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THE ARTEMIS ACCORDS:

NEW PROVISIONS ON THE USE OF SPACE RESOURCES AND THE DECONFLICTION OF SPACE ACTIVITIES

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1. INTRODUCTION TO THE ARTEMIS PROGRAM

1.1 The birth of the Artemis program

The Artemis program is a space exploration program launched by the National Aeronautics and Space Administration (NASA) in collaboration with private commercial partners and international space agencies. It started in the United States under the administration of President Trump, who in December 2017 signed the Space Policy Directive-1[1] calling upon NASA to create "an innovative and sustainable program of exploration" that would put humans back on the Moon and pave the way for Mars exploration.

On 26 March 2019, basing on this directive, the National Space Council adopted a recommendation stating the goals expressed by the directive would be concretized by landing Americans on the Moon by 2024 and by establishing a sustainable human presence on the Moon by 2028. [2]

The program was named "Artemis," in reference to the deity of the Moon in Greek mythology, who was Apollo's twin sister. It is no coincidence that "Apollo" was the name given to the first mission that brought the first man on the Moon, in July 1969.

NASA's ambition is to reorganise the human landing on the Moon by 2024, keeping low the possibility of technical risks and, at the same time, carry out research on the lunar soil that can ensure a deeper knowledge of the Satellite and provide clues on the entire Solar System. The ability of NASA to respond quickly to presidential directives is rooted in fifty years of experience and preparation for returning to space, supported by the partnership with the US industry that has allowed the development of new technologies.

The willingness to open up the Artemis Programme to the international community was expressed by President Trump in his executive order of 6 April 2020.[3] According to it, in carrying out the exploration programme, the United State require foreign legitimization and acceptance, therefore the secretary of State is in charge to take appropriate measures to encourage international cooperation.

[1] Presidential Memorandum on Reinvigorating America's Human Space Exploration Program (SPD-1)". Issued on 11 Dec. 2017.

[2] Recommendations on Human Space Exploration. National Space Council (Mar.29,2019)

[3] Exec.Order No13,914, 85 Fed. Reg.20,381 (Apr.6,2020).

His duty is described as follows:

"The Secretary of State shall seek to negotiate joint statements and bilateral and multilateral arrangements with foreign states regarding safe and sustainable operations for the public and private recovery and use of space resources."[4]

On May 5, only one month after publication of the executive order, NASA announced that the participation of international partners would be regulated and subject to the signing of bilateral agreements, known as Artemis Accords.

1.2 The Artemis Program Overview

According to the NASA Advisory Council (NAC), the program is divided in two different phases, which differ in terms of timing and objectives, and composed of three different missions.

The first phase started in 2019 and it is expected to end in 2024. It is designed to be the first test of the exploration systems, comprising the Orion spacecraft, the Space Launch System (SLS) rocket and the ground systems at Kennedy Space Center, and it will include the first unscrewed test flight.

The first launch of the SLS and Orion is called Artemis 1, and it was planned for 2020, but several delays and rising costs have caused a change in planning, resulting in the postponement of the launch to 2022.

This first flight will enable the collection of engineering data needed for subsequent missions and will make it possible to assess the rocket's performance in the space environment.

The second phase is aimed at developing and improving the skills and technologies needed to establish a sustainable human presence on the moon. This step focuses on the study of the installation and mobility on the moon, as well as the use of resources. NASA uses the term "In-Situ Resource Utilisation" (ISRU) to refer to a series of sustainable infrastructures that will facilitate access to supplies and to the life-sustaining elements.

A very common and previously used type of ISRU is the exploitation of sunlight to generate power.

[4] Exec.Order No13,914, 85 Fed. Reg.20,381 (Apr.6,2020). Section 3.

Based on these studies and the data collected during the Artemis 1 mission, the second flight of SLS and Orion will be prepared, this time including a crew of four astronauts. The mission is called Artemis 2 and will last about 10 days, during which the crew will make two orbits around the Earth and it will be testing navigation and communication systems, which are essential to ensure their health and safety.

Artemis 2 was initially planned for 2022, but due to the substantial delay in the first mission, NASA is proposing a new deadline of 2024, a date considered uncertain by the NASA Office of Inspector General (OIG), which foresees a delay of up to 4 years before the start of operational flights.[5]

Meanwhile, the first modules of the Gateway, a space station orbiting the Moon, will also be launched into space. The Gateway will act as a reference point for expeditions and scientific research on the moon, becoming a cornerstone for all future deep space missions.

In fact, the Gateway is the first landing point of the third planned mission, Artemis 3. The crew will board the Gateway before being transferred to the landing system, with which they will descend to the Lunar South Pole.

Artemis 3 is currently planned between 2025 and 2026, and will last 30 days during which at least two moonwalks are planned, to conduct research and test technologies.

During this period, the crew will set up the Artemis Base Camp, which will remain in place once the mission is complete and will be used for future lunar landings, allowing the crew to remain on the lunar surface for up to two months at a time. In this perspective, the formation of the "Artemis Base Camp" at the Lunar South Pole, will not only represent the reference point for expeditions and studies on site, but is configured as a fundamental step to prepare the subsequent explorations, which look towards Mars.

1.3 The Lunar Gateway and the International Space Station

As mentioned above, the space station used for lunar missions will be the Lunar Gateway, which in addition to providing a foothold for astronauts, will include laboratories to conduct remote analyses and observations of lunar rocks. The Gateway is the result of the international collaboration between NASA, the European Space Agency (ESA), the Russian Space Agency (Roscosmos) and the Japan Aerospace Exploration Agency (JAXA).

[5] PULCRANO GIUSEPPINA , *Artemis sotto esame del congresso,* globalscience.it (Mar.4,2022).

The framework within which the Lunar Gateway has been discussed and designed is the one previously outlined through the negotiation of the 1998 intergovernmental agreement on the creation and use of the International Space Station (ISS).[6] The close relationship between the Lunar Gateway and the International Space Station in terms of use and planning allowed the parties not to sign a new agreement specifically for the new station, but to use an extension of the IGA made possible by an evolutionary clause present there in.[7]

Firstly, and with specific reference to the clause contained in the IGA, the task of the Partners is to cooperate in the proposals that the different countries put forward with the aim of expanding activity in space, provided that they maintain the peaceful purpose and comply with international law. In the third paragraph of Article 14 of the IGA, it is specified that the procedures for coordination are outlined in the respective Memoranda of Understandings. [8]

Secondly, the legal problems that characterised the ISS have provided answers applicable to both the Lunar Gateway and future bases on other celestial bodies. Both stations are modular and therefore assembled directly in orbit. This makes it possible to consider them not as a single large object but as an assembly of parts, which are subject to the control and jurisdiction of the launching state. In the following chapters, we will elaborate on this issue by shedding light on the relationship between the Artemis Accords and the Registration Convention, which completes their regulatory framework.

