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A Historical Perspective on Space Resource Exploitation

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Abstract

The legality of space mining has been the subject of long debate. This article provides a comprehensive legal analysis of Article II of the Outer Space Treaty (OST) at the time of its creation. It is crucial to distinguish between arguments justifying space mining based on the original interpretation of the OST and those justifying it through the evolution of State practice. The focus here is on the former, and not on subsequent State practice. The conclusion here is that the treaty as originally drafted was not intended to, nor does it in its plain wording, support space mining. Nor is the mechanical application of legal analogies made at the time (and subsequently) — drawn from the freedom of fishing, seabed mining, and res communis — convincing. Rather, arguments for the legality of space mining rely upon the evolution of State practice, by which States have gradually bent the OST's meaning to accommodate new interests. The purpose of this article is to establish the baseline for interpreting Article II of the OST, paving the way for future works to demonstrate how States have strategically altered its interpretation via practice to permit space mining. It re-surfaces the original drafting intentions of newly decolonized Third World States, highlighting how far current debates have moved from the agenda for space law they proposed.

Key words

outer space; treaties; international law; state practice

1 Introduction

The subject of space mining has recently re-emerged as a prominent topic in international fora. Recent events include the establishment of national legislation in four States legalising the extraction of space resources; the conclusion of the Artemis Accords (AA), an initiative asserting the legality of the extraction of space resources; and deliberations between States in the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) regarding space mining. Furthermore, on 7 April 2017, the Luxembourgish State Council ('the State Council') advised on a Luxembourgish bill regarding the exploitation and use of space resources. In its advisory opinion, the Council considered that the Outer

Space Treaty[1] (OST) does not take a position regarding the ownership of those resources.[2] The State Council also rejected the analogy made with national laws by which minerals may be owned without laying claim to the land (such as under the US General Mining Act of 1872). The Council considered that the territory on which national mining sites are exploited is part of the territorial sphere over which a State can exercise sovereignty.[3] This, however, is not the case for space, in which no sovereign has the right to grant property rights over mineral resources.[4] The State Council concluded that the question of appropriation of extracted resources is not settled and cannot provide the Luxembourgish legislator with a 'sécurité juridique'.[5] Events such as these, among others, have reignited the discussion on the legality of space mining.

Considerable controversy has surrounded the assertion by developed States that commercial exploitation of space resources is legal under the OST.[6] On its face, Article II of the OST prohibits 'national appropriation' by claims of 'sovereignty, means of use or occupation'. The meaning of these words has engendered significant debate, encompassing several strands: first, what the words meant at the time the OST was drafted; second, how they have been interpreted since; and third, whether State practice evidences a new or revised interpretation of the treaty. Part of the literature argues that at the time it was concluded, the OST permitted space mining, by applying legal analogies drawn from different domains of law (particularly the law of the high seas). The contribution of this article is to consider the question from a purely historical perspective, that is, what did the words mean when the OST was drafted? By clarifying the original meaning, this article provides a foundation for other works to explore how States may have, through practice, reshaped the interpretation of the OST to accommodate space mining. The conclusion here is that space mining was originally prohibited. As will be demonstrated in this paper, the content of legal principles such as the freedom

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[1] 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies.

[2] Conseil d'Etat, Projet de loi sur l'exploration et l'utilisation des ressources de l'espace, Avis v. 7.4.2017, No CE 51.987. P. 3 and 4.

[3] Conseil d'Etat, Projet de loi sur l'exploration et l'utilisation des ressources de l'espace, Avis v. 7.4.2017, No CE 51.987. P. 5.

[4] Conseil d'Etat, Projet de loi sur l'exploration et l'utilisation des ressources de l'espace, Avis v. 7.4.2017, No CE 51.987. P. 5.

[5] Conseil d'Etat, Projet de loi sur l'exploration et l'utilisation des ressources de l'espace, Avis v. 7.4.2017, No CE 51.987. P. 5.

'Cependant, contrairement à la revendication de souveraineté des corps célestes qui est expressément interdite par le Traité sur l'Espace et à l'appropriation de ces corps par des personnes privées et qui, même si elle n'est pas expressément interdite, découle implicitement de l'interdiction de la revendication de souveraineté, la question de l'appropriation des ressources extraites des corps célestes ne peut être considérée comme étant définitivement tranchée et ne peut donc pas bénéficier de la « sécurité juridique » que les auteurs du projet de loi sous examen entendent établir.'

[6] *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies* (1967).

of high seas and *res communis* were already disputed within their own framework. It follows that the mechanical application of these legal principles by analogy, to outer space, is unlikely to yield useful results. So far, very few scholars have undertaken the task of comprehensively examining these legal analogies within their own context before addressing their application to space. Typically, the approach taken is either to reject such application outright as nonsensical or to argue that the freedom of fishing and seabed mining can be unproblematically applied in the context of space. Some scholars also address outer space as *res communis* without making a distinction between *res communis omnium* and *res communis humanitatis*.[7] While there is literature on how legal analogies should or would apply to outer space,[8] this article adds to such analyses in a foundational way by first examining the analogies in their original framework and then contesting their relevance to the OST and space mining.

Beyond analyzing the law of the sea analogies, this article also challenges the relevance of concepts such as *res communis omnium* and reinvigorates the idea of *res communis humanitatis*. That is, since Cocca's[9] contributions in 1964 and 1970, *res communis humanitatis* has seen little scholarly attention. In examining the legality of space mining, there is value in returning to what the OST's drafters understood the legal position to be and what the legal debates were at the time. That is, this earlier literature provides the foundational arguments upon which space mining could be said to be banned by the OST. A thorough examination of these early works is essential, as they effectively refute many of the later arguments advocating for space mining. Furthermore, this discussion, which is influenced by the work of Ranganathan's re-examination of the contribution of newly decolonised States to the law of the sea, clears the ground for an examination of how subsequent practice

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[7] For example see Tare Brisibe, 'Africa and Common Interests in Outer Space' in (eds) PJ Blount and Mahulena Hofmann, *Innovation in Outer Space: International and Africa n Lega I Perspectives* (Nomos/Hart 2018).

[8] For example, Feichtner explains Luxembourg's interpretation without endorsing it, Isabel Feichtner, 'Mining for humanity in the deep sea and outer space: The role of small states and international law in the extraterritorial expansion of extraction' (2019) 32 *Leiden Journal of International Law,* 255 at 264 – 266; 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,* at 306, in which the author proceeds to justify the application of *res communis omnium* and high sea analogies to outer space; Zachos A. Paliouras, 'The Non-Appropriation Principle: The Grundnorm of International Space Law' (2014) 37 *Leiden Journal of International Law* at 45 - 49; see also Jinyuan Su, 'Legality of Unilateral Exploitation of Space Resources under International Law' (2017) 66 *International & Comparative Law Quarterly* and S Hobe, B Schmidt-Tedd, K-U Schrogl, M Reynders, & R Popova, *Cologne commentary on space law. 1, Outer space treaty* (BWV Berliner Wissenschafts-Verlag 2017), 225; also see Thomas Gangale, 'The Legality of Mining Celestial Bodies' (2016 - 2017) 187 *Journal of Space Law* ; 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 *International Lawyer* ; see also Cestmir Cepelka and Jamie H.C. Gilmour, 'The Application of General International Law in Outer Space ' (1970) 36 *Journal of Air Law and Commerce,* at 39.

[9] Aldo Armando Cocca was a pioneer in space law; he worked on space law treaties and represented Argentia in the negotiation of the Moon Treaty; he also joined the UN Committee on the Peaceful Uses of Outer Space as an Ambassador; see Aldo Armando Cocca, 'VI Coloquim on the Law of Outer Space: 1. General Principles for the Utilization of Outer Space - Determination of the Meaning of the Expression Res Communes Humanitatis in Space Law' (1964) 6 *Proc on L Outer Space* 1 and Aldo Armando Cocca, 'Mankind as a New Legal Subject: a New Juridical Dimension Recognized by the United Nations' (1970) 13 *Proc on L Outer Space, at* 211.

has changed the meaning, and understanding, of how far the law has moved from the drafters' original intent. Key terms of the OST have been subject to various interpretations. In the second section of this article, I address key treaty terms such as the 'use' of outer space, 'national appropriation' and 'sovereignty' as found in Articles I and II of the OST. In support of my textual analysis, I further review the *travaux préparatoires* in the third section. Some of the negotiating States had expressed their understanding of Article II as providing for the internationalization of outer space, thus prohibiting the acquisition of property rights, as well as colonization or the pursuit of national rivalries. The fourth section examines analogies made by scholars and State representatives to argue for the legality of space resource exploitation, including those based on the freedom of the high seas, the Continental Shelf Convention,[10] and the *res communis* approach. Such gap-filling analogies are not applicable in the presence of a positive rule of treaty law, and even where such a positive rule does not exist, the view taken here is that the preferrable approach would be to apply a *res communis humanitatis* rather than a *res communis omnium*/free-market approach.

