law of Treaties with Commentaries* (1966), United Nations, 2005. It must be observed that although this commentary was drafted for the Draft Article on the Law of Treaties of 1966, it can also be used as commentary for the Vienna Convention on the Law of Treaties of 1969 as the content of the articles remained unchanged. See International Law Commission, *Law of Treaties*, online: <https://legal.un.org/ilc/texts/1_1.shtml>.

importance of such subsequent practice in the application of the treaty ... constitutes objective evidence of the understanding of the parties as to the meaning of the treaty.”⁷³⁶ Accordingly, the Permanent Court of International Justice noted in the *Corfu Channel* case that the true intention of the parties bound by a rule derives from the “subsequent attitude”⁷³⁷ of the parties in case of ambiguity. Such attitude might not only bring a change in the interpretation of a Treaty but also eventually lead to the acceptance that the initial meaning of a Treaty has changed. “Where the practice has brought about a change or development in the meaning of the treaty through a *revision* of its terms by conduct,”⁷³⁸ Fitzmaurice observes, “it is permissible to give effect to this change or development as an agreed revision but not as an interpretation of its original terms.”⁷³⁹

However, to conclude that a Treaty can either be interpreted in a manner that deviates from its original text, or that a Treaty’s original text has been revised through the *de facto* – or, put more accurately, normative – conduct of the States that are party to it, the new conduct must be observed in the ensemble of the States that are party to it, rather than in a small group of States. Indeed, the official commentary on the Vienna Convention on the Law of Treaties notes that “‘the understanding of the parties’ necessarily means ‘the parties as a whole’.”⁷⁴⁰ The commentary

⁷³⁶ *Draft Articles on the Law of Treaties with Commentaries*, *supra* note 735 at 221.

⁷³⁷ *Corfu Channel Case (United Kingdom v. Albania)*; *Assessment of Compensation*, 15 XII 49, International Court of Justice (ICJ), 15 December 1949 at 25. See also, *Draft Articles on the Law of Treaties with Commentaries*, *supra* note 735 at 222: “The subsequent attitude of the Parties shows it has not been their intention, by entering into the Special Agreement, to preclude the Court from fixing the amount of the compensation.”

⁷³⁸ As quoted in Irina Buga, *Modification of Treaties by Subsequent Custom* (Oxford: Oxford University Press, 2018) at 20.

⁷³⁹ *Ibid.*

⁷⁴⁰ *Draft Articles on the Law of Treaties with Commentaries*, *supra* note 735 at 222:

The value of subsequent practice varies according as it shows the common understanding of the parties as to the meaning of the terms. The Commission considered that subsequent practice establishing the understanding of the parties regarding the interpretation of a treaty should be included in paragraph 3 as an authentic means of interpretation alongside interpretative agreements. The text provisionally adopted in 1964 spoke of a practice which “establishes the understanding of all the parties.” By omitting the word “all” the Commission did not intend to change the rule. It considered that the phrase “the understanding of the parties” necessarily means “the parties as a whole”. It omitted the word “all” merely to avoid any possible misconception that every party must individually have engaged in the practice where it suffices that it should have accepted the practice.

continues to clarify that the text of the Treaty does not refer to the understanding of *all the parties*⁷⁴¹ but to the understanding of *the parties*,⁷⁴² as opposed to the earlier version of the Treaty's text of 1964, in order to "avoid any possible misconception that every party must individually have engaged in the practice where it suffices that it should have accepted the practice."⁷⁴³ Concluding that the meaning of a provision of a Treaty has changed through the conduct of States – rather than through a formal treaty amendment or revision – necessitates the existence of *subsequent practice* and the acceptance of such practice even by those States which are not actively involved in the practice itself.⁷⁴⁴ Therefore, the requirement that "the parties as a whole"⁷⁴⁵ must share the same understanding comprises both, State action (practice) and the acceptance of it (practice by acceptance).

Similarly, the scholarship on article 31⁷⁴⁶ of the Vienna Convention on the Law of Treaties tends to accept as State conduct any actions that are attributable to the State as a means of treaty

⁷⁴¹ *Ibid.*

⁷⁴² *Ibid.*

⁷⁴³ Buga, *Modification of Treaties by Subsequent Custom*, *supra* note 738 at 22.

⁷⁴⁴ See Luigi Crema, "Subsequent Agreements and Subsequent Practice within and outside the Vienna Convention in George Nolte, ed, *Treaties and Subsequent Practice* (Oxford: Oxford University Press, 2013) 13-28; Richard Gardiner, *Treaty Interpretation* (Oxford: Oxford University Press, 2015) 223ff; Christian Djefal, *Static and Evolutive Treaty Interpretation – A Functional Reconstruction* (Oxford: Oxford University Press, 2016); Jan Klabbbers, "Virtuous Interpretation" in Malgosia Fitzmaurice, *Treaty Interpretation and the Vienna Convention on the Law of Treaties: 30 Years On* (Leiden: Martinus Nijhoff, 2010) 17-38.

⁷⁴⁵ *Draft Articles on the Law of Treaties with Commentaries*, *supra* note 735 at 222.

⁷⁴⁶ *Vienna Convention on the Law of Treaties*, *supra* note 730, Article 31:

1. A treaty shall 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.
2. The context for the purpose of the interpretation of a treaty shall comprise, in addition to the text, including its preamble and annexes:
 - (a) any agreement relating to the treaty which was made between all the parties in connection with the conclusion of the treaty;
 - (b) any instrument which was made by one or more parties in connection with the conclusion of the treaty and accepted by the other parties as an instrument related to the treaty.
3. There shall be taken into account, together with the context:
 - (a) any subsequent agreement between the parties regarding the interpretation of the treaty or the application of its provisions;

interpretation. “Relevant practice,”⁷⁴⁷ Buga notes, “may emanate from all State organs – legislative, executive, or judicial – as long as these are attributable to the States as acts of treaty interpretation.”⁷⁴⁸ For example, national legislation is considered as State conduct that has the capacity to effectuate change on the original text of a Treaty.⁷⁴⁹ Therefore, the conduct of nationals of a State that cannot be attributed to the State may not be considered as State conduct in that sense.

For example, as this thesis earlier mentioned, the political and academic dialogue on whether space natural resources may be appropriated and the subsequent question as to whether private entities may be entitled to rights of exclusivity over parts of outer space, has led States, such as Luxembourg, to adopt legislation that promotes their own clarification – and, therefore, understanding – on the issue of space resources appropriation, while at the same time being rooted in the authority of private space actors.⁷⁵⁰ Although such legislation does not have a direct effect at the international level due to its limited jurisdictional application, they may, however, be considered as one of the possible means of State conduct that can be used for the interpretation of international law under article 31 of the Vienna Convention on the Law of Treaties. For that to occur, Luxembourg’s – and several other States’⁷⁵¹ – interpretation of the issue must be shared or accepted by all States that are party to the relevant provisions of international law, that is, articles

(b) any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation;

(c) any relevant rules of international law applicable in the relations between the parties. 4. A special meaning shall be given to a term if it is established that the parties so intended.

⁷⁴⁷ Buga, *Modification of Treaties by Subsequent Custom*, *supra* note 738 at 32.

⁷⁴⁸ *Ibid.*

⁷⁴⁹ *Ibid.* See also International Law Commission, *Report on the Work of the 65th Session*, A/68/10 (2013) 64ff; International Law Commission, *Report on the Work of the 66th Session*, A/69/10 (2014) 147ff.

⁷⁵⁰ For example, *Luxembourg Law on the Exploration and Use of Celestial Bodies*, *supra* note 124; United Kingdom, *A Bill to make Provision about Space Activities and Suborbital Activities; and for connected Purposes - Space Industry Act 2018*, Government Bill, House of Lords, Session 2017-2019.

⁷⁵¹ *Ibid.*

I and II of the Outer Space Treaty, which provide for the inclusive and free for all exploration and use of outer space as well as for the prohibition of “national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.”⁷⁵² As opposed to this provision, Luxembourg’s Law on Space Natural Resources provides that “space resources are capable of being appropriated.”⁷⁵³ Similarly, the United States Commercial Space Launch Competitiveness Act⁷⁵⁴ provides for private ownership rights of space resources for its private entities,⁷⁵⁵ while the United Kingdom’s *Space Resources Activities Bill*, which was proposed by a mining start-up company, “recognizes that ... right to possess, own, transport, use and sell over the extracted space resources”⁷⁵⁶ and suggests the attribution of such rights to its nationals on a “first-come-first-served”⁷⁵⁷ basis. Similarly, Japan’s parliament has also approved a draft *Law Concerning the Promotion of Business Activities Related to the Exploration and Development of Space Resources*,⁷⁵⁸ which grants Japanese companies prospecting, extraction, and use rights over mineral resources, without, however, specifying the property-related status of the resources.⁷⁵⁹ Therefore, although these domestic law provisions illustrate that national space laws express the interests of private space actors through a property- and territory-centered approach, one needs to also examine whether such State conduct is shared or accepted by all the States that are party to the initial international Treaty, that is, the Outer Space Treaty.⁷⁶⁰

⁷⁵² *Outer Space Treaty*, *supra* note 1, Article II.

⁷⁵³ *Luxembourg Law on the Exploration and Use of Celestial Bodies*, *supra* note 124, Article 1.

⁷⁵⁴ *United States Commercial Space Launch Competitiveness Act*, *supra* note 124.

⁷⁵⁵ *Ibid* at paragraph 51302.

⁷⁵⁶ Asteroid Mining Corporation, *UK Space Resources Activities Bill* (2018), online: <<https://asteroidminingcorporation.co.uk/wp-content/uploads/2021/10/UK-Space-Resources-Activities-Bill-il.pdf>>.

⁷⁵⁷ *Ibid*.

⁷⁵⁸ *Japan Space Resources Act*, *supra* note 363.

⁷⁵⁹ *Ibid*, Article 5: “The Space Resources Act provides that the person who obtained the permit owns the space resources that the person exploits in accordance with the approved activity plan.”

⁷⁶⁰ United Nations Office for Outer Space Affairs, “Status of International Agreements Relating to Activities in Outer Space as at 1 January 2021,” *supra* note 385.

Relatedly, the scholarship on treaty interpretation suggests that the acceptance by all States that are party to a treaty (the Outer Space Treaty in this case) does not need to take a formal and positive form; it can also rely on the silent acceptance by States (tacit consent).⁷⁶¹ Despite the overall lack of specific formal objections to these laws by other States, however, the ensemble of States that have signed the Outer Space Treaty do not appear to have implicitly accepted such space laws. The Russian Federation, that have signed and ratified the Outer Space Treaty,⁷⁶² has expressly communicated to the global community their disagreement with the privatization of outer space parts and with the commercialization of space natural resources exploration as well as with the subsequent institutionalization of property in the *corpus juris spatialis*. Roscosmos, for example, which is the Russian Federation's space agency, has condemned the United States Executive Order of 2020⁷⁶³ that promotes private property by emphasizing its contradiction not only with the letter of law of the Outer Space Treaty, but also its imperial character, which is contradictory to the rationale of the Treaty. "There have already been examples in history,"⁷⁶⁴ notes Saveliev, the deputy Director-General for international cooperation of Roscosmos, "when one country decided to start seizing territories in its interest – everyone remembers what came of it."⁷⁶⁵

Similarly, the position of several European States with respect to Luxembourg's and other countries' unilateral approach to a private actor and property-based legal regime for the exploration of space natural resources seems to deviate from the property- and territory-centred approach to

⁷⁶¹ Buga, *Modification of Treaties by Subsequent Custom*, *supra* note 738 at 20: "The express reference to 'all' the parties had been removed, along with the word 'clearly'. It was also subsequently agreed to replace the term 'understanding', which had been meant to emphasize that acceptance of the practice by other parties need not be explicit, with 'agreement'."

⁷⁶² United Nations Office for Outer Space Affairs, "Status of International Agreements Relating to Activities in Outer Space as at 1 January 2021," *supra* note 385.

⁷⁶³ *Executive Order of 2020*, *supra* note 360.

⁷⁶⁴ Cecilia Jamasmie, "Russia slams Trump's Order to spur Mining on the Moon" (9 April 2020), online: Mining.com <<https://www.mining.com/russia-slams-trumps-order-to-spur-mining-the-moon-asteroids/>>.

⁷⁶⁵ *Ibid.*

the exploration and use of outer space. In their *Joint Proposal for the Establishment of a Working Group for the Development of an International Regime for the Utilization and Exploration of Space Resources* to the 58th Legal Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space,⁷⁶⁶ Belgium and Greece noted the need for a multilateral approach to the exploration of space natural resources, emphasizing the necessity to preserve the rationale of the Outer Space Treaty – especially articles I and II of the Treaty – and to refrain from a property-based legal regime. Specifically, the proposal highlights that,

The absence of any national jurisdiction over outer space, or parts thereof, is also patent in the principle of non-appropriation, enshrined in article II of the Outer Space Treaty, pursuant to which 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.⁷⁶⁷

Belgium and Greece, in their effort to stress the importance of international – as opposed to domestic – laws on the exploration of space natural resources as well as the need to preserve the essence of free access to space and its non-appropriable nature, emphasize that “article I of the Outer Space Treaty ... pronounces the need to adopt space law rules of an international nature to regulate the use of space (and its resources).”⁷⁶⁸ Therefore, both States appear to condemn not only the substance of the domestically adopted provisions, but also the shift of law-making processes to the domestic level, characterizing outer space as a “common space regulated by international law.”⁷⁶⁹

⁷⁶⁶ United Nations, Committee on the Peaceful Uses of Outer Space, Legal Subcommittee, *Proposal for the establishment of a working group for the development of an international regime for the utilization and exploitation of space resources Working paper by Belgium and Greece*, 85th Sess, A/AC.105/C.2/L.311 (2019) 4 March 2019.

⁷⁶⁷ *Ibid* at 2.

⁷⁶⁸ *Ibid*.

⁷⁶⁹ *Ibid*.

As a result, despite the emergence of private actors as authorities in the domestic law-making processes of certain jurisdictions in the regulation of space natural resources, their law-changing power at the international level appears restricted by the procedural guarantees of international law from the perspective of subsequent (opposite) practice and its power to change the interpretation of international legal norms. Therefore, even though the relevant subsequent practice of recent years can demonstrate the existence of pressure centers – mainly at the domestic level and mainly composed by private space actors, their power is currently limited to the formation of national space policies and international trends, without, however, their transformation into the *stricto sensu* international legal regime.

1.1.2. QUESTIONING THE POTENTIAL ROLE OF THE ARTEMIS ACCORDS AS SUBSEQUENT AGREEMENT

Despite the lack of sufficiently wide subsequent practice demonstrating a change in the understanding of international space law as far as the territory- and property-based approach to the exploration and use of outer space is concerned, the Vienna Convention on the Law of Treaties provides one more mechanism that can lead to perceiving the text of international treaties in a way that deviates from their initial understanding. Specifically, article 31, paragraph 3, point a, of the Vienna Convention on the Law of Treaties provides that “any subsequent agreement between the parties regarding the interpretation of the treaty application or the application of its provisions”⁷⁷⁰

⁷⁷⁰ *Vienna Convention on the Law of Treaties*, *supra* note 730, Article 31, Paragraph 3, Point b:

3. There shall be taken into account, together with the context:

(a) any subsequent agreement between the parties regarding the interpretation of the treaty or the application of its provisions;

(b) any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation;

in interpreting the contemporary meaning of a treaty's provisions. Therefore, the Vienna Convention on the Law of Treaties introduces one more possible means of treaty interpretation that could lead to understanding the law in a manner different from its original inception, or even consider it changed. The basis for such an interpretation is the existence of subsequent agreements that shed light on the interpretation of the initial Treaty.

The commentary on the International Law Commission's *Draft Conclusions on Subsequent Agreements and Subsequent Practice in Relation to the Interpretation*⁷⁷¹ analyzes this rule of interpretation by emphasizing that the importance of subsequent agreements as a means of interpretation lies in the fact that they "[constitute] objective evidence of the understanding of the parties as to the meaning of the treaty."⁷⁷² Accordingly, the commentary describes the rationale of article 31, paragraph 3, point a, as satisfying the common intention of the States that are party to a Treaty to update the meaning of a Treaty by forming a subsequent agreement on the content of the initial agreement. For an agreement to play the role of subsequent agreement, it must have been signed after the conclusion of the Treaty under interpretation and it must concern the content – or part of the content – covered by the initial Treaty.⁷⁷³ Therefore, a subsequent agreement between the parties to the initial Treaty could, in essence, be any agreement regulating (part of) the content of the initial Treaty without expressly specifying that the role of the agreement is to change the

(c) any relevant rules of international law applicable in the relations between the parties.

⁷⁷¹ International Law Commission, *Draft conclusions on subsequent agreements and subsequent practice in relation to the interpretation of treaties*, United Nations, 2018.

⁷⁷² *Ibid*, Conclusion 3 at 2:

Subsequent agreements and subsequent practice as authentic means of interpretation Subsequent agreements and subsequent practice under article 31, paragraph 3 (a) and (b), being objective evidence of the understanding of the parties as to the meaning of the treaty, are authentic means of interpretation, in the application of the general rule of treaty interpretation reflected in article 31.

⁷⁷³ *Draft conclusions on subsequent agreements and subsequent practice in relation to the interpretation of treaties*, *supra* note 771. See also Gardiner, *Treaty Interpretation*, *supra* note 744 at 246ff.

meaning of the initial Treaty.⁷⁷⁴ Relatedly, the International Law Commission suggests that as subsequent agreement would qualify an agreement that “requires a common understanding regarding the interpretation of a treaty which the parties are aware of and accept.”⁷⁷⁵ Both the commentary and relevant jurisprudence of international courts and tribunals,⁷⁷⁶ show that the subsequent agreement does not need to entail the degree of formality of the initial Treaty and, as such, can be used as a means to interpret the initial Treaty, but it cannot be considered as a replacement of the initial Treaty.⁷⁷⁷

Moreover, although according to the same commentary “such an agreement must be reached between all parties to the treaty,”⁷⁷⁸ the scholarship on the topic questions whether express acceptance of the Treaty by all initial parties is required or whether tacit acceptance would be equally sufficient.⁷⁷⁹ The predominant position, however, supports that the subsequent agreement requires the participation of all the initial parties to the Treaty in the conclusion of the subsequent agreement.⁷⁸⁰ The same position notes that the subsequent agreement must have been expressly

⁷⁷⁴ Buga, *Modification of Treaties by Subsequent Custom*, *supra* note 738 at 20-24.

⁷⁷⁵ *Draft conclusions on subsequent agreements and subsequent practice in relation to the interpretation of treaties*, *supra* note 771, Conclusion 4 at 10.

Agreement of the parties regarding the interpretation of a treaty 1. An agreement under article 31, paragraph 3 (a) and (b), requires a common understanding regarding the interpretation of a treaty which the parties are aware of and accept. Such an agreement may, but need not, be legally binding for it to be taken into account. 2. The number of parties that must actively engage in subsequent practice in order to establish an agreement under article 31, paragraph 3 (b), may vary. Silence on the part of one or more parties may constitute acceptance of the subsequent practice when the circumstances call for some reaction.

⁷⁷⁶ See for example *Gabčíkovo-Nagymaros Project (Hungary v Slovakia)*, Judgment, ICJ Reports 1997 at 77 and *Maritime Delimitation and Territorial Questions between Qatar and Bahrain*, Judgment, ICJ Reports 1995 at 16.

⁷⁷⁷ *Draft conclusions on subsequent agreements and subsequent practice in relation to the interpretation of treaties*, *supra* note 771, Conclusion 4 at 10.

⁷⁷⁸ *Ibid* at 13.

⁷⁷⁹ Irina Buga, “Subsequent Practice and Treaty Modification” in Michael J Bowman & Dino Kritsiotis, eds, *Conceptual and Contextual Perspectives on the Modern Law of Treaties* (Cambridge: Cambridge University Press, 2018) at 363-391; Malgosia Fitzmaurice & Pans Merkouris, *Treaties in Motion – The Evolution of Treaties from Formation to Termination* (Cambridge: Cambridge University Press, 2020) 182 ff. See also, *Land and Maritime Boundary between Cameroon and Nigeria (Cameroon v Nigeria: Equatorial Guinea intervening)*, Judgment, ICJ Reports 2002 at 303.