Finally, the ISS is already open for business for private industries, with the aim of boosting the space economy, a sector that is expected to create strong revenue potential. The privatisation issue paves the way for economic competition in space, which will see more and more participants interested in space exploration and trade: the Lunar Gateway's versatility as a communications hub, laboratory and short-term human habitation facility could soon attract the interest of industry tycoons.

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[6] MODA J.,PREST M.V., MESSINA E., RAGONE M.E., SANTORIELLO P.,BONIFAZI A., *Il Diritto delle Attività Spaziali tra Cooperazione e Competizione per lo Spazio, in Alla conquista dell'ottavo continente: lo Spazio*. Rivista Trimestrale della Società Italiana per l'Organizzazione Internazionale, 2021, 90- 167.

[7] International Space Station Intergovernmental Agreement, concluded at Washington on 29 January 1998, Article 14.

[8] Memoranda of Understanding (MOUs) between NASA and CSA, NASA and BSA, NASA and the Government of Japan, and NASA and RSA concerning cooperation on the civil international Space Station. and arrangements between or among NASA and the other Cooperating Agencies implementing the MOUs (implementing arrangements).

1.4 The Artemis Accords

The international space agencies that have decided to take part in the Artemis Programme have participated in the negotiation and execution of bilateral agreements, known as Artemis Accords, which represent the legal instrument governing the activities of the programme.

These agreements ensure that the participants in the programme act in accordance with a set of shared principles, which reflect the legal framework of the Outer Space Treaty of 1967. Adherence to these principles is intended to ensure that civil space activities are sustainable, conducted in a safe and secure environment, and aimed at creating a benefit for all humankind.[9]

The Artemis Accords open up the possibility of implementing ad hoc instruments and measures, such as memoranda of understanding and agreements between governments and agencies, to foster cooperation between partners and define in detail provisions relating to responsibility for action, intellectual property and the use of assets and data.

The principles are catalogued in thirteen sections and introduced by a preamble underlining the mutual interest of the signatories in the exploration and use of space and their common ambition to inspire and guide new generations towards new frontiers.

The first principle described in the third section and defined as the essential core of the agreements, concerns the peaceful purpose of activities conducted in space. This section is followed by the principles of transparency[10], referring to the need to make public all policies and projects, and the principle of interoperability[11], i.e. the use of common standards for all signatories, which can be updated if deemed inadequate. Providing emergency assistance[12] to those in need is another of the fundamental principles of a safe and responsible space programme. In this respect, the Artemis Accords echo the 1968 Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space.

[9] Artemis Accords. Section 1. Paragraph 1.
[10] Artemis Accords. Section 4.
[11] Artemis Accords. Section 5.
[12] Artemis Accords. Section 6.

The need to conduct exploration in a safe and sustainable manner is safeguarded by the principle of registration of space objects[13]. As stipulated in the 1974 Registration Convention, every object in orbit must be marked before launch in a central register.

The eighth section deals with the communication of scientific data, reminding signatories of their obligation to share scientific data and information openly and promptly, so that the entire scientific community can benefit from them. In addition, by participating in the Artemis Accords, signatories also commit themselves to preserving the heritage of outer space, including historic landing sites and all kinds of activities on celestial bodies.[14]

The use of space resources, dealt with in the tenth section, is another of the key issues of the Artemis Accords, since the possibility of extracting resources from celestial bodies would be a fundamental element in supporting astronaut life and space exploration. This practice is therefore recognised as legal by the Artemis Accords and is contextually differentiated from the prohibition of national appropriation established by Article II of the Outer Space Treaty.

The latter is also taken up in the next section, concerning the deconfliction of space activities.[15] The partners are in fact engaged in the creation of 'safety zones', i.e. zones that are forbidden because they are used for ongoing operations and activities, which must be notified in advance to ensure coordination.

The last section, preceding the final provisions, deals with orbital debris and spacecraft decommissioning[16]: at the end of their missions, the signatories are responsible for the disposal of spacecraft and debris, which must be planned in advance. In addition, partner nations undertake to mitigate debris creation by taking appropriate measures.

In the next chapter, we will analyse in more detail the legal framework within which the Artemis Accords are defined, explaining the treaty references mainly necessary for its understanding. Subsequently, we will focus on the negotiation of the agreements, broadening the discussion on content that has just begun and attempting to unravel some of the principles mentioned above, which represent the most important issues.

[13] Artemis Accords. Section 7.
[14] Artemis Accords. Section 9.
[15] Artemis Accords. Section 11.
[16] Artemis Accords. Section 12.

2. THE NORMATIVE CHARACTER OF THE ARTEMIS ACCORDS

2.1 Negotiation of the Artemis Accords

The Artemis Accords represent a novelty in international law also with regard to their negotiation and registration. In fact, they were not discussed in the Committee on the Peaceful Uses of Outer Space (COPUOS)[17], but are the result of a private negotiation conducted mainly by the United States.

The purpose of the negotiation is to promote best practices for the human exploration of outer space and enhance peaceful relationships between nations. Moreover, they seek to establish a legal framework under international law so that companies, both private and non-private, can commercially exploit the resources they find and extract on the Moon and other bodies in the solar system.

Formally the Artemis Accords are not binding, they are intended to 'establish a political understanding regarding mutually beneficial practices [among the signatories] for the future exploration and use of outer space, with a focus on activities conducted in support of the Artemis Program'[18]

The Accords were signed on 13 October 2020 by eight states, namely Australia, Canada, Italy, Japan, Luxembourg, the United Arab Emirates, the United Kingdom and the United States. They were later joined by Ukraine on 12 November 2020[19], South Korea on 24 May 2021 and New Zealand on 31 May 2021.[20]

In June 2021 Minister of Science, Technology, and Innovation Marcos Pontes signed the Artemis Accords representing Brazil, the first Latin American country to participate in the programme[21], while in October it was the president of the Polish Space Agency (POLSA), present at the 2021 International Astronautical Congress in Dubai, who signed for Poland.

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[17] The Committee on the Peaceful Uses of Outer Space (COPUOS) was set up by the General Assembly in 1959 to discuss legal questions related to the exploration and use of outer space.

[18] Artemis Accords, Preamble, para 10.

[19] U.S. EMBASSY IN UKRAINE. *Ukraine becomes the 9th country to sign the Artemis Accords*. Nov. 17, 2020.

[20] POTTER S., *New Zealand Signs Artemis Accords*, NASA.gov, Jun 1, 2021.

[21] U.S. EMBASSY & CONSULATES IN BRAZIL. *Brazil is the first Country in Latin America to sign the Artemis Accords*. June 15, 2021.

The government of Mexico announced on 9 December that it would sign the Artemis Accords[22], bringing the number of signatory countries to 14. In the first half of 2022 it was the turn of Israel, Romania, Bahrain, and Singapore, while French President Emanuel Macron had already indicated his intention to join the programme in November 2021. [23]

The president's intention became concrete on 7 June 2022, when France formally joined the Artemis Accords during an event to celebrate the 60th anniversary of the French space agency (CNES).[24]

The preamble to the Accords highlights the continued importance of existing bilateral space cooperation agreements. These include the 'Framework Agreement between the Government of the United States of America and the Government of the Italian Republic for Cooperation in the Exploration and Use of Outer Space for Peaceful Purposes', signed on 19 March 2013.