2 Use and Appropriation

The purpose of this section is to determine whether, under the OST, the expression 'use of outer space' permits space mining and whether space mining amounts to a prohibited 'national appropriation'. Part 2.1 of this section examines the meaning of 'use' whereas part 2.2 examines the terms 'national appropriation' and 'sovereignty' under the OST. While historical meanings may have been superseded by subsequent developments in international space law, historical meanings are crucial for providing the original context intended at the time the treaty was established. Such analysis also helps trace the evolution of the legal framework and understand how States might force new interpretations through practice, especially when faced with legal deadlocks.

Article I of the OST states:

> 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.[11]

Article II of the OST states:

> 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.

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[10] *Convention on the Continental Shelf* (1958).

[11] Art. I of the OST implemented a principle from UNCOPUOS's 1958 report; This report recognised 'a generally accepted rule to the effect that, in principle, outer space is, on conditions of equality, freely available for exploration and use by all in accordance with existing or future international law agreements'. Check Hobe & ors (2017), 179.

The first question to address is the meaning of the term 'use' within the OST.

2.1 The Use of Outer Space

'The price of consensus has [often] been ambiguity on … crucial issues' in international negotiations.[12] The drafting of the OST is no exception. The choice of terms in legal texts has always been subject to close examination by legal scholars. However, negotiators might choose their terms for reasons having little to do with legal clarity.

Gorove observed that, in the legal sense, 'use' 'refers to the enjoyment of property which usually results from the occupancy, employment, or exercise of such property'.[13] And that from 'use' usually follows an element of advantage or profit.[14] Gorove assumed that the word 'use' in the treaty denotes a legal concept rather than an ordinary meaning and should therefore be interpreted in that light.[15] Furthermore, according to him, 'use' includes a wide range of activities from economic to scientific to military, except for any that are prohibited, such as use that amounts to 'national appropriation' or the establishment of military bases and the avoidance of harmful contamination.[16] Hobe also considered that 'use' includes economic and non-economic activities.[17] However, in contrast to Gorove, he considered that 'use' is a broad and general term that comprises the exploitation of outer space resources.[18]

While I agree with Gorove regarding the range of activities covered by the term 'use', I dispute that the legislators' intention at the time was to give it a technical legal meaning rather than a broader and ordinary one as contemplated by the Vienna Convention (VCLT).[19] From reviewing the negotiating records, one could conclude that the term 'use' was intended to have its ordinary meaning rather than a specific legal meaning. For instance, delegations referred to the testing of weapons and the conduct of military manoeuvres on celestial bodies as being illegal uses of space.[20] Most of the delegates when speaking, made a distinction between

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[12] Christine Gray, *International Law and the Use of Force* (3rd edn, Cambridge University Press 2008) at 9 (referring to General Assembly resolutions); see also Douglas Guilfoyle, 'The South China Sea Award: How Should We Read the UN Convention on the Law of the Sea?' (2018) 8 *Asian journal of international law* 51.

[13] Stephen Gorove was Professor of space law and director of space studies and policy at the University of Mississippi. He was considered a space law education pioneer and authored 'Developments in Space Law: Issues and Policies" (Kluwer, 1991) and 'United States Space Law: National and International Regulation' (Oceana, 1982). Stephen Gorove, 'Freedom of Exploration and Use in the Outer Space Treaty: A Textual Analysis and Interpretation ' (1971) 93:1 *Denver Journal of International Law and Policy,* at 98.

[14] Ibid, 98.

[15] Ibid, 98.

[16] Ibid, 98; to note that harmful contamination is prohibited via Art. IX of the OST.

[17] Stephan Hobe is a Professor of space law and the director of the institute of air and space law and cyber law. Hobe and ors. (2017),195.

[18] Ibid, 195.

[19] *Vienna Convention on the Law of Treaties* (1969).

[20] Speech of Mr. Morozov USSR - A/AC.105/C.2/SR.57 – 1966 - LSC Summary Records - 5th Session.

the use of space for military purposes on the one hand, and peaceful and scientific purposes on the other.[21] Examples of the latter uses of outer space included use for telecommunications and transmission of tv programmes.[22] Furthermore, the traditional legal meaning of the term 'use' is one of three Roman concepts that derive from ownership: '*usus, fructus, and abusus'*. The '*usus'* means the right to use the object according to its nature whereas the *fructus* is the right to profit from the object. From reviewing the records, it is not clear that the OST negotiators intended this legal meaning. The user of an object does not have the *fructus* over that object and thus is not allowed to make any profit. It follows from this that if 'use' was intended in its legal meaning, users will not be able to benefit from any space activity as they are not owners.

Unfortunately, the meaning of the term 'use' was not discussed in the *travaux préparatoires*. The word was dealt with as pre-acquired knowledge with no need for a definition. However, an interesting intervention by the French delegate came when he inquired whether the term 'use' implies the use for exploration purposes, such as the launching of satellites, or use in the sense of exploitation, which would involve far more complex issues, such as the extraction of mineral resources.[23] The French delegate suggested that the term 'use' in the Declaration of Principles resolution[24] 'was by no means exhaustive and should not preclude further textual improvements'.[25] In answer to this, the Soviet delegate considered that:

> no human activity on the moon or any other celestial body could be taken as justification for national appropriation. Needless to say, a treaty could deal only with the problems arising at the current stage of human evolution, and future developments would give rise to new problems requiring subsequent solution. [26]

This statement could have a two-fold interpretation. One, it could be interpreted in the negative, as prohibiting the extraction of mineral resources because it is a form of appropriation. Two, the Soviet delegate's statement could be interpreted as allowing the extraction of resources since outer space might be considered a *res communis* area in which the extraction of resources does not amount to

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[21] Mr. Benyi speech - A/AC.105/C.2/SR.59 – 1966 - LSC Summary Records - 5th Session.

[22] A/AC.105/C.2/SR.62 – 1966 – LSC Summary records – 5th Session.

[23] Consideration of a treaty governing the exploration and use of outer space, the moon and other celestial bodies - A/AC.105/C.2/SR.63 – 1966 - LSC Summary Records - 5th Session, at 8.

[24] UNGA Res 1962 (XVIII) (13 December 1963), Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space; this resolution was a foundation for the Outer Space Treaty.

[25] Consideration of a treaty governing the exploration and use of outer space, the moon and other celestial bodies - A/AC.105/C.2/SR.63 – 1966 - LSC Summary Records - 5th Session, at 8.

[26] Consideration of a treaty governing the exploration and use of outer space, the moon and other celestial bodies - A/AC.105/C.2/SR.63 – 1966 - LSC Summary Records - 5th Session, at 10 – 11.

appropriation. The Soviet statement also aligned with the observation of US delegate Goldberg in the First Committee.[27]

Concerns were raised by many States in the UN. The Tanzanian delegate considered that the Space Treaty should have been postponed until the 'Committee on the Peaceful Uses of Outer Space (COPUOS) had made greater progress in the study of the question relative to … the utilization of outer space and celestial bodies'.[28] According to the French delegate to the First Committee, the OST principles could easily be applied to any exploratory activity. However, it would be much harder to apply those principles when exploitation activities are involved, and especially when simple occupation has to be distinguished from appropriation, which is barred by the treaty.[29] As a result, the French delegate proposed drafting a resolution giving a mandate to COPUOS to study questions regarding the utilization of outer space.[30] Thus, Resolution 2222 XXI of 1966 was passed. The resolution requested COPUOS to study, among other things, questions relating to the definition of outer space and the utilization of outer space and celestial bodies, including the various implications of space communications.[31] The Austrian delegation pointed out that the draft presented by the US for the OST should not only regulate the exploration of the moon and other celestial bodies but also their use so there would be no contradiction between the terms 'non-appropriation' and 'use'.[32]

The point to be drawn from the foregoing is that what the term 'use' included was unclear. Indeed, 'use' is a key element in solving the exploitation riddle. The negotiation of the OST started directly after the USSR's successful satellite launch in 1957. The purpose at the time was not the exploitation of natural resources, and this was clear from the statements of the US and USSR delegations. Also, making the task more confusing is the later statement of Hosenball,[33] US negotiator of the Moon Agreement, before the US Subcommittee on Space Science and Applications in 1979. In defending the Moon Agreement,[34] Hosenball

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[27] A/C.1/PV.1492 – 1966 – Twenty first session – First Committee - Verbatim record of the fourteen hundred and ninety-second meeting. The text was as follows: 'The aim of the negotiators of this treaty was not to provide in detail for all contingencies that might arise in the exploration and use of outer space – many of which are unforeseeable – but rather to establish a set of basic principles. The treaty's provisions are purposely broad…'

[28] A/PV. 1499 – 19 December 1966, at 66; also check S. Bhatt, 'Legal Controls of the Exploration and Use of the Moon and Celestial Bodies' *The Indian Journal of International Law* (January 1968) 8:1, at 47.

[29] A/C.1/PV.1492 – 1966 – Twenty first session – First Committee - Verbatim record of the fourteen hundred and ninety-second meeting.

[30] A/C.1/PV.1492 – 1966 – Twenty first session – First Committee - Verbatim record of the fourteen hundred and ninety-second meeting. 17 December 1966.

[31] UN Doc. A/RES/21/2222 - 19 December 1966.

[32] A/AC.105/C.2/SR.58 – 1966 – LSC Summer Records – 5th Session.

[33] Neil Hosenball was NASA's General Counsel from 1975 to 1985.

[34] 1979 Agreement governing the activities of States on the Moon and other Celestial Bodies.

considered that, without this treaty, the question would be whether one is allowed to exploit natural resources at all, and whether one could gain ownership over them.[35] Even among US officials, then, this shows that in their view, the OST did not settle the question of whether exploitation is legal. However, it is convenient to note that ambiguities in the OST did not prevent States from using space for commercial and non-commercial purposes, such as launching satellites.[36] Section 2.2 examines the non-appropriation principle to determine whether it offers any guidance on the legality of space resource exploitation.

2.2 National Appropriation and Sovereignty

The interpretation of Article II requires first ascertaining the ordinary meaning of the term 'appropriation' in accordance with the VCLT. Furthermore, one must answer the following question: does the prohibition of national appropriation mean only that the acquisition of territorial sovereignty is prohibited? This question arises as scholarly opinion has sometimes equated a ban on national appropriation with a ban on acquisition of 'territorial sovereignty', thereby arguing that the exploitation of space resources is permitted because this can be done without violating 'territorial sovereignty'.[37] This section, as opposed to past literature, argues that 'national appropriation' is a broad enough term that it bans 'acquisition of sovereignty' and also bans the acquisition of private rights in space.

'Appropriation' is normally defined as the 'exercise of control over property; a taking of possession'.[38] Among international space lawyers, Gorove defined appropriation as denoting the taking of property for one's own or exclusive use with a sense of permanence, as opposed to temporary occupation.[39] According to ,[40] 'property' is the legal expression of a basic form of appropriation.[41] It confers the right to use or dispose of an object and excludes all others from doing so.[42]

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[35] International space activities, 1979: hearings before the Subcommittee on Space Science and Applications of the Committee on Science and Technology, U.S. House of Representatives, ninety-sixth Congress, first session, September 5 and 6, 1979, at 96

[36] Fabio Tronchetti (ed), *The Exploitation of Natural Resources of the Moon and Other Celestial Bodies*, 4 (Martinus Nijhoff 2009), 223.

[37] Zachos A. Paliouras, 'The Non-Appropriation Principle: The Grundnorm of International Space Law' (2014) 27 *Leiden Journal of International Law*, at 47 and 48; Goedhuis Goedhuis, 'Legal Aspects of the Utilization of Outer Space' (1970) 17:25 *Netherlands International Law Review*, at 33 -35; Ricky J Lee, 'Article II of the Outer Space Treaty : prohibition of state sovereignty, private property rights, or both' (2004) 11 *Australian international law journal* 128 at 133; also see Ethan Hutchings, 'Outer Space Resource Acquisition – A Legal Perspective' (*Reddie & Grose LLP,* 2024) <https://www.reddie.co.uk/2024/10/09/outer-space-resource-acquisition-a-legal-perspective/> (accessed 2 December 2024)

[38] Bryan A. Black Garner, Henry Campbell, *Black's Law Dictionary* (2009), 117.

[39] Stephen Gorove, 'Interpreting Article II of the Outer Space Treaty' (1969) 37 *Fordham Law Review,* at 352.

[40] Manfred Lachs was a previous Polish diplomat and a judge of the international court of justice; Lachs was also the first chair of UNCOPUOS (1959-1967).

[41] M. Lachs, *The Law of Outer Space* (Sijthoff Leiden, 1972), 44.

[42] Ibid 44.

Linguistically speaking, a prohibition on appropriation is self-explanatory. It prohibits any entity from appropriating, and as such, from owning property, which is distinct from the exercise of full sovereignty.

In contrast to 'appropriation', the term 'sovereignty' has no universal legal meaning. One should note that the concept of sovereignty has historically been intrinsically related to a territory. A sovereign State is considered as composing of a government, subject, and a territory in which it has a monopoly of power.[43] Sovereignty was also defined as:

> the most extensive form of jurisdiction under international law. In general terms, it denotes full and unchallengeable power over a piece of territory and all persons from time to time therein.[44]

Furthermore, the principle that 'territorial sovereignty' requires the effective occupation by a State of a certain territory while having the right to exclude others from this area and to display the activities of a State,[45] was stipulated by Huber in the *Island of Palmas*.[46] At the time, the Permanent Court of Arbitration considered that: 'The title of discovery ... under the most favorable and most extensive interpretation, exists only as an inchoate title, as a claim to establish sovereignty by effective occupation'.[47] Hence, one could reach the conclusion that 'sovereignty', which is the exercise of powers within a territory, or 'territorial sovereignty', which also is the exercise of State powers within a territory, either occupied or not, meant the same thing.

Besides the foregoing categories, Bhat referred to 'functional sovereignty'.[48] So far, no standard definition has been provided for functional sovereignty. From the wording, functional sovereignty should mean the exercise of certain functions of a Sovereign State with no territory, or outside its territory. Riphagen considered that functional sovereignty exists within a stateless domain

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[43] W. Riphagen, '*Some Reflections on "Functional Sovereignty*', *Netherlands yearbook of international law*, (1975) 6 at 122

[44] Arshid Iqbal Dar and Jamsheed Ahmed Sayed, 'The Evolution of State Sovereignty: A historical overview' (2017) 6 *International Journal of Humanities and Social Science Invention* 8 At 8. Also MP Ferreira-Snyman, 'THE EVOLUTION OF STATE SOVEREIGNTY: A HISTORICAL OVERVIEW' (2006) 12 *Fundamina: A Journal of Legal History* 1 At 1. Also check footnote 3 of the same paper

[45] William A. Hyman, 'Sovereignty over Space' (1960) *Proceedings on the Law of Outer Space* 26 at 32, 33.

Also check William A. Hyman, 'Magna Carta of Space - Sovereignty and Strife' (1966) 86 At 93

[46] *Island of Palmas case (Netherlands, USA)* (Permanent Court of International Arbitration) at 868 - 870; Hyman, 'Sovereignty over Space' at 33

[47] Permanent Court of Arbitration, 1928, Scott, Hague Court Reports 2nd ser., p. 83 (1932); 2 UN Reports Arb, Awards 829; also check Hyman, 'Sovereignty over Space' 33

[48] S. Bhatt, 'Legal Controls of the Exploration and Use of the Moon and Celestial Bodies' (1968) 8 The Indian Journal of International Law 33 at 40. Compare (using similar ideas without calling them 'functional sovereignty'): Linda R Sittenfield, 'The Evolution of a New and Viable Concept of Sovereignty for Outer Space' (1980) 4 *Fordham International Law Journal* 199 at 204; Frans Von Der Dunk, 'Sovereignty and Space: When and Where Shall the Twain Meet?' in Gerard Kreijen (ed.) et al. (ed), *State, sovereignty, and International governance* (Oxford Academic 2002) at 466.

or where there seems to be a form of government, but no territory.[49] Thus, exercising sovereign functions outside its territory or without territory.

With all its complexities, sovereignty has been considered by the vast majority of scholars as 'a set of administrative, policing, and military organizations headed, and more or less well coordinated by, an executive authority', that is the State, which scope is limited to the people and resources found within a geographical area.[50] Importantly, permanent sovereignty over natural resources is an essential and inherent element of State sovereignty.[51] In addition, the concept of sovereignty not only gives rights, but also prohibits States from interfering with the sovereignty of other States.[52] Thus, sovereignty includes an intrinsic duty to respect another State's territorial sovereignty by for example not exploiting their natural resources.[53] Exploiting another State's resources is a violation of its territorial sovereignty, which suggests that resources are part of a States territorial sovereignty. Therefore, given that sovereignty and territorial sovereignty appear to be two sides of the same coin, and that both of these terms include sovereignty over natural resources, one could argue that if the OST by prohibiting national appropriation, prohibited the acquisition of 'territorial sovereignty', this should include the exploitation of space resources.

According to Christol,[54] when the legal sub-committee met in May and June 1962, a debate regarding the meaning of UNGA resolution 1721[55] A (XVI) regarding international cooperation in the peaceful uses of outer space took place. During that debate, 'national appropriation' was considered to prohibit claims of national sovereignty.[56] If that was the case then Article II would be redundant. Article II would become: Outer space, including the moon and other celestial bodies, is not subject to national sovereignty (appropriation replaced by sovereignty) by claim of sovereignty, by means of use or occupation, or by any other means.

According to Sittenfield, the OST addressed itself to the traditional concept of sovereignty, which enabled States to exercise exclusive control over

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[49] Riphagen (1975), 122.

[50] Janice E. Thomson, 'State Sovereignty in International Relations: Bridging the Gap between Theory and Empirical Research' (1995) 35 *International Studies Quarterly* 213 at 227

[51] Franz Xaver Perrez, 'The Relationship between Permanent Sovereignty and the Obligation Not to Cause Transboundary Environmental Damage' (1996) 26 *Environmental Law* 1187 at 1207

[52] Ibid 1207

[53] Ibid 1209

[54] Carl Q. Christol was a public international lawyer, a Distinguished Professor Emeritus of Political Science and a pioneer of space law. Christol has over 100 articles, and 5 books on international space law. He was also a member of the International Institute of Space Law

[55] UNGA Res 1721/XVI (1961)

[56] Carl Q. Christol, 'Article 2 of the 1967 Principles Treaty Revisited' (1984) 9 *Annals Air Space L* at 227

acquired territory.[57] Sovereignty in the form of jurisdiction over vehicles and personnel, and for establishing liabilities, is not prohibited. Rather, it is expressly provided for in the OST.[58] Brooks on the other hand made a valid point by pointing out that the US and the Soviet Union used the term 'sovereignty' when providing drafts for the purpose of formulating General Assembly resolutions which were the predecessors of the OST.[59] The US draft stated outer space and celestial bodies could not be subject to 'claims of sovereignty', whereas the Soviet draft stated that outer space and celestial bodies are to be 'free from claims of sovereignty'.[60] However, resolutions 1721 A (XVI) and 1962 (XVIII) picked the term 'national appropriation' over sovereignty.[61] One should note that resolutions 1721 A (XVI) and 1962 (XVIII) were the third and fifth resolutions in the space law domain. They were considered as the first chapter in the book of space law.[62] Following from this history, Lachs interpreted Article II as prohibiting both claims of sovereign and property rights.[63] This could also be supported by the statements of the French and Belgian delegates in the *travaux préparatoires* as will be discussed below.

Before turning to the *travaux*, it is instructive to consider what legal scholars at the time (the late 1960s and early 1970s) considered this wording to mean. Notably, Gorove was among the scholars who argued for the legality of exploitation by private individuals rather than States. Gorove observed that under his interpretation, the establishment of permanent settlements, or the conduct of commercial activities by or under the authority of a State, would amount to national appropriation.[64] However, in his interpretation, Gorove held that private individuals – if not subject to a supreme authority – were not caught by Article II. He argued that the lack of a supreme national authority would make private acts of appropriation legal unless nationals were used as cover for States activities.[65] In contrast to Gorove, I believe that prohibition on national appropriation extends to private individuals for two reasons. First, this stems from the ordinary interpretation of the law, 'the greater includes the lesser'. Simply put, if a State is not allowed to conduct a certain activity, an individual of that State shall not either. This could also be deduced from Article VI of the OST which makes States

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[57] Sittenfield(1980), 204

[58] Ibid 204

[59] Eugene Brooks, 'Control and Use of Planetary Resources' (1968) 11 *Proc on L Outer Space* 339 at 344

[60] Ibid 344.

[61] Ibid 343 – 344. Also check U.N. Doc. A/AC 105/L 2, June 6, 1962.

[62] Bin Cheng, *Studies in international space law* (1997), 125.

[63] M. Lachs (1972), 44.

[64] Gorove (1969), 352.

[65] Ibid.

responsible for activities undertaken by their nationals in outer space. Second, private individuals are covered by the '[n]or by any other means' language in Article II. The prohibition is on all forms of 'national appropriation' by whatever means.

'By any other means' was explained in this sense by Christol as imposing the same restrictions on individuals and private entities as on states.[66] Christol argues that, if private appropriation was allowed, the drafters would have employed the expression 'by any other national means'.[67] According to Brooks, while it is not clear what the drafters meant by 'any other means', it is obvious that this expression includes the remaining rules of international law through which there could be appropriation.[68] Hobe regards 'any other means' as a 'catch all' phrase that prevents States from using private entities to appropriate space resources.[69] Overall, it seems clear that the phrase was intentionally placed at the end of the Article so as to leave no room for any form or shape of appropriation by any entity.[70]

Another argument that exploitation is permitted under the current regime involves acknowledging that the OST prohibits appropriation (in the sense of acquiring private property) but arguing that the extraction of space resources is not a form of appropriation. Jenks considered, based on the Declaration of Legal Principles and resolution 1721 (XVI) A 1961, that the prohibition on national appropriation only applies to outer space and celestial bodies, thus excluding mineral resources from the legal equation.[71] As a counterargument, Brooks considered that the sweeping nature of the ban on appropriation went further. For Brooks, the non-appropriation principle not only refers to entire planets, but also to portions of these planets.[72] Brooks also referred to the speech of US Ambassador Goldberg where he stated that 'no State should be permitted to say that a portion of a celestial body was subject exclusively to its national control'.[73] Hence, if the drafters had wanted to prohibit only the national appropriation of the surface of the moon or celestial bodies in the sense of acquiring title to territory, they would have not replaced claims of 'sovereignty' with the term 'national appropriation'.[74] Brooks supports his argument by referring to the Antarctic Treaty in which claims of territorial sovereignty are clearly prohibited thus leaving the question of resource appropriation open.[75] Lachs was also one of the scholars who

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[66] Christol (1984), 241.

[67] Ibid 241

[68]Brooks (1968), 341 – 342.

[69] Hobe & ors. (2017), 242.

[70] Ibid 247.

[71] C. Wilfred Jenks, *Space Law* (Stevens and Sons 1965), 202 and 275.

[72] Brooks (1968), 342..

[73] U.N. Doc. A/AC.105/C.2/SR 57, p. 7

[74] Brooks (1968), 342.

[75] Ibid 342.

considered that appropriation covers both sovereign claims and property rights.[76] He argued that appropriation applies to outer space as a whole and to any part of it, and parts refer to the volume into which the great void might be divided.[77]

The main question examined here has been whether non-appropriation specifically refers to territorial sovereignty. I have interpreted these terms in light of the history of space law and the legal literature at the time. It is reasonable to consider that Article II created a strict rule prohibiting not only claims of sovereignty but all property rights in space. States and private entities can in no form or shape have property rights in space. The exercise of certain aspects of sovereignty, such as jurisdiction over nationals and vehicles, remains lawful, however. That is expressly provided for in Article VIII of the OST.[78]

In conclusion, Section 2.1 discusses the term 'use'. Based on the text, scholarship, and highlights of the *travaux préparatoires,* I conclude that (i) the term 'use' was inserted to denote an ordinary meaning; (ii) the term 'use' included economic and non-economic activities; and (iii) every use of space is permissible except for the ones that amount to national appropriation. To support this analysis, Section 2.2 examines the terms 'appropriation' and 'sovereignty'. Based on the evidence, appropriation meant ownership, and national appropriation meant ownership by States or their agents. Ownership by private entities was also prohibited based on the 'any other means' provision. Section 2.2 shows that if only territorial sovereignty was prohibited, the legislator could have specified this in the text of the treaty just as it was expressly specified in the Antarctic Treaty. This could have left the discussion regarding the legality of exploitation open and not settled. The reason for this is that even if territorial sovereignty was prohibited, it does not automatically mean that the exploitation of natural resources is permissible as these resources are intrinsically linked to territorial sovereignty.

After examining the ordinary textual meaning of the prohibition on national appropriation, I next refer to the *travaux préparatoires* which could be used as supplementary means for its interpretation.

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[76] Christol (1984), 218; also Lachs (1972) at 44. Gorove (1969), 350 'At the same time, the Treaty as it stands seems to make little allowance for national acquisition of exhaustible spatial resources'. Also Lee, 'Article II of the Outer Space Treaty : prohibition of state sovereignty, private property rights, or both'at 135

[77] Lachs (1972), 44

[78] Art. VIII of the OST states that 'A State Party to the Treaty on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body.'

3 Appropriation In the *Travaux Préparatoires*

When drafting the OST, the issue of space resource exploitation was simply not on the horizon.[79] At the time, exploitation of mineral resources in space was not technically possible and, as discussed, Article II has generated multiple scholarly opinions. This section examines the drafters' intent by reviewing the *travaux préparatoires*.

Negotiating sessions relating to Articles I and II showed that some States considered that private property rights could not exist in space (including the impossibility of ownership of space resources).[80] The position of Belgium is instructive. The Belgian delegate for instance, stated on 4 August 1966, that:

> his delegation had taken note of the interpretation of the term 'non-appropriation' advanced by several delegations apparently without contradiction as covering both the establishment of sovereignty and the creation of titles to property in private law.[81]

Belgium took the same position during the 2023 COPUOS meetings in which it distinguished between exploration and utilisation on one hand, and exploitation on the other.[82] While the purpose of this paper is to avoid a detailed discussion on subsequent State practice, Belgium's position is noteworthy for its consistency up until 2024. Belgium's position before joining the AA suggested that space mining outside the framework of the Moon Agreement is illegal under international law. [83]

Furthermore, in the 1966 COPUOS session the representative of Australia agreed with the French delegate that draft Article II:

> did not make it clear that outer space was not subject to national sovereignty and that no one could acquire property rights in outer space, including the Moon and other celestial bodies.[84]

Indeed, the text of the treaty does not expressly prohibit claims of 'national sovereignty'. However, the drafting history shows that the US and USSR proposal to use the term sovereignty was replaced by the wider term appropriation. In doing

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[79] Christol (1980) 431.

[80] Ibid 442.

[81] U.N. Doc. A/AC.105/C.2/SR.71, 7.

[82] Intervention de la Belgique au titre du point 10 de l'agenda du sous-comite juridique de l'UNCOPUOS – 62eme session. Tuesday 21 March 2023, 1036th meeting.

[83] A/AC.195/C.2/L.325 « Contribution de la Belgique au débat général sur les modèles juridiques envisageables pour les activités d'exploration, d'exploitation et d'utilisation des ressources spatiales »

Speaking about the Moon Agreement, the document states « Premièrement, elle met en avant le seul instrument juridique international qui porte sur l'exploitation des ressources naturelles de la Lune et des autres corps célestes – allant au-delà des concepts habituels « d'exploration » et « d'utilisation » de l'espace extra-atmosphérique – et vient de ce fait compléter le Traité sur les principes régissant les activités des États en matière d'exploration et d'utilisation de l'espace extra-atmosphérique, y compris la Lune et les autres corps célestes (Traité sur l'espace extra-atmosphérique) » ; Intervention de la Belgique au titre du point 10 de l'agenda du sous-comite juridique de l'UNCOPUOS – 62eme session. Tuesday 21 March 2023, 1036th meeting.

[84] (1966) U.N.Doc. NAC.l05/C.2/SR71 and Add. 1, at 15.

so, the drafters created a strict rule preventing the acquisition of territorial or property rights, which also eliminates a major aspect of national sovereignty.

In 1966, France considered that the draft treaty was not clear about the point of national sovereignty and property rights in outer space.[85] Furthermore, as mentioned in Section 2, the French delegate inquired whether the term 'use' implies the use for exploration purposes, such as the launching of satellites, or use in the sense of exploitation, which would involve far more complex issues, such as the extraction of mineral resources. However, France's last statement concluded that 'there was reason to be satisfied that … basic principles were affirmed, namely: the prohibition of any claim of sovereignty or property rights in space'.[86] This statement, made in the context of prior questions about property rights and resource extraction, suggests that France understood the treaty as prohibiting property rights in outer space, thereby encompassing the extraction of resources.

Relevant statements during the 1966 OST discussions were also made by Chile, Brazil, Japan, and the Philippines. Chile understood Article II as eliminating any type of colonialism and preventing an arms race in outer space.[87] For Brazil, Article II served to prevent rivalries that had poisoned relations between States during the age of earthly discoveries.[88] For Japan, Article II also removed outer space from the sphere of national rivalries.[89] The Philippines considered that Article II of the OST internationalized outer space, and by doing so, prevented it from being subject to contention between present and future space powers.[90] Although these States did not explicitly address the exploitation of resources, their statements were obviously made in the context of the decolonization era. In that context, the idea of coloniality included, at the very least, treating nature and those denied personhood as resources for exploitation.[91] Furthermore, quoting US President Johnson, US Ambassador to the UN Stevenson said: 'The goals now within reach of the human race are too great to be divided as spoils, too great for the world to waste its efforts in a blind race between competitive nations'.[92]

The concerns of Third World states with regard to potential colonialism and national rivalry suggests an intent to prevent not only acquisition of territorial

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[85] (1966) U.N.Doc. NAC.l05/C.2/SR71 and Add. 1, at 15.

[86] Quoted in: Virgiliu Pop, *Who Owns the Moon?: Extraterrestrial Aspects of Land and Mineral Resources Ownership* (Springer 2008), 64.

A/C.1/PV.1492 – 27 January 1967 – Twenty First Session – First Committee – Verbatim Record of the Fourteen Hundred and Ninety-Second Meeting. 36.

[87] A/C.1/SR.1492 – 1966 - FCGA Verbatim Records - 21st Session at 432.

[88] A/C.1/SR.1492 – 1966 - FCGA Verbatim Records - 21st Session at 432.

[89] A/C.1/SR.1493 – 1966 - FCGA Verbatim Records - 21st Session at 439.

[90] A/C.1/SR.1493 – 1966 - FCGA Verbatim Records - 21st Session at 444.

[91] Natalie B. Treviño, 'Coloniality and the Cosmos' in (eds.) Juan Francisco and Alice (Alice Claire) Gorman Salaza, *The Routledge Handbook of Social Studies of Outer Space* (Routledge, Taylor and Francis Group 2023) at 226.

[92] Bhatt (1968), 37.

sovereignty but also private property in natural resources. The free use of resources might result in claims of exclusive appropriation of these resources, and these claims have led in the past to exclusive claims to territory.[93] As far as history is concerned, colonialism, territorial discoveries, and national rivalries included the seizure and acquisition of resources. Land and precious metals were a key purpose of European colonialism,[94] and the appropriation of indigenous people's lands occurred in order to access their natural resources.[95] Furthermore, one should note the obvious point that colonialism has manifested in different forms across time. In certain cases, States formally invaded foreign territories and established colonies. In other cases, colonies were preceded by an era of European corporate control over and extraction of resources. For example, the East India Company controlled parts of South and East Asia (now India and parts of Pakistan and Bangladesh) long before the British officially established direct rule over the Indian subcontinent in 1858.[96] The Netherlands executed a similar strategy. Two companies established in 1602 and 1621, the Dutch East India Company and the Dutch West India Company, were given a commercial monopoly by the Dutch government over modern day Indonesia and the Americas (including the Caribbean), with Dutch colonial administration following later.[97] Thus, if the OST was understood to ban colonial acts, it should de facto ban the appropriation of mineral resources in space by corporations. That is, informed by this history, Third World concerns about 'appropriation' were not limited to appropriation by sovereign States.

In summary, neither the terms 'use' nor 'national appropriation' were explicitly defined during the negotiations of the OST. In principle, 'use' was meant to cover commercial and non-commercial space activities. Whether 'use' was meant to include the exploitation of space resources (space mining) cannot be considered in isolation from the principle of non-appropriation. While it is not accurate to claim that the appropriation of mineral resources in space was clearly banned, there are indications in the statements made by delegates, an the treaty language eventually chosen that strongly suggest its illegality. As noted, earlier

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[93] Ibid 47.

[94] Some scholars had even argued that resources is another word for colonialism; see Andrew Curley, 'resources is just another word for colonialism' chapter 7 at 79 of Matthew Himley, Elizabeth Havice, and Gabriela Valdivia, *The Routledge Handbook of Critical Resource Geography* (Abingdon, Oxon ; New York, NY : Routledge 2022); also Endalcachew Bayeh, 'THE POLITICAL AND ECONOMIC LEGACY OF COLONIALISM IN THE POST-INDEPENDENCE AFRICAN STATES' (2015) 2 *International Journal* in *Commerce, IT & Social Science*s at 91

[95] S Parson, & E Ray, 'Sustainable Colonization: Tar Sands as Resource Colonialism' (2018) 29 *Capitalism, Nature, Socialism*, at 69; Also check: SO Oloruntoba, *The Political Economy of Colonialism and Nation-Building in Nigeria* (1st edn, Springer International Publishing : Imprint: Palgrave Macmillan 2022), 4; It has been often argued that political the economies of colonialists have been the motive and philosophy of colonialism

[96] Jörn Axel Kämmerer, 'Colonialism' (2018) *Max Planck Encyclopedia of Public International Law* para 6.

[97] Ibid para 6.

resolutions which lead to the Treaty replaced the term 'sovereignty' with 'appropriation', which implies an expansion of the prohibited types of claims to include property rights. In addition, considering the purpose of the OST, and given the *travaux préparatoires*, it seems sensible to interpret Article II as prohibiting the acquisition of property rights and accordingly space mining. As such, any use of outer space that includes the exploitation of space resources should be interpreted as amounting to national appropriation in violation of Article II.

As foreshadowed, another line of argument concedes that the OST forbids appropriation but considers that space mining does not fall within this category. To support this view, analogies with different principles have been applied. These analogies, largely drawn from the law of the sea, are considered in the next section.

4 Freedom Of the High Seas, Continental Shelf, And *Res Communis*

Multiple arguments by analogy were made after the conclusion of the OST to justify space mining. One of the arguments was based on the freedom of the high seas, while another applied the Continental Shelf Convention (CSC). A third argument was drawn from the application of the *Res Communis* principle.[98]

4.1 Freedom of the High Seas and Continental Shelf

The application by analogy of the freedom of the high seas principle seemed to have wide support among scholars as a basis for the legality of the exploitation of space resources. Article 2 of the High Seas Convention (HSC)[99] reads:

> The high seas being open to all nations, no State may validly purport to subject any part of them to its sovereignty. Freedom of the high seas … comprises, inter alia …:
>
> (1) Freedom of navigation;
> (2) Freedom of fishing;
> (3) Freedom to lay submarine cables and pipelines;
> (4) Freedom to fly over the high seas.
>
> These freedoms, and others which are recognized by general principles of international law, shall be exercised by all States with reasonable regard to the interests of other States …

Clearly, Article 2 does not mention seabed mining as a freedom of the high seas. Nonetheless, it is also a non-exhaustive list ('inter alia'). Before the 1960s, few scholars argued that seabed mining could fall under the freedom of the high seas

[98] This school of thought includes Daniel Goedhuis, Bin Cheng, Eugene Pipin, Cyril Hosford and others; see Sylvia Maureen Williams, 'Exploitation and Use of Natural Resources in the New Law of the Sea and the Law of Outer Space' (1986) 29 Proceedings on the Law of Outer Space 198 at 201; also see Fabio Tronchetti, 'Legal aspects of space resource utilization' in Frans von der Dunk and Fabio Tronchetti (ed), *Handbook of Space Law* (Edward Elgar 2015) at 789; Luxembourg argued the legality of extraction resources from space by applying the freedom of the high seas analogy, see Feichtner (2019), 265.

[99] Convention on the High Seas, Geneva, 29 April 1958, entered into force on September 30, 1962

principle.[100] From 1973 onwards, the U.S. and other countries which were not satisfied with the emerging draft text of the UN Convention on the Law of the Sea and the Common Heritage of Mankind (CHM) principle contained therein, argued that mining was a freedom of the high seas, and would continue to be so until the entry into force of the 1982 United Nations Convention on the Law of the Sea (UNCLOS) which included a specific regime governing seabed mining beyond national jurisdiction.[101] Those States interpreted the term '*inter alia*' in Article 2 as including seabed mining among the freedoms and based their interpretation on the commentaries produced by the International Law Commission (ILC).[102] Article 32 of the 1969 Vienna Convention on the Law of Treaties allows recourse to such preparatory work as a means of interpretation.

And indeed, the commentaries[103] would appear to confirm the legality of exploitation. In the first ILC commentary I find the following paragraph:

> The list of freedoms of the high seas contained in this Article is not restrictive; the Commission has merely specified the four main freedoms. It is aware that there are other freedoms, such as freedom to explore or exploit the subsoil of the high seas and freedom to engage in scientific research therein.[104]

Apparently, the word 'exploit' was added upon the request and insistence of the French member of the Commission.[105] The French member expressed his dissatisfaction with a version that did not include the extraction of mineral wealth and requested that his dissenting opinion be put on the record.[106] In answer to that, the Rapporteur found it inappropriate to have a footnote recording dissent and instead prepared a new passage, hence the above-mentioned paragraph.[107]

The Chairman invited the Commission to consider this proposed addition to the commentary on Article 2.[108] Another member of the Commission proposed the deletion of the words 'or to exploit' because the question of high seas

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[100] Jon Van Dyke and Christopher Yuen, '"Common Heritage" v. "Freedom Of The High Seas": Which Governs The Seabed?' (1982) 19 San Diego Law Review at 501; Check also footnote 25

[101] Ibid 501.

[102] Ibid 501.

The ILC is a body established by the UN to promote the codification of the international law. The ILC prepared the draft Articles for the Convention on the High Seas and the companion Conventions resulting from the First United Nations Conference on the Law of the Sea.

[103] The commentaries were written by the ILC which prepared the 1958 High Seas Convention.

[104] United Nations International Law Commission, *Yearbook of the International Law Commission*, vol 1 (1955) at 282 para 46

[105] Ibid 263 para 32 – 52

[106] Ibid 263 para 40

[107] 'He would endeavour to draft a passage which would give some satisfaction to the objections of Mr. Scelle and certain other members, but if his solution were not approved by Mr. Scelle, he did not think that a footnote recording dissent would be appropriate'. Yearbook of the International Law Commission (1955) I, 264 para 51

[108] Commission, *Yearbook of the International Law Commission*, at 282 para 46

exploitation of subsoil had not been discussed, and furthermore, no such right existed in international law.[109] The French member replied that he was not aware of any rule prohibiting such exploitation, albeit that there were technical difficulties.[110] The Rapporteur's text was in the end adopted by 9 votes to 1 with 1 abstention.[111]

The foregoing indicates that the ILC considered seabed mining lawful at the time. However, the final commentary introduces some doubt. It states: 'Any freedom that is to be exercised in the interest of all entitled to enjoy it, must be regulated'[112] and:

> The Commission has not made specific mention of the freedom to explore or exploit the subsoil of the high seas. It considered that apart from the case of the exploitation or exploration of the soil or subsoil of a continental shelf - a case dealt with separately in section III below - such exploitation had not yet assumed sufficient practical importance to justify special regulation.[113]

According to its preamble, the High Seas Convention was intended to codify the rules relating to the High Seas, and its provisions are generally considered declaratory.[114] As a result, the non-inclusion of seabed mining as an express freedom of the high seas for whatever reason shows that it was not believed at the time to be amongst the established principles of international law.[115] Adding to this, the Continental Shelf Convention (CSC)[116] was clear in this regard by expressly providing the State with the sovereign right for the purpose of exploring and exploiting seabed natural resources.[117] No such grant of rights appears in the High Seas Convention or in the OST. Article 137 of UNCLOS was also clear in providing that:

> 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.

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[109] Ibid 282 paras 46 and 55.

[110] Ibid 282 para 56.

[111] Ibid 283 para 62.

[112] United Nations International Law Commission, *Yearbook of the International Law Commission*, vol 2 (1956) at 278 para 5.

[113] Ibid 278 para 2.

[114] Gonzalo Biggs, 'Deep seabed mining and unilateral legislation' (1980) 8 *Ocean development and international law* 223 at 233

[115] Ibid 233

[116] The Continental Shelf Convention, Geneva 29 April 1958.

[117] Art. 2 of the CSC provides: 'the coastal State exercises over the Continental Shelf sovereign rights for the purpose of exploring it and exploiting its natural resources.'

Furthermore, the negotiating record at UNCLOS shows that seabed mining was not mentioned during the discussion of Article 2.[118] In conclusion, drawing an analogy from seabed mining seems strained.

Some scholars have gone further, arguing for the application by analogy of the freedom of fishing on the high seas.[119] That is, that private acquisition of resources on (or under) the high seas is permitted on a 'first come, first served' basis. The application of such a freedom to seabed mining was challenged at the time. Koh, the President of UNCLOS III, for example, considered that an analogy between high seas fisheries and the manganese nodules was not appropriate.[120] Unlike fish, manganese nodules are resource *in situ*.[121] In addition, commercially viable mining operations require the allocation to a company of exclusive rights over a large area in the sea.[122] Van Dyke and Yuen argue that the freedoms of the high seas cannot apply to seabed mining as this defies Grotius' logic upon which the theory was established.[123] That is, certain activities are freedoms of the high seas because they do not interfere with other states' ability to use the oceans in the same manner. They also explain that an analogy between fishing, laying cables, and navigation could not apply to seabed mining for the following reasons:[124] polymetallic nodules are exhaustible resources that are non-renewable on any human time frame; they differ dramatically in their economic value, and the deposits that are economically attractive in the near future are limited; if exploited vigorously, the prime mining sites could be completely exhausted within a few decades; and mining could also impact developing economies that rely on the export of those resources. If the application of the freedom of fishing principle to seabed mining was not considered legally appropriate, the projection of such a freedom to outer space would therefore be equally inappropriate.

Furthermore, arguing that the application of the freedom of the high seas analogy is inadequate as it disregards the restrictions that were imposed by the UNCLOS imposed. UNCLOS established a duty for States to conserve the living resources of the high seas,[125] and set limits on the exploitation and conservation of straddling and highly migratory species, catadromous and anadromous species, and

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118 Yuen, '"Common Heritage" v. "Freedom Of The High Seas": Which Governs The Seabed?' at 506.

Check footnote 52 of the same paper: 'UNCLOS I, Off. Rec. at 37-56, U.N. Doc. A/CONF.13/40 (1958). The only explicit proposal to add to the four freedoms specified by the ILC was from Portugal, which wanted to include a freedom of exploration and scientific research. Id. at 55, U.N. Doc. A/CONF.13/C.2/L.7 (1958). This proposal was rejected'

119 Ibid 8.

120 Tommy Koh, *Building a New Legal Order for the Oceans* (Nus Press 2019), 65.

121 Ibid 65.

122 Ibid 65.

123 Yuen, '"Common Heritage" v. "Freedom Of The High Seas": Which Governs The Seabed?' at 508 – 509

124 Ibid 508 – 509.

125 Articles 160 to 120 UNCLOS .

marine mammals.[126] Article 118 encourages States to cooperate to create Regional Fisheries Management Organizations (RFMO).[127] Furthermore, Article 8 of the RFMO prohibits States that are not members of such management organizations to access fishery resources.[128] Collectively, these articles impose limits on the freedom of fishing.[129]

The continental shelf doctrine was another analogy for the utilization of space resources. Zhukov was one of the scholars who rejected the high seas freedom of fishing analogy and instead applied the continental shelf doctrine.[130] Before this doctrine, the sea was divided for legal purposes into internal waters, territorial waters, and high seas. Everything beyond territorial waters was considered high seas. The Truman Declaration in 1945 spelt out the Continental Shelf doctrine, which allowed States jurisdiction over natural resources in an area situated between territorial waters and the high seas called the continental shelf. Under this doctrine, States are given an exclusive right when exploiting the natural resources of their continental shelf. According to Zhukov, to apply this analogy on the moon, States will have to install structures, and these structures will give them an exclusive right to exploit around it. Accordingly, these installations will give exclusivity and lead to the protection of the area without national appropriation.[131] Brooks, however, considered the application of the Continental Shelf doctrine inaccurate for two reasons. First, the definition of the Shelf in Article 1 of the Continental Shelf Convention (CSC) partially rests on the element of adjacency to the coast as opposed to the moon and celestial bodies, which border no State and are very far away.[132] Second, the CSC made clear provision for sovereign rights over natural resources, whereas the OST prohibits national appropriation.[133] No such express grant of rights appears in the High Seas Convention or in the OST. Rather, the OST prevents national appropriation. Unsurprisingly Zhukov's analogy never gained general acceptance.

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126 Articles 63-67 UNCLOS.

127 Also see articles 8, 9, and 10 of the Agreement for the Implementation of the Provisions of the UNCLOS relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks of 1995.

128 Article 8(4) of the Agreement for the Implementation of the Provisions of the UNCLOS relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks of 1995.

129 Michaela Young, 'Then and Now: Reappraising Freedom of the Seas in Modern Law of the Sea' (2016) 47 *Ocean Development & International Law,* at 168.

130 G. P. Zhukov, 'Problem of Legal Status of Scientific Research Stations on the Moon' (1967) 10 *Proc on L Outer Space* at 61

131 Ibid 61

132 Brooks (1968), 348.

133 Ibid 348. The CSC provided for the exploitation of natural resources by stating in Art. 2 that 'the coastal State exercises over the Continental Shelf sovereign rights for the purpose of exploring it and exploiting its natural resources'.

4.2 Res communis

Besides the freedom of the high seas principle, scholars have used and are still using the *res communis* principle to justify the legal exploitation of space resources. The freedom of the high seas and the *res communis* principles are interrelated.

Szaloky, alongside many other scholars, considered that the exploitation of natural resources in space is permitted under the *res communis* principle, which entails the free use and exploitation of such resources by anyone. Szaloky argued that by separating natural resources from the land (through a process of extraction), they are given a new and separate legal entity.[134] In contrast, Williams rejected the application of the *res communis* principle based on the non-appropriation principle and argued that natural resources can be extracted and brought back to earth and shared among States exclusively for scientific purposes.[135] Williams believed that the appropriation of space resources is totally banned. Her argument makes a useful distinction between mining in the high seas from mining in outer space.[136] Williams observes that there was no express rule at the time the HSC was concluded either allowing or banning the appropriation of high seas minerals (which created confusion), whereas in space, the 1967 OST exists, a positive law which gives rise to an obligation.[137] According to Williams, the principle of 'first come, first served' might have been applied in the absence of a positive law.[138] However, as long as a positive law exists, no such analogy can be applied because there is no gap for it to fill.

Even if a positive law did not exist and there was a gap to be addressed, *res communis* is not the answer. This argument is supported by reference to Lachs' views on transferring legal principles. Lachs considered that 'the "mechanical transfer" of [legal] institutions from one environment to another is of little avail: it may lead to distortions and even seriously stunt the development of the new branch of law' like space law.[139] In 1964, Cocca explained that although the Roman law concept of *res communis* did not ignore the existence of other countries (barbaric ones), we still cannot speak of international law during the Roman period.[140] Roman law also could not foresee the evolution of concepts and the need for a law regarding outer

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134 Christol (1980) 443.

135 Ibid 444.

136 Silvia Maureen Williams, 'The Principle of Non-Appropriations Concerning Resources of the Moon and Celestial Bodies' (1970) 13 *Proc on L Outer Space* 157 at 157

137 Ibid.

138 Ibid.

139 Lachs, M, S Hobe, & TL Masson-Zwaan, *The law of outer space: an experience in contemporary law-making* (Leiden [Netherlands] ; Boston, Martinus Nijhoff Publishers, 2010), 20.

140 Aldo Armando Cocca, "VI Coloquim on the Law of Outer Space: 1. General Principles for the Utilization of Outer Space - Determination of the Meaning of the Expression Res Communes Humanitatis in Space Law" (1964) 6 *Proc on L Outer Space* 1

space.[141] Lachs thus considered the application of traditional legal analogies to new developing branches of international law to be a mistake.[142] One must also bear in mind the idiosyncrasies of the environment from which the rules arose.[143] The sea and outer space are very different environments. As already noted, there are serious problems transposing the freedom of fishing principle to freedom of mining, even as regards seabed mining.

Beyond that argument, even if a positive law did not exist, and even if an analogy with *res communis* was made for the purpose of exploiting space resources, it is necessary to set this principle within its correct legal boundaries. The next section will argue that the potential application of res communis to space has often been misunderstood.

4.3 Res Communis or *Res Communis Humanitatis*?

According to the Institutes of Justinian, the Roman definition of *res communis omnium* was those 'things that are naturally everybody's such as the air and the sea'.[144] This meant that all of those things could be used by anyone at any time, with no right to claim ownership over them.[145] Scholars such as Christol deduced the application of *res communis* to space based on Articles I and II of the OST. Supporters of this approach argued that Articles I and II are complementary. In 1967 hearings before the US Committee on Foreign Relations, Ambassador Goldberg stated that Article II of the OST prohibits national appropriation, and that this reinforces Article I regarding free access.[146] In addition, the US and the Soviet Union agreed in 1966 to accept State responsibility for national activities in Outer Space, whether carried out by private or public entities.[147] According to Christol, allowing public and private corporations to use space, combined with the lack of sovereignty that States can exercise in space, represents a rejection of the *res nullius* principle and an acceptance of the *res communis* principle.[148] The right of States and private organisations to engage in space activities and make use of the

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141 Aldo Armando Cocca, "Mankind is a New Legal Subject: a New Juridical Dimension Recognized by the United Nations" (1970) 13 Proc on *L Outer Space* 211, at 213.

142 Lachs, M, S Hobe, & TL Masson-Zwaan, (2010), 21.

143 Ibid 19.

144 *res communis* as codified in the VI century throughout the Institutes of Justinian. Peter Birks and Grant McLeod (trs), The Institutes of Justinian (Duckworth 1987), 55.

145 Aldo Armando Cocca, "VI Coloquim on the Law of Outer Space: 1. General Principles for the Utilization of Outer Space - Determination of the Meaning of the Expression Res Communes Humanitatis in Space Law" (1964) 6 *Proc on L Outer Space* 1.

146 Christol, (1980)', 437; Also check footnotes 30 and 31 of the same paper

147 Ibid 437.

148 Ibid 438.

space environment follows from this, and by analogy with the High Seas Convention.[149]

Cocca explains that *res communis omnium* was based upon Roman *ius naturalis* (natural law).[150] Based on this doctrine, humans could use the resources of the *res communis omnium* but could not make property claims on them.[151] Nowadays, international law has limited the *res communis omnium* doctrine through rules allowing the virtual appropriation of the shoreline and the airspace above territory by States, and by strictly regulating sea and air navigation (i.e. requirements as to the nationality of ships and aircraft, etc).[152] In addition to this, among other things, regulations regarding the exploitation of marine living resources through instruments such as the Agreement on Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks.[153]

According to Cocca, the classical Roman theory of *res communis omnium* does not apply to space. What should apply to space is a new concept, the *res communis humanitatis*.[154] '*Omnium*' is a concept of private nature, the subject of which is the individual, not the State nor the community.[155] *Humanitatis,* on the other hand, refers to a single concept of 'Humankind,' which was unknown to the Romans (who had an established system of slavery).[156] Cocca argues that space law is based on four foundations, among them the subject 'Humankind', which is instantiated in the language of the Treaty.[157] In supporting his theory, Cocca also relies on Article V OST, which refers to astronauts as envoys of mankind. According to Cooca, this Article mandated the legal representation of Humankind by astronauts.[158] As Gorove explained, astronauts should not be seen as representatives of a specific State, but rather Humankind collectively, and therefore should be given immediate assistance in case of distress and emergency.[159] However, regardless of Article V, the language of the OST, combined with

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149 Ibid 438.

150 Cocca, (1964), 2.

151 Ibid 2.

152 Ibid 2.

153 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 - 1995

154 Cocca (1970), 212.

155 Ibid 212.

156 Ibid 213.

157 Ibid 213.

158 Aldo Armando Cocca, 'the Advances In International Law Through The Law Of Outer Space' (1981) 9 *Journal of Space Law,* at 17.

159 Stephen Gorove, 'The Concept of "Common Heritage of Mankind": A Political, Moral or Legal Innovation?' (1972) 9 *San Diego L Rev*, at 396; also, check Ernst Fasan, 'The Meaning of the Term Mankind in Space Legal Language' (1974) 2 *Journal of Space Law.* Fasan considered that Humankind encompasses all human beings, the whole of humanity

previous resolutions, gave rise to the implication that a new legal concept was being created.[160] According to Lachs, the Treaty was established in the interest of Humankind as a whole.[161]

A legal concept of Humankind is not expressly established in the text of the OST, but rather its spirit. As of 1958, Humankind was a work in progress; in 1958, the UN recognized 'the common interest of Humankind in outer space'.[162] In 1959, the General Assembly recognized 'the common interest of Humankind as a whole in furthering the peaceful use of outer space', and that 'that the exploration and use of outer space should be only for the betterment of Humankind…'[163] Furthermore, in 1961, Resolution 1721/XVI recognized the common interest of Humankind in the peaceful uses of outer space and stated that space exploration and use should only be for the betterment of Humankind.[164] Subsequent resolutions have also repeated this language.[165]

The 1967 Outer Space Treaty was formulated based in part on the foregoing resolutions. The text of the OST contained the term 'mankind' four times (which is generally taken to be synonymous with 'Humankind'), twice in the preamble and twice in the Articles. The preamble recognizes the great prospects opening up before mankind and the common interest of all mankind in the progress of the exploration and use of outer space. Article 1 states that the 'exploration of outer space … shall be the province of all mankind'; and Article 4 states that 'States Parties to the Treaty shall regard astronauts as envoys of mankind in outer space'. Fasan argues these passages could not be seen as a mere eulogy, with no legal meaning.[166] Fasan quotes Lachs as saying, 'even ... general formulae have their meaning'.[167] Fasan thus argues that these references required the establishment of an institution to represent humanity and/or regulate activities in space comparable to the International Seabed Authority later established under UNCLOS. [168] He states:

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[160] Gorove, (1972), 393.

[161] M Lachs, S Hobe, & TL Masson-Zwaan, *The law of outer space : an experience in contemporary law-making* (Martinus Nijhoff Publishers 2010), at 22.

[162] UNGA Res 1348/XIII (1958).

[163] UNGA Res 1472/XIV (1959).

[164] UNGA Res 1721/XVI (1961).

[165] UNGA Res 1884/XVIII (1963); UNGA Res 1962/XVIII (1963); Principle 1 of UNGA Res 1962/XVIII (1963); Principle 9 of UNGA Res 1962/XVIII (1963); Resolution 1962 further recognised 'the great prospects opening up before Humankind as a result of man's entry into outer space' and declared that the exploration and use of outer space shall be carried on for the benefit and in the interests of all Humankind

[166] Ernst Fasan was an Austrian scholar and lawyer; he was among the pioneers of space law. Fasan was a member of the board of directors of the International Institute of Space Law. Fasan (1974), 127.

[167] Ibid 127.

[168] Ibid 130.

> perhaps the time has come for the law to move in the direction of recognizing humankind's interests, its rights and obligations, as distinct from those of the nation state, and provide for a fully representative international body with appropriate authority to act in its behalf.[169]

Given that Humankind is clearly the beneficiary of space exploration and is conceived of as the bearer of a domain and a heritage, and as having envoys, Fasan concluded that it was legitimate to consider Humankind as a new subject of international law.[170] One may therefore ask how 'humankind' can fit as a new subject within that system. Part of the answer is given in the ICJ's ruling in the 1949 *Reparation* case when it considered that:

> The subjects of law in any legal system are not necessarily identical in their nature or in the extent of their rights, and their nature depends upon the needs of the community ...[171]

This statement shows that legal subjects can differ in their characteristics and also implies that the legal nature of a subject is not fixed and depends on the specific needs and values of a society.

Fasan concludes that the notion of Humankind has a legal meaning and is undergoing the 'painful process of becoming a new legal subject of international law'.[172] According to Hobe, during the negotiation of the OST, it was remarked that 'mankind' was recognised by the treaty as a new subject of international law.[173] The representative of Argentina in the legal Subcommittee of UN COPUOS, after the completion of work on the OST, considered that the international community has recognised the existence of a new subject of international rights, namely humanity itself and thereby created *jus humanitatis;* and the international community has endowed this new subject of international law – humanity – the greatest common property (*res communis humanitatis*).[174] In this sense, it could be said that the OST contained obligations towards the international community as a whole rather than a nation, State, or individuals.[175] Even scholars who argued in favour of space mining, such as Jenks who considered that title to consumable resources can be acquired by extraction or use, were of the view that a permit or licence from the UN would be desirable 'to eliminate any uncertainty of title or international

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169 Gorove (1972), 394 – 395.

170 Fasan (1974), 130.

171 Recueil des arrêts, avis consultatifs et ordonnances de I.C., at 178 (1949)

172 Fasan (1974), 131.

173 Hobe & ors. (2017), 253 – 254.

174 UN document A/AC.105/C.2/SR.75 UN COPUOS Legal Subcommittee, sixth session, brief report of the seventy – fifth (opening) meeting, November 13, 1967, at 8.

175 Ibid, 253 – 254.

disagreement in the matter and to permit of any measures which may be desirable to avoid waste or contamination and to provide for resource conservation'.[176]

However, I believe that the current language in the OST and space resolutions does not expressly require the establishment of a representative body to act in the interests of all mankind, such as was created in UNCLOS. Article 137(2) UNCLOS explicitly provides 'mankind' with a separate, representative legal entity governing mining activity in the seabed area beyond national jurisdiction. This was neither the case in the OST nor in the MA. However, the idea that the exploration and use of outer space shall be the province of all mankind and is the common interest of all mankind tends to support the idea that exploitation should be governed by a representative body (*res communis humanitatis*) rather than by a free market approach (*res communis omnium*).

In this context, Cocca argues that what was or should be meant by *res communis* in space was *res communis humanitatis,* which entails a new subject of international law. States and a majority of scholars, however, have deduced the application of a *res communis omnium*/free market approach. Although we agree that the OST did not explicitly provide for any of these analogies, the text does, however, strongly imply the application of a *res communis humanitatis* approach. Cocca, however, went further by claiming that the benefits obtained in space belong to Humankind, which includes all human beings.[177] He seemed to favour a double approach where *res communis humanitatis* entails (i) establishing a body representing all humankind; and (ii) some form of financial sharing of benefits, as States or corporations that exploit those resources do so on behalf of all humanity.[178] Such conclusions go well beyond what the text of the OST will support. The sharing of benefits in a strict financial sense was unlikely to have been intended by the drafters of the OST. Indeed, the sharing of benefits provision in the Moon Agreement had made developed States reluctant to join the treaty. If the OST were understood to impose an equal distribution of the riches of space, developed countries would have rejected the language at the time.[179]

In short, the concept of *res communis humanitatis* could theoretically lead to three key implications: (i) the creation of a representative body for humankind, (ii) regulating space activities, including the issuance of permits for resource use, and (iii) the equitable sharing of benefits derived from space resources. However, the language of the OST does not explicitly provide for the principle of *res communis humanitatis*, nor the principle of *res communis omnium*. The language of the OST, along with previous resolutions and statements during the negotiation stage, seems to –

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[176] Jenks (1965) 275.

[177] Cocca (1964), 3.

[178] Ibid, 3–5.

[179] Megan Alexa MacKay, 'Property Rights in Celestial Bodies: A Question of Pressing Concern to All Mankind' (2020) 104 *Marq L Rev*, at 588.

at least implicitly - suggest a leaning towards the *res communis humanitatis* approach. Given the lack of explicit language in the OST, some States decided to use this gap to their advantage and interpret the treaty through a *res communis omnium* lens. In good faith, States could—and arguably should—have embraced the *res communis humanitatis* interpretation to reflect the collective interests of humankind. However, States chose a different path, opting not to concretize the *res communis humanitatis* principle in their interpretation of the OST.

In conclusion, this section has shown that the freedom of the high seas, the continental shelf doctrine, and the *res communis* principles are all analogies ill-suited to the space context. There are no gaps for these principles to fill, and if there are, they must be found within the four corners of the treaty.

5 Conclusion

This article has examined whether the concept of 'use' of outer space includes space mining and whether space mining amounts to national appropriation. This examination was conducted solely as a matter of treaty interpretation based on what States and commentators understood at the time the OST was drafted, and regardless of any subsequent customary developments or interpretative practices in international space law. Section 2 interpreted the prohibition on national appropriation in Article II of the OST, in the light of the history of space law, and the state of the legal literature at the time. The conclusion reached is that Article II went further than prohibiting the acquisition of territorial sovereignty by prohibiting property rights in space. Section 3 supported this analysis by examining the *travaux préparatoires* in which some States expressed their understanding of Article II as prohibiting the acquisition or creation of property rights. Section 4 addressed the application of other legal doctrines or principles by analogy to create a regime governing the exploitation of space resources. These include arguments based on the Continental Shelf Convention, the freedom of the high seas under customary international law, or the High Seas Convention, as well as the *res communis* principle. Both the CSC and the HSC are inappropriate legal analogies as their application beyond the sea to a completely different domain is dubious. *The res communis* principle, on the other hand, is at best a gap-filling principle. It cannot, therefore, be applied to override a positive rule of treaty law, such as Article II of the OST. This chapter further argued that a *res communis humanitatis* approach ought to be deduced from the language of the OST and space resolutions, rather than an approach based on a *res communis omnium*. The key difference is that the former implies the establishment of a regulatory body to act on behalf of 'mankind', whereas the latter would allow a system of 'first come, first served' exploitation similar to the freedom of fishing on the high seas.

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'There was an academic friend here — where are you?'
by Samir Harb (Instagram: Samir_harbsss)
In memory of Dr Wiesam Essa (1975—2024)
and all the scholars who have been tragically killed in Gaza
by the Israeli war machine.

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