⁷⁸⁰ *Ibid*.

accepted by all States, as an different approach would endanger legal certainty.⁷⁸¹ At the same time, this view observes that tacit acceptance of the content of the new agreement would not qualify as acceptance of the agreement and it would more likely fall under the scope of tacit *state practice*, rather than acceptance of a subsequent agreement.⁷⁸²

Therefore, an agreement would qualify as subsequent agreement able to change the meaning of – or part of – the initial Treaty only if: (1) it follows temporally the initial Treaty, (2) it has been accepted by all the States party to the initial Treaty, and (3) it regulates the content – wholly or partly – of the initial Treaty in a different manner.

As this thesis often mentioned, in April 2020, the United States published the United States Executive Order of 2020,⁷⁸³ which intended to clarify the understanding of the United States regarding the legal status of outer space as far as space resources are concerned and the rights linked to the commercial exploration, recovery, and use of space resources.⁷⁸⁴ The subsequent development of the Artemis Accords founded by Australia, Canada, Italy, Luxembourg, Japan, the United Arab Emirates, the United Kingdom, the United States, and later signed by Ukraine,⁷⁸⁵ South Korea,⁷⁸⁶ Brazil, New Zealand, and Poland⁷⁸⁷ led to commonly understood “principles for

⁷⁸¹ Buga, *Modification of Treaties by Subsequent Custom*, *supra* note 738 at 61ff.

⁷⁸² *Ibid.*

⁷⁸³ *Executive Order of 2020*, *supra* note 360.

⁷⁸⁴ *Ibid.*: “The Executive Order also affirms Congress’ intent that Americans should have the right to engage in commercial exploration, recovery, and use of resources in outer space, consistent with applicable law;” “outer space is a legally and physically unique domain of human activity, and the United States does not view space as a global commons;” “American industry and the industries of like-minded countries will benefit from the establishment of stable international practices by which private citizens, companies and the economy will benefit from expanding the economic sphere of human activity beyond the Earth.”

⁷⁸⁵ NASA, “Ukraine becomes the 9th country to sign the Artemis Accords” (12 November 2020), online: NASA <<https://ua.usembassy.gov/ukraine-becomes-the-9th-country-to-sign-the-artemis-accords/>>.

⁷⁸⁶ NASA, “Republic of Korea Joins List of Nations to Sign Artemis Accords” (26 May 2021), online: NASA <<https://www.nasa.gov/feature/republic-of-korea-joins-list-of-nations-to-sign-artemis-accords>>.

⁷⁸⁷ NASA, “Poland Signs Artemis Accords at IAC” (26 October 2021), online: NASA <<https://www.nasa.gov/feature/poland-signs-artemis-accords-at-iac>>; NASA, “Principles for a Safe, Peaceful, and Prosperous Future,” online: NASA <<https://www.nasa.gov/specials/artemis-accords/index.html>>.

cooperation in the civil exploration and use of the Moon, Mars, comets, and asteroids for peaceful purposes”⁷⁸⁸ among these States and attributed special value to the commercial exploration of space natural resources.⁷⁸⁹

The Artemis Accords have often been characterized as having the status of Memorandum of Understanding among a small number of States, rather than that of an international agreement.⁷⁹⁰

The Vienna Convention on the Law of Treaties, however, does not distinguish between formal international agreements and other forms of inter-State agreements in their qualification as subsequent agreements, as long as the three criteria mentioned above are met. As a result, even if the Artemis Accords are considered as a mere Memorandum of Understanding, they could still qualify as subsequent agreement under article 31, paragraph 3 of the Vienna Convention on the Law of Treaties.

Although the Artemis Accords appear to promote a set of principles and practices in view of advancing the lunar exploration program “Artemis”⁷⁹¹ of the United States, they also cover issues initially regulated by the Outer Space Treaty. In fact, the Artemis Accords specify that one of the Accords’ objectives is to “implement the provisions of the Outer Space Treaty.”⁷⁹² However, as the content of the provisions of the Artemis Accords often conflict – rather than implement – the content of the Outer Space Treaty, a question follows as to whether the Artemis Accords could be considered as a subsequent agreement on the basis of article 31, paragraph 3, point a, of the Vienna

⁷⁸⁸ See *Artemis Accords*, *supra* note 2, Title.

⁷⁸⁹ See *Artemis Accords*, *supra* note 2, Preamble and “Purpose and Scope.”

⁷⁹⁰ Andre Farand, “International Space Station Agreements to Artemis Accords: A Quantum Leap,” presentation, Institute of Air and Space Law, McGill University, and International Association for the Advancement of Space Safety, Space “Artemis Accords”: Challenges and Opportunities webinar, 10 July 2020; Rossana Deplano, “The Artemis Accords: Evolution or Revolution in International Space Law?” (2021) 70:3 *International & Comparative Law Quarterly* 799-819.

⁷⁹¹ Artemis Program, online: NASA <<https://www.nasa.gov/artemisprogram>>.

⁷⁹² See *Artemis Accords*, *supra* note 2, Preamble.

Convention on the Law of Treaties, able to change the meaning of the relevant provisions of the Outer Space Treaty.

The most important conflicts between the Artemis Accords and the Outer Space Treaty appear in the general principles embedded in the Outer Space Treaty as well as in the field of the commercial exploration of space natural resources. Specifically, section 10 of the Artemis Accords aims at providing a legal basis for the extraction and utilization of space resources.⁷⁹³ The Accords foresee that execution of extraction and utilization of space resources, including the recovery of the resources from the surface or subsurface of the Moon and they emphasize that “the extraction of space resources, does not inherently constitute national appropriation under article II of the Outer Space Treaty.”⁷⁹⁴ Based on the prohibition of appropriation of outer space and its parts, as embedded in article II of the Outer Space Treaty,⁷⁹⁵ Section 10 of the Artemis Accords contradicts the Outer Space Treaty by providing that the exploration and utilization of space natural resources does not constitute appropriation in an effort to promote such activities. Built to promote a private actor-rooted authority and seeking to commercialize space natural resources, the intended role of this provision appears to be the establishment of a legal basis introducing the commercial exploration and utilization of space natural resources by deviating from the prohibitions of the Outer Space Treaty.

⁷⁹³ *Artemis Accords*, *supra* note 2, Section 10, Paragraph 2:

The Signatories emphasize that the extraction and utilization of space resources, including any recovery from the surface or subsurface of the Moon, Mars, comets, or asteroids, should be executed in a manner that complies with the Outer Space Treaty and in support of safe and sustainable space activities. The Signatories affirm that the extraction of space resources does not inherently constitute national appropriation under Article II of the Outer Space Treaty, and that contracts and other legal instruments relating to space resources should be consistent with that Treaty.

⁷⁹⁴ *Ibid.*

⁷⁹⁵ *Outer Space Treaty*, *supra* note 1, Article II: “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.”

This thesis earlier described the Outer Space Treaty as a treaty with a deeply anticolonial character and one that sought to exclude international law's territory-based legal relations from international space law's foundations. As a result, an agreement such as the Artemis Accords – even if they are understood as a Memorandum of Understanding – that seek to introduce principles for the commercialization of outer space *territories*, contradicts the *spacelessness* of the Outer Space Treaty, to a lesser extent as far as the *stricto sensu* exploration of space natural resources is concerned, and to a bigger extent in regard to the general principles of international space law.

Therefore, as the Artemis Accords constitute an agreement addressing topics covered in the Outer Space Treaty in a manner that deviates from the initial rationale and provisions of the Outer Space Treaty, their role as a potential subsequent agreement under article 31 of the Vienna Convention on the Law of Treaties constitutes an inevitable question. Despite, however, the fact that the Artemis Accords constitute an agreement that is temporally subsequent to the Outer Space Treaty and one that addresses topics covered in the Outer Space Treaty, their acceptance is not shared by all States party to the Outer Space Treaty. Rather, it is limited to 8 out of the 110 States that have signed the Outer Space Treaty. Furthermore, even though the Artemis Accords remain open for signature by any other interested States – in fact, the Accords invite more States to join⁷⁹⁶ – no significant number of States have, as of today, taken steps to sign the Accords.

Nevertheless, it must also be observed that even though the Artemis Accords could not be considered as falling under the scope of article 31, paragraph 3, point a, of the Vienna Convention on the Law of Treaties, and, consequently, cannot be considered as able to change the meaning of the relevant provisions in the Outer Space Treaty, they reveal the intent of some major space-faring

⁷⁹⁶ *Artemis Accords*, *supra* note 2, Section 13, Paragraph 3: “After October 13, 2020, any State seeking to become a Signatory to these Accords may submit its signature to the Government of the United States for addition to this text.”

nations to be part of a new norm-creating process that could eventually reverse the dynamics of the Outer Space Treaty, should it involve a wider number of States that are also party to the Outer Space Treaty in the future. As the Artemis Accords remain open for signature to all States, it cannot be excluded that more States will join the agreement, potentially transforming it into a subsequent agreement.

Moreover, the Accords could offer a ground for the formation of a future agreement truly implementing the provisions of the Outer Space Treaty in a way similar to the *Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks*.⁷⁹⁷ This Agreement, although initially signed by less than thirty States,⁷⁹⁸ currently counts 91 States party⁷⁹⁹ and, in a way similar to the Artemis Accords, it regulates the use of a resource beyond national sovereignty – even if partially, that is, the straddling and highly migratory fish stocks.⁸⁰⁰ Therefore, a more widespread acceptance of the Artemis Accords – and their potential further development under the auspices of the United Nations – could also lead to an implementing agreement among some of the States party to the Outer Space Treaty

⁷⁹⁷ *Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks*, United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks, United Nations General Assembly, A/CONF.164/37, 8 September 1995.

⁷⁹⁸ See Chronological lists of ratifications of, accessions and successions to the Convention and the related Agreements, *Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks*, United Nations, Division for Ocean Affairs and the Law of the Sea, online: <https://www.un.org/Depts/los/reference_files/chronological_lists_of_ratifications.htm#Agreement%20for%20the%20implementation%20of%20the%20provisions%20of%20the%20Convention%20of%2010%20December%201982%20relating%20to%20the%20conservation%20and%20management%20of%20straddling%20fish%20stocks%20and%20highly%20migratory%20fish%20stocks>.

⁷⁹⁹ *Ibid.*

⁸⁰⁰ United Nations, Division for Ocean Affairs and the Law of the Sea, “The 1995 United Nations Fish Stocks Agreement,” online: <https://www.un.org/Depts/los/convention_agreements/Background%20paper%20on%20UNFSA.pdf>.

for “the purpose of adapting the general rules of that treaty ... to a specific topic.”⁸⁰¹ In a way similar to the Straddling Fish Stocks and Highly Migratory Fish Stocks Implementing Agreement, which does not enjoy acceptance by all the States that are party to the Law of the Sea Convention, the Artemis Accords could eventually be considered as a new implementing agreement among several States on a specific topic.

As a result, even though the Artemis Accords have not yet reached the status of subsequent agreement able to change the initial interpretation of the Outer Space Treaty as they do not successfully express the intention of the States party to the Outer Space Treaty to change its content, the role of the Accords remains important in understanding the current normative trends of international space law and – possibly – its future.

1.2. PRIVATE SPACE ACTORS, THE STATE, AND INTERNATIONAL CUSTOM: TOWARDS A SPACE-BASED NEW LEGAL ORDER FOR SPACE ACTIVITIES?

The previous part of this thesis found that neither the expression of the power of private space actors through State regulatory mechanisms, nor schemes of limited multilateralism, such as the Artemis Accords, have – so far – changed the initial interpretation of international space law and, consequently, its non-territorial objectives. Having observed, however, that the normativity of private space actors is transmitted into the global governance of outer space through the avenue of public authority,⁸⁰² the potential impact of such normativity into the law-making processes is relevant for this thesis’ inquiry.

⁸⁰¹ Chie Kijima & Vladlen S Vereshchetin, “Implementation Agreements” in *Max Planck Encyclopedia of International Law* (Oxford: Oxford University Press, 2013), Parts A.

⁸⁰² See Chapter III, Part 1.4.

Consequently, this subpart of the thesis asks whether the current legal order for the exploration and use of outer space has been – or could be – altered through law-making mechanisms that are rooted in the normativity of actors and its expression through the conduct of States. Such a mechanism is the international custom, the production of which is based on the observation of State conduct, rather than on written international law.

The purpose of this subpart is, therefore, to examine whether the *territoryless* order of international space law is – or could be – affected through the production of *general* or *particular* international customary rules that take a space-based approach to the exploration and use of outer space. In this context, the potential role of States as persistent objectors in this process will also be examined.

1.2.1. A RELATIONSHIP OF INTERDEPENDENCE AND MUTUAL LIMITATIONS

The International Law Commission defines customary international law as “unwritten law deriving from practice accepted as law.”⁸⁰³ Indeed, two elements have traditionally been used in the methodology to identify the existence of custom at the international level: a general State practice and the acceptance of such practice as law.⁸⁰⁴ In the words of the International Court of Justice in the *Jurisdictional Immunities of the State* case, “the existence of a rule of customary law requires that there be ‘a settled practice’ together with *opinio juris*’.”⁸⁰⁵ Therefore, this “two-element approach”⁸⁰⁶ requires the observation of the practice of States as well as the observation of whether

⁸⁰³ International Law Commission, *Draft Conclusions on Identification of Customary International Law, with Commentaries*, *supra* note 720.

⁸⁰⁴ *Draft Conclusions on Identification of Customary International Law, with Commentaries*, *supra* note 720 at 123.

⁸⁰⁵ *Draft Conclusions on Identification of Customary International Law, with Commentaries*, *supra* note 720 at 125. See also the case law referred to in *Jurisdictional Immunities of the State (Germany v Italy)*, Judgment, ICJ Reports 2012 at 122–123; *Continental Shelf (Libyan Arab Jamahiriya v Malta)*, Judgment, ICJ Reports 1985 at 13.

⁸⁰⁶ *Draft Conclusions on Identification of Customary International Law, with Commentaries*, *supra* note 720 at 125–127 and 156. See also International Law Commission, *Second Report on Identification of Customary International*

such practice is widely accepted among States that it is believed to constitute binding law.⁸⁰⁷ In describing the methodology that one needs to follow to identify the existence of custom in international law, the commentary on the Draft Conclusions on Identification of Customary International Law, suggests that

In assessing evidence for the purpose of ascertaining whether there is a general practice and whether that practice is accepted as law (*opinio juris*), regard must be had to the overall context, the nature of the rule and the particular circumstances in which the evidence in question is to be found. ... This requires an assessment of evidence for each element.⁸⁰⁸

Therefore, to identify whether State conduct is capable of introducing new unwritten international legal norms, is to observe the impact that the conduct of States has at the global normative level. In other words, observing the existence of custom is closely related to observing the emergence of the power of States as actors and how it translates into the legal sphere. This chapter earlier the power of actors as equivalent to their ability to bring change at the global level and, subsequently, to take part in the (re)formation of global governance structures. Therefore, observing the emergence of custom is – in a way – observing the emergence of State-derived authorities with the capacity to bring change at the level of international legal normativity. The International Court of Justice has highlighted the relationship between the production of norms which enjoy a status of authority and the creation of international customary law. In the *Fisheries* case,⁸⁰⁹ the Court

Law by Michael Wood, special rapporteur, United Nations, General Assembly, 22 May 2014, A/CN.4/672 (2014) at 7.

⁸⁰⁷ *Draft Conclusions on Identification of Customary International Law, with Commentaries*, *supra* note 720 at 125. See also generally David J Bedeman, *Custom as a Source of Law* (Oxford: Oxford University Press, 2010) and Brian S Lepard, ed, *Reexamining Customary International Law* (Cambridge: Cambridge University Press, 2017).

⁸⁰⁸ *Draft Conclusions on Identification of Customary International Law, with Commentaries*, *supra* note 720 at 126.

⁸⁰⁹ *Fisheries case*, Judgment of 18 December 1951, ICJ Reports 1951 at 116; *Draft Conclusions on Identification of Customary International Law, with Commentaries*, *supra* note 720 at 127.

rejected the proposed ten-mile rule for the determination of Norwegian fisheries zone, noting that “the ten-mile rule has not acquired the authority of a general rule of international law.”⁸¹⁰

Such an authority can be achieved, according to the International Law Commission, through the expression of State practice, which can be evidenced in several forms, including “diplomatic correspondence,”⁸¹¹ “conduct in connection with treaties,”⁸¹² and “legislative and administrative acts,”⁸¹³ and it must be “sufficiently widespread and representative, as well as consistent.”⁸¹⁴ The recognition of the status of authority on State practice can also be observed through the second essential element for the creation of customary international law, that is, *opinio juris*. State practice must have taken place because States “felt or believed themselves legally compelled or entitled to do so by reason of a rule of customary international law.”⁸¹⁵

The legislative developments of the last five years in the field of space resources exploration lead to the question whether current State practice in the field of space activities has reached the level of custom in the exploration and use of space natural resources and, more specifically, whether the

⁸¹⁰ *Ibid* at 127.

⁸¹¹ *Draft Conclusions on Identification of Customary International Law, with Commentaries, supra* note 720, Conclusion 6 at 133:

Forms of practice

1. Practice may take a wide range of forms. It includes both physical and verbal acts. It may, under certain circumstances, include inaction.
2. Forms of State practice include, but are not limited to: diplomatic acts and correspondence; conduct in connection with resolutions adopted by an international organization or at an intergovernmental conference; conduct in connection with treaties; executive conduct, including operational conduct “on the ground;” legislative and administrative acts; and decisions of national courts.
3. There is no predetermined hierarchy among the various forms of practice.

⁸¹² *Ibid*.

⁸¹³ *Ibid*.

⁸¹⁴ *Ibid*, Conclusion 8 at 135:

The practice must be general

1. The relevant practice must be general, meaning that it must be sufficiently widespread and representative, as well as consistent.
2. Provided that the practice is general, no particular duration is required.

⁸¹⁵ *Ibid* at 138.

nature of outer space and its parts as beyond appropriation and national sovereignty has been – or is on the verge of being – reversed through customary international law. Indeed, there are several elements that could trigger a discussion on whether international custom is being formed as far as the appropriation of outer space parts is concerned.

As this thesis earlier analyzed, a series of private actor-derived space policies argue for rules that permit the appropriation of outer space parts (with emphasis on space natural resources), while the emergence of domestic space laws tends to express such policies by adopting a similar direction. At the same time, the tendency to seek international law that erases the prohibition of appropriation of outer space has surfaced.

Space faring nations such as Canada, Japan, the United States, the United Kingdom, The Netherlands, Luxembourg, Italy, China and Japan have produced space policies that present the position of these States as arguing for either regional or international cooperation that would lead to the agreement on a new regulation of the exploration and use of outer space permitting the commercial exploitation – and, consequently, appropriation – of space natural resources⁸¹⁶ and they have made relevant public declarations.⁸¹⁷

As this thesis discussed earlier, several of these States have already adopted domestic laws allowing appropriation of space natural resources by their private entities and the establishment of

⁸¹⁶ As the current relevant national laws provide for appropriation of space resources. See relevant analysis in Chapter II, Part 1.

⁸¹⁷ United Kingdom, National Space Policy, online: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/484865/NSP_-_Final.pdf; *Executive Order of 2020*, *supra* note 360; The Government of the Grand Duchy of Luxembourg, SPACERESOURCES.LU Initiative, online: <https://space-agency.public.lu/en/space-resources/the-initiative.html>; United Arab Emirates, Space Science and Technology, online: <https://u.ae/en/about-the-uae/science-and-technology/key-sectors-in-science-and-technology/space-science-and-technology>.

private property over them.⁸¹⁸ Furthermore, some of these States have already foreseen in their national laws the authorization procedures of private resource exploration companies that plan on realizing space mining and on commercially exploiting space natural resources,⁸¹⁹ thus engaging in both legislative and administrative acts that are inconsistent with the rules and principles embedded in the Outer Space Treaty as far as the appropriation and occupation of outer space parts are concerned. The same States have engaged in international collaborations through Memoranda of Understanding⁸²⁰ or through their participation in schemes such as the Artemis Accords, thus expressing their property-based approach to the exploration and use of space natural resources at the international level, while also demonstrating their willingness to be bound by international relevant rules. The signing of a historic trade agreement in the form of a Memorandum of Understanding between the United States Nuclear Corporation and Solar System Resources Corporation, a space mining company, which “outlines how US Nuclear and Solar Systems Resources Corp. plan to cooperate building a value chain starting with mining and selling valuable

⁸¹⁸ Such as the *United States Commercial Space Launch Competitiveness Act* (*supra* note 124), the *Luxembourg Law on the Exploration and Use of Celestial Bodies* (*supra* note 124), and the *Japan Space Resources Act* (*supra* note 363).

⁸¹⁹ *Luxembourg Law on the Exploration and Use of Celestial Bodies*, *supra* note 124, Articles 2-17.

⁸²⁰ See for example The Government of the Grand Duchy of Luxembourg, Ministry of Economy, press release, “The Luxembourg Space Agency and LIST join forces to create a “European Space Resources Innovation Centre in Luxembourg” (4 August 2020), online: <<https://space-agency.public.lu/en/news-media/press-release.html>>; The Government of the Grand Duchy of Luxembourg, press release, “The Grand Duchy of Luxembourg and Belgium join forces to develop the exploration and utilisation of space resources” (23 January 2019), online: <<https://space-agency.public.lu/en/news-media/press-release.html>>; The Government of the Grand Duchy of Luxembourg, press release, “United States and Luxembourg sign memorandum on space co-operation” (10 May 2019), online: <<https://space-agency.public.lu/en/news-media/press-release.html>>; The Government of the Grand Duchy of Luxembourg, press release, “Luxembourg cooperates with China in the exploration and use of outer space for peaceful purpose, including in the utilization of space resources” (16 January 2018), online: <<https://space-agency.public.lu/en/news-media/press-release.html>>; The Government of the Grand Duchy of Luxembourg, press release, “Luxembourg and the Republic of Poland agree to cooperate on space activities with particular focus on the exploration and utilization of space resources” (12 October 2018), online: Luxembourg Space Agency <<https://space-agency.public.lu/en/news-media/press-release.html>>.

helium-3 and lanthanide metals and other materials from space deposits,”⁸²¹ is also significant for this observation.

However, these examples of State practice appear to involve only a small number of States, while most States have not yet communicated their intention to participate in, accept, or reject this State practice. Therefore, even if State practice demonstrates the intention of several States to change the rules of the Outer Space Treaty, according to which the appropriation and commercialization of outer space parts is not prohibited under article II of the Treaty, the extend of the available evidence does not affirm that a relevant pattern has been developed and followed by the majority of States.

Nevertheless, State practice often does not require the participation of a wide number of States but rather of States that are “representative,”⁸²² which is an element “that should be assessed in light of all the circumstances, including the various interests at stake and/or the various geographical regions.”⁸²³ Indeed, States such as the United States play an important role in the advancement of space activities, policies, and laws – and have historically done so. Yet, their counterpart, the Russian Federation, that has been both a superpower in space activities and a key-player in the development of international space law does not appear to be part of neither element of the “two-elements”⁸²⁴ approach to international custom, thus creating a gap in the ensemble of representative States that would be required for the production of sufficient State practice.⁸²⁵

⁸²¹ “US Nuclear Marks Beginning of Age of Space Mining as It Signs Historic Trade Agreement” (28 April 2021), online: The Globe and Mail
<<https://www.theglobeandmail.com/investing/markets/stocks/UCLE/pressreleases/1585688/>>.

⁸²² *Draft Conclusions on Identification of Customary International Law, with Commentaries*, *supra* note 720 at 135.

⁸²³ *Ibid* at 136.

⁸²⁴ *Draft Conclusions on Identification of Customary International Law, with Commentaries*, *supra* note 720 at 125-127 and 156. See also, International Law Commission, *Second Report on Identification of Customary International Law* by Michael Wood, *special rapporteur*, United Nations, General Assembly, 22 May 2014, A/CN.4/672 (2014) at 7.

⁸²⁵ See the relevant declarations of the Russia Federation as presented in Part 2.2.4.

Simultaneously, the second element that is essential for the formation of custom, that is, *opinio juris*, does not appear to be present. Although the majority of States remain silent on the matter, the issue of whether space mining could legally take place and whether the appropriation and commercialization of space natural resources would be part of it, has been of focal concern during the last sessions of the Legal Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space.⁸²⁶ Therefore, instead of a *feeling* or *belief* of States that they are legally bound by understanding that appropriation and commercialization of outer space parts is allowed, there is a *doubt* that leads them to question whether this could eventually be the case. Even though in identifying the existence of custom, the International Court of Justice has observed that “too much importance need not be attached to the few uncertainties or contradiction, real or apparent,”⁸²⁷ in this case the uncertainty has reached the level of a separate agenda item in the discussion of the Legal Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space, thus evidencing that the existing State practice is not seamlessly accepted by States as deriving from a customary norm. Specifically, the *Decisions and Actions by the Committee on the Peaceful Uses of Outer Space and its Legal Subcommittee taken by Written Procedure* of the 75th session of the General Assembly⁸²⁸ emphasized the need for a “general exchange of views on potential legal models for activities in exploration, exploitation and utilization of space resources”⁸²⁹ as well as relevant informal consultations, thus confirming the uncertainty of States on the legal norms regarding the exploration, exploitation and utilization of space resources.

⁸²⁶ Committee on the Peaceful Uses of Outer Space, Legal Subcommittee, *Report of the Legal Subcommittee on its fifty-eighth session, held in Vienna from 1 to 12 April 2019*, United Nations, General Assembly, 62nd Sess, A/AC.105/1203, 18 April 2019.

⁸²⁷ *Draft Conclusions on Identification of Customary International Law, with Commentaries*, *supra* note 720 at 135.

⁸²⁸ United Nations, General Assembly, *Decisions and Actions by the Committee on the Peaceful Uses of Outer Space and its Legal Subcommittee taken by Written Procedure*, 57th Sess, Supplement No 20, A/75/20.

⁸²⁹ *Ibid* at 2.

At the same time, no State appears to have expressly objected to the policy, legislative, and administrative initiatives taken by States such as Luxembourg, the United States, the United Kingdom, and Japan, therefore raising the question of whether tacit consent would validate the *opinio juris* requirement of the “two-element”⁸³⁰ approach to custom or whether a case of particular customary international law on space natural resources may be on the rise. However, the expressed uncertainty of the international space community on the matter, that can be observed in the conduct of States, makes of the tacit acceptance a future possibility rather than a current reality.

1.2.2. THE ARTEMIS ACCORDS: FORMING PARTICULAR CUSTOM?

The jurisprudence of the International Court of Justice, as well as the work of the International Law Commission, have recognized one more form of customary international law, the *particular customary international law*, otherwise referred to as regional or special custom.⁸³¹ The difference

⁸³⁰ *Draft Conclusions on Identification of Customary International Law, with Commentaries*, *supra* note 720 at 125-127 and 156. See also International Law Commission, *Second Report on Identification of Customary International Law* by Michael Wood, *special rapporteur*, United Nations, General Assembly, 22 May 2014, A/CN.4/672 (2014) at 7.

⁸³¹ See *Colombian-Peruvian Asylum Case* [1950] ICJ Rep 276-277; *Case concerning the Rights of Nationals of the United States of America in Morocco* [1952] ICJ Rep 199; *Case concerning Right of Passage over Indian Territory* (Merits) [1960], ICJ Rep 37; *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America)* (Merits) [1986] ICJ Rep 14. See also *Draft Conclusions on Identification of Customary International Law, with Commentaries*, *supra* note 720, Part 7 at 154:

Part Seven

Particular customary international law

Part Seven consists of a single draft conclusion, dealing with particular customary international law (sometimes referred to as “regional custom” or “special custom”). While rules of general customary international law are binding on all States, rules of particular customary international law apply among a limited number of States. Even though they are not frequently encountered, they can play a significant role in inter-State relations, accommodating differing interests and values peculiar to only some States.⁷⁸³

Conclusion 16 “Particular customary international law”

1. A rule of particular customary international law, whether regional, local or other, is a rule of customary international law that applies only among a limited number of States.

between regular and particular custom is crucial in identifying whether custom exists in the realm of space law, especially as far as the regulation of space natural resources is concerned. Specifically, as opposed to the regular form of custom, which requires a general State practice evidenced in or accepted by a wide number of States – or by the most important States in the respective field of activity, particular custom can be formed “only among a limited number of States,”⁸³² or “among the States concerned.”⁸³³ Relatedly, “to determine the existence and content of a rule of particular customary international law,”⁸³⁴ suggests the International Law Commission, “it is necessary to ascertain whether there is a general practice among the States concerned that is accepted by them as law (*opinio juris*) among themselves.”⁸³⁵

While it would seem paradoxical to refer to *regional* customary international law in regards to the regulation of the uses of a global commons, such as the outer space, which by nature deviates from the notion of *local* or *regional* and extends towards the *global*, the definition of regional or particular custom is less often linked to the fixed territoriality of a physical region⁸³⁶ and more often to a group of States sharing a common interest over the subject matter under customary regulation.⁸³⁷ That is, to speak of regional or particular custom, the agreement among a group of States regarding a specific issue suffices as “a rule of particular customary international law itself ... creates neither obligations nor rights for third States.”⁸³⁸

2. To determine the existence and content of a rule of particular customary international law, it is necessary to ascertain whether there is a general practice among the States concerned that is accepted by them as law (*opinio juris*) among themselves.

⁸³² *Ibid.*

⁸³³ *Ibid.*

⁸³⁴ *Ibid.*

⁸³⁵ *Ibid.*

⁸³⁶ *Ibid.*

⁸³⁷ *Ibid.*

⁸³⁸ *Ibid.*

Such a form of custom would bring to the fore the signing of the Artemis Accords by eight space-faring nations sharing “a common cause, interest or activity other than their geographical position, or constituting a community of interest, whether established by treaty or otherwise.”⁸³⁹ Indeed, the Artemis Accords appear to be inspired by the “mutual interest in the exploration and use of outer space for peaceful purposes”⁸⁴⁰ and by “a common spirit and the ambition that the next steps of humanity’s journey in space inspire current and future generations to explore the Moon, Mars, and beyond.”⁸⁴¹

Despite, however, the common interest of the eight signatory space-faring nations in space exploration, including the exploration and exploitation of space natural resources, particular custom can only be formed if the activity in question concerns only the States involved in the State practice that leads towards the creation of custom and no other States. Nevertheless, in the field of space exploration, the common interest among eight States does not appear to satisfy the criterion of the *concerned* States.⁸⁴²

As this thesis earlier claimed, international space law was founded on the inclusivity and multiplicity of actors concerned, while the institution of State was simply used as a vehicle towards the adherence to the international legal mechanisms or procedures.⁸⁴³ Yet, the pluralism and inclusivity reflected on the principles of international space law significantly deviates from a conclusion accepting eight space-faring States as founding a form of custom that is limited among some of the most powerful of space actors. As a result, the Artemis Accords, as a limited effort of

⁸³⁹ *Ibid* at 155.

⁸⁴⁰ *Artemis Accords*, *supra* note 2, Preamble.

⁸⁴¹ *Ibid*.

⁸⁴² Based on the principles embedded in the Outer Space Treaty, all States must be considered as “concerned” States in the exploration and use of outer space. Therefore, a group of eight States is far behind in qualifying under this definition. See *Outer Space Treaty*, *supra* note 1, Preamble and Article I, where the interests of all States are considered.

⁸⁴³ See Chapter I, Part 1 and Chapter III, Part 1.

multilateralism is insufficient to produce particular custom over the use of a space of global concern. It could, however, signify the beginning of a wider State practice and lead to a global effort to revisit the governance and regulation of outer space, with emphasis on space natural resources exploration, when the discourse on the emergence of regular custom may be revisited.

1.2.3. PERSISTENT OBJECTION V. INSUFFICIENT STATE PRACTICE

The emergence of customary international law – especially at the stage of its formation – is often linked to the rule of persistent objector. According to the majority of international legal scholarship on custom, the rule of persistent objector relates to the formation of custom as it concerns the *persistent* and *consistent* objection of a State against a State practice in the making.⁸⁴⁴ As Green notes,

if a state persistently and consistently objects to a newly emerging norm of customary international law during the period of the ‘formation’ of that norm (i.e. prior to its crystallization as a binding rule of customary international law), then the objecting state is exempt from the customary norm in question once it has crystallized and for so long as the objection is maintained.⁸⁴⁵

⁸⁴⁴ *Draft Conclusions on Identification of Customary International Law, with Commentaries*, *supra* note 720, Part 6 at 152:

Conclusion 15

Persistent objector

1. Where a State has objected to a rule of customary international law while that rule was in the process of formation, the rule is not opposable to the State concerned for so long as it maintains its objection.
2. The objection must be clearly expressed, made known to other States, and maintained persistently.
3. The present draft conclusion is without prejudice to any question concerning peremptory norms of general international law (*jus cogens*).

⁸⁴⁵ James A Green, *The Persistent Objector Rule in International Law* (Oxford: Oxford University Press, 2016) at 1.

A similar definition has been given to the rule of persistent objector by the International Law Association, which states that “if whilst a practice is developing into a rule of general law, a State persistently and openly dissents from the rule, it will not be bound by it.”⁸⁴⁶ Similarly, the International Law Commission sets as essential criteria for the application of the rule that: (1) the persistent objector must be a State, and (2) that the objection must be persistent, it must be expressed in a clear manner, and it must be communicated to other States.⁸⁴⁷

The essence of the persistent objector rule is to give States the opportunity to opt out of an international rule, while still at its phase of formation, as exemption of a State from a norm of customary nature is not possible after its crystallization into custom has taken place. In the *North Sea Continental Shelf Cases*,⁸⁴⁸ the International Court of Justice specifically addressed this impossibility by clarifying that customary rules “must have equal force for all members of the international community, and cannot therefore be the subject of any right of unilateral exclusion exercisable at will by any one of them in its favour.”⁸⁴⁹ Therefore, on the one hand, the rule of persistent objector can be exercised by a State that expressly wishes to be excluded from emerging State practice that could eventually form into a binding customary rule. On the other hand, the observation that a State acts as a persistent objector constitutes an indication that such customary rule is indeed in the process of its formation.

Recent political declarations made by the Russian Federation with respect to the norms regulating access to and utilization of space natural resources at the domestic level and allowing private

⁸⁴⁶ International Law Association, *Statement of Principles Applicable to the Formation of General Customary International Law*, Final Report of the Committee (2000).

⁸⁴⁷ *Draft Conclusions on Identification of Customary International Law, with Commentaries*, *supra* note 720, Part 6 at 153.

⁸⁴⁸ *North Sea Continental Shelf Cases (Federal Republic of Germany v Denmark and Federal Republic of Germany v Netherlands)* [1969] ICJ Rep 38 at 3.

⁸⁴⁹ *Ibid* at 39. See also, Green, *The Persistent Objector Rule in International Law*, *supra* note 845 at 44, 139, and 145.

companies to appropriate them, raise the question as to whether the Russian Federation could be considered as a persistent objector, should the formation of relevant customary rules be under way. Indeed, the Russian Federation has expressly noted their disagreement both with the procedures followed, that is, the establishment of relevant rules through the channels of domestic legislative procedures, and with the content of the produced rules. The establishment of such rules by several jurisdictions has been criticized by the Russian Federation as incompatible with the spirit of the Outer Space Treaty and as a development leading to the creation of *de facto* monopolies that would give access to space resources only to a few private actors within a few States (based on their economic and technological capabilities), thus creating an exclusive *first come, first-served* approach.⁸⁵⁰

A similar disagreement was expressed by the Russian Federation regarding the relevant developments at the international level, that is the signing of the Artemis Accords. The Russian Federation expressly noted that the signing of an agreement that concerns the exploration and use of a global commons, with emphasis on space natural resources, by only a limited number of States – and, therefore, an exclusive agreement, or an agreement of elitist character⁸⁵¹ – has many characteristics in common with the colonial practices of past terrestrial explorations and, as such, is in conflict with the spirit of the Outer Space Treaty.⁸⁵² The objection of the Russian Federation and its exclusion from both the practice of regulating the exploration and use of space natural resources through a private property-based regime and from the limited multilateral initiative of

⁸⁵⁰ See Committee on the Peaceful Uses of Outer Space, Legal Subcommittee, *Report of the Legal Subcommittee on its fifty-eighth session, held in Vienna from 1 to 12 April 2019*, United Nations, General Assembly, 62nd Sess, A/AC.105/1203, 18 April 2019. See also Jamasmie, “Russia slams Trump’s Order to spur Mining on the Moon,” *supra* note 764.

⁸⁵¹ See Chapter II, Part 1.2.

⁸⁵² See Jamasmie, “Russia slams Trump’s Order to spur Mining on the Moon,” *supra* note 764.

the Artemis Accords, could be thought as an indication that the Russian Federation plays the role of persistent objector within a potentially emerging custom in this area of space activities.

Furthermore, in March 2021, the Russian Federation signed a Memorandum of Understanding with China on the “Cooperation for the Construction of the International Lunar Research Station,”⁸⁵³ part of which is the access to and use of lunar terrain and of its resources.⁸⁵⁴ Nevertheless, such access and use is intended to be for purposes of research and innovation rather than for commercial purposes, thus demonstrating the intention of the two States to participate in a research-intensive exploration and use of space natural resources and, simultaneously, to express their disagreement with the property and commerce-based approach of the States that signed the Artemis Accords and of those that produced relevant laws at the domestic level. Consequently, although the Russian Federation could be considered as a persistent objector as far as the regulation of the exploration and use of space natural resources in an exclusive and property-based manner is concerned, the objection seems to extend only to the approach taken towards the exploration and use of space natural resources by States and their private companies (property-based approach), rather than to the activity of exploration and use of space resources itself.

As a result, whether the role of the Russian Federation should be interpreted as that of a persistent objector or as a mere indication that the emergence of customary norms in the exploration and use of space natural resources is still at a premature stage, or even already failing, will be seen in the

⁸⁵³ China National Space Administration, “China and Russia sign a Memorandum of Understanding Regarding Cooperation for the Construction of the International Lunar Research Station,” *supra* note 523.

⁸⁵⁴ *Ibid.*:

The ILRS [International Lunar Research Station] is a comprehensive scientific experiment base with the capability of long-term autonomous operation, built on the lunar surface and/or on the lunar orbit that will carry out multi-disciplinary and multi-objective scientific research activities such as the lunar exploration and utilization, lunar-based observation, basic scientific experiment and technical verification.

future narrative of space law. For the moment, it appears that more than one States⁸⁵⁵ are expressly suggesting a different approach towards the regulation of the exploration and use of space natural resources. Ultimately, the expression of objections by more than one States would eventually lead to a “situation where the objection of a significant number of States to the emergence of a new rule of customary international law prevents its crystallization altogether (because there is no general practice accepted as law).”⁸⁵⁶

1.3. SPACE LAW: AN INCORRUPTIBLE LEGAL ORDER?

The narrative of space law, from its inception until the reflection of modern space governance on it, leads to the question whether the legal order that governs the uses of outer space has endured in the passage of time or whether it is failing. On the one hand, this thesis observed the shift in the dynamics of the space industry – and its mirroring on the modern space law structures – from being State-centered to focusing on the private sector, where modern space laws – primarily at the domestic level – question the relevance and topicality of international space law.⁸⁵⁷ On the other hand, this thesis also observed that this shift has not intervened into the strictly legal regime of international space law. Whether the order of international space law could be considered as failing or not would depend on whether new rules are required or whether the old ones need to be preserved and their implementation ensured.

⁸⁵⁵ *Ibid.* See also United Nations, Committee on the Peaceful Uses of Outer Space, Legal Subcommittee, *Proposal for the establishment of a working group for the development of an international regime for the utilization and exploitation of space resources Working paper by Belgium and Greece*, 85th Sess, A/AC.105/C.2/L.311 (2019) 4 March 2019.

⁸⁵⁶ *Draft Conclusions on Identification of Customary International Law, with Commentaries*, *supra* note 720, Part 6 at 152.

⁸⁵⁷ Chapter II, Part 1.

This thesis observed the challenges that the order of space law is currently facing due to the emergence and power of private space actors and territory-centered institutions. Despite such challenges, however, to describe international space law as a failing legal framework would be to doubt the success it has had in maintaining the peaceful uses of outer space for over sixty years. Indeed, the institutions comprised in the body of international space law, primarily in the Outer Space Treaty, have achieved, without modifications, to harmoniously regulate – or prompt for further regulation – a wide range of space activities thus far.

Therefore, the general nature of the provisions of international space law and the subsequent flexibility to accommodate a wide range of emerging issues has demonstrated the resilience of international space law in time and in innovation.

While it is a reality that private space actors have led to property and territory-centered laws, this tendency has not yet intervened into the international legal regime, which remains to be the overarching regulatory body.⁸⁵⁸ The mechanism of responsibility as comprised in the Outer Space Treaty, for example, ensures both the relevance of international space law and its ability to provide a centralized regulatory structure and, in practice, to limit fragmentation. Specifically, by guaranteeing that the States remain the ultimate responsible actor for all space-related activities, the international space law framework renders States responsible for ensuring that their private actors respect and abide by international law.⁸⁵⁹

⁸⁵⁸ See analysis in Chapter III, Parts 1.1, 1.2.

⁸⁵⁹ *Outer Space Treaty*, *supra* note 1, 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

Therefore, the mechanism of international responsibility for space activities provided in the Outer Space Treaty, constitutes a guarantee that the role of international space law structures still remains relevant and acts as an ultimate legal safeguard balancing the normative territory- and private actor-centered development of the legal order.

Furthermore, as this chapter later finds, the structures of international space law are rather succeeding than failing, as the existing contractual international law foresees structures that could potentially be used for the exploration and exploitation of the physical environment of outer space, such as the Moon Agreement.

Consequently, the mechanisms of the current international space law regime are not only relevant to ensure that its content must be respected by all space actors, public and private, but they also foresee future space activities and provide potential governance structures for them. The challenges posed by private space actors, especially with respect to the further development of international space law and to the translation of normativity into law, are now present more than ever before. Such challenges, however, have always been present in legal regimes regulating and governing areas beyond national jurisdiction.

2. LEARNING FROM THE GOVERNANCE AND REGULATION OF THE DEEP

SEABED AND THE ANTARCTICA

Almost every academic work on the topic of the regulation and governance of space natural resources includes a comparative approach with respect to the respective regimes of the law of the

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.

sea and the *Antarctic Treaty System*.⁸⁶⁰ Even though this thesis does not focus on the governance and regulation of space natural resources *per se*, but it rather considers it as an example to explore the role of private actors in the development of international space law, it is useful to explore these two regulatory and governance examples.

As this part will show, the governance and regulation of the deep seabed and the Antarctica have been guided by the action of private space actors. Specifically, the examination of the law of the sea, with emphasis on the governance of the deep seabed, will demonstrate the power of private actors and their respective States, to change the route of international law and lead to the development of laws tailored to their needs. Similarly, the Antarctic Treaty System will enhance this thesis' understanding of how powerful States can influence the development of international law to the exclusion of those not possessing the means (technological and/or financial) to participate and influence this development. Ultimately, this part is essential in realizing the vulnerability of international law and its structures before the colossus of the private industry and its supporting States.

⁸⁶⁰ United Nations General Assembly, *Antarctic Treaty*, 2 December 1992 (entered into force 9 December 1992), *Question of Antarctica*, adopted by the General Assembly, 9 December 1992, A/RES/47/57; *Agreed Measures for the Conservation of Antarctic Fauna and Flora*, 2 June 1964 (entered into force 1 November 1982), 1964 Antarctic Consultative Meeting; *Convention for the Conservation of Antarctic Seals*, 11 February 1972, London; *Convention for the Conservation of Antarctic Marine Living Resources*, 20 May 1980, Australia; *Convention on the Regulation of Antarctic Mineral Resource Activities*, 2 June 1988 (never entered into force); *Protocol on Environmental Protection to the Antarctic Treaty*, 4 October 1991 (entered into force 14 January 1998) (hereafter "Madrid Protocol"). See for example Ricky J Lee, *Law and Regulation of Commercial Mining of Minerals in Outer Space* (Dordrecht, Heidelberg, London, New York: Springer, 2012) and De Man, *Exclusive Use in an Inclusive Environment – The Meaning of the Non-Appropriation Principle for Space Resource Exploitation*, *supra* note 281.

2.1. THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA AND THE 1994 AGREEMENT: A SYSTEM WITH CONFLICTING GOVERNANCE MODELS

As this thesis often observed, the modern trends that have emerged in the context of the exploration and use of outer space seek a new legal order that would bring territory and property in outer space and over its natural resources to the fore.⁸⁶¹ An important number of private space actors and States alike see as solution to the issue of space natural resource exploration the legal institution of property.⁸⁶² As the narrative of the law of the sea has historically been confronted with similar questions, this thesis will turn to the history of the legal status of the natural resources of the deep seabed and the legal regime that surrounds their exploration and exploitation to compare and contrast the two natural areas from the perspective of natural resource exploration.

As opposed to the exploration of space natural resources, which is still in the sphere of planned space activities, the exploration of the natural resources of the deep seabed commenced on a *law following the facts* basis. Indeed, the history of the exploration of the deep seabed and its natural resources did not start within the auspices of the United Nations and did not emerge from a law-making process. It was rather initiated by consortia already established in Germany, the United States, Canada, Japan, France, Belgium, and Italy⁸⁶³ that focused on exploring the resources of the deep seabed well before the Law of the Sea Convention was negotiated. Attracted by the potential of seabed nodules, the consortia invested in developing specialized mining technologies and started exploring the deep seabed during the 70's, while they also appropriated the extracted materials as

⁸⁶¹ See Chapter II, Part 1.

⁸⁶² *Ibid.*

⁸⁶³ "Exploration Contracts," online: International Seabed Authority <<https://www.isa.org.jm/exploration-contracts>>.

no relevant regime existed at that time.⁸⁶⁴ The appropriation of such materials, however, caused concern regarding the status of the deep seabed resources and led to legal efforts towards a regulation of deep seabed mining that would not allow free appropriation of what was thought as an area belonging to no one.⁸⁶⁵ As a result, the international community gathered to negotiate the Law of the Sea Convention which was adopted in 1982.⁸⁶⁶ Prior to the adoption of this Convention, the consortia were free to claim the material mined by the deep seabed with the condition that they would respect material claimed by other consortia on the basis of the principle of the freedom of the seas.⁸⁶⁷ This led a number of developing countries during the negotiations of the Law of the Sea Convention to suggest that the resources be given the status of *common heritage of mankind*, and therefore, not be subject to appropriation.⁸⁶⁸

Indeed, the status of the natural resources of the deep seabed was extensively discussed during the third conference on the law of the sea, where the *common heritage of mankind* characterization was introduced. This characterization caused significant disagreement between the developing and industrialized countries, especially concerning the appropriation over the natural resources of the

⁸⁶⁴ Katherine Dixon, “United States Position in Light of Recent Agreement and Exchange of Notes with Five Countries Involved in Preparatory Commission of United Nations Convention on the Law of the Sea” (1988) 18 GA J Int’L & Comp L 497– 515 at 504:

Four private multinational consortia had begun exploration of the deep seabed prior to the adoption of the LOS Convention. Those consortia were Ocean Mining Associates, which included investors from the United States, Belgium, and Italy; Ocean Minerals Company, which included investors from the United States and the Netherlands; Ocean Management, Inc., comprised of investors from Canada, the United States, Japan, and the Federal Republic of Germany; and the Kennecott Consortium, comprised of investors from the United States, the United Kingdom, Canada, and Japan. The four consortia originally began mining under permits issued by individual states whose investors were included in the consortia. Later, however, the consortia sought to preserve their rights as pioneer investors through representation in the Preparatory Commission and explicit recognition in the section of the Draft Final Act of the Convention dealing with pioneer investors.

⁸⁶⁵ See Aline Jaeckel, “Deep Seabed Mining” in Oystein Jensen, ed, *The Development of the Law of the Sea Convention – The Role of International Courts and Tribunals* (Cheltenham: Edward Elgar, 2020) 168-189.

⁸⁶⁶ The Convention was discussed and adopted during the UNCLOS (Law of the Sea Convention) III conference. See Tullio Treves, “Historical Development of the Law of the Sea” in Alex G Oude et al, eds, *The Oxford Handbook of the Law of the Sea* (Oxford: Oxford University Press, 2015) 1-23.

⁸⁶⁷ Tullio Treves, “United Nations Convention on the Law of the Sea,” 2008, United Nations Audiovisual Library of International Law.

⁸⁶⁸ *Ibid.*

deep seabed, which is simultaneously one of the reasons explaining the lengthy negotiation process that led to the adoption of the Law of the Sea Convention in 1982.⁸⁶⁹

Inspired by the vision of the developing countries to prevent the oligopolistic commercialization of seabed natural resources by the industrialized countries, the main difference between the new law of the sea and its predecessors, the *Geneva Conventions*,⁸⁷⁰ was the focus of the negotiations on the exploration and exploitation of the deep seabed resources, rather than on the rights of navigation as was the case in the older legal framework. From its very first lines, the Law of the Sea Convention clarifies that one of the objectives of the Convention was to introduce a regime enabling the “equitable and efficient”⁸⁷¹ utilization of the resources. As far as the resources under national jurisdiction are concerned, the Convention attributes exploitation and exploration rights to the coastal State, which is simultaneously responsible for taking all necessary measures to eliminate pollution or other damage to the environment.⁸⁷²

Part XI of the Law of the Sea Convention focuses on the status of the deep seabed natural resources as well as the exploration and exploitation of such resources. Because the provisions of this part are guided by the *common heritage of mankind* concept with which the industrialized States disagreed, it was ultimately decided that a specialized conference would be established to address

⁸⁶⁹ *Ibid.*

⁸⁷⁰ United Nations, *Convention on the Territorial Sea and the Contiguous Zone*, 29 April 1958, Geneva (entered into force 10 September 1964); United Nations, *Convention on the High Seas*, 29 April 1958, Geneva (entered into force 30 September 1962); United Nations, *Convention on Fishing and Conservation of the Living Resources of the High Seas*, 19 April 1958, Geneva (entered into force 20 March 1966); United Nations, *Convention on the Continental Shelf*, 19 April 1958 (entered into force 10 June 1964); United Nations, *Optional Protocol of Signature concerning the Compulsory Settlement of Disputes*, 29 April 1958, Geneva (entered into force 30 September 1962).

⁸⁷¹ *Law of the Sea Convention*, *supra* note 230, Preamble:

Recognizing the desirability of establishing through this Convention, with due regard for the sovereignty of all States, a legal order for the seas and oceans which will facilitate international communication, and will promote the peaceful uses of the seas and oceans, the equitable and efficient utilization of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment.

⁸⁷² *Law of the Sea Convention*, *supra* note 230, Article 193.

the issue of the resources of the deep seabed.⁸⁷³ The conference ultimately led to the adoption of an *Agreement implementing Part XI of the Convention on the Law of the Sea*⁸⁷⁴ (hereafter “1994 Agreement”), which, however, did not exclude the *common heritage of mankind* concept.⁸⁷⁵ The Agreement is thought as a compromise between the industrialized and the developing countries, thus incorporating elements from both approaches.⁸⁷⁶ While maintaining the *common heritage of mankind* concept, the Agreement placed emphasis on the goals of the industrialized States by introducing a specialized regime for the exploration and exploitation of deep seabed’s natural resources. The Agreement is not considered to alter, but rather implement the provisions of part XI of the Law of the Sea Convention. In reality, however, the 1994 Agreement renders void most of the core mechanisms introduced in part XI of the Law of the Sea Convention and emphasizes a market-based exploitation of the resources.

One of the fundamental provisions of part XI of the Law of the Sea Convention is enshrined in article 136 of the Convention,⁸⁷⁷ which provides the deep seabed – “Area” – and its resources as the *common heritage of mankind*, provision that is later reiterated in the preamble of the 1994 Agreement.⁸⁷⁸ In doing so, the Convention, allows the common utilization by all and for the benefit of all of the deep seabed and its resources. Linked to this status is the prohibition to establish sovereignty over the deep seabed and its resources or rights that derive from a sovereign status.⁸⁷⁹

⁸⁷³ Treves, “United Nations Convention on the Law of the Sea,” *supra* note 867.

⁸⁷⁴ United Nations, *Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982*, 28 July 1994, New York.

⁸⁷⁵ 1994 Agreement, *supra* note 874, Preamble: “Reaffirming that the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction (hereinafter referred to as ‘the Area’), as well as the resources of the Area, are the common heritage of mankind.”

⁸⁷⁶ Treves, “United Nations Convention on the Law of the Sea,” *supra* note 867.

⁸⁷⁷ *Law of the Sea Convention*, *supra* note 230, Article 136: “The Area and its resources are the common heritage of mankind.”

⁸⁷⁸ 1994 Agreement, *supra* note 874, Preamble.

⁸⁷⁹ *Law of the Sea Convention*, *supra* note 230, Article 137 “Legal Status of the Area and its Resources:”

Similarly, appropriation of the Area and its resources is also prohibited.⁸⁸⁰ “No State shall claim or exercise sovereignty or sovereign rights over any part of the Area or its resources, nor shall any State or natural or juridical person appropriate any part thereof,”⁸⁸¹ provides the article. At the same time, in the event that a State does attempt to establish such rights, “no such claim or exercise of sovereignty or sovereign rights nor such appropriation shall be recognized.”⁸⁸²

For the management of the exploration and exploitation of resources, part XI of the Law of the Sea Convention establishes an organization, the Authority, which is responsible for the equitable sharing of any resources that derive from the Area (through its Assembly).⁸⁸³ The role of the Authority is strictly linked to the participation of the developing countries in the exploration and exploitation of the Area and its resources. The Authority has a centralized and monitoring role, as no exploitation activities can take place without prior authorization by the Authority. The Authority has the jurisdiction to both authorize the activity or limit the resources that can be exploited.⁸⁸⁴ To undertake its role, the Authority comprises an Assembly,⁸⁸⁵ a Council,⁸⁸⁶ a

1. No State shall claim or exercise sovereignty or sovereign rights over any part of the Area or its resources, nor shall any State or natural or juridical person appropriate any part thereof. No such claim or exercise of sovereignty or sovereign rights nor such appropriation shall be recognized.

2. All rights in the resources of the Area are vested in mankind as a whole, on whose behalf the Authority shall act. These resources are not subject to alienation. The minerals recovered from the Area, however, may only be alienated in accordance with this Part and the rules, regulations and procedures of the Authority.

3. No State or natural or juridical person shall claim, acquire or exercise rights with respect to the minerals recovered from the Area except in accordance with this Part. Otherwise, no such claim, acquisition or exercise of such rights shall be recognized.

⁸⁸⁰ *Ibid.*

⁸⁸¹ *Ibid.*, Paragraph 2.

⁸⁸² *Ibid.*, Paragraph 3.

⁸⁸³ *Ibid.*, Article 160, Paragraph 2: “In addition, the powers and functions of the Assembly shall be: ... (g) to decide upon the equitable sharing of financial and other economic benefits derived from activities in the Area, consistent with this Convention and the rules, regulations and procedures of the Authority;” see also *ibid.*, Article 157, Paragraph 3: “The Authority is based on the principle of the sovereign equality of all its members.”

⁸⁸⁴ *Ibid.*, Article 151, Paragraph 9.

⁸⁸⁵ *Ibid.*, Articles 159-160.

⁸⁸⁶ *Ibid.*, Articles 161-165.

Secretariat,⁸⁸⁷ and an Enterprise.⁸⁸⁸ The Enterprise is one of the most important organs of the Authority as it has the capacity to “carry out activities in the Area directly, as well as the transporting, processing, and marketing of minerals recovered from the Area.”⁸⁸⁹

Furthermore, the Authority is responsible for “acquir[ing] technology and scientific knowledge relating to activities in the Area”⁸⁹⁰ and “promot[ing] and encourag[ing] the transfer to developing countries of such technology and scientific knowledge so that all States Parties benefit therefrom.”⁸⁹¹ Specific programs and measures enabling the transfer of such technology are yet to be established.

As such, the role of the Authority and the Enterprise in the modern law of the sea appeared critical in maintaining a sovereignty-free and property-free framework for the exploration and exploitation of the Area and its natural resources. At the same time, the same organ was set to safeguard a regulated exploitation of the Area and its resources, thus preventing the formation of mono- or oligopolies.

Nevertheless, the 1994 Agreement, despite recalling the *common heritage of mankind* principle in its preamble as one of its guiding concepts, reversed this benefit-sharing dynamic, the transfer of

⁸⁸⁷ *Ibid.*, Articles 166-169.

⁸⁸⁸ *Ibid.*, Article 170.

⁸⁸⁹ *Ibid.*, Annex IV “Statute of the Enterprise,” Article 1:

1. The Enterprise is the organ of the Authority which shall carry out activities in the Area directly, pursuant to article 153, paragraph 2 (a), as well as the transporting, processing and marketing of minerals recovered from the Area.

2. In carrying out its purposes and in the exercise of its functions, the Enterprise shall act in accordance with this Convention and the rules, regulations and procedures of the Authority.

⁸⁹⁰ *Ibid.*, Article 144 “Transfer of Technology,” Paragraph 1:

1. The Authority shall take measures in accordance with this Convention:

(a) to acquire technology and scientific knowledge relating to activities in the Area; and

(b) to promote and encourage the transfer to developing States of such technology and scientific knowledge so that all States Parties benefit therefrom.

⁸⁹¹ *Ibid.*

technology, and the exploitation of the natural resources of the Area without the simultaneous acquisition of property. Specifically, similar to the case of the Moon Agreement, the *common heritage of mankind* concept discouraged industrialized States, such as the United States, from signing the Law of the Sea Convention.⁸⁹² To overcome this concept, which appeared as an obstacle for the industrialized countries that were interested in harvesting the deep seabed, the 1994 Agreement introduced provisions which, in essence, reversed the ideas that derive from the *common heritage of mankind* characterization, such as the idea of benefit-sharing, the inclusion of the developing countries, and the transfer of technology. In an effort to attract more industrialized States, such ideas were replaced by market-friendly principles aligned with the liberal approaches of the West. As such, the 1994 Agreement weakened the management role of the Enterprise in the deep seabed exploration and exploitation and strengthened that of the Council.⁸⁹³ This development gave private companies direct access to the exploitation of the deep seabed without having to first coordinate the sharing of their future benefits with a centralized managing entity, such as the Enterprise. The Enterprise was replaced by exploitation contracts managed by the Authority and interested entities (States, consortia, or the Enterprise itself).⁸⁹⁴ Furthermore, the provisions regarding the transfer of technology from developed to developing States were

⁸⁹² Treves, “United Nations Convention on the Law of the Sea,” *supra* note 867.

⁸⁹³ 1994 Agreement, *supra* note 874, Annex, Section 5.

⁸⁹⁴ 1994 Agreement, *supra* note 874, Annex, Section 1, Paragraph 6 (a) (i):

A plan of work for exploration submitted on behalf of a State or entity, or any component of such entity, referred to in resolution II, paragraph 1 (a) (ii) or (iii), other than a registered pioneer investor, which had already undertaken substantial activities in the Area prior to the entry into force of the Convention, or its successor in interest, shall be considered to have met the financial and technical qualifications necessary for approval of a plan of work if the sponsoring State or States certify that the applicant has expended an amount equivalent to at least US\$ 30 million in research and exploration activities and has expended no less than 10 per cent of that amount in the location, survey and evaluation of the area referred to in the plan of work. If the plan of work otherwise satisfies the requirements of the Convention and any rules, regulations and procedures adopted pursuant thereto, it shall be approved by the Council in the form of a contract. The provisions of section 3, paragraph 11, of this Annex shall be interpreted and applied accordingly.

eliminated,⁸⁹⁵ and the limitations that could be set by the Authority in the exploitable quantities of the minerals were similarly removed. Simultaneously, the prior advisory and decision-making role of the Council was transformed into a decision-making role, thus attributing more power to States party.⁸⁹⁶ Even though these changes brought the desired result, that is, the increase of the number of States that ratified the Law of the Sea Convention, they transformed the nature of the Authority from an organ aiming to enable inclusivity into an organ enabling the private commercial exploitation of the Area's natural resources.

Up to date, the Authority has granted approximately thirty contracts to 22 private and public companies, as well as to public/private partnerships.⁸⁹⁷ The majority of the contracts, which were initially signed for a duration of fifteen years, were extended to twenty years, due to the technological challenges of the operations.⁸⁹⁸ The system, however, has not yet achieved to entirely eliminate unauthorized relevant activities.⁸⁹⁹ Furthermore, the Authority has issued a

⁸⁹⁵ *1994 Agreement*, *supra* note 874, Annex, Section 5 "Transfer of Technology:"

1. In addition to the provisions of article 144 of the Convention, transfer of technology for the purposes of Part XI shall be governed by the following principles:

(a) The Enterprise, and developing States wishing to obtain deep seabed mining technology, shall seek to obtain such technology on fair and reasonable commercial terms and conditions on the open market, or through joint-venture arrangements;

(b) If the Enterprise or developing States are unable to obtain deep seabed mining technology, the Authority may request all or any of the contractors and their respective sponsoring State or States to cooperate with it in facilitating the acquisition of deep seabed mining technology by the Enterprise or its joint venture, or by a developing State or States seeking to acquire such technology on fair and reasonable commercial terms and conditions, consistent with the effective protection of intellectual property rights. States Parties undertake to cooperate fully and effectively with the Authority for this purpose and to ensure that contractors sponsored by them also cooperate fully with the Authority;

(c) As a general rule, States Parties shall promote international technical and scientific cooperation with regard to activities in the Area either between the parties concerned or by developing training, technical assistance and scientific cooperation programmes in marine science and technology and the protection and preservation of the marine environment.

2. The provisions of Annex III, article 5, of the Convention shall not apply.

⁸⁹⁶ *1994 Agreement*, *supra* note 874, Annex, Section 3 "Decision-Making."

⁸⁹⁷ "Exploration Contracts," online: International Seabed Authority <<https://www.isa.org.jm/exploration-contracts>>.

⁸⁹⁸ *Ibid.*

⁸⁹⁹ *Ibid.* See also Andrew Thaler, "IUCN votes for Seep-Sea Mining Moratorium" (30 September 2021), online: DSM Observer <<https://dsmobserver.com/2021/09/iucn-votes-for-deep-sea-mining-moratorium/>>.

series of regulations relating to the prospecting, monitoring, and extracting of deep seabed minerals, codes of conducts, and recommendations,⁹⁰⁰ which, due to their *soft* character – and due to the fact that some are still under a finalization process⁹⁰¹ – are not always respected by the mining companies, thus often resulting to environmental harm.⁹⁰²

The scholarship on space law, with emphasis on the scholarship on the governance of space resources, often refers to the law of the sea, specifically to part XI of the Law of the Sea Convention and to the 1994 Agreement, as a model possibly sustainable for the management and regulation of the exploration and exploitation of space natural resources.⁹⁰³ Indeed, the mechanisms embedded in part XI of the Law of the Sea Convention would have the potential to create a mechanism for the exploration and exploitation of space natural resources. That is, such a mechanism would enable the anticolonial dynamic of international space law while, at the same time, accommodating modern technological possibilities. Specifically, this could be achieved through a mechanism similar to that of the Enterprise. In the context of the law of the sea, the Enterprise initially occupied a critical role in the sharing of the benefits and, as such, contributed in securing the equitable management of resources. The transferring of such a mechanism in the realm of the governance of

⁹⁰⁰ *Regulation of 13 July 2000 on Prospecting and Exploration for Polymetallic Nodules in the Area; regulation of 7 May 2010 regarding the prospection and exploration of the polymetallic sulphides in the Area; regulation of 27 July 2012 on Prospecting and Exploration for Cobalt-rich Ferromanganese Crusts in the Area; recommendations of 1 March 2013 for the guidance of contractors for the assessment of the possible environmental impacts arising from exploration for marine minerals in the Area; environmental Management Plan for the Clarion-Clipperton Zone, approved by the Council decision of 26 July 2012; recommendations of 12 July 2013 for the guidance of contractors and sponsoring states relating to training programmes under plans of work for exploration; recommendations of 14 April 2015 for the guidance of contractors for the reporting of actual and direct exploration expenditure; recommendations of 4 August 2015 for the guidance of contractors on the content, format and structure of annual reports.* See also *The Mining Code*, online: International Seabed Authority <<https://isa.org.jm/node/20314>>.

⁹⁰¹ See “Draft Exploitation Regulations,” online: International Seabed Authority <<https://isa.org.jm/mining-code/draft-exploitation-regulations>>. See also “Draft Standards and Guidelines,” online: International Seabed Authority <<https://isa.org.jm/mining-code/standards-and-guidelines>>.

⁹⁰² “Draft Mining Regulations insufficient to protect the Deep Sea – IUCN Report” (16 July 2018), online: Funding the Ocean <<https://fundingtheocean.org/news/draft-mining-regulations-insufficient-to-protect-the-deep-sea-iucn-report/>>.

⁹⁰³ See especially Lee, *Law and Regulation of Commercial Mining of Minerals in Outer Space*, *supra* note 860.

space resources would be compatible with both articles I and II of the Outer Space Treaty,⁹⁰⁴ while, at the same time expressing principles found in the Moon Agreement, such as the equitable benefit-sharing principle⁹⁰⁵ and that of inclusion of and enhanced assistance for developing countries.⁹⁰⁶

However, the current status of the Law of the Sea Convention, where its XIth part has been fully erased by the changes brought forward through the 1994 Agreement, does not argue towards the same. The enhanced importance and power of the contractors, the limited role of the Enterprise, the lack of technology transfer provisions, and the veto power of industrialized States in the Council – which from policy-making organ was transformed into a decision-making one – argue for a market-oriented and property-based governance mechanism. Nonetheless, such a mechanism would not be in conformity with the anticolonial spirit of the Outer Space Treaty as it would enable the appropriation, commercialization, and, consequently, objectification of outer space and its resources, in the interest of the industrialized States. Indeed, out of the 168 States that have ratified

⁹⁰⁴ *Outer Space Treaty*, *supra* note 1:

The exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind. Outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies. There shall be freedom of scientific investigation in outer space, including the Moon and other celestial bodies, and States shall facilitate and encourage international cooperation in such investigation. (Article I)

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. (Article II)

⁹⁰⁵ *Moon Agreement*, *supra* note 1, Article 11, Paragraph 7:

The main purposes of the international regime to be established shall include:

- (a) The orderly and safe development of the natural resources of the Moon;
- (b) The rational management of those resources;
- (c) The expansion of opportunities in the use of those resources;
- (d) 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 those countries which have contributed either directly or indirectly to the exploration of the Moon, shall be given special consideration.

⁹⁰⁶ *Ibid.*

the Law of the Sea Convention,⁹⁰⁷ including an impressive number of developing States,⁹⁰⁸ the majority of exploration and exploitation contracts have been signed only with industrialized States or with emerging global superpowers. That is, the majority of the contracts have been signed with France, Germany, Japan, the Republic of Korea, the Russian Federation, China, and India.⁹⁰⁹ Some smaller States have also been involved, such as Singapore, Nauru, and Tonga,⁹¹⁰ as their geographical location justified their direct interest in deep seabed mining activities. Yet, the majority of States are not included in such activities.

Therefore, the mechanism introduced with the 1994 Agreement attracted and enabled the mining activities of a small number of States and their private actors, as well as a smaller number of directly interested less powerful countries. As a result, it appears that the mechanism of the 1994 Agreement led to a regime of exclusivity rather than that of an inclusive participation. Therefore, the initial regime produced in part XI of the Law of the Sea Convention, which ensured access and participation of all States, and its benefit-sharing and technology-transfer mechanisms have now been replaced by a mechanism reflecting the real market-power of several States and private companies alike.

A similar regulatory and governance regime for the exploration and exploitation of outer space and its resources would lead to a use of exclusive rather than inclusive nature, as opposed to the provisions of international space law. As this thesis often mentioned, the essence of international space law's provisions on the prohibition of sovereignty and property in outer space and over its

⁹⁰⁷ See the status of the Convention: *United Nations Convention on the Law of the Sea: Declarations made upon signature, ratification, accession or succession or anytime thereafter*, online: United Nations, Oceans & Law of the Sea, Division for Ocean Affairs <https://www.un.org/Depts/los/convention_agreements/convention_declarations.htm>.

⁹⁰⁸ *Ibid.*

⁹⁰⁹ "Exploration Contracts," online: International Seabed Authority <<https://www.isa.org.jm/exploration-contracts>>.

⁹¹⁰ *Ibid.*

resources was to circumvent territorial formations of any kind, be they material or social.⁹¹¹ Introducing a space governance mechanism similar to the one brought forward by the 1994 Agreement, would lead to the restriction of the exploration and use of outer space and its resources to a small group of space-faring States and space companies, thus leading to both a legal and a sociopolitical state of oligopolistic access and use. That is, such a mechanism would formalize the existing normativity produced by private space actors and space-faring States, leaving the plurality of States outside of the arena of space exploration and use.

2.2. THE EXAMPLE OF THE ANTARCTIC GOVERNANCE

The governance of Antarctica has been faced with similar concerns as far as the exploration, exploitation, and, ultimately, appropriation of its natural resources are concerned. In a way similar to the inception of international space law, the legal regime surrounding the exploration and use of Antarctica was discussed almost simultaneously with that of outer space. After brief negotiations, the Antarctic Treaty System was established in the 60's, including the *Antarctic Treaty*,⁹¹² the *Convention for Conservation of Antarctic Seals*,⁹¹³ the *Convention on the Conservation of Antarctic Marine Living Resources*,⁹¹⁴ the *Convention on the Regulation of Antarctic Mineral Resources Activities*,⁹¹⁵ and the *Protocol on Environmental Protection of the Antarctic*.⁹¹⁶

⁹¹¹ See especially, Chapter I.

⁹¹² *Antarctic Treaty*, *supra* note 860.

⁹¹³ *Convention for Conservation of Antarctic Seals*, *supra* note 860.

⁹¹⁴ *Convention on the Conservation of Antarctic Marine Living Resources*, *supra* note 860.

⁹¹⁵ *Convention on the Regulation of Antarctic Mineral Resources Activities*, *supra* note 860.

⁹¹⁶ *Protocol on Environmental Protection of the Antarctic*, *supra* note 860.

The initial signatories of the Antarctic Treaty were Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, the former Soviet Union, the United Kingdom, and the United States, that is, the twelve States that were already active in the area during the International Geophysical Year.⁹¹⁷ Influenced by the destructive consequences of WWII, the involved international community at that moment saw the area of Antarctica as a potential arena for military activities;⁹¹⁸ thus, the first concern was the regulation of the uses of Antarctica for peaceful purposes, with emphasis on scientific activities.⁹¹⁹ As opposed to the Outer Space Treaty, however, the Antarctic Treaty prohibited all military activities and bases in the area, as it prohibits “any measure of military nature, such as the establishment of military bases and fortifications, the carrying out of military manoeuvres, as well as the testing of any type of weapon.”⁹²⁰ Although the Treaty does not specifically address the exploration and exploitation of natural resources, it provides a general principle against the formation of territories over the areas of Antarctica. However, due to territorial claims put forward before the negotiation of the Treaty,⁹²¹ the latter does not abolish such claims, but rather embraces them. Indeed, the Antarctic Treaty explicitly accepts such claims by providing that the entry into force of the Treaty does not lead to a *renunciation*⁹²² of pre-existing territorial claims.

⁹¹⁷ List of Parties, Secretariat of the Antarctic Treaty, online: <<https://www.ats.aq/devAS/Parties?lang=e>>.

⁹¹⁸ For the context, see generally Francesco Francioni & Tullio Scovazzi, eds, *International Law for Antarctica* (The Hague: Kluwer Law International, 1996).

⁹¹⁹ See generally Jeffrey D Muhre, *The Antarctic Treaty System: Politics, law, and Diplomacy* (New York: Taylor and Francis, 1986) and Gillian Triggs, “The Antarctic Treaty System: A Model of Legal Creativity and Cooperation” (2006) *Science Diplomacy* 39-49.

⁹²⁰ *Antarctic Treaty*, *supra* note 860, Article I.

⁹²¹ These States are the United Kingdom, France, Norway, New Zealand, Australia, Argentina and Chile; “Antarctic Territorial Claims,” online” Australian Antarctic Program <<https://www.antarctica.gov.au/about-antarctica/law-and-treaty/history/antarctic-territorial-claims/>>.

⁹²² *Antarctic Treaty*, *supra* note 860, Article IV, Paragraph 1:

1. Nothing contained in the present Treaty shall be interpreted as:

(a) a renunciation by any Contracting Party of previously asserted rights of or claims to territorial sovereignty in Antarctica;

Although the prohibition of territorial rights over the Antarctica was not initially linked to the exploration and exploitation of space natural resources, as the technology advanced during the 60's and as the prospects for valuable minerals become more potent, discussions over the legal regime for the potential exploration and exploitation of such resources led to the *Convention on the Regulation of Antarctic Mineral Resource Activities* (hereafter "Wellington Convention")⁹²³ and to the *Protocol on Environmental Protection to the Antarctic Treaty* (hereafter "Madrid Protocol").⁹²⁴

The Wellington Convention and the Madrid Protocol reiterate that Antarctica must be used exclusively for peaceful purposes and links mineral exploitation activities to a prior assessment of their impacts on the very environment of Antarctica.⁹²⁵ Therefore, the Convention foresees that mining activity may take place in Antarctica but embeds the element of due diligence within the exploitation right itself. Accordingly, as opposed to the Outer Space Treaty that renders States responsible for the activities of their private entities,⁹²⁶ the Wellington Convention, as well as the Madrid Protocol, locate the operating actors⁹²⁷ – including private actors – as directly responsible

(b) a renunciation or diminution by any Contracting Party of any basis of claim to territorial sovereignty in Antarctica which it may have whether as a result of its activities or those of its nationals in Antarctica, or otherwise;

(c) prejudicing the position of any Contracting Party as regards its recognition or non-recognition of any other State's right of or claim or basis of claim to territorial sovereignty in Antarctica.

⁹²³ *Convention on the Regulation of Antarctic Mineral Resource Activities*, *supra* note 860.

⁹²⁴ *Madrid Protocol*, *supra* note 860. The Madrid Protocol replaced the Wellington Convention in 1991.

⁹²⁵ *Antarctic Treaty*, *supra* note 860, Article IV; *Madrid Protocol*, *supra* note 860, Article 7: "Any activity relating to mineral resources, other than scientific research, shall be prohibited."

⁹²⁶ *Outer Space Treaty*, *supra* note 1, Article VI.

⁹²⁷ *Convention on the Regulation of Antarctic Mineral Resource Activities*, *supra* note 860, Article 8:

1. An Operator undertaking any Antarctic mineral resource activity shall take necessary and timely response action, including prevention, containment, clean up and removal measures, if the activity results in or threatens to result in damage to the Antarctic environment or dependent or associated ecosystems. The Operator, through its Sponsoring State, shall notify the Executive Secretary, for circulation to the relevant institutions of this Convention and to all Parties, of action taken pursuant to this paragraph.

2. An Operator shall be strictly liable for:

for environmental damage, without excluding simultaneous liability of States.⁹²⁸ Therefore, the Convention appears to add more emphasis on the link between the exploitation of natural resources and the effects of such exploitation on the environment than on the possible effects on a sociopolitical level, e.g. on the activities' potential to lead to colonial practices.

To control exploitation activities and regulate them in a centralized manner, the Convention created a Commission charged with the designation of restricted areas, where the exploitation of resources is prohibited.⁹²⁹ For areas where exploitation is permitted, the operator must apply for an exploration permit, after a notification regarding the planned exploitation activities, which must be submitted nine months in advance. The Convention introduces a peculiar status over the exploitable resources as the operator may have "exclusive rights"⁹³⁰ to explore but may not have any rights over the resources as such.⁹³¹

(a) damage to the Antarctic environment or dependent or associated ecosystems arising from its Antarctic mineral resource activities, including payment in the event that there has been no restoration to the *status quo ante*;

(b) loss of or impairment to an established use, as referred to in Article 15, or loss of or impairment to an established use of dependent or associated ecosystems, arising directly out of damage described in subparagraph (a) above;

(c) loss of or damage to property of a third party or loss of life or personal injury of a third party arising directly out of damage described in subparagraph (a) above; and

(d) reimbursement of reasonable costs by whomsoever incurred relating to necessary response action, including prevention, containment, clean up and removal measures, and action taken to restore the *status quo ante* where Antarctic mineral resource activities undertaken by that Operator result in or threaten to result in damage to the Antarctic environment or dependent or associated ecosystems.

⁹²⁸ *Convention on the Regulation of Antarctic Mineral Resource Activities*, *supra* note 860, Article 8 (3) (a):

Damage of the kind referred to in paragraph 2 above which would not have occurred or continued if the Sponsoring State had carried out its obligations under this Convention with respect to its Operator shall, in accordance with international law, entail liability of that Sponsoring State. Such liability shall be limited to that portion of liability not satisfied by the Operator or otherwise, (b) Nothing in subparagraph (a) above shall affect the application of the rules of international law applicable in the event that damage not referred to in that subparagraph would not have occurred or continued if the Sponsoring State had carried out its obligations under this Convention with respect to its Operator.

⁹²⁹ *Convention on the Regulation of Antarctic Mineral Resource Activities*, *supra* note 860, Articles 21, 22.

⁹³⁰ *Ibid*, Article 53.

⁹³¹ *Ibid*, Article 37.

Consequently, the Wellington Convention introduced a mechanism enabling the exploitation of resources without allowing the establishment of property rights over such resources. The Convention, however, never entered into force and it was later replaced by the Madrid Protocol, which prohibited all non-scientific activities relating to mineral resources.⁹³² Indeed, several environmental organizations opposed the content of the Convention as it could eventually lead to the degradation of Antarctica's natural environment. The voice of civil society was well echoed in State decision-making and the Convention was signed by only 19 States, none of which was included in the States with historical territorial claims in Antarctica, which was a requirement for the entry into force of the Convention.⁹³³

Similarly, the 1991 Protocol on Environmental Protection that was signed a few years later did not address resource mining activities. Rather, it introduced the obligation of States to conduct environmental impact assessments prior to undertaking any activity in Antarctica. The sociopolitical impacts, however, reside beyond the legal equation.

Therefore, from a comparative perspective, it appears that neither in the law of the sea, nor in the Antarctic Treaty System the regulation of resource exploitation has been successful. In both cases the instruments used to regulate the activities failed. In the law of the sea, part XI of the Law of the Sea Convention, which specifically addressed the issue, failed due to its cosmopolitan nature that prohibited exclusive property over the resources. In the case of the Antarctic Treaty System, both the wide exploitation restrictions emerging from environmental protection and the prohibition of territorial rights over the resources led to the limited acceptance of the system.

⁹³² *Madrid Protocol*, *supra* note 860, Article 7.

⁹³³ See Peter J Beck, "Convention on the Regulation of Antarctic Mineral Resource Activities: a major addition to the Antarctic Treaty System" (1989) 152 *Polar Record* 19-32 and *Convention on the Regulation of Antarctic Mineral Resource Activities*, *supra* note 860, Article 62.

Similarly, the only international legal document that addressed the issue of resource exploration in the context of outer space, that is, the Moon Agreement, had a similar fate so far, with very limited recognition by the international space community.⁹³⁴ However, this thesis finds that the principles embedded in the Moon Agreement hold high promise for a balanced and sustainable development of a space resource governance and regulatory mechanism.

3. PLURALISM OF ACTORS, PLURALISM OF NORMS: DECONFLICTING MODERN SPACE LAW AND GOVERNANCE

This thesis has so far claimed that the modern governance of the exploration and use of outer space, especially as far as space activities entailing the element of connection with the physical environment of outer space are concerned, is undergoing a process of transformation from a rules-based State-centric structure to a normative construction of – primarily – private actor-centred governance and instigated by the ever-advancing space technology. At the same time, this thesis presented outer space as a living ecosystem reflecting sociopolitical constructs and, therefore, having the status of a subject – rather than that of an object⁹³⁵ – and being transformed into a “source of action regardless of its status as a human or non-human.”⁹³⁶ The role of international space law in this relationship between actors and outer space was presented as a guarantee for the

⁹³⁴ For the status of the Convention, see “Convention on the Regulation of Antarctic Mineral Resource Activities - Current status of the Convention,” online: New Zealand Foreign Affairs and Trade <<https://www.mfat.govt.nz/en/about-us/who-we-are/treaties/convention-on-the-regulation-of-antarctic-mineral-resource-activities/>>.

⁹³⁵ See Chapter I, Parts 1.2 and 1.3. The initial international space law regime did not attribute to outer space the role of an “object” under exploration and use, and it did not regulate outer space – that is, the physical environment of outer space – *per se*. Rather, it regulated human behaviour over it in a way preventing outer space from being converted into an *object*. Therefore, the initial space law regime introduced both an anticolonial character in the exploration and use of outer space, as well as a prohibition of its objectification; prohibition that expresses and enables anticoloniality.

⁹³⁶ Kathrin M Cresswell, “implementation of information technology developments in healthcare” (2010) 10:67 BMC Medical Informatics and Decision Making 11 at 2.

spaceless nature of outer space and as a mechanism of social decolonization. Taking into account these newly emerged dynamics in the realm of space activities and lessons learned through the narratives of failure of the law of the sea and the Antarctic Treaty System, the purpose of this part is to explore the potential of the principles and mechanisms embedded in the Moon Agreement to lead to a governance and regulatory mechanism for the exploration and use of outer space itself understood as a resource.

This thesis also observed that the current status of the governance of outer space reveals that all space actors – considered as power and authority-generating actors – function in a relational way. That is, the action of private space actors gives – to a significant extend – form to the action of public space actors and, in a similar way, the action of public space actors enables that of the private ones. Ultimately, this plurality of actors and actors’ networks appear to be guided by the potential of space technology – and the subsequent potential for economic well-being – and to ultimately shape their normative relationship with outer space.⁹³⁷

As this normative relationship is currently characterized by a territory- and property-led objective – or, simply put by a space-making objective – that is in contrast with the *spacelessness* and anticolonial vision of international space law, the need for a mechanism to deconflict the relationship between the modern actor-based normativity and the rules-based regime of space activities appears critical.

The role of this new governance mechanism is to introduce the existing rules-based regime as a guarantee to a materially and socially anticolonial space governance, while also welcoming and

⁹³⁷ See generally Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory* (Oxford: Oxford University Press, 2012); Yvonne Rydin & Laura Tate, ed, *Actor Networks of Planning – Exploring the Influence of Actor Network Theory* (London: Routledge, 2017); Anders Blok et al, eds, *The Routledge Companion to Actor-Network Theory* (London: Routledge, 2020); Idongesit Williams, ed, *Contemporary Applications of Actor Network Theory* (Singapore: Palgrave Macmillan, 2020).

accommodating new interests. That is, the role of this mechanism is to translate the anticolonialism of international space law into a minimum standard of action and, in parallel, translate the relational normativity produced through these actor-networks into modern actor-specific – or network specific – standards. However, to imagine how such a mechanism could be architected, one needs first to envision the diversity of the actors that currently characterize space activities.

3.1. THE *SPACELESS* PLURALISM OF SPACE LAW

This thesis often referred to the anticolonial character of international space law's principles and rationale, while this chapter earlier identified emerging challenges that could bring with them changes to the existing legal order for space activities through mechanisms of treaty interpretation or through the formation of custom. This part of the thesis seeks to locate the anticolonial character of space law as the center of space law's pluralism and its modern challenges as challenges to the very nature of international space law.

Imagining the pluralism of international space law is imagining the ideals that it reflects. This thesis often argued that the ideals expressed through international space law, in particular through the Outer Space Treaty, are those of anticolonialism, inclusivity, and the formation of a legal order that is detached from the fixity of land and from the bordered thinking of property-based rules and rights of exclusivity over parts of outer space.⁹³⁸ It is in this sense that the pluralism of international space law is understood. Accordingly, the ideology of space law has led to imagining international space law's order as one leading to an inclusive exploration and use of outer space, detached from

⁹³⁸ See Chapter I, Parts 1.1 to 1.4, and 2.1.

the element of fixed territorialities, and reflecting the interests of all actors, yet without privileging some.

The idea of pluralism – understood as inclusivity of actors – could fulfil such an ideology. The emergence of new actors in the realm of space activities and, consequently, the emergence of new powers and authorities that have the capacity to eventually change the existing law – for example, by interpreting international space law through a practice opposed to its ideals, or via the creation of new customary norms,⁹³⁹ also have the potential to transform its ideology. As such powers and authorities appear to form pressure centers⁹⁴⁰ and new centers of governance, the inclusive aesthetic of international space law must adjust, rather than change, in order to accommodate them. That is, while the current approaches in legal scholarship as well as in the recent political and juridical developments in the field of space law, with emphasis on the regulation of the exploration and use of space natural resources, seek to change the order of space law to accommodate new entrants,⁹⁴¹ the traditional ideology of space law tends to favour the concept of inclusion rather than that of exclusion, entailing, in fact, a deeply pluralistic character.

Indeed, the study of pluralism has been central in the postcolonial context, where multiple identities – and, therefore, multiple sources of authority – coexisted and sought to translate their own power into law. As this thesis earlier observed, the history of international space law showed that international space law's postcolonial moment occurred at its inception, when international space law – through the ideal of *spacelessness* that it introduced – appeared as an effort to decolonize international law.⁹⁴² The idea of pluralism, however, has also been studied in the

⁹³⁹ See Chapter III, Part 2.2.1.

⁹⁴⁰ See Chapter III, Part 1.2.

⁹⁴¹ See Chapter II, Part 1.1, on the effects of the pragmatism that characterizes the modern scholarship on space law.

⁹⁴² See Chapter I, Part 1.1.

context of colonialism, where the “preexisting law ... was itself often pluralistic, having undergone diverse influences of war, settlement, trade and religion.”⁹⁴³ Therefore, the archetypical concept of pluralism appears to be linked to the idea of influencing and altering existing laws and customs, which, ultimately, lose their initial identity and reflect their colonial history. Paradoxically, as opposed to this conceptualization of pluralism, legal pluralism in the modern formation of law – and of international law – is linked to positive connotations.⁹⁴⁴ Thought as the amalgamation of the powers and authorities that emerge from the multiplicity of modern actors and their translation into a multiplicity of normativities, applying pluralism into the law-making process can ultimately lead to a multi-normative – and therefore inclusive – law. Drawing from the concept of pluralism as explained above, this thesis provides a different understanding of pluralism in the context of international space law and proposes the term as a concept referring to a legal order and governance structure that takes into account a plurality of actors, be they traditional (States in this case), or modern (private actors in this case). Although the way that this thesis understands pluralism does not refer to the inclusion of private actors in the *stricto sensu* rule-making processes of a legal system, it refers, however, to the power of new entrants (private actors) to influence policies and laws⁹⁴⁵ and to coexist with States in the same legal and governance structures.

⁹⁴³ Margaret Davies, “Legal Pluralism” in Peter Cane & Herbert Kritzer, eds, *The Oxford Handbook of Empirical Legal Research* (Oxford: Oxford University Press, 2010) 805 - 817 at 811.

⁹⁴⁴ See generally Sally E Merry, “Legal Pluralism” (1988) 22:5 *Law & Society Review* 869-896; Emmanuel Melissaris, *Ubiquitous Law – Legal Theory and the Space for Legal Pluralism* (London: Routledge, 2016); Wendy A Adams, *Popular Culture – Narrative as Law* (London and New York: Routledge, 2017); Paul S Berman, *Global Legal Pluralism – A Jurisprudence of Law Beyond Borders* (Cambridge: Cambridge University Press, 2012):

... [N]ation-state governmental have been quick to reassert themselves. For example, there was already a moment circa 1995 when it seemed as if the rise of cyberspace could not legitimately be governed by territorially based sovereigns and that the online world should create its own legal jurisdiction (or multiple jurisdictions). Predictably, nation-states pushed in the opposite direction, passing a slew of laws purporting to regulate almost every conceivable online activity, from gambling to chat rooms to auction sites, and seeking to enforce territoriality-based rules regarding trademarks, contractual relations, privacy norms, “indecent” content, and crime, among others.

⁹⁴⁵ See also relevant explanation in footnote 693.

Therefore, the pluralism of international space law understood as actor inclusivity, combined with space law's vision to deterritorialize the way in which international law is applied to the exploration and use of outer space, necessitates a legal and governance mechanism facilitating and accommodating new entrants into new space activities, especially considering the exploration and use of space natural resources. Consequently, such a regime should be able to simultaneously accommodate new entrants – and the subsequently created authorities – in space activities, without, however, such inclusion territorializing neither the physical environment of outer space, nor its social one. This thesis earlier used the notion of territory as a metaphor to emphasize that the anticolonial and anti-territorial vision of international space law has two dimensions: the *stricto sensu* anti-territorial dimension, that is, the prohibition of physical territorial formations in outer space, and secondly, the prevention of an often-invisible colonialism – that is, space law's socially anti-territorial dimension.⁹⁴⁶

Leaving uncontained the current development of space law, especially regarding the exploration and use of space natural resources, that takes place either through domestic law-making structures⁹⁴⁷ or at the level of limited multilateralism,⁹⁴⁸ would be to accept the change in the ideology of space law not only as far as the inclusivity in the substantive provisions of the law but also in the processes of its formation. Therefore, further incorporating the pluralism of space law into the modern governance and regulation of outer space would be to foresee a truly inclusive legal framework welcoming new actors while, at the same time, maintaining the place of older ones; welcoming the differences among all actors, their normativities, and ultimately harmoniously

⁹⁴⁶ See Chapter I, Parts 1.1-1.4.

⁹⁴⁷ For example, *Luxembourg Law on the Exploration and Use of Celestial Bodies*, *supra* note 124; *United States Commercial Space Launch Competitiveness Act*, *supra* note 124, Paragraph 51302.

⁹⁴⁸ *Artemis Accords*, *supra* note 2.

accommodating their respective authorities. The Moon Agreement, a truly pluralistic international legal instrument, could be used as guidance towards this objective.

3.2. THE MOON AGREEMENT AS A DECONFLICTING FOUNDATION FOR RESTRUCTURING SPACE GOVERNANCE

The normative shift towards a private actor-led global space governance demonstrates the need to adjust the specificities of the international space law regime to the needs of modern space governance. The lack of such adjustment could eventually render the existing international legal regime obsolete and transform the modern global space governance into an anarchic regime of governance, where *anarchy* can be understood as the lack of *arches*, that is, principles and rules.⁹⁴⁹ In this case, modern space activities and technologies would prove the international space law regime to be either rigid and unwelcoming to the new, or unable to accommodate such activities and technologies under its umbrella of governance and regulation.

Therefore, while maintaining the initial objectives of international space law is critical in preserving the anticolonial order that it introduced, a new mechanism – of both a regulatory and governance nature – is imperative to welcome and promote present and future space innovation. As this thesis earlier observed, international space law was built based on a rationale that sought to avoid terrestrial colonial dynamics from reoccurring in the exploration and use of outer space; a rationale that is still compelling today.⁹⁵⁰ As such, the *spaceless* use of outer space was expressed

⁹⁴⁹ See earlier in this thesis in Chapter II, Parts 1.1. and 2.1.

⁹⁵⁰ Despite the authority of private actors that leads modern space governance and its expression through national juridical structures or international limited multilateral schemes, the core principles and provisions of international space law do not appear to have been replaced or updated through the avenues of custom or *ex ante* legal interpretation. See Chapter III, Part 2.

through articles I and II of the Outer Space Treaty, introducing an inclusive exploration and use of outer space, within the context of which, rights of exclusivity, such as property rights, would be redundant.⁹⁵¹

At the same time, this thesis emphasized the objective of international space law to not only prohibit a land-based colonial approach to the exploration and use of outer space but, more importantly, to regulate against a social coloniality and a social territorialisation of it. That is, international space law, from its inception, imagined the socially constructed *invisible* territorialities of outer space and promoted a governance against them. Furthermore, the diversity of actors – and, subsequently, of normativities that emerge as a result of the modern governance of the exploration and use of outer space – constitutes further evidence for the need to form a mechanism ensuring the reflection of the plurality of actors in it, together with the preservation of international space law’s objectives, principles, and its overall anticolonial mission.

Considering that neither the emergence of custom has yet occurred to replace such rules and principles,⁹⁵² nor new international binding treaties are in place, the role of such a governance mechanism of reconciliation would be to bring together the old with the new, the public with the private, the exclusive with the inclusive, while simultaneously respecting and enabling the main rationale of international space law and its core provisions. Both the private actor-centred domestic legal efforts to enable the exploitation of outer space – and, therefore, its territorialisation and objectification – and the limited multilateral initiative of the Artemis Accords, should be thought

⁹⁵¹ See analysis in Chapter I, Part 1.

⁹⁵² See Chapter III, Part 2.

as cautioning indications that a new mechanism is required to address the specificities of modern space exploration, rather than as concrete efforts to change international space law.

As the narrative of international space law has shown, its creation followed a fact: the launch of Sputnik I and the realization of the world that the human reach to outer space was a reality.⁹⁵³ This launch gave humanity sufficient time to conclude rules and agree on the form of the exploration and use of outer space, which came into being a decade after this first launch. However, the readiness of modern space activities, the more advanced space technologies, and the higher degree of private investment in space activities could not afford the wait of one more decade following the first commercial space mining operation for a working international legal regime and mechanism to be introduced.

Therefore, combining the emerging specificities of the normativity of modern global space governance with the specificities of international space law's initial principles and objectives, the new regulatory or governance mechanism would have to introduce minimum actor-specific standards based on three criteria:

- First, the mechanism should satisfy the anticolonial spirit of international space law, in particular of the Outer Space Treaty.
- Second, the mechanism should reflect the diversity that has surfaced through the emergence of new space actors' power and authority and accommodate the new actor-generated norms.

⁹⁵³ Doyle, "Nasdasiri Jasentuliyana Keynote Address on Space Law – A Concise History of Space Law," *supra* note 64 at 3. See also, United Nations, General Assembly, *Regulation, limitation and balanced reduction of all armed forces and all armaments; conclusion of an international convention (treaty) on the reduction of armaments and the prohibition of atomic, hydrogen and other weapons of mass destruction*, 12th Sess, 716th plenary meeting, Res 1148 (XII), A/RES/XII/1148, 14 November 1957.

- Third, it should respond to the new governance reality that entails decentralized decision-making centres (based on pluralistic regional network(s) of actors) and use the institution of State as a vehicle rather than as the sole player in space activities.

This thesis identifies the Moon Agreement as an instrument that could constitute a legal basis accommodating and sustainably reflecting all interests involved as well as the normativity of new space actors and the principles of the existing international legal regime. Even though the Moon Agreement has appeared to be an apple of discord in space politics and counts only 18 States,⁹⁵⁴ the objectives and provisions of the agreement could be used for the generation of a global governance mechanism fulfilling the above three criteria.

Indeed, the Moon Agreement is the only United Nations space Treaty that foresees and considers the exploitation of outer space as a resource as a possibility in the realm of future space activities⁹⁵⁵ and it does so in a way that satisfies the three criteria listed above. Similar to the Outer Space Treaty, the Moon Agreement is inspired by the anticolonial dynamic of international space law and it reflects this dynamic through the rights and limitations that are embedded in it.⁹⁵⁶ The

⁹⁵⁴ 18 States have ratified, and 4 States have signed the Moon Agreement as of 1 January 2020. See United Nations Office for Outer Space Affairs, “Status of International Agreements Relating to Activities in Outer Space as at 1 January 2021,” *supra* note 385.

⁹⁵⁵ *Moon Agreement*, *supra* note 1, Preamble: “*Bearing in mind* the benefits which may be derived from the exploitation of the natural resources of the Moon and other celestial bodies,” and Article 11, Paragraph 5:

States Parties to this Agreement 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. This provision shall be implemented in accordance with article 18 of this Agreement.

⁹⁵⁶ *Moon Agreement*, *supra* note 1, Preamble:

Determined to promote on the basis of equality the further development of cooperation among States in the exploration and use of the Moon and other celestial bodies,

Recalling the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies,¹ the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space,² the Convention on International Liability for Damage Caused by Space Objects,³ and the Convention on Registration of Objects Launched into Outer Space,

preparatory works to the Agreement frame the purpose of its creation as inspired by a double ideal: to promote and enable innovation in space activities and, at the same time, to preserve the anticolonial dynamic of international space law.⁹⁵⁷ As such, “*determined* to promote on the basis of equality the further development of cooperation among States in the exploration and use of the Moon and other celestial bodies,”⁹⁵⁸ the Moon Agreement aims to balance the demands of space innovation with those of an exploration and use of outer space that does not promote only an elite⁹⁵⁹ of space actors.

The rules-based accommodation of private space companies that seek to exploit the natural environment of outer space for profit in a future space law and governance scheme appears to be a challenging task. On the one hand, States and their domestic space laws are being influenced by the objectives of private space actors, as the previous chapter showed. Therefore, private space actors appear to have a central and influence-bearing role in the legal and policy scene. On the other hand, however, the State remains the mechanism through which the activities of private space actors can take effect and be legally materialized as the existing international space law framework is still in effect and provides States to be those entities that ought to supervise, authorize, and license the activities of their private space actors, for which they ultimately remain internationally responsible.⁹⁶⁰ As a result, even though private space actors have the capacity to influence the future of space policies and regulations at the domestic level, at the international level, their action

Taking into account the need to define and develop the provisions of these international instruments in relation to the Moon and other celestial bodies, having regard to further progress in the exploration and use of outer space.

⁹⁵⁷ See United Nations General Assembly, Committee on the Peaceful Uses of Outer Space, *Verbatim Record of the 197th Meeting*, A/AC.105/PV.197, 10 July 1979.

⁹⁵⁸ *Moon Agreement*, *supra* note 1, Preamble.

⁹⁵⁹ See Chapter II, Part 1.2.

⁹⁶⁰ *Outer Space Treaty*, *supra* note 1, Article VI.

remains legally bound by State decision-making infrastructures. To accommodate these two seemingly opposite realities, the Moon Agreement appears as a source of legal rules made to embrace both the central role of State and that of private space actors.

As this thesis earlier observed, the potential of space exploration, and the potential benefits that could derive therefrom, generate new decentralized actor-based centres of space governance more than ever before, transforming non-State actors into the modern norm-makers, while the traditional State-focused networks function as legitimization mechanisms for – primarily – private claims.⁹⁶¹ However, although the Moon Agreement could accommodate this shift, it should not be considered *per se* as an international contractual instrument that would enable a balanced and sustainable exploration and use of outer space and of its resources, due to its limited acceptance by States. Historically, the reluctance of States to sign the Moon Agreement has been caused by the *common heritage of mankind* legal characterization of the celestial bodies and their natural resources.⁹⁶² Such States perceived this provision as an obstacle to the commercial exploitation of outer space and space natural resources, as they were called upon to consider as *common* resources that they sought to exploit on a private commercial or national level.⁹⁶³

However, due to the fast pace with which space technology is evolving, and considering the long-standing refusal of States to sign the Moon Agreement, the general principles and substance of the majority of the provisions of this Agreement could serve as a guidance for the establishment of the

⁹⁶¹ See Chapter II.

⁹⁶² *Moon Agreement*, *supra* note 1, Article 11, Paragraph 1: “The Moon and its natural resources are the common heritage of mankind, which finds its expression in the provisions of this Agreement, in particular in paragraph 5 of this article.” See also United Nations General Assembly, *Committee on the Peaceful Uses of Outer Space – Verbatim Record of the One Hundred and Forty-Sixth Meeting*, A/AC.105/PV.146, 11 June 1975, New York, 52ff.

⁹⁶³ See for example Stanley B Rosenfield, “The Moon Treaty: The United States should not become a Party” (1980) 74 *Proceedings of the Annual Meeting* (American Society of International Law); United Nations, UNISPACE ’82, *Report and Hearing before the Subcommittee on Space Science and Applications of the Committee on Science and Technology*, U.S. House of Representatives, 97th Congress, 2nd Sess, No. 160, 14 July 1982 at 162-171; 513-516 and 629.

new mechanism – possibly through a new Treaty leading to an actor-inclusive global administrative mechanism, or through a global platform of public-private cooperation – leaving outside the concept of the *common heritage of mankind*, yet maintaining the core principles of the Moon Agreement.⁹⁶⁴ Even though the concept of *common heritage of mankind* is a political one that has historically reflected the importance of considering the place of developing States in the exploration and use of global commons,⁹⁶⁵ it remains a concept of historical, rather than substantial, importance reflecting the objectives of the New International Economic Order⁹⁶⁶ rather than the needs of the modern uses of outer space. Besides, the essence of this concept is fulfilled in substance through the remaining principles of the Moon Agreement. Therefore, without allowing a problem of semantics to hinder space exploration, a new international mechanism could

⁹⁶⁴ And, as a result, simultaneously maintain and promote the principles embedded in the Outer Space Treaty, as these are also reflected in the Moon Agreement.

⁹⁶⁵ J I Gabrynowicz, “The ‘Province’ and ‘Heritage’ of Mankind Reconsidered: A New Beginning” in W W Mendell, ed, *The Second Conference on Lunar Bases and Space Activities of the 21st Century, Proceedings from a conference held in Houston, TX, April 5-7, 1988*, NASA Conference Publication 3166 (NASA, 1992) 691-695; Stephen Gorove, “The Concept of ‘Common Heritage of Mankind:’ A Political, Moral, or Legal Innovation?” (1972) 9 San Diego Law Review 390-403; Alexandre Kiss, “The Common Heritage of Mankind: Utopia or Reality?” (1985) 40:3 International Journal 423-441; Rudolph P Arnold, “The Common Heritage of Mankind as a Legal Concept” (1975) 9:1 The International Lawyer 153-158.

⁹⁶⁶ United Nations, General Assembly, *Declaration on the Establishment of a New International Economic Order*, 6th special Sess, agenda item 7, Res 3201 (S-VI), A/RES/S-6/3201, 1 May 1974:

2. The present international economic order is in direct conflict with current developments in international political and economic relations. Since 1970 the world economy has experienced a series of grave crises which have had severe repercussions, especially on the developing countries because of their generally greater vulnerability to external economic impulses. The developing world has become a powerful factor that makes its influence felt in all fields of international activity. These irreversible changes in the relationship of forces in the world necessitate the active, full and equal participation of the developing countries in the formulation and application of all decisions that concern the international community.

3. All these changes have thrust into prominence the reality of interdependence of all the members of the world community. Current events have brought into sharp focus the realization that the interests of the developed countries and those of the developing countries can no longer be isolated from each other, that there is a close interrelationship between the prosperity of the developed countries and the growth and development of the developing countries, and that the prosperity of the international community as a whole depends upon the prosperity of its constituent parts. International co-operation for development is the shared goal and common duty of all countries. Thus, the political, economic and social well-being of present and future generations depends more than ever on co-operation between all the members of the international community on the basis of sovereign equality and the removal of the disequilibrium that exists between them.

be built reflecting the substantial provisions of the Moon Agreement and preserving the anticolonial spirit and objectives of the general *corpus juris spatialis*.

Moreover, the Moon Agreement appears to be an ideal source of inspiration for a new mechanism for the modern governance of outer space, understood as a resource, especially as far as the exploration of its natural resources is concerned, and adjusting it to the specificities of modernity without neglecting the objectives of the past. Specifically, the Moon agreement reiterates the provisions of the Outer Space Treaty and, in that way, emphasizes the extension of the provisions and objectives of the Outer Space Treaty over the celestial bodies and their natural resources. As such, it confirms the anticolonial spirit of the Outer Space Treaty by providing that “the [celestial bodies] shall be used by all States Parties exclusively for peaceful purposes,”⁹⁶⁷ and by reaffirming the provisions of article I and II of the Outer Space Treaty⁹⁶⁸ and, consequently, the historical weigh they bring with them.

In other words – and without strictly considering the *common heritage of mankind* concept – the Moon Agreement has achieved to maintain the spirit of the Outer Space Treaty and adjust it to an exploitation of outer space that would allow for commercial profit, without objectifying outer space and without transforming law into an instrument that objectifies space.

Both the limited multilateralism of the Artemis Accords and the unilateral domestic legal mechanisms that have been mobilized towards the facilitation of space natural resources exploration and other modern space activities, demonstrate that modern space actors seek to identify legal mechanisms and instruments to enable their interests, as well as the future of space

⁹⁶⁷ *Moon Agreement*, *supra* note 1, Article 3, Paragraph 1.

⁹⁶⁸ *Outer Space Treaty*, *supra* note 1, Articles I and II.

exploration. However, the lack of an international legal scheme accommodating these interests has led to unilateral and limited multilateral efforts. Therefore, an international legal scheme reflecting those interests and objectives would prevent both the phenomenon of limited multilateralism and the unilateral efforts of a small number of States by, at the same time, providing private space actors with a place of their own in the formal structure of international space law and governance.

At the same time, this unilateralism and limited multilateralism serves as an indication of the emerging modern space policies at the national and global levels. As this thesis earlier discussed, such policies reveal the tendency to deviate from the traditional State-centric and centralized structures of space law and to move towards private actor-centred and decentralized governance structures. Therefore, there is also a need to express this decentralization of power, authority, and governance onto the new legal structures of international space law to avoid the development of the governance of outer space on a non-rules-based normativity.

To serve this purpose, the Moon Agreement is an instrument that could guide towards a mechanism combining the traditional non-objectifiable nature of outer space with the needs of modern actor-networks. Specifically,

1. The Moon Agreement could inspire an inclusive and non-discriminatory mechanism for the exploration and use of celestial bodies seen as the province of all mankind, in a way similar to the Outer Space Treaty,⁹⁶⁹ while such exploration and use could “be carried out in the interests of all countries.”⁹⁷⁰

⁹⁶⁹ *Ibid.*

⁹⁷⁰ *Moon Agreement*, *supra* note 1, Article 4, Paragraph 1:

The exploration and use of the Moon shall be the province of all mankind and shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development. Due regard shall be paid to the interests of present and future generations as well as to the need to promote

2. As it foresees the enablement of international cooperation in the exploration and use of outer space not only through platforms of multilateralism, but also through bilateral structures and by considering the potential involvement of international organizations,⁹⁷¹ it could guide towards a new mechanism recognizing that a plurality of actors can lead to different governance and regulatory structures.
3. The Moon Agreement, in a way similar to the Outer Space Treaty, also provides that celestial bodies can neither be appropriated, nor can sovereignty be established on them, by specifying that neither part of the celestial bodies can become property of States or any other natural or juridical person.⁹⁷² As such, it could inspire the creation of a governance structure deviating from legal institutions of exclusivity, such as that of property and enabling the anticolonial spirit of international space law.
4. Most importantly, the Moon Agreement provides the exploitation of celestial bodies as a possibility, therefore embracing innovation. Such a possibility, however, based on the Moon Agreement, should be accompanied by a new international regime, new mechanisms, and new procedures.⁹⁷³ Such an international regime would promote the

higher standards of living and conditions of economic and social progress and development in accordance with the Charter of the United Nations.

⁹⁷¹ *Moon Agreement, supra* note 1, Article 4, Paragraph 2:

States Parties shall be guided by the principle of cooperation and mutual assistance in all their activities concerning the exploration and use of the Moon. International cooperation in pursuance of this Agreement should be as wide as possible and may take place on a multilateral basis, on a bilateral basis or through international intergovernmental organizations.

⁹⁷² *Moon Agreement, supra* note 1, Article 11, Paragraphs 2 and 3:

2. The Moon is not subject to national appropriation by any claim of sovereignty, by means of use or occupation, or by any other means.

3. Neither the surface nor the subsurface of the Moon, nor any part thereof or natural resources in place, shall become property of any State, international intergovernmental or non-governmental organization, national organization or nongovernmental entity or of any natural person. The placement of personnel, space vehicles, equipment, facilities, stations and installations on or below the surface of the Moon, including structures connected with its surface or subsurface, shall not create a right of ownership over the surface or the subsurface of the Moon or any areas thereof. The foregoing provisions are without prejudice to the international regime referred to in paragraph 5 of this article.

⁹⁷³ *Moon Agreement, supra* note 1, Article 7, Paragraph 5:

States Parties to this Agreement 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. This provision shall be implemented in accordance with article 18 of this Agreement.

“rational” management of the resources.⁹⁷⁴ Rational, however, may not lead to the exclusion of private space actors, but instead to their rational integration.⁹⁷⁵

5. Furthermore, the Moon Agreement provides for the sharing of the benefits deriving from the exploitation of space resources in an equitable manner.⁹⁷⁶ Such equitability in the distribution of benefits is to take into special consideration not only the interests of the developing countries, but also the interests of those States that have contributed to the exploitation of the resources. As such, a regime drawing inspiration from the Moon Agreement would enable a mechanism of fairness as the process towards achieving the anticolonial equality of international space law’s rationale, first includes a process of equitability, where the standard of reward recompenses the standard of contribution and effort.
6. Last, the Moon Agreement anticipates the possibility that modern space activities, such as space natural resources exploitation, may harm the environment of outer space. To prevent that, the Agreement introduces the obligation of States to “take measures to prevent the disruption of the existing environment, whether by introducing adverse changes in that environment, or by its harmful contamination through the introduction of extra-environmental matter, or otherwise.”⁹⁷⁷ Therefore, environmental protection could also be part of a new regulatory mechanism on the basis of the Moon Agreement.

⁹⁷⁴ *Ibid.*

⁹⁷⁵ The *travaux préparatoires* of the Moon Agreement do not exclude the private sector from space activities and, especially, from space resources exploration and exploitation activities. On the contrary, they foresee and encourage private participation, without excluding the potentially involved private sector from enjoying the benefits of such activities. On the other hand, however, the Moon Agreement suggests that States, especially the developing States are simultaneously taken into consideration. See for example the discussions in United Nations General Assembly, Committee on the Peaceful Uses of Outer Space, *Verbatim Record of the 197th Meeting*, A/AC.105/PV.197, 10 July 1979.

⁹⁷⁶ *Moon Agreement*, *supra* note 1, Article 11, Paragraph 7(d):

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

⁹⁷⁷ *Moon Agreement*, *supra* note 1, Article 7, Paragraph 1.

Consequently, the advent of a mechanism founded on these principles would have the capacity to balance the specificities of space law with the specificities of the modern actor-based space governance.

One of the central elements of such balancing should be the distribution of benefits originating from the exploitation of outer space, seen as a resource. Originating in the provisions of the Moon Agreement, the new governance mechanism could take into account the interests of private space actors together with the interests of States at an *ex post* distribution of space benefits level. That is, as the management of the resources is provided as *rational* and the sharing of the benefits as *equitable* by taking into account the interests of developing States and those of the States that have contributed to the exploitation, the following steps are suggested to satisfy the interests of all stakeholders, without objectifying outer space and without the need for unilateral and limited multilateral solutions:

1. Space exploration – in particular the exploitation of space natural resources – should take place through the involvement of private space actors as well as through their cooperation with States. Since, however, the action of private space actors is always linked to the action of States⁹⁷⁸ – through, for example, the licensing and authorization processes as well as through the responsibility mechanism of international space law⁹⁷⁹ – the State would always play a critical role in deciding on the future of such activities and in legally enabling them. Therefore, at a first stage, the engagement of private space actors in the exploitation of space natural resources should be foundationally identified as linked to State action, yet as deserving of recognition for contributing to the exploration of a global commons.
2. At a second stage, to maintain the interest of private actors in the exploration and use of outer space, and, as such, promote innovation, guarantees for the coverage not only of

⁹⁷⁸ See Chapter III, Part 1.4.

⁹⁷⁹ *Outer Space Treaty*, *supra* note 1, Article VI.

operational costs, but also of profit-based incentives should portray the link between private actors and States. Specifically, the rational management of the resources alludes to the fact that the interests of private actors should be considered, as contrary interpretation would lead to the exploitation of such actors.⁹⁸⁰ Therefore, the contribution of such actors should be included in the sharing of space benefits based on the equitable benefit-sharing principle. However, since the action – and, as a result, contribution – of private space actors is linked to that of States and vested in the international action of States, the contribution of private space actors should be considered at the level of State. That is, the allocation of space benefits at the international level should take into special consideration States whose private actors contributed to the exploitation of outer space, with the allocation of benefits to the private space actors ultimately being an internal task of the State, or of regional governance centres.

3. Accordingly, the mechanism should provide that States remain responsible towards their private actors that have been involved and contributed to the exploitation of outer space. To enable that, domestic regulatory mechanisms and contracts on the provision of services between the State and private space actors should manage the internal allocation of space-derived benefits to the private space actors by taking into account both their operational costs but also the expected profit. That would enable both the equitable sharing of space benefits and, at a second level, the partial attribution of such benefits to the private actors involved, yet through regional distribution mechanisms. At the same time, this would allow for the current structure of international space law to continue serving its anticolonial dynamics, without rendering private actors as norm-making entities in the field of space activities and by simultaneously enabling a contribution-based profit for them.
4. The interests of the developing countries should also be taken into special consideration, thus promoting development in all regions of the world, and enabling an inclusive space exploration in the interests of all countries. Relatedly, the special consideration of developing countries in the distribution of space benefits could also take place on the basis

⁹⁸⁰ As such, this interpretation would be “absurd,” leading to the exploitation of private space actors, when the Outer Space Treaty and the Moon Agreement promote an exploitation-free legal regime. See also *Vienna Convention on the Law of Treaties*, *supra* note 730, Article 32 (b).

of contribution. For example, bilateral or multilateral cooperation agreements in the exploration and use of outer space could take place between developed and developing countries, where the input of developing countries could consist of the contribution of facilities, or other in-kind resources. Besides, developing countries have often demonstrated innovative thinking in the exploration of natural areas and the willingness to cooperate with developed countries through solutions involving mutual compromises.⁹⁸¹

Drawing from the principles included in the Moon Agreement, these steps would lead to a new era of space exploitation, which, on the one hand, would preserve the anticolonial dynamic of traditional international space law as it would prevent independent private profit and the establishment of property rights over outer space while, on the other hand, it would enable an inclusive, exploration and use of outer space, where all States could be considered as participating States – directly or indirectly – and they would share the benefits deriving from outer space in an equitable manner.

This mechanism would enhance the space industry without allowing private actors – that is, space companies – to cause the normative alteration of international space law and, consequently, it would discourage the unilateral and monopolistic or oligopolistic exploration of outer space. But more importantly, this mechanism would prevent the social colonization as it would guarantee a global and holistic access to outer space – through the equitable modes of benefit distribution – even to States not possessing the means to expand their reach into outer space.

⁹⁸¹ Kenya, for example, a developing country, was the one that proposed a concept of exclusivity: the concept of the Exclusive Economic Zone for the governance of the respective areas of the sea in 1972. Therefore, the history of the governance of areas beyond national jurisdiction has also shown that mutual understanding and compromises become possible when the interest of all is involved. See United Nations, *Kenya: Draft Articles on the Concept of an Exclusive Economic Zone Beyond the Territorial Sea*, International Legal Materials, 12:1, January 1973 at 33-35.

As part of this mechanism, a hybrid international organization could eventually be established, combining elements of both global and regional management. The regional – decentralized – structures of the organization would promote the participation of non-State actor-networks, who could promote their interests in a direct manner.⁹⁸² At the same time, the centralized structures – like those of a traditional United Nations organization – would enable the expression and negotiation of such interests at the global level and their consideration through appropriate decision-making processes.

However, the construction of such a regime and its adaptation to the specificities of space exploration and, more importantly, to new forms of space exploration that see outer space as a resource, would need to trigger the interest of all actors in the international space community, private and public. Due to the legal and social impasses of modern regulatory initiatives, such as that of the Artemis Accords (limited multilateralism) and the emergence of domestic space laws (unilateralism), all actor-networks of the global space community may be ready to realize their self-interest in participating in a global, rather than local, structure, and move forward. The following part introduces several practical aspects to be considered in designing such a governance mechanism.

⁹⁸² Even though this could be the subject of a separate research work, the concepts proposed by Bruno Latour in his work *Reassembling the Social: An Introduction to Actor-Network-Theory* could be used to build this parallel double standard of a socially inclusive centralized and de-centralized global governance mechanism. See Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory*, *supra* note 937, especially at 159-262.

3.3. TOWARDS A *TERRITORYLESS* GOVERNANCE FOR THE EXPLORATION AND USE OF OUTER SPACE AND SPACE NATURAL RESOURCES

Designing the governance of areas beyond national jurisdictions and their natural resources has been historically a highly political and complex task. The governance of the deep seabed and its resources, as well as that of Antarctica, showed that it is not only the political interests of States but also – and even more so – those of private actors that seek market-based regimes leading to the objectification and commercialization of areas and their natural resources. The 1994 Agreement, for example, came to reverse the ideals entailed in the institution of the Authority and the Enterprise⁹⁸³ and promote those of commercialization and direct private actor participation.⁹⁸⁴ Similarly, the current normative – extra-legal – governance of outer space and of its resources reveal a similar tendency; one that embraces the objectification and commercialization of natural areas beyond national jurisdiction.

However, as the initial objectives that led to the creation of international space law were based on the prevention of territorial and social colonialism, and an exploration and exploitation of outer space without the simultaneous commercialization and objectification of its natural environment, this part of the thesis reinvents the governance of outer space and suggests a governance architecture securing the anticolonial spirit of space law while, at the same time, enabling private profit and ensuring inclusive participation of all States, without leading to the commodification of outer space and its resources. As such, the proposed architecture reflects the guidelines inspired by the Moon Agreement as presented in the previous part.

⁹⁸³ See Chapter III, Part 2.1.

⁹⁸⁴ By enhancing the role of the Authority, introducing contracts with private exploration companies with terms more beneficial for the private sector than before, and by reducing the technology transfer requirements as introduced in the *Law of the Sea Convention*. See Chapter III, Part 2.1.

As this thesis showed earlier, the current state of normativity produced by modern space actors reveals a precedence of the privatization and commercialization in modern space governance. This precedence, however, is not based on legal norms, but rather on the observation of the action of private space actors and their influence over political decisions.⁹⁸⁵ That is, the lack of a legal and governance structure providing certainty could lead to an unregulated exploitation of outer space where the power of private space actors and space-faring States would prevail by excluding a large segment of States and actors alike. Accordingly, considering that the commercial exploitation of outer space resources is not yet a fact, but rather a possibility for the future, the emergence of a governance structure and legal rules setting the scene *a priori* would prevent a scenario of exclusion, establishment of territoriality, and mono- or oligopolistic exploitation.

The development of a governance mechanism in the form of an international agency with centralized administrative competencies to overview and coordinate space (mining) activities, as initially introduced in the law of the sea, could be such an example. As this thesis often observed, although the dominance of private space actors in modern national and international space policies is altering the initial anti-territorial and anticolonial vision of international space law, their presence in the realm of space activities is both desired and essential. However, as precedence has demonstrated, the cooperation between public and private actors has often showed that guarantees of return on investment and an environment of certainty and security are critical in incentivizing their participation and willingness to cooperate at the level of shared services.⁹⁸⁶ To do so, without

⁹⁸⁵ See the analysis on normativity in Chapter II, Part 1.4.

⁹⁸⁶ For example, the initial steps for the Galileo program of the European Union failed to secure sufficient support from the private sector as the financial risk entailed in the activity was high. With competitors such as the United States and Russia, the European Space industry appeared reluctant to commit through private investments in this program, due to the lack of guarantees for its success and due to uncertain profit. Therefore, the initially proposed public-private-partnership schemes for the funding of Galileo failed, thus often sourcing public financial back-up on the part of the European Union to salvage the project. See Johan Lembke, "The Politics of Galileo," European Policy Paper No 7, April 2001, European Union Center, Center for West European Studies/University of Pittsburgh, University Center for International Studies.

allowing the private space sector to conquest the governance of outer space and objectify it for private profit, this thesis suggests that the proposed mechanism serves the following principles and adopts the following mechanisms:

I. INDIRECT DECENTRALIZED GOVERNANCE

As opposed to traditional international agencies and organizations, the proposed mechanism could combine both the element of centralized governance and that of decentralization. Both are essential to respond to the specificities of international space law and modern space governance. At the level of decentralization, regional centres of representation, such as regional space agencies or organizations, could group together public and private space actors, such as States and private space companies, in order to represent and advocate for the interests of the represented regions.

At the level of centralized governance, a centralized *space resources exploration agency* – or, simply, *space agency* – would have the capacity to take decisions, grant private exploitation licenses and contracts based on a decision-making mechanism where all the regional centres would have the opportunity to represent the regional interests through voting processes that would reflect equitably all regional centres. Equitability⁹⁸⁷ – as opposed to an *ab initio* equality – has often proved to be more effective in ultimately achieving the fairest facet of equality. That is, by

⁹⁸⁷ *Moon Agreement*, *supra* note 1, Article 11, Paragraph 7:

The main purposes of the international regime to be established shall include:

- (a) The orderly and safe development of the natural resources of the Moon;
- (b) The rational management of those resources;
- (c) The expansion of opportunities in the use of those resources;
- (d) 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 those countries which have contributed either directly or indirectly to the exploration of the Moon, shall be given special consideration.

including into the equation the extend of a States' or private actor's participation – rather than the participation solely as an equal and impersonalized unit – decisions tend to be representative of the realities and struggles that the actors are facing. For instance, the interests of the developing countries – that is, the interests of the regional centres that would represent such countries and their private space actors would bear more weigh during the voting process. Similarly, the interests of regions rich in know-how, essential infrastructures and resources, would also be taken into account in a similar way, due to their enhanced contribution.⁹⁸⁸ Factors such as the size of the population and the existence of relevant technologies and infrastructures, as well as the need for economic reinforcement, could be especially considered. However, as this remains a political matter, its discussion should take place under the auspices of the existing decision-making mechanisms, such as the United Nations Committee on the Peaceful Uses of Outer Space.

II. THE NEED FOR MINIMUM STANDARD-SETTING

A. STATE PARTICIPATION AND SPONSORSHIP

As the history of the law of the sea has proven, as well as several *ad hoc* public-private partnerships, such as that of European Union's Galileo,⁹⁸⁹ one of the main concerns of private actors is the investment risk they undertake compared to a possibly low or non-existent profit. In the case of Galileo, for example, the lack of minimum profit assurances led to the failure of the public-private cooperation and hindered private investment.⁹⁹⁰ As a significant part of the technological and financial dynamic lies in the hands of the private space sector in the case of the

⁹⁸⁸ *Ibid.*

⁹⁸⁹ See Galileo, *supra* note 986.

⁹⁹⁰ *Ibid.*

exploration and exploitation of space natural resources, the participation and contribution of States cannot be considered alone, but rather as part of a cooperation scheme between the public and private sectors.

As this thesis often observed, the largest part of the territory-based plans of private space companies that could eventually regenerate the colonial practices of the past find their justification in the profit guarantees that the ownership of property – and, consequently, the ability to commercially exploit it – brings with it. Therefore, considering that the exploration and use of outer space is provided for the benefit of humanity, rather than for the benefit of private companies or several space-faring nations, while the participation of private companies is inevitable and must, fairly, be compensated, the participation of the decentralized centres of representation to the proposed central structure of governance, should consider both sides.

Accordingly, this thesis suggests that a rules-based *ab initio* participation of the representation centers be agreed on the basis of financial contributions and expected benefits. For instance, minimum standards of financial contributions could be established at the level of representation centers. The contributions of member States to the European Space Agency is an example. These contributions consist of two segments; one that is allocated to the compulsory activities of the agency and a second one that covers the needs of the optional space activities of the agency.⁹⁹¹ While the compulsory contributions are based on the Gross Domestic Product of the member States,⁹⁹² the optional ones are based on the investment interest that each member State has.⁹⁹³ In a similar manner, the funding of the centralized representation center could be subject to a

⁹⁹¹ *Convention of the European Space Agency*, CSE/CS(73)19, 30 May 1975 (entered into force 30 October 1980), Article XIII.

⁹⁹² *Ibid.*

⁹⁹³ *Ibid.*

compulsory contributions scheme ensuring a minimum return to the participating representation centers, which, subsequently could redistribute the return – and potential profits – to the public and private contributors of the region that they represent.

In a way similar to that of the system of the European Space Agency, the compulsory contributions could be used towards the core expenses of the projects of the agency,⁹⁹⁴ such as its main space mining activities that may or may not lead to return in the decentralized centers of the agency. Specifically, the compulsory funding of the agency could be used towards the coverage of the expenses of the private companies and States – if any. The mode of public-private cooperation could be decided at an *ad hoc* basis at the decentralized level. As a result, private companies would not hesitate to cooperate under the auspices of a globalized structure as the risk of losses would be eliminated through the compulsory contributions of the members, which would cover their operational costs *a priori*. The contributions would not be *per se* directed towards the profit of the participating public and private entities, but rather cover their operational expenses. Consequently, the risk of losses would be eliminated and the need to own the resources as an assurance for the investment risks and for potential benefits would also be reduced.

Furthermore, considering the equitable – rather than equal – contributions of the participating regions,⁹⁹⁵ the return on investment and the compensation should also be equivalent to the contributions of each region, therefore allowing for a fair sharing of both losses and benefits.

⁹⁹⁴ *Ibid.*

⁹⁹⁵ *Moon Agreement*, *supra* note 1, Article 11, Paragraph 7 (d): “An equitable sharing by all States Parties in the benefits derived from those resources”

The optional funding by the regional centers could cover a *beyond the minimum standard* (that is, beyond the compulsory contributions) contribution to the same activities, which would also lead to higher return to those regional centers that committed to higher contributions.

As opposed to the traditional structure of an international organization or agency, where the members of the organization are States, a hybrid scheme of centralized and decentralized governance would enable a more involved – and, therefore, broader – participation of actors. Less technologically and economically developed States could be supported through the decentralized structures of the scheme by engaging in a community undertaking rather than in individual effort. Regional capacity-building schemes and programs at the level of the decentralized centers of governance could also serve the same purpose.

Such a mechanism would allow States to contribute through regional centers in an equitable manner and private actors to enjoy the certainty of not incurring losses, since the compulsory contributions of the regional centers would cover their operational or investment costs.

B. BENEFIT-SHARING STANDARDS

One more of the reasons that lead private companies and several governments to an approach of unilateralism and oligopoly towards the exploration and exploitation of outer space is also the aim to secure profit. The higher the link with the element of exclusivity and land ownership is, the higher is also the chance of commercial profit. As such, private companies in particular seek exclusivity over land to secure the market-based usability of the product of their planned mining operations.

Consequently, a benefit-sharing mechanism beyond the expense-reimbursement of the investment-related costs incurred by the participating public and private entities, would create incentives for public and private investors. On the basis of that, the benefit-sharing mechanism could entail a minimum standard of benefit to the participating entities in the form of a reward that could be drawn through the contributions of States.

Although this mechanism is still market-based as, in essence, it proposes a globalized agency that would *purchase* – or *reimburse* – the services of a public or private entity or a consortium of entities, it does not lead to the objectification and commercialization of the physical environment of outer space and its resources. Specifically, it does not attribute property rights over the physical environment of outer space to the public or private entities, while, simultaneously reimbursing the operational costs and attributing a minimum profit to the companies. Similarly, it does not create territorial attachment between the exploration and exploitation entities and the physical environment of outer space.

In parallel, this mechanism would also prevent the formation of a socioeconomic territorialism. As this thesis often mentioned, the aspects of territoriality are first formed at the level of subject with the element of physical land occupation following.⁹⁹⁶ To achieve that, the management of the resources could remain within the centralized structure and be guided through decision making-procedures taking into account the interests of all decentralized centres involved, instead of attributing the ownership of the resources as profit to the private or public space entities. In other words, although such entities will be the main players in the exploration and exploitation of space and its resources, their contribution reward would take the form of a monetary compensation for

⁹⁹⁶ See Chapter I.

their investment and a monetary reward for their contribution provided by the participating centres in an equitable manner.

Similar to the example of the Law of the Sea Convention mechanisms, the relationship between the agency and the public or private entities undertaking the activities could take the form of a contract. However, the contract could entail a pre-agreed minimum compensation and profit that does not involve ownership or any other kind or right over the physical parts of outer space *per se*.

Furthermore, this mechanism could also include impact assessment procedures not only at the environmental, but also at the socioeconomic level, demonstrating the value of the planned activities for humanity and the benefits they would bring to all the represented regions. Such socioeconomic impact assessments, for example, should take into account the impact of present exploration and exploitation activities to future generations, therefore also reflecting the Moon Agreement's spirit of intergenerational justice.⁹⁹⁷

Ultimately, instead of a system of technology transfer, which, would likely not be accepted by space-faring States, such as the United States, as the example of the law of the sea has witnessed,⁹⁹⁸ a system of open use of resources without the transfer of their technology could bring a more balanced solution. For example, without transferring or sharing ownership rights of the space technologies, a mode of interoperability could be introduced, leading to a lending, or sharing of resources rather than their transfer.⁹⁹⁹

⁹⁹⁷ *Moon Agreement*, *supra* note 1, Article 4, Paragraph 1:

The exploration and use of the Moon shall be the province of all mankind and shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development. Due regard shall be paid to the interests of present and future generations as well as to the need to promote higher standards of living and conditions of economic and social progress and development in accordance with the Charter of the United Nations.

⁹⁹⁸ See Chapter III, Part 2.1.

⁹⁹⁹ The Artemis Accords, for example, provide for a mode of interoperability without technology transfers. As a result, such a scheme has the potential to attract space faring nations (as several of them have signed the Accords and,

Among these mechanisms, the proposed scheme could also comprise Open Public Consultation procedures at the regional level, thus giving the opportunity of participation to citizens of all regions, as well as capacity building programs enhancing cooperation between the traditional space-faring nations, emerging middle space powers, and less developed States.

As a result, the construction of a mechanism along these guidelines would, simultaneously, consider all actors concerned and their interests, secure private – yet limited – profit, and safeguard and outer space beyond territoriality and appropriation.

CONCLUSION

Considering the fragmented initiatives of private space actors, States, and networks of actors alike, and the initiatives *beyond formal structures* to promote a space-based approach to the exploration and use of outer space, the construction of an actor-inclusive and interest-reconciling governance mechanism will be a challenge. Nevertheless, limited international initiatives, such as that of the Artemis Accords, could be seen as a vehicle towards the construction of such a mechanism, instead of being considered as one more addition to the fragmented and power-structured normative space governance. As history has shown, the only means to moderate such power in the modern space governance structures is to negotiate and influence the development of

therefore, agree with their content) as well as States that do not wish to abide by technology transfer provision, such as in the past example of the law of the sea. See the text of the Accords, *Artemis Accords*, *supra* note 1, Section 5 “Interoperability:”

The Signatories recognize that the development of interoperable and common exploration infrastructure and standards, including but not limited to fuel storage and delivery systems, landing structures, communications systems, and power systems, will enhance space-based exploration, scientific discovery, and commercial utilization. The Signatories commit to use reasonable efforts to utilize current interoperability standards for space-based infrastructure, to establish such standards when current standards do not exist or are inadequate, and to follow such standards.

law and law-making structures by participating in them and by recognizing the interest of all (States, non-State actors, human and non-human actors) in constructing an inclusive governance for areas of global interest – both at a procedural and at a substantial level. Therefore, should the number of actors involved as active makers in global space governance increase geographically and structurally – through, for example, structures such as those proposed in this chapter – the more appeased will become the power and authority of the currently few ones that tend to normatively shape the future of an area of interest to all the others.

CONCLUSIONS – THE WAY FORWARD: BETWEEN AN INCLUSIVE SPACE GOVERNANCE AND A GOVERNANCE OF POWER-STRUCTURES?

A few days before concluding this writing, Poland became the thirteenth country to sign the Artemis Accords. “I want to thank Poland for its commitment to establishing peaceful norms of behavior in space”¹⁰⁰⁰ mentioned Nelson, Administrator of NASA. A few lines later, the same press release describes the Artemis Accords as “a practical set of principles to guide space exploration cooperation among nations participating in NASA’s 21st century lunar exploration plans.”¹⁰⁰¹

The descriptions of the Artemis Accords as “peaceful norms of behavior in space” and as “a practical set of principles”¹⁰⁰² to guide cooperation among nations participating in NASA’s lunar exploration plans demonstrate the role of these Accords in seeking to regulate the exploration and use of a part of outer space, the Moon, *in the interest of the United States* as opposed to the Outer Space Treaty’s rationale to regulate human space exploration *in the interest of all*.¹⁰⁰³ Consequently, the principles entailed in the Artemis Accords constitute a set of regulatory guidance for the use of a space beyond national jurisdiction towards the objectives of one, yet powerful, State.

As this thesis showed, this case – especially the descriptions used in NASA’s press release to describe the Artemis Accords – is a good example of how the social construction of outer space is formed and how the authority of the most powerful space actors is transformed into law through a

¹⁰⁰⁰ “Poland signs Artemis Accords at IAC” (26 October 2021), online: NASA <<https://www.nasa.gov/feature/poland-signs-artemis-accords-at-iac>>.

¹⁰⁰¹ *Ibid.*

¹⁰⁰² *Ibid.*

¹⁰⁰³ As per Article I of the Outer Space Treaty; *Outer Space Treaty*, *supra* note 1.

process of legal institutionalization. This thesis paid significant attention to the power of space actors – mainly private, but in this instance also public¹⁰⁰⁴ – to lead the regulation of space activities. Even though the Accords have not yet reached the status of an international agreement, they can still be considered as a multilateral effort – of limited subjects¹⁰⁰⁵ – in setting new space exploration rules.

Unlike the international treaty negotiation processes that were followed in the formation of traditional space law, mainly for the conclusion of the Outer Space Treaty, the modern space law-making processes break from the traditional processes both positively and negatively. On the one hand, this modern rule-making process provides flexibility as it does not follow structured negotiation channels and drafting procedures like, for example, in the case of an international instrument being developed under the auspices of the United Nations. Therefore, it has the potential of attracting a large number of States that can accede to it through a simple process.¹⁰⁰⁶ Furthermore, the rules comprised in the document are tailored to the modern needs of the space industry and aim to further enable the engagement of private space actors, therefore attracting more of them. Accordingly, through the potential to collaborate with the United States, a continuous space power, the Accords have the potential to attract middle space powers, thus giving them the possibility to participate in space exploration missions, which they might not have had the potential to support as individual States. On the other hand, however, this new space law-making process does not involve an extensive degree of negotiations at the global level, but rather suggests rules that have been unilaterally produced by one State, the United States in this instance. This points to the capacity of powerful States to lead the regulation of an area beyond jurisdiction; an area the

¹⁰⁰⁴ It should be noted that one of the main objectives that led to the Artemis Accords was the enhancement and facilitation of private space actor plans, as analyzed in Chapter II, Part 2.

¹⁰⁰⁵ See above the understanding of the term limited multilateralism in footnote 716.

¹⁰⁰⁶ See *Artemis Accords*, *supra* note 2, Section 13.

traditional regulation of which has achieved its *spaceless* use. This further demonstrates a direct reflection of the space industry's power structures on the rule-making process, thus making the social *spacelessness* of outer space a thing of the past.

This new process of regulating the use of an area beyond national jurisdiction together with the emergence of relevant domestic laws (unilateralism) tests the global and inclusive participation of space actors aspired for in the traditional space law regime. It also tests the status of outer space as a spaceless area beyond the exclusivity entailed in bordered national or private actions and tends to argue for a governance of the uses of outer space on a space-making – and, hence, territorial – basis. At the same time, these new processes of space law and governance development try out the place of developing countries that do not have the capacity to participate in initiatives such as the Artemis Accords.

Most importantly, such initiatives challenge the globality of the uses of outer space. Even through the Artemis Accords is just an example in this thesis, it shows how modern space governance can lead to law production centers that serve the needs of one – or a few – countries, therefore limiting *international cooperation*¹⁰⁰⁷ to the needs of a specific country's space program¹⁰⁰⁸ or to the objectives of a small group of States. This reality further challenges the anticolonial spirit of international space law – mainly of the Outer Space Treaty – as it shows that modern space governance and the regulation of the uses of outer space – and ultimately, the benefits that derive therefrom – are under the influence of a small number of powerful space actors, thus excluding many others. Similarly, initiatives such as the Artemis Accords, entail the danger of incentivizing States to become party to the Accords and abide by their principles out of their aspiration to not

¹⁰⁰⁷ As presented in Article IX of the Outer Space Treaty; *Outer Space Treaty*, *supra* note 1.

¹⁰⁰⁸ For example, the Artemis Accords were developed in the context of NASA's Artemis Program. See "The Artemis Accords," online: NASA <<https://www.nasa.gov/specials/artemis-accords/index.html>>.

be left behind, or to participate in a prestigious project. In that way, they abide by standards and principles that do not reflect their objectives, whose development they did not have the chance to influence. But the biggest challenge of all is realizing the need to reactivate multilateralism in space regulation and inclusivity in space governance, especially as far as activities that intervene in the physical environment of outer space are concerned. For example, if a space mining project is undertaken under the principles entailed in the Artemis Accords, the benefits deriving from it would benefit a small number of participating States through rules put forward by one State, the United States, and developed through a very limited process of negotiation.

As a positive impact, these developments could incentivize more and more States to engage in the regulation of modern space activities, such as space mining, thus mobilizing a global rules-based trend even if rooted in domestic – local – levels. This could have an impact on the international regulatory structures by motivating the international community to simultaneously act at the international rather than national level through the development of a new space law regime or the adjustment of the existing one. However, if such motivation does not occur, the risk of further fragmentation in modern space governance will arise. One more of the impacts of modern space law's trajectory is the potential regulatory chaos and insufficiency that it can create. That is, if the regulation of modern space activities, such as space mining, continues only at the domestic level, the produced laws will reflect national space policies and the objectives of private space actors that are reflected in them, thus leading to a patchwork of unharmonized domestic regulations for what concerns the use of an area beyond national borders.

Overall, these observations show a need to introduce inclusive regulatory structures and substantial rules at the international level or reinvent them in the existing legal regime and governance. In this

context, the strengthening of existing international law-making fora, such as the United Nations Committee on the Peaceful Uses of Outer space, occupies a central place.

All the above will play an important role in preserving – or re-establishing – the anticolonial and anti-territorial dynamics of space law as described in Chapter I and in addressing the actor-based normativity as presented in Chapter II, by simultaneously setting limits to the influence of private space actors. As Chapter III noted, to achieve that, a modern space governance of hybrid nature, composed of both centralized and decentralized features with the elements of inclusivity entailed in the Moon Agreement would achieve both objectives.

Chapter III emphasized the importance of such a pluralistic legal regime and governance for the uses of outer space and provided general guiding lines for future steps. However, as the matter can be politically complex, the need for its discussion at the political level is pressing and further research from a socioeconomic perspective is required. As part of further research, specific economic benefit-sharing structures should also be examined by taking into account all the factors indicated in Chapter III. Finally, another object of further research could be the future role of the United Nations Committee for the Peaceful Uses of Outer Space and ways in which such a role could be enhanced and given a more active stance in the contemporary space law-making process.

This thesis concludes on the account that understanding outer space as a space beyond the material, and space law as a legal order with the objective to deterritorialize the function of international law and maintain *spacelessness* – legal, sociopolitical, and physical – in the uses of outer space, made us also think about what the best ways might be to address future space governance by promoting a pluralistic inclusivity at both the legal and social levels. The rethinking of space law as a law made to deconstruct space and embrace anticolonialism in the exploration and use of outer

space is laid out in this thesis in the benefit of realizing the social territorialities of outer space that are deployed beyond the material sphere.

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