Italy is in fact a historical partner of the United States in the area of space activities, counting over fifty years of collaboration. The signing of the Artemis Accords strengthening bilateral cooperation between the two countries had already been announced in a Joint Declaration of Intent with the United States, signed on 25 September 2020. [25]

The understanding between the two countries is not only limited to direct cooperation between the governments, but is intended to create economic and commercial benefits for both.

NASA has stated that accessions to the Accords will remain open to the international community to establish a safe, peaceful and prosperous future in space.[26]

In the thirteenth section of the Artemis Accords, called 'Final Provision', it is stipulated that the US government is the depository of the accords, as it guards the original text and is in charge of controlling all documents related to them.

Furthermore, since the Artemis Accords are formally not legally binding, the 'Final Provision' states that the they are not eligible for registration under Article 102 of the UN Charter, differentiating them from the main treaties on the exploration and utilisation of space, which are registered and maintained by the United Nations.

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[22] FOUST J., *Mexico joins Artemis Accords*, Spacenews.com, Dec. 10, 2021.

[23] HOWELL T. JR., *Harris: France wants to join the Artemis Accords, a major space-exploration pact*, Washingtontimes.com, Nov. 11, 2021

[24] FOUST J., *France joins Artemis Accords,* Spacenews.com, June 8, 2022.

[25] MARCHISIO S., The Law of Outer Space Activities, Roma, 2022 p. 314.

[26] POTTER S., WARNER C., *NASA*, *International Partners Advance Cooperation with First Signings of Artemis Accords*, NASA.gov, Oct 13, 2020.

In fact, in accordance with Article 102 of the UN Charter, the Outer Space Treaty, the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (1968), the Convention on International Liability for Damage Caused by Space Objects (1972), and the Convention on the Registration of Objects Launched into space (1975), were all registered with and published by the Secretariat. Unlike the latter, the Artemis Accords are not subject to the rules of the UN Charter, so none of the signatories can invoke them before UN bodies.

2.2 Signatories commitment to the OST

The considerable endorsement of the Artemis Accords by the international community is rooted not only in the desire of each signatory to be part of an innovative and presumably profitable project, but also in the explicit reference to established norms of international space law. In particular, the preamble to the agreements mentions the Outer Space Treaty (OST) as the first reference treaty[27], which the signatories undertake to respect and identify as the regulatory framework within which to operate.

The OST, formally known as the 'Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies'[28], entered into force on 10 October 1967 and has been ratified by 110 countries. It establishes a set of general principles that form the normative framework underpinning international space law and regulates international activities and relations in outer space.

The OST is the cornerstone of the legal regime for outer space, which is why, more than fifty years after its ratification, it retains its hegemony in the treaties governing this area and is the basis on which national legislation and international agreements are currently drafted.

In the Artemis Accords it is possible to find two types of reference to the OST: some provisions in the Accords merely incorporate provisions previously set out in the treaty, while other provisions add detail and guidance to established rules contained therein.

Provisions incorporating OST directives can be further divided into three categories.[29]

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[27] Ibid.18

[28] Outer Space Treaty, concluded in January 1967, and it entered into force in October 1967.

[29] DEPLANO R., *The Artemis Accords: Evolution or Revolution in International Space Law?,* International and Comparative Law Quarterly, Vol. 70(3), 2021, pp. 799-819.

The first type includes provisions that are repeated in a literal manner, i.e. they are nothing more than a transposition of provisions found in the OST. An illustrative case of this type is Section 3 of the Artemis Accords, which, by stating that activities in space must be "exclusively for peaceful purposes" and "in accordance with international law", replicates Article IV and Article III of the OST respectively.

The second type concerns the principles mentioning the content of the OST. For example, in Section 4 of the Agreements, concerning transparency of information concerning space activities, it is stated that "the Signatories plan to share scientific information [...] with the public and the international scientific community on a good-faith basis"[30] in a manner consistent with Article IX of the OST.

The last type concerns provisions with indirect reference to OST and which reflect established practices in international cooperation. Section 6 of the Agreements, which requires signatories to commit themselves to assisting personnel in distress, provides an illustration of the latter case. Indeed, emergency assistance is now customary in international law, but there may also be a direct reference to Article V of the OST, which requires States Parties to the Treaty to regard astronauts as envoys of mankind in space and to render them all possible assistance.

On the other hand, as regards the provisions extending the already established rules, adding operational guidance to fulfil the obligations outlined by the OST, we refer to two sections in particular of Artemis, the tenth concerning the use of space assets and the eleventh concerning the deconfliction of space activities, which we will elaborate on in the following chapters.

2.3 Artemis' relation with other treaties

We have therefore explained how the Artemis Accords often recall the OST and reaffirm important provisions contained therein.

However, the content of the Artemis Accords does not exclusively take up the latter: the Agreement on Rescue and Return, the Convention on International Responsibility and the Registration Convention are also referred to in the preamble.

The Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, also known as the Rescue Agreement, is an

[30] Artemis Accords. Section 4, para 2.

international accord which entered into force on 3 December 1968. It has the aim of deepening the obligations outlined in the OST concerning the rescue of persons and the recovery of objects in space and address the issue of the responsibility of the launching state.

Section 6 of the Artemis Accords emphasises the parties' commitment to the Rescue Agreement, stating that the "The Signatories […] acknowledge their obligations under the Rescue and the Return Agreement".[31]

The Liability Convection, colloquial denomination for the Convention on International Liability for Damage Caused by Space Objects, is an international treaty dating from 1972, based on Article VII of the OST.[32]

The liability convention states that "a launching State is absolutely obliged to compensate for damage caused by its space object"[33] and defines a launching State as a State that launches a space object or a State from whose territory a space object is launched.[34]

Therefore, according to the liability convention, the responsibility of the state for damage to objects or physical and juridical persons does not require a fault or causality attributable to the state, but the ownership of the object or the involvement, even indirect, in the launch is sufficient.

The Convention on Registration of Objects Launched into Outer Space, also known as the Registration Convention, is closely related to the Liability Convention. It provides States with a means of assisting in the identification of space objects[35] in order to address issues of State responsibility. The Registration Convention was adopted by the United Nations General Assembly in 1974 and it entered into force on 15 September 1976. In February 2022, it reached seventy-two ratifications with the accession of Oman.[36]

Section 7 of the Artemis Accords states that signatories have a duty to determine which of them has the burden of registering any relevant space object, respecting the terms and obligations of the Registration Convention.[37]

These three treaties, together with the OST, represent the normative structure on which the Artemis Accords were built and dominate the legal field of international space law.

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[31] Artemis Accords. Section 6

[32] United Nations Convention on International Liability for Damage Caused by Space Objects, concluded on 29 March 1972 and entered into force on 1 September 1972, supra note 57, at 2391

[33] Id. at Article II

[34] Id. At Article I

[35] United Nations Convention on Registration of Objects Launched into Outer Space, concluded in New York on 12 November 1974 and entered into force on 15 September 1976.

[36] Ibid.

[37] Id. 13

There is, however, another treaty, described as "the weakest" of the UN space law treaties[38], which is not considered within the Artemis Accords document. This is the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, better known as the Moon Treaty or Moon Agreement.

The Moon Agreement came into force on 11 June 1984 and has been ratified by 18 countries, a number that excludes three nations that historically contended for supremacy in space exploration, namely the United States, China and Russia.

The non-adherence of the United States to this treaty appears to be the reason why the Artemis Accords do not refer to it. In his executive order of 6 April[39], President Trump explicitly distanced himself from the Moon Agreement, stating The United States does not consider the Moon Agreement to be an effective or necessary instrument.

2.4 Impact on the development of International Space Law

The content of the Artemis Accords cannot be defined as revolutionary, as it is based on already established norms of international space law and aims to elaborate on principles previously presented in other treaties.

However, the particular process of negotiation, which does not involve UN bodies, represents a turning point in the development of international space law, which could lead to new adoption models for the space legislature.

Some authors see in these models a departure from the multilateralism, of which COPUOS is an emblem, in favour of national legislation on the development of space activities or international agreements specifically promoted by a State, as in the case of the Artemis Accords. [40]

The reasons behind this shift are varied and it must be remembered that all space exploration treaties prior to Artemis were adopted in a relatively short period of time, between 1967 and 1978, i.e. more than 40 years ago.

This implies, firstly, that the historical and political context has changed profoundly. At the time of the adoption of the UN treaties, the world was in the midst of

[38] WALKER A. SMITH, *Using the Artemis Accords to Build Customary International Law: A Vision for a U.S.-Centric Good Governance Regime in Outer Space*, 86 J. AIR L. & COM. 661 (2021)

[39] Id. 3

[40] See DE MAN P., '*State Practice, Domestic Legislation and the Interpretation of Fundamental Principles of International Space Law'* (2017) 42 Space Policy 92, 101. See also SCHROGL K-U, '*The New Debate on the Working Methods of the UNCOPUOS Legal Subcommittee'* (2014)

the Cold War, divided between the antithetical visions of the United States and the Soviet Union. The priority at the time was to create a regime that would regulate the use of space technologies and activities in a way that was not pretextual and belligerent.

Nowadays, with the advent of globalisation and the still nascent development of the space economy, the purpose of space legislation has changed, focusing on scientific and commercial activities.

The need to regulate the use of space resources also in the domestic field has led to the creation of ad hoc legislation aimed at private companies, such as the US Commercial Space Launch Competiveness Act in the United States and the General Law on Space Activities, adopted by Luxembourg.[41]

Secondly, the number of states interested in space and capable of supporting its exploration has grown exponentially, translating into an increase in the membership of COPUOS.[42]

This expansion brings with it the problem of consensus, since negotiating an agreement is all the more difficult the larger the number of states participating in it.

In line with this discourse, the Artemis Accords could be the beginning of a re-orientation of international space law, which would favour the negotiation of international agreements and treaties without the involvement of UN bodies.

[41] Law of 15 December 2020 on Space Activities.

[42] UNITED NATION Office of Outer Space Affairs. *Committee on the Peaceful Uses of Outer Space: Membership Evolution*. Unoosa.org. (May 03, 2022)

3. CONTENT ANALYSIS I: SPACE RESOURCES UTILIZATION

3.1 Artemis Accords – Section 10

As previously affirmed, Section 10 of the Artemis Accords explores the principle regarding the use of Space Resources. This issue has been one of the main objects of discussion in space law for decades now, as the extraction of resources from celestial bodies and the use of sunlight could not only benefit the Earth's economy, but above all be the premise for the creation of settlements on the Moon, Mars or other celestial bodies.

The first paragraph of the section picks up on precisely this idea, stating that the use of space resources would be crucial to ensure safe and sustainable space operations. The paragraph thus refers to the in-situ use of resources and emphasises again that the purpose of such activity is the benefit of all humanity, in line with what was stated in the OST.

The second paragraph seems to be more controversial, as it states that "the extraction of space resources does not inherently constitute national appropriation".[43] providing a different interpretation of Article II of the OST.

A part of the academic literature adopted this perspective even before the Artemis Accords, arguing that the exploitation of space resources is not prohibited by the principle of non-appropriation and is consistent with the freedom of exploration and use of space enshrined in Article I of the OST.[44]

However, the use of space resources needs to be regulated and limited in such a way that it does not conflict with the principle of 'due regard' laid down in Article IX of the OST. This implies that any activity must be carried out taking into account the corresponding interests of all parties. [45]

On the other hand, the Committee on the Pacific Use of Space expressed itself in the opposite direction, stating that the exploitation of outer space resources to promote national commercial interests is unacceptable.[46]

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[43] Artemis Accords. Section 2. Para 2.

[44] SU J., Legality of Unilateral Exploitation of Space Resources Under International Law, in "*International and Comparative Law Quarterly",* 2017, *pp.* 991-1008.

[45] MARCHISIO S., The Law of Outer Space Activities, cit. footnote 25 p. 315

[46] Report of the Legal Subcommittee on its fifty-sixth session, held in Vienna from 27 March to 7 April 2017, at 33 para 250

The third paragraph of Section 10 states that "Signatories commit to informing the Secretary-General of the United Nations as well as the public and the international scientific community of their space resource extraction activities in accordance with the Outer Space Treaty". The provision providing for the reporting of activities in outer space and on celestial bodies is in fact Article XI of the OST, which also requires the immediate and effective divulgation of such information by the Secretary-General.

Finally, the last paragraph of the section states the signatories' intention to contribute to multilateral efforts to further develop international practices and rules applicable to the extraction and utilisation of space resources, including through ongoing efforts at COPUOS.[47]

The United States emphasised its intention to fulfil the above paragraph at the 61st Session of the COPUOS Legal Subcommittee, regarding potential legal models for space resource exploration, exploitation and utilisation activities. On that occasion, they recognised the international need to deepen the discourse on space resources and expressed their intention to participate in the Working Group focused on this issue.[48]

The proposal to create the Working Group on exploration and utilization of space resources had been put forward by the Legal Subcommittee at its 60th session in 2021, with the intention of establishing a forum for multilateral discussion of the legal aspects of space resources activities.

The working group aims to ensuring "that space resources activities are conducted in a safe, sustainable and peaceful manner, for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and in accordance with international law." [49]

In 2022, a five-year plan was introduced, which should be completed in 2027, and would lead to the finalisation of a set of recommended principles for space resource activities and their eventual adoption by the UN General Assembly, in the form of a resolution or other action.[50]

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[47] Artemis, Section 1, para 4

[48] *61st Session of the COPUOS Legal Subcommittee – Agenda Item 15: Potential Legal Models for Activities in Exploration, Exploitation and Utilization of Space Resources*, U.S. Mission To International Organizations In Vienna (26 May 2022)

[49] Committee on the Peaceful Uses of Outer Space Legal Subcommittee

[50] Working Group on Legal Aspects of Space Resources Activities, Legal Subcommittee 2022, *Co-Chairs' Proposed Five Year Workplan and Methods of Work for the Working Group on Legal Aspects of Space Resource Activities,* United Nation Office for Outer Space Affairs (07 June 2022)

3.2 Interpreting article II of the OST

Article II of the OST states that "Outer space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means."

The question of the interpretation of this provision concerns four main aspects. [51]

First of all, it is necessary to examine what are the objects whose appropriation is prohibited. The provision states that the prohibition of appropriation is generically related to outer space, even though in international law there is no clear definition of what the latter comprises, what its parts and boundaries may be.

The only indication provided by the OST concerns celestial bodies, which are defined as part of outer space and thus undoubtedly subject to the prohibition of appropriation.

Moreover, we have to consider that common sense interprets the provision as also relating to the acquisition of parts of celestial bodies.

The second aspect concerns the meaning of 'national' appropriation and what distinguishes it from 'nonnational' appropriation. In the treaty, in fact, only the former is explicitly prohibited, leaving a gap on appropriation by private individuals or international organisations.

Regarding the latter, the possibility of creating ad hoc international organisations that would be legally authorised to appropriate was discussed.[52]

To date, neither has been followed and the issue of appropriation is still discussed and related to Article II of the OST. However, the US Commercial Space Competitiveness Act (2015 Act) represented a breakthrough in this context, as it questioned the possibility of appropriation by private parties.

The 2015 Act was created to 'facilitate commercial exploration for and commercial recovery of space resources by United States citizens', but highlighted the need for a legal regime that would allow the 'recovery' or 'extraction' of space resources.

The third aspect strictly concerns the concept of appropriation and what it constitutes. The term 'appropriation' is usually used to indicate the acquisition of a right of ownership or permanent exclusive use. Thus, the casual use of a spatial object or the

[51] GOROVE S., *Interpreting Article II of the Outer Space Treaty*, Fordham L. Rev. 349, Vol. 37, 1969.
[52] Ibid.

temporary occupation of a landing site do not constitute appropriation, as they lack the conditions of exclusivity and permanence.[53]

The last aspect, closely related to the previous one, concerns the possibility of exercising limited sovereign authority in certain situations, which would deviate somewhat from the prohibition imposed by Article II.

Consistent with the above, the temporary use of space resources seems to be permitted by the treaty, provided it does not lead to the transformation or deterioration of the resource itself.

In addition, the exercise of sovereignty in terms of control over activities carried out in space and responsibility for objects launched into space falls within the exceptions. In these cases, the supervision of the Government of a given state translates into the jurisdiction of that state in those areas of space where governmental and non-governmental entities connected to it carry out activities.

3.3 The US Commercial Space Launch Competitiveness Act

The US Commercial Space Launch Competitiveness Act (2015 Act) is an act of the US government, passed in 2015, with the purpose of creating an environment conducive to the development of the commercial space industry. It aims to encourage private sector investment and create a more stable regulatory framework. [54]

In particular, Title IV of the 2015 Act addresses the exploration and utilisation of space resources, specifically focusing on commercial exploration and rights to asteroidal and space resources.[55]

With regard to the latter, the 2015 Act establishes the right of citizens of the United States to possess, transport, use and sell a space resource, the commercial recovery of which it has provided. The same provision also states that these rights must be exercised in accordance with applicable law, including the international obligations of the United States.

[53] Ibid.

[54] MOSTESHAR, S., *Artemis: The Discordant Accords*, Journal of Space Law, vol. 44, no. 2, 2020, p. 591-603.

[55] Par.51303

However, the act does not specify which international obligations it refers to, leaving as the only clarification a clause that specifies that the adoption of laws by the United States government is not intended to assert sovereignty and property rights over celestial bodies.[56]

The entry of private individuals into space exploration and trade should not be seen as giving citizens the green light to use space as they please, any kind of activity in space would require licences or authorisations, subject to special conditions and state control.

The entry of private individuals into space exploration and space commerce is not to be seen as a green light for citizens to use space as they please, any kind of activity in space would require licences or authorisations, subject to special conditions and state control.

Basically, these two issues represent the basis for criticism of the 2015 Act. In the Congressional Record of May 2015[57], it is stated that the two challenges against the 2015 Act are the allegations that the bill violates Article II of the OST and that the US government has not established a licensing regime for commercial space activities under the bill.

However, according to the same record, the 2015 Act is not in violation of international obligations because it does not introduce regulations on the extraction of space resources, let alone determine their appropriation, but legislates on the use of the resources obtained, and is therefore consistent with Article I of the OST, which establishes freedom of exploration and use of outer space and celestial bodies.

Another perspective, presented by the International Institute of Space Law (IISL) in a Position Paper on the Mining of Space Resources, argues that the absence of a clear provision prohibiting the mining of space resources within the OST determines that the use of space resources is permitted.[58]

Regarding the licensing system, the record states that proposing a specific licensing requirement for the use of resources would have been inappropriate because of all the new activities proposed in outer space, which would have required a common framework.

Therefore, the issue of licences in the 2015 Act was not addressed because the intention was to create an all-encompassing framework for all activities in the future. It must also be remembered that in the US there were already regulatory requirements for commercial companies that wanted to go into space and use it.

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[56] MARCHISIO S., *Lo sfruttamento delle risorse minerarie dei corpi celesti,* in TREGGIANI E., CHERUBINI F., INGRAVALLO I., NALIN E., VIRZO R., Dialoghi con Ugo Villani, vol..I, Bari, 2017, pp.881-889

[57] Congressional Record Volume 161, Issue 79, at 3518., 21 May 2015.

[58] *Position Paper on Space Resource Mining.* International Institute Of Space Law, 2015

Nevertheless, there are still concerns about the content of the act: part of academic opinion considers private intervention in the use of space resources to be 'undesirable'.

The reason for this opposition lies in the risks associated with activities in space, which in a context of inadequate technologies and security standards can represent a real danger.[59]

3.4 The Building Blocks on Space Resource Activities

The provisions on space resource activities contained in the Artemis Accords conform to the recommendations of the International Working Group on Space Resource Governance in The Hague, which adopted the Building Blocks for the Development of an International Framework on Space Resource Activities on 12 November 2019.

The Hague Working Group on the Governance of International Space Resources was established in 2016, attended by key stakeholders from government, industry, universities and research centres, with the aim of establishing a comprehensive governance framework on space resources.

The activities of the working group were divided into two phases.

The first, which lasted from January 2016 to December 2017, consisted of identifying Building Blocks for the governance of space resource activities as a basis for the negotiation of an international agreement or non-legally binding instrument. In September 2017, the first Draft of the Building Blocks was presented for comment by its participants.

The second phase started in January 2018 and ended in December 2019. During this time, the Working Group undertook consultations on the Draft and discussion regarding the creation of a future mechanism for the governance of space resources.

In order to ensure that the Working Group could also discuss technical as well as political and legal issues in the future, a Technical Panel was established to identify technical and space resource challenges and assess the feasibility of implementing the proposed building blocks.

[59] MARCHISIO S., *The Law of Outer Space Activities*, cit. footnote 25 p.87

The Building Blocks include guidance on strategies to be implemented for the conclusion of international legally binding and non-legally binding agreements, and identify the constitutive principles for the governance of space resource activities.[60]

In particular, the Building Blocks promote the concept of adaptive governance. This is defined as "a form of environmental governance that aims to coordinate resource management regimes in situations of complexity and uncertainty brought about by rapid environmental change". [61]

Adaptive governance is based on the premise that the social, economic and environmental systems of which we are a part cannot be governed by one-size-fits-all solutions, but must consider interdisciplinarity and evolution over time.

In the field of space resource utilisation, adaptive governance translates into the development of a step-by-step approach to the regulation of space resources, using a step-by-step methodology that takes into account appropriate timing and technological development.[62]

Moreover, the discussion and implementation of new practices should involve all stakeholders and thus be the result of their interaction.

As far as the alignment between the Artemis Accords and the Building Blocks is concerned, the content analysis shows a high level of compatibility.

We have previously examined the fourth paragraph of the tenth section of the Accords, concerning the multilateral discussion of new experiences in the field of space resources, which specifically reads:

"The Signatories intend to use their experience under the Accords to contribute to multilateral efforts to further develop international practices and rules applicable to the extraction and utilization of space resources, including through ongoing efforts at the COPUOS."

This provision incorporates the first paragraph of the eighth section of the Building Blocks, in which it is stated that:

"The international framework should ensure that resource rights over raw mineral and volatile materials extracted from space resources, as well as products derived therefrom, can lawfully be acquired through domestic legislation, bilateral agreements and/or multilateral agreements."

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[60] *The Hague International Space Resources Governance Working Group,* International Institute of Air and Space Law, Universiteitleiden.nl (26 may 2022)

[61]CHAFFIN, B. C., GOSNELL H., and COSENS B. A., A decade of adaptive governance scholarship: synthesis and future directions, Ecology and Society, Vol.19, 2014.

[62] BITTENCOURT N. et al. "*Building Blocks for the Development of an International Framework for the Governance of Space Resource Activities: A Commentary*, The Hague, 2020.

Both provisions insist on the necessity for an international effort to ensure transparency in the conduct of activities related to the extraction and utilisation of space resources and they state that this process must be determined and must determine the development of new rules applicable to the context.

The concept of evolution recurs frequently in the text of the Artemis Accords, particularly in relation to the signatories' commitment to multilateral efforts and periodic review. [63]

It has been suggested that the Accords could benefit from a development consistent with what is contained in the Building Blocks, since the latter are proposed as the new basis for the governance of space assets, both internationally and domestically. [64]

In particular, Building Blocks 18 suggests new functions that should be included in the governance framework, such as the creation of a registry for priority rights, a database on the commencement or cessation of space-related activities, and the establishment of an international body to monitor the implementation of the international framework.

[63] Artemis accords, section 13, para 1.

[64] Report of the Legal Subcommittee on its fifty-seventh session, held in Vienna from 9 to 20 April 2018' (30 April 2018) UN Doc A/AC.105/ 1177, at 30, para 234 (describing the Building Blocks as a valuable starting point for the negotiation of an international framework) and ibid para 233 (arguing that the Building Blocks 'should not be acknowledged as providing a forum for negotiation').

4. Content Analysis II: Deconfliction of Space Activities

4.1 Artemis Accords – section 11

Section 11 of the Artemis Accords deals with the issue of deconfliction of space activities and consists of eleven paragraphs, making this the most articulate issue within the Accords.

The text opens with a reaffirmation of the signatories' commitment to comply with the OST also in the area of due regard and harmful interference provisions[65], while the second paragraph affirms compliance with the United Nations Guidelines (LTS Guidelines) for the long-term sustainability of outer-space activities, adopted by COPUOS in 2019.

The LTS Guidelines propose legally non-binding rules that encourage states to carry out activities in space in a sustainable and accessible manner in the future.[66] The concept of sustainability of space activities has become a cornerstone within international space law, it refers to the use of outer space "in a manner that maintains its potential to meet the needs and aspirations of present and future generations, and that ensures that all of humanity continues to use outer space [...]" [67]

The third paragraph reaffirms the commitment to the principle of due regard, specifically citing Article IX of the OST, and authorises signatories that risk harmful interference to request consultations with the parties to the OST authorising the activity that generates the harm.

Subsequent paragraphs establish an obligation to refrain from voluntarily performing actions potentially resulting in harmful interference[68] and an obligation to report information regarding the location and nature of activities in space if there is any doubt that the activities of another signatory may result in harmful interference. [69]

The sixth paragraph contains the crux of the section: the idea of safety zones.

[65] Artemis accords Section 11 para 1.
[66] MARCHISIO S., The Law of Outer Space Activities, Roma, 2022, cit. footnote 25 p. 331.
[67] Id. p. 302
[68] Artemis accords Section 11 para 4.
[69] Artemis accords Section 11 para 5.

"The Signatories intend to use their experience under the Accords to contribute to multilateral efforts to further develop international practices, criteria, and rules applicable to the definition and determination of safety zones and harmful interference."[70]

The next paragraph defines a 'safety zone' as an area within which the nominal operations of a relevant activity or abnormal events could cause harmful interference and sets out principles in relation to safety zones that signatories undertake to observe.[71]

These principles relate to the size and scope of the safety zone, which must reflect the nature of the operations conducted and the environment in which they take place and must be determined on the basis of common scientific and engineering principles.
Furthermore, in relation to changing operations, the operational signatory must change the size and scope of the corresponding security zone, as appropriate. This implies the temporariness of security zones, which terminate when the operation that determines them ceases.

Changes to or termination of a security zone must be notified to the parties to the Treaty and to the Secretary-General of the United Nations, in accordance with Article XI of the OST.

Paragraphs eight and nine of the section deal with the commitment of signatories to provide any signatory with the basis for the area and to protect public and private personnel, equipment and operations from harmful interference. In addition, they are responsible for providing the public with information about security zones, taking into account appropriate protections for proprietary and export-controlled information.

The following paragraph states the commitment to respect security zones and the need to coordinate with each other before conducting operations in an established security zone.

Paragraph eleven, with which the section closes, states that "the Signatories commit to use security zones […] in a manner that encourages scientific discovery [...] and the safe and efficient use of space resources in support of sustainable space exploration [...] The Signatories commit to respect the principle of free access to all areas of celestial bodies and all other provisions of the Outer Space Treaty in the use of safety zones. The Signatories

[70] Artemis Accords, Section 11 para 6.
[71] Artemis Accords, Section 11 para 7.

further commit to adjust their usage of security zones [...] on the basis of mutual experience and consultations [...]"[72]

4.2 Interpreting article IX of the OST

Article IX is the longest of those contained in the OST. Consisting of four sentences, in the first part it presents in a programmatic manner the principles regarding cooperation, mutual assistance, non-harmful interference and non-contamination; while later it dwells on the need to undertake appropriate consultations before proceeding with potentially harmful activities.

The first principle presented, regarding cooperation between signatory states, is based on two main elements, namely mutual assistance and fair consideration of the corresponding interests of other states. This principle is often interpreted in light of the Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries, which was later adopted and which clarifies the basis for international cooperation.

It states that "international cooperation in the exploration and use of outer space for peaceful purposes shall […] It shall be carried out for the benefit and in the interest of all States, irrespective of their degree of economic, social or scientific and technological development, and shall be the province of all mankind. Particular account should be taken of the needs of developing countries."

The Declaration specifies that international cooperation is based on the free determination of fair, equitable and mutually acceptable contractual conditions, which must respect the rights and legitimate interests of the parties concerned.

The principle of cooperation applies to all models of cooperation, at governmental and non-governmental levels, without excluding commercial and private activities, which must be conducted under State supervision. [73]

Since it is not constructed as an obligation, but as a 'general principle', international cooperation needs detailed rules to be realised. Such rules can be found in other provisions, such as Article VI of the Registration Convention, concerning the principle of mutual assistance in the identification of a spatial object.

[72] Artemis Accords, Section 11, para 11.
[73] MARCHISIO S., The Law of Outer Space Activities, cit. footnote 25, pp. 277- 278

As far as the 'due regard' element is concerned, this deserves to be explored in more detail, since while it represents a safeguard for the interests of all states, it also acts as a limitation on their actions. Indeed, while Article I of the OST declares the freedom of exploration and use of outer space, Article IX ensures that the exercise of this freedom does not result in harmful interference that could jeopardise the operations of other States.

In the framework of Article IX, the term 'due regard' refers to the standards of care, attention and compliance to be used in space activities.

States are indeed liable for their actions or omissions, whether towards other states or non-state actors, and must prove beyond a reasonable doubt that they have taken all necessary measures to prevent harmful interference from occurring. [74]

The notion of 'due regard', refers in the article to the 'corresponding interests of all other state parties', this emphasis is meant to remind that interests in space may not be unilateral and therefore there can be no discriminatory treatment, so that the interests and rights of all state parties can be satisfied.

The second part of Article IX deals with rights and obligations to consult in order to avoid potential harmful interference in outer space.

The provision states that if a State party to the treaty believes that one of its activities or an activity of a third party for which it is responsible could cause harmful interference with the space activities of another state party, the former must consult with the latter before beginning the activity. On the other hand, if the first State Party does not initiate consultations but the second State Party learns of potentially harmful interference in some other way, the second State Party has the right to request consultations.

A particular aspect of this provision concerns the timing of consultations. According to Article IX, the interfering state must request consultations prior to initiating the potentially harmful interference. This would allow states to discuss the interference and try to take measures to mitigate it.

Otherwise, the article does not define timeframes for the request for consultations by the state potentially affected by the interference, which, according to academic interpretation, could require consultations both before and during the course of the activity causing the interference.[75]

[74] Id. p. 279
[75] Id. p. 283

In this context, it is important to emphasise that Article IX does not constitute any right of veto on the part of the states that might be affected, but merely creates the prerequisite for a discussion aimed at mitigating harmful interference in outer space.

4.3 The creation of Safety zones and the analogy with Law of the Sea

The establishment of safety zones, stated in the sixth paragraph of the eleventh section of the Artemis Accords, fits perfectly into the framework created by Article IX of the OST to prevent harmful interference.

The discussion on the creation of safety zones is closely related to the need to develop new rules regarding the extraction of space resources. The use of in-situ resources and the creation of future mines or extraction centres presupposes the need to create controlled and safe perimeter areas where no harmful interference can occur.

The debate on safety zones also developed as a result of the provisions contained in the Moon Agreement, which does not represent "a key point in the definition of space jurisdiction"[76] but in Article 9 provides for the possibility to *"establish manned and unmanned stations on the moon. A State Party establishing a station shall use only that area which is required for the needs of the station and shall immediately inform the Secretary-General of the United Nations of the location and purposes of that station. Subsequently, at annual intervals that State shall likewise inform the Secretary-General whether the station continues in use and whether its purposes have changed."*

Since this provision, the hypothesis of creating safety zones to secure space activities has gained momentum, with the aim of setting a commonly accepted standard for the future.

The Artemis Accords accentuated the discussion on the creation and regulation of safety zones in space, but the focus of the debate is on finding a scheme that can be consistent with the principles contained in the OST and other relevant treaties.

To analyse the concept of safety zones and examine their potential legal use and implications, it is useful to draw an analogy with the Law of the Sea.

[76] MODA J.,PREST M.V., MESSINA E., RAGONE M.E., SANTORIELLO P.,BONIFAZI A., *Il Diritto delle Attività Spaziali tra Cooperazione e Competizione per lo Spazio*, cit. footnote 6 p.153

Generally speaking, the concept of non-appropriation that underlies the international law of space can also be found in the law of the sea, as far as the jurisdiction of the High Seas is concerned[77], albeit with limitations that guarantee a number of freedoms to states.

Indeed, they have the possibility to exploit resources and carry out scientific research in the High Seas, with the obligation to carry out all activities for a peaceful purpose. [78]

With regard to safety zones specifically, to find a parallel with the law of the sea, it is necessary to refer to Exclusive Economic Zones (EZZs).

The concept of EZZs was adopted in the 1982 Third United Nations Convention on the Law of the Sea (UNCLOS) in Montego Bay. An EZZ is an area that can extend from the limit of territorial waters up to 200 miles, in which the state holds exclusive rights for exploration, jurisdiction and use of facilities. The coastal state that has jurisdiction over the area may not prevent navigation and overflight of this area, provided it is exercised with due regard to its laws and regulations.[79]

The coastal state has the option of establishing safety zones within the EZZs, to surround artificial islands, installations and structures, with the aim of maintaining their safety and avoiding harm to possible sailors in those areas.

The radius of the safety zones can extend up to 500 metres from the structure concerned, however it is not well defined what restrictive measures can be taken in these areas. To date, state practice simply configures them as areas of restricted navigation.[80]

In accordance with international law, the structures listed above do not have the status of islands, so their installation and the creation of safety zones around them does not entail territorial appropriation. However, there are limitations to the use of these zones.

Safety zones cannot be established at strategic points or where they could interfere with maritime routes essential for international navigation and at the end of the activities any abandoned or disused facilities or structures must be removed to ensure the safety of navigation.

The concepts behind safety zones in Law of the Sea can be reproduced in the creation of similar areas in space. It follows from the arguments presented so far that a state's jurisdiction over a given area cannot be absolute, permanent or sovereign, but is subject to

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[77] United Nations Convention on the Law of the Sea (UNCLOS), Montego Bay, 10 December 1982

[78] Id. at artt. 87-88.

[79] Id. at artt. 55-58.

[80] MALLOWAN L., RAPP L., TOPKA M.,. *Reinventing treaty compliant "safety zones" in the context of space sustainability* in *Journal of Space Safety Engineering*, Elsevier, 2021, vol.8 (n°2), pp.155-166.

limitations that grant rights to other states and discourage the use of these zones to interfere with others' interests or to obtain exclusivity over resources.

The creation of safety zones in the outer space without creating conflict with the right of non-appropriation is therefore possible, as is the case in the law of the sea, as long as these zones maintain the characteristics of temporariness and conditionality.

4.4 Safety zones in the Building Blocks on Space Resources Activities

In the course of the discussion, we presented the Building Blocks on space resources, which are proposed to establish a legal regime within which the extraction and utilisation of space resources can take place.

The implementation of such a regime also presupposes the provision of areas to enable the execution of space resource activities, which is why the Building Blocks also deal with the establishment of safety zones and their management.

Specifically, Building Blocks 11 covers technical standards, prior review and safety zones around space resource activities. The third paragraph of this section states:

"*Taking into account the principle of non-appropriation under Article II OST, the international framework should permit States and international organizations responsible for space resource activities to establish a safety zone, or other area-based safety measure, around an area identified for a space resource activity as necessary to assure safety and to avoid any harmful interference with that space resource activity. […]*"[81]

The provision suggests the establishment of safety zones and stipulates the creation of security measures, but does not define them specifically, leaving the development and delineation of specifications to the future.

The following paragraph suggests the initiation of international consultations in the event of possible overlapping safety zones or conflicts regarding freedom of access. This point seems particularly significant, considering that the interest of different parties in the same area or in an already assigned area could generate conflicts at the international level.

The discussion of safety zones has over time been extended beyond the context of space resource extraction, in fact, it is believed that they could be extended to larger areas

[81] Building Blocks For The Development Of An International Framework On Space Resource Activities, concluded on 12 November 2019, at 11.3

and used for different functions, while maintaining their purpose of avoiding harmful interference.[82]

An in-depth work on the possible basis for the jurisdiction of safety zones was included in the Technical Panel Presentation, which in the wake of the Building Blocks identifies some useful principles for the establishment and management of safety zones.

The first principle states that safety zones must be managed, from their establishment to their termination, in a manner that protects public and private personnel, equipment and operations from harmful interference and that such management must be in accordance with the OST.

On the other hand, the fourth and fifth principles focus on the size and purpose of safety zones, which must take into account the environment in which they are placed and the nature of the operations conducted, based on commonly accepted scientific and engineering principles.

The sixth principle states that as the nature of the operation for which a safety zone was created changes, the appropriate variation in the size of the safety zone, which will be decommissioned when the operation ceases, is also assessed.

The last two principles state that the entity establishing a safety zone must publicly provide information about the zone and that safety zones must be used in a manner that encourages the safe and efficient extraction and use of space resources.

Analysing the content of the Technical Panel Presentation, it is possible to see that many of the principles are repeated, and in some respects reproduced ad litteram in the eleventh section of the Artemis Accords.

In any case, these principles remain merely the starting point for outlining more concrete measures and specifications regarding the use and allocation of zones, which will need to be further elaborated in future legislation.

[82] MODA J.,PREST M.V., MESSINA E., RAGONE M.E., SANTORIELLO P.,BONIFAZI A., *Il Diritto delle Attività Spaziali tra Cooperazione e Competizione per lo Spazio* cit. footnote 6

5. Conclusion

The new frontiers towards which space exploration is heading, determine the need to draw up new guidelines for the extraction and use of space resources, paying particular attention to the creation and management of the areas in which these operations are carried out.

In this context, the Artemis Accords propose themselves as an effective starting point for developing the future framework within which space activities will be regulated. In fact, in addition to restating in the form of principles the fundamental nodes of the international treaties on outer space concluded to date, with particular reference to the OST, they call for the development of new international standards when necessary.

The new debate on the utilisation of space resources has proved to be dominant in the context of international outer-space law in recent decades and has been fuelled by the implementation of national legislation aimed at fostering private space trade, as in the case of the 2015 Act in the United States.

However, such a wide-ranging topic, which needs to be interpreted and developed in line with shared principles, cannot be regulated domestically alone, but requires in-depth analysis in a multilateral forum.

The Building Blocks on Space Resources, represent in this sense an attempt to find a common legal framework within which to place the extraction and use of space resources. The latter can be considered as a fundamental reference in this area, so although they are not mentioned in the Artemis Accords, they are useful in the discussion to understand the direction they take, both with regard to the development of an adaptive governance system and the creation of security zones.

The Artemis Accords can be characterised as "accords in the making", as discussions on the implementation of their content are still open, as are the accessions for the countries concerned.

In addition, a limitation of the Accords is the absence of technical specifications for the extraction and use of space resources and standards for the creation of safety zones.

A future discussion will have to determine these specifications and establish, within the framework of safety-zones, standards concerning size, permitted activities, and the creation and termination cycle.

A further investigation to be carried out concerns the control and supervision of these zones, whether there will be a need to create ad hoc bodies or whether they can be regulated through bilateral or multilateral agreements.

This is particularly significant in view of the growing economic attention being paid to space and the possible competition that could result from the advantages of using space resources.

Future legislation cannot fail to contemplate private involvement in the exploration and commercialisation of outer space, and needs to evolve with a view to preventing potentially conflictual situations.

In conclusion, recent developments have emphasised the urgency to provide the space community with a shared jurisdiction, developing detailed rules regarding the use of resources and security in areas used for space operations.

ABSTRACT

Gli Accordi Artemis nascono come una manifestazione della volontà di partecipare al programma Artemis intrapreso dalla NASA, ma delineano un framework per la cooperazione internazionale volta a continuare l'esplorazione dello spazio in maniera sostenibile e consistente alle obbligazioni presenti nel Trattato sullo spazio extra-atmosferico.

L'esigenza di approfondire e fortificare il regime di governance già formulato dai trattati precedenti nasce dalla necessità di trovare norme compatibili con gli sviluppi futuri dell'esplorazione spaziale e predisposte a colmare i vuoti normativi lasciati in precedenza.

Gli Accordi Artemis non rappresentano uno strumento giuridicamