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IS IT NECESSARY TO DRAFT A NEW OUTER SPACE TREATY FOR THE TWENTY-FIRST CENTURY?

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Dedicated to Polish Ambassador Andrzej Misztal (in memoriam 1968–2025), who recognized in me a passion for learning and welcomed it with kindness, attentiveness, and respect—an enduring memory that continues to inspire me. May the Creator of the Cosmos and the Earth embrace his soul in eternal glory.

Purpose: *to describe and study the 1967 Space Treaty in the context of current space activities involving new subjects and objects of law. The document highlights the Treaty's continued relevance due to its broad and general wording, which allows it to address a wide range of cases, while questioning the necessity of drafting a new Space Treaty for when mankind sets foot on Mars.* ***Research methods:*** *study of specialized bibliography and the Corpus Iuris Spatialis, and analysis of information related to space industry. In addition, the author conducted interviews with space law experts and professors Robin J. Frank, Frans G. von der Dunk, and Marta Gaggero Montaner, which are included in the Interview Appendix.* ***Results:*** *1) Articles II, III, IV, V, VI, VII, VIII, IX, XI and XIII, are legal limitations to the principle of freedom of exploration and use enshrined in Article I of the 1967 Space Treaty; 2) Today, new terms and definitions are being developed not only within UNCOPUOS but also through the national space legislation of countries with space capabilities; 3) For mankind to set foot on Mars in a sustainable manner and establish permanent human and AI-operated settlements, the U.S. and the People's Republic of China, current spacefaring superpowers, will need to adopt common and binding international rules applicable to all, for the greater good and the survival of our species.* ***Discussion:*** *is it realistic for us, as space lawyers, to consider the possibility of drafting a new Space Treaty for the twenty-first century? Does the classical characteristic of predictability of space law urge us to act?*

Key words: *1967 Space Treaty; commercial space activities; Corpus Iuris Spatialis; hybridization of new subjects and objects of law; Space Law; spacefaring superpowers; UNCOPUOS.*

Problem statement and its relevance. Today, in the context of the United States of America (hereinafter "U.S."), private sector companies are operators and owners of space transportation systems [1], and national space legislations over the years have created new legal terms such as "space flight participants" [2] and "government astronauts" [3], both of which are of utmost importance in commercial space flights, where a particular hybridization of subjects and objects of law occurs

when, for example, a private company such as SpaceX provides transportation services to and from the International Space Station (hereinafter "ISS") for the National Aeronautics and Space Administration (hereinafter "NASA") in its current role as client.

At the same time, so-called "private astronauts" [4] such as Jared Isaacman, who successfully completed the first private spacewalk on September 12, 2024, with the Polaris Dawn mission, lack a specific legal term and definition in codified international instruments. Are these new subjects of law "envoys of mankind" as provided for in Article V of the 1967 Space Treaty?

On the other hand, since 2015, new national space legislations around the world have defined terms such as "space resource" [5] without having first reached consensus within the United Nations Committee on the Peaceful Uses of Outer Space (hereinafter "UNCOPUOS"), and multilateral initiatives such as The Artemis Accords expresses terms such as "commercial partners", "commercial utilization" and "commerce" [6] in its text; all of which, in reality, reverses o modifies the classic logic of the creation of space law.

As Argentine Professor Manuel Augusto Ferrer (Jr.) stated almost 50 years ago, the "communis opinio generalis" that is, the coinciding work of doctrine and the Resolutions of the United Nations General Assembly (hereinafter "UNGA"), is what has historically created international space law [7], but as can be seen, currently, not all terms or new subjects and objects related to space activities originate from it. Does this phenomenon create the need to draft a new Space Treaty for the twenty-first century? This is the main question the study seeks to answer.

Analysis of recent research and publications. The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (hereinafter "1967 Space Treaty") was adopted by UNGA Resolution 2222 (XXI) on December 19, 1966, it was opened for signature on January 27, 1967, in London, Moscow and Washington D.C., and entered into force on October 10, 1967. As of January 1, 2025, it has 116 States Parties [8].

One of the fundamental characteristics of the 1967 Space Treaty is that its principles and precepts were forged in broad and general wording, which opened the door to debate among multiple legal doctrines over time and has enabled its continued validity despite not defining in detail central terms such as "outer space", "celestial bodies", "province of all mankind," "peaceful purposes," "astronauts", "envoys of mankind", "national activities", "appropriate State Party", among others [9].

In this regard, Professor Sergio Marchisio states that "the entire Outer Space Treaty contains general prescriptions rather than detailed rules" [10] and Professor Frans G. von der Dunk argues that "though providing for at least as much provisions wide open to various interpretations as clear law, has with its grand scheme provided the foundations for all the rest of space law, and for that reason alone it has always captured the imagination" [11].

In this context, Professor Bin Cheng states that "the Space Treaty was born from the need to determine the legal status of celestial bodies before man's landing on the moon, and based on a tacit agreement on the part of the super powers to forgo territorial claims and military activities on all celestial bodies" [12]. In other words, as Professor Robin J. Frank responded to the author for this study, there are terms of the Space Treaty that were not defined in detail for pragmatic reasons and to achieve consensus [13].

The international community has not yet used the amendment mechanism provided for in Article XV of the 1967 Space Treaty, which would allow for the redefinition, addition, and new definition of terms that have emerged with technological development and human and Artificial Intelligence (hereinafter "AI") activities in outer space. Perhaps no progress has been made on this issue so far to avoid opening what space law scholars have called a "Pandora's box" [14], which would distort the legal regime governing space.

But the truth is that two of the fathers of space law in the world, Professor José Monserrat Filho and Professor Bin Cheng, have written about the need to update the 1967 Space Treaty or even create new space conventions. Professor Filho states that after "years of profound political changes and rapid scientific and technical advances in the world,

this key text really needs to be updated, if only to maintain its high prestige and be accepted by countries that have not yet ratified or signed it" [15]. However, he clarifies that Articles I and II of the 1967 Space Treaty should not be altered. And Professor Cheng argues that "as commercial development in outer space gathers pace, there is a need, and, in many cases, an urgent need, for the new international agreements (…) It is earnestly to be hoped that our perception in the matter will not fall on deaf ears but will be shared by all the powers that be" [16].

Purpose of the paper. In light of Argentine Professor Aldo Armando Cocca's doctrine that "the space lawyer perfects and refines every legal institution, however classic it may be, that comes within the scope of his task, in order to construct this new edifice of law" [17], the paper will describe and study the 1967 Space Treaty and apply it to the facts of the present in order to arrive at conclusions. Scholarly opinions of distinguished experts in space law and professors Robin J. Frank, Frans G. von der Dunk, and Marta Gaggero Montaner will also be shared in the Interview Appendix. All three provided answers along the same lines to the question posed in the title of this research: two said it is unrealistic, and one responded that it is pessimistic about the possibility [18], all contrary to the author's opinion.

"The work of doctrine is of decisive importance in this matter; it is a work of creation, on the one hand, and of consensus, on the other. Without these two stages fulfilled by doctrine, we would not have space law" [19]. Therefore, the contribution made by this paper is to consider the possibility of drafting a new Space Treaty for the twenty-first century. If the principal consensus and political will of two spacefaring superpowers in the 1960s crystallized in the 1967 Space Treaty, complemented by the participation of other States, then it can be said that, with new commercial space activities and the real possibility for mankind to set foot on Mars in a sustainable manner and establish permanent human and AI-operated settlements at some point in the twenty-first century, the U.S. and the People's Republic of China, i.e., today's spacefaring superpowers, will need to balance their geopolitical interests in outer space to help create new binding international rules that include new subjects and objects of law for the greater good, the future, and the survival of our species.

Summary of the main research material.

I. Brief Overview of the 1967 Space Treaty

"(…) particularly from the perspective of the future commercial development of space, those areas of law which require clarification, improvement, and further regulation, and thus stand in need of new treaties" [20]

Bin Cheng

Article I of the 1967 Space Treaty establishes 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 [21].

It also states that space activities must be implemented without discrimination of any kind, on a basis of equality and in accordance with international law, that there shall be free access to all areas of celestial bodies, and that freedom of scientific investigation and international cooperation shall be facilitated and encouraged by States [22].

Thus, this article enshrines freedom as the core legal principle of space law, which sets it apart from other branches of law applicable to the Earth, the sea, and airspace, whose fundamental legal principle is sovereignty.

Brazilian Professor José Monserrat Filho refers to Article I of the 1967 Space Treaty as the "common good clause" as it ensures the activities of private companies are carried out in accordance with the international public interest [23]. However, the article it does not provide a precise definition of "outer space", "celestial bodies" or "province of all mankind". This broadness of terms has allowed both economic and non-economic objectives to be pursued in outer space.

As Argentine Professor Silvia Maureen Williams argues: "The starting point for upholding the legitimacy of private enterprise activities in space is, first and foremost, Article I of the 1967 Treaty, which enshrines freedom of access, as well as freedom of exploration and use" [24].

Article II of the 1967 Space Treaty prohibits national appropriation of outer space, including the Moon and other celestial bodies, by claim of sovereignty, by means of use, occupation, or any other means, which to date has been the basis for avoiding international military disputes in outer space and celestial bodies. It is one of the main guarantors of peace in outer space, and constitutes the first legal limitation to the principle of freedom of exploration and use set forth in Article I.

It should be noted that the term "exploitation" was not added to the 1967 Space Treaty but was subsequently included in Article 11.5 of the 1979 *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies* (hereinafter "MOON").

"The idea of exploitation has strong commercial connotations and clearly suggests the placement of resources on the terrestrial market" [25], but it is important to note that current spacefaring superpowers, such as the U.S. and the People's Republic of China, have not signed this international instrument because Article 11.5 MOON links the term "exploitation" with the legal status of the Moon's natural resources as the "common heritage of mankind", which implies the creation of an international regime to govern the equitable sharing of the benefits derived from those space resources.

The Argentine Republic has not ratified MOON either, even though one of its main promoters and drafters was the Argentine Professor Aldo Armando Cocca, who proposed the legal status of "common heritage of mankind" to be applied for outer space in August 1954 at the 5th International Astronautical Congress (IAC), held in Innsbruck, Austria [26]. This legal status, also known by the Latin term "res communis humanitatis", continues to cause heated controversy within UNCOPUOS. The widespread and historic rejection by spacefaring superpowers and part of the international community has resulted in only 17 states being party to MOON since 1979 (Saudi Arabia withdrew from this international agreement on January 5, 2023).

The author of this paper, as a member of the International Institute of Space Law's delegation at the Sixty-third session of the Legal Subcommittee of UNCOPUOS, held from April 15 to 26, 2024, at the Vienna International Centre, Austria, was able to verify that the concept of "common heritage of mankind" is the reason why, for example, the People's Republic of China has not signed MOON. At the cited international session, Professor Gao Guozhu from Beihang University (BUAA, formerly as Beijing University of Aeronautics and Astronautics) said: "Some words in the OST are obscure (…) What is the meaning of peaceful purposes? (…) Some words cannot be explained or interpreted. For example, what is common heritage of mankind? You tell me—is it a legal term? No! It is a political term. And I ask you a question: who will leave the heritage to you? You cannot answer… Oh, it is so difficult! I do not know" [27].

On the other hand, historically, South American doctrine has established a completely different position on this issue, and there is even an interpretation that links the legal status of "common heritage of mankind" with the term "province of all mankind" established in Article I of the 1967 Space Treaty. This standpoint, defended by Ambassador Héctor Gros Espiell, Uruguayan diplomat, international criminal lawyer, and politician, considers that recognizing humanity as an entity from a legal point of view and as the owner of a common heritage was intrinsically a revolution [28]. However, the U.S. interpretation of the possible relationship between the terms "province of all mankind" and "common heritage of mankind" maintains they are completely unrelated.

This is confirmed in U.S. Executive Order 13914, issued by President Donald J. Trump on April 6, 2020, and entitled "Encouraging International Support for the Recovery and Use of Space Resources", which directs the Secretary of State "to object to any attempt by any other state or international organization to treat the Moon Agreement as reflecting or otherwise expressing customary international law" [29].

Subsequently, The Artemis Accords omit any reference to that international agreement and establish the following in Section 10 regarding space resources: "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" [30].

Article II of the 1967 Space Treaty has served for decades as a barrier to interests that could indirectly lead to military action in outer space. However, its current interpretation is at stake, as since 2015 some countries have begun to define the term "space resource" in their national space legislations, i.e., outside UNCOPUOS debates [31].

The fifth country in the world to include this term in its national space legislation was the Federative Republic of Brazil, through Law No. 14.946 of July 31, 2024, which in Chapter I, Article 2, item XII, defines "space resource" as a "natural resource originating from a celestial body" [32]. Chapter II, Article 3, item IX, refers to the "exploration of space resources" [33]. It is a noteworthy attempt; however, perhaps future State and private sector practice will contribute to further clarity and more precise terminology.

In response to these national developments, in 2021, at the 60th Session of the Legal Subcommittee of UNCOPUOS, the international community agreed to create a "working group under the agenda item on the general exchange of views on potential legal models for activities in the exploration, exploitation and utilization of space resources of the Legal Subcommittee", chaired by Polish Ambassador Andrzej Misztal and vice-chaired by Australian Professor Steven Freeland [34].

The workplan was established for five years and includes gathering information through presentations by interested parties. In 2025, Professor Freeland was named chair of this working group due to the passing of Ambassador Misztal in January 2025, and Professor Ayman Mahmoud Mohamed Ahmed from Egypt was named vice-chair. As of 2025, there is still no consensus concerning the term "extraction" and its interpretation under Article II of the 1967 Space Treaty in the initial draft set of recommended principles for space resource activities [35].

Article III of the 1967 Space Treaty establishes that States Parties shall conduct their space activities in accordance with international law, the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international cooperation and understanding. This constitutes another legal limitation to the principle of freedom of exploration and use enshrined in Article I.

Article IV of the 1967 Space Treaty prohibits the placement in orbit around the Earth of objects carrying nuclear weapons or other types of weapons of mass destruction, as well as their emplacement on celestial bodies or in outer space. However, it does not define the terms "nuclear weapon", "weapon of mass destruction" or "peaceful purposes".

Second paragraph of this article does not mention the term "outer space". This omission "was intentional and designed to permit States to be able to carry out certain space activities for military purposes, such as the use of reconnaissance satellites" [36]. The only two clear prohibitions expressed in this article do not address the use of conventional weapons or other military activities in outer space. Moreover, in the twenty-first century, the line between commercial and governmental space activities has become increasingly blurred. This raises the following question: does the 1967 Space Treaty prohibit the use of anti-satellite weapons?

Article V of the 1967 Space Treaty does not define the term "astronauts" but assigns them the legal status of "envoys of mankind" and stipulates that the State of Registry of the spacecraft determines where they must be returned safely and without delay in the event of accident, danger, or forced landing in another State. In the U.S. context, the Commercial Space Launch Amendments Act of 2004 defines, among other things, the terms "crew", "suborbital rocket", "suborbital trajectory" and "space flight participant", which is "a person, other than a crew member, carried inside a launch or reentry vehicle" [37].

In turn, the U.S. Space Launch Competitiveness Act of 2015 has created the roles of "government astronaut" and "international associate astronaut". The former is designated by NASA and transported inside a launch vehicle or reentry vehicle in the course of their work, and the latter is designated in accordance with Article 11 of the Intergovernmental Agreement on the ISS and qualifies as a crew member [38].

At the time the 1967 Space Treaty was created, the idea of tourists traveling to outer space was not part of the context or legal debates of those years.

In other words, Jared Isaacman, one of the private astronauts of the Polaris Dawn mission who performed the first private spacewalk on September 12, 2024, lacks a specific legal definition in codified international instruments [39]. What is a private astronaut? Is an envoy of mankind as provided in Article V of the 1967 Space Treaty? Is it time to put Article XV into action, which establishes the possibility of applying amendments to the Treaty? Will this open the "Pandora's box"? [40].

Article VI of the 1967 Space Treaty establishes, as a general principle, the international responsibility of States for national activities carried out in outer space, including the Moon and other celestial bodies, by governmental agencies or non-governmental entities. The latter shall require authorization and continuing supervision by the appropriate State.

On this last point, current space activities in which private third parties interact with States have made increasingly common the view held by Professor Bin Cheng regarding the possibility that there may be more than one appropriate State related to a space object and, according to Art. II, item 2, of the 1975 *Convention on Registration of Objects Launched into Outer Space*, even jurisdiction and control may be divided through the issuance of free arrangements among launching States [41].

Article VI also contemplates the international responsibility of international organizations, and its final wording is the result of a mixture of two conflicting geopolitical views: the former Soviet Union position, which advocated that space activities be carried out exclusively by States and not by non-governmental entities, and the U.S. approach, which proposed that space activities be open to such actors [42] with the obligation to authorize and continuously supervise them.

Space responsibility regime is broad, and it was created to widely attribute international responsibility to all States involved in the launch of a space object. Therefore, according to this article, the space activities of non-governmental entities are assimilated to those carried out by States themselves bearing direct international responsibility and liability for them. "This assimilation and consequently the assumption by the contracting States of direct States responsibility for non-governmental space activities is a fundamental innovation which the Treaty has introduced into international law" [43]. "This is where Article VI is not merely innovatory. It is almost revolutionary. Under it, it appears that States have assumed direct State responsibility for non-governmental national space activities" [44].

Article VII of the 1967 Space Treaty establishes four categories of launching States which make them internationally liable in the case of damage to another State or to its natural or juridical persons on the Earth, in air space or in outer space, including the Moon and other celestial bodies. Because space activities are highly risky in nature, strict liability was established in the 1967 Space Treaty as a general principle.

It should be noted that the provisions of Article VII of the 1967 Space Treaty are contained in Articles I, II, and III of the 1972 *Convention on International Liability for Damage Caused by Space Objects* (hereinafter "RESP"), which provides for applying absolute liability for damage caused by a space object on Earth or an aircraft in flight, and fault liability for damage caused outside the Earth's surface to space objects in orbit, or to persons or property on board. Articles VI and VII of the 1967 Space Treaty, together with RESP and Article VIII that follow it, should be analyzed in a specific case as a block, as all these norms represent another legal limitation to the principle of freedom of exploration and use stated in Article I of the 1967 Space Treaty.

Current international space treaties do not yet address emerging legal issues arising from autonomous AI-deployed space objects and future AI-operated settlements on the Moon, Mars, and other celestial bodies, including, for example, details related to liability exemptions. Accordingly, new rules concerning AI in outer space are required. Due to the specificity of this topic and space constraints, this will be analyzed in a separate forthcoming paper.

Article VIII of the 1967 Space Treaty provides that the State 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. Furthermore, this article states that ownership

of objects launched into outer space, including objects landed or constructed on a celestial body, and of their component parts, is not affected by their presence in outer space or on a celestial body or by their return to the Earth.

Unlike territorial jurisdiction or jurisdiction over persons that a State may exercise, this article provides quasi-territorial jurisdiction [45] that supersedes the jurisdiction of the national State of the astronauts or crew members of the spacecraft and overrides the jurisdiction of the launching States concerned. This is also a legal limitation to the principle of freedom of exploration and use stated in Article I of the 1967 Space Treaty.

Article IX is the longest article in the 1967 Space Treaty and has its origins in the "West Ford Experiment" of 1961 and 1963. It establishes the general principles of international cooperation and mutual assistance, as well as the classic "due regard" to the "corresponding interests" of all other States.

The principle of international cooperation is fundamental to fostering actions aimed at reducing serious risks in outer space, including the Moon and other celestial bodies. It also ensures that space activities are carried out in accordance with the principle of peaceful purposes. These two fundamental space principles work in tandem with the principle of transparency and with confidence-building measures (TCBMs).

The notion of "due regard" means that a State conducting a space activity may exercise the principle of freedom of exploration and use to outer space, provided that the activities of other States are not jeopardized. The concept of "corresponding interests" implies that space activities cannot be guided by unilateral interests; rather, a State, while safeguarding its own interests, must also respect and protect the rights of all other States.

Article IX of the 1967 Space Treaty also provides that States shall conduct their space exploration in such a manner that no "harmful contamination" or adverse change in the Earth's environment is caused by the introduction of extraterrestrial matter into it. Therefore, this article incorporates the environmental protection of outer space. In addition, international environmental instruments apply to space activities through Article III of the 1967 Space Treaty, which stipulates that the exploration and use of outer space must be carried out in accordance with international law.

The final part of Article IX of the 1967 Space Treaty establishes an international consultation mechanism to avoid obstacles that could harm the activities of States and the space environment. The purpose is to avoid potentially "harmful interference" in outer space. The State where the activity arises is obliged to hold consultations in advance, before authorizing the start of the space activity in question. For its part, the State that detects a potential space activity that could cause harmful interference may request consultations not only before but also during the activity or experiment.

In other words, Article IX of the 1967 Space Treaty constitutes another legal limitation on the principle of freedom of exploration and use provided in Article I.

The absence of a definition of space debris in the 1967 Space Treaty is a legal vacuum that is also repeated in the other international instruments of the Corpus Iuris Spatialis, and it is understood because of the historic context where these instruments were drafted. Although the 2007 Space Debris Mitigation Guidelines of UNCOPUOS exist, they do not establish a mechanism for removing this type of orbital fragments [46].

However, The Pact for the Future, promoted at the 79th United Nations General Assembly (hereinafter "UNGA79") on September 22, 2024, in its Action 56 encourages UNCOPUOS to further consult on the proposal to hold a fourth United Nations Conference on the Exploration and Peaceful Uses of Outer Space (hereinafter "UNISPACE IV") in 2027. This resolution also reaffirms the importance of a widest adherence to and full compliance with the 1967 Space Treaty and to discuss the establishment of new frameworks for space traffic, space debris and space resources through UNCOPUOS, and invites to "the engagement of relevant private sector, civil society and other relevant stakeholders, where appropriate and applicable, to contribute to intergovernmental processes related to the increased safety and sustainability of outer space" [47]. UNISPACE IV will be a great opportunity for space law to regain its classical characteristic of predictability [48].

Article X of the 1967 Space Treaty promotes the principle of international cooperation in space activities and provides that States shall examine on equal footing requests made by other States to be given an opportunity to observe the flight of space objects launched. Article XI also promotes the principle of international cooperation so that States inform the public and the international scientific community about nature, progress, location, and results of their space activities. Thes article also constitutes a legal limitation on Article I of the 1967 Space Treaty.

Article XII of the 1967 Space Treaty provides that all stations, installations, equipment, and space vehicles located on the Moon and other celestial bodies shall be accessible to representatives of other States based on reciprocity. The intention to visit must be notified in advance. Article XIII establishes that the provisions of the Treaty apply whether space activities are carried out by a single State to the Treaty or jointly with other States, including cases where they are carried out within the framework of international intergovernmental organizations. This provision constitutes yet another legal limitation on the principle of freedom of exploration and use enshrined in Article I and may be regarded as a visionary norm in view of the ongoing space race of the twenty-first century.

Article XIV of the 1967 Space Treaty contains procedural rules, such as its opening for signature and ratification by all States, its entry into force, and its registration in accordance with Article 102 of the Charter of the United Nations. It should be noted that, as previously informed. Article XV provides that each State Party may propose amendments to the 1967 Space Treaty. Article XVI refers to the manner of withdrawing from the Treaty and the date on which this action takes effect and Article XVII states that the Chinese, English, French, Russian, and Spanish texts are equally authentic and that the Treaty shall be deposited in the archives of the depositary Governments, among other relevant procedures.

Conclusions. The 1967 Space Treaty demonstrates that no right is absolute. Articles II, III, IV, V, VI, VII, VIII, IX, XI, and XIII constitute legal limitations on the fundamental principle of freedom of exploration and use enshrined in Article I. Moreover, the Treaty's broad and general wording enables it to cover a wide range of situations, which accounts for its enduring relevance over decades. However, the erosion of the "communis opinio generalis" as the classical creator of international space law within UNGA is a reality, and it is likely that new States will continue to adopt national space legislation defining terms absent from existing international space law, as has been the case since 2015 with the issue of space resources. In this context, it is urgent to seek mechanisms for unifying terminological interpretations through the drafting of a new Space Treaty for the twenty-first century, as well as updates to space conventions that remain consistent with the foundational principles of space law and consider new phenomena, such as autonomous AI-deployed space objects in outer space and celestial bodies, among other issues.

The three experts interviewed for this study concur that, at present, proposing a new Space Treaty for the twenty-first century is not realistic. The path forward they propose lies instead in continuing to develop non-binding mechanisms and instruments of international cooperation to include and clarify the subjects and objects of law studied.

The convening of UNISPACE IV in 2027 will represent a significant opportunity for space law to recover its classic characteristic of predictability, given that Action 56 of The Pact for the Future presented at UNGA79 encourages the creation of legal frameworks addressing space traffic, space debris and space resources.

New commercial activities in outer space, together with human-crewed and AI-operated missions to Mars, could constitute a point of equilibrium whereby the space and technological capacities of the U.S. and China—today's two spacefaring superpowers, each pursuing similar objectives—may converge. Such balance of interests could pave the way for the negotiation of a new Space Treaty for the twenty-first century and the establishment of a permanent human presence on the Moon, Mars, and other celestial bodies, and new orbits.

Interview Appendix. The following interviews were conducted specifically for this paper with three distinguished experts in space law. Interviewer: Professor Álvaro Andrés Erices Bravo, lawyer and professor of Space Law at the Faculty of Law

of the University of Buenos Aires, Argentine Republic. Interviewees: Professor Robin J. Frank[1] (U.S.), Professor Frans G. von der Dunk[2] (The Netherlands) and Professor Marta Gaggero Montaner[3] (Oriental Republic of Uruguay). Date of the interview: March–April, 2024.

1. Is it necessary to redefine terms in the 1967 Space Treaty? For example: "outer space", "province of all mankind", "peaceful purposes", among others.

Professor Robin J. Frank: I believe the terms were not defined further when the treaties were negotiated for pragmatic reasons – that is, the effort to achieve consensus. I think that no new broad, overarching definitions are likely to be agreed upon. I think a pragmatic, issue specific approach (e.g. scientific investigations, cultural heritage, utilization of different resources, coordination and consultation mechanisms, transparency mechanisms) is more likely to gather broad multilateral support.

Professor Frans G. von der Dunk: As a law professor I would say 'yes', it is important to (better) define those terms as much (read as precisely) as possible, as this allows for more fruitful discussions on how to draft new international as well as national laws pertinent to those issues. For instance, the divergent attitude of States to where, vertically speaking, their airspace sovereignty gives way to the global commons of outer space, is not helpful since, generally speaking, States much prefer to know the extent of their legal powers and responsibilities – compare, for purposes of reference, the law of the sea.

Professor Marta Gaggero Montaner: It is true that the Outer Space Treaty does not define many terms, which sometimes creates uncertainty regarding the application and interpretation of space law. For example, there has been debate as to whether the term "province of all mankind" can be equated with "common heritage of mankind". Argentine professor Aldo Armando Cocca formulated the principle in 1954 and stated in the COPUOS Legal Subcommittee in 1967 that the international community had already recognized the existence of a new subject of law, humanity, which had been granted ownership of outer space, including the Moon and other celestial bodies ("res communis humanitatis"). Dr. Héctor Gros Espiell (Uruguayan diplomat, international criminal lawyer, and politician) asserted that the expression "common heritage of mankind" had acquired, thanks to the Moon Agreement, an unquestionable legal content, which would give rise to discrepancies, but that its legal nature could not be denied. He considered that recognizing humanity as an entity from a legal point of view and as the owner of a "common heritage" was intrinsically a revolution. I agree that the principle of the "common heritage of mankind" should be interpreted in accordance with the provisions of the 1979 Moon Agreement, in particular Article 11.

2. Should terms be added to the 1967 Space Treaty that consider current technological advances? For example: Artificial Intelligence (AI), Space Debris, Space Traffic Management, Space Resources, among others.

Professor Robin J. Frank: I do not think it is realistic to try to define terms in multilateral treaty-based documents. Using non-binding multilateral cooperative mechanisms – like the Long-Term Sustainability Guidelines and the 1996 Space Benefits Declaration, bilateral and regional binding instruments (including treaties and contracts), national laws, and contracts between private companies is more likely to be successful. The approach of the 1987 Missile Technology Control Regime

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(MTCR), as amended and extended far beyond the original G-7 participants, is an example of a multilateral non-binding understanding that is then implemented by national laws (such as the United States' International Traffic in Arms Regulations (ITAR) and Export Administration Regulations (EAR) regulations).

Professor Frans G. von der Dunk: The problem with formally adding such terms – and then, presumably 'doing something with them', meaning drafting legal principles or rules on the basis thereof – is that it requires following the formal amendment procedure, which in the eyes of many opens up a Box of Pandora and in the worst case might well mean the end of a coherent legal framework for space activities.

Professor Marta Gaggero Montaner: Existing international space treaties per se do not cover the issues arising from the potential use of AI technologies, whether it be the 1967 Outer Space Treaty or the 1972 Liability Convention. To resolve the relationships arising from the use of AI technologies, States could consider several options: adopting a new international treaty; amending existing treaties; or adopting an interpretative declaration. In this regard, the role of national legislation, which is frequently used to regulate certain issues, becomes important as it can offer some legal certainty.

3. Is it necessary to draft a new Outer Space Treaty for the twenty-first century?

Professor Robin J. Frank: If there was sufficient political will to do so that would be ideal from my personal multilateralist perspective but, at the present time at least, I don't think it is necessary or realistic. The gamut of multilateral treaties and other instruments and fora to advance peaceful uses of outer space is sufficient to address the real issues likely to arise over the next generation.

Professor Frans G. von der Dunk: Whether necessary or not, it is not realistic, which means that I think the obvious need for adaptation and elaboration of many of its rules and principles should be undertaken by a different route. Further to my previous point: amendment of the OST (and the follow-on treaties) would not seem to be the best way. A protocol or additional convention would at least have the advantage (over customary international law and 'soft law') of clarity in legal terms, but currently it seems rather unlikely, given the general geopolitical climate, that such a new legally binding document would be acceptable to all the major spacefaring nations, which is necessary if such new law is to create true progress.

Professor Marta Gaggero Montaner: While I understand that an update or revision of the Outer Space Treaty is necessary, I am pessimistic about achieving a consensus like the one reached in the 1960s and 1970s. I think the best thing would be to maintain the Outer Space Treaty, the "Magna Carta of Outer Space", which achieved such widespread adherence and whose cardinal principles must be respected and complied with. They could be modified, if necessary, through the formulation of principles, guidelines, or directives, which should then be incorporated into the domestic legislation of States. Let us not forget that many of the principles of the Outer Space Treaty are considered by most legal scholars to be customary international law (jus cogens) and are therefore applicable to those States that have not ratified it.

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ЧИ НЕОБХІДНО СКЛАСТИ НОВУ КОСМІЧНУ КОНВЕНЦІЮ ДЛЯ XXI СТОЛІТТЯ?

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Мета: *описати та дослідити Договір про космос 1967 року в контексті сучасної космічної діяльності, що включає нові суб'єкти та об'єкти права. У документі підкреслюється актуальність Договору завдяки його широкому та загальному формулюванню, що дозволяє йому розглядати широкий спектр справ, водночас ставлячи під сумнів необхідність розробки нового Договору про космос на момент, коли людство ступить на Марс.* ***Методи дослідження:*** *вивчення спеціалізованої бібліографії та Corpus Iuris Spatialis, а також аналіз інформації, пов'язаної з космічною галуззю. Крім того, автор провів інтерв'ю з експертами з космічного права та професорами Робіном Дж. Франком, Франсом Г. фон дер Дунком та Мартою Гаджеро Монтанер, які включені до Додатка до інтерв'ю. Результати: 1) статті II, III, IV, V, VI, VII, VIII, IX, XI та XIII є правовими обмеженнями принципу свободи дослідження та використання, закріпленого у статті I Договору про космос 1967 року; 2) сьогодні нові терміни та визначення розробляються не лише в рамках UNCOPUOS, але й через національне космічне законодавство країн, що мають космічний потенціал; 3) щоб людство могло ступити на Марс у сталий спосіб та створити постійні поселення, що керуються людиною та штучним інтелектом, США та Китайська Народна Республіка, нинішні космічні наддержави, повинні будуть прийняти спільні та обов'язкові міжнародні правила, що застосовуються до всіх, заради загального блага та виживання нашого виду.* ***Обговорення:*** *чи реально для нас, як космічних юристів, розглянути можливість розробки нового Космічного договору на XXI століття? Чи спонукає нас класична характеристика передбачуваності космічного права до дії?*

Ключові слова: *Договір про космос 1967 року; комерційна космічна діяльність; Corpus Iuris Spatialis; гібридизація нових суб'єктів та об'єктів права; космічне право; космічні наддержави; UNCOPUOS.*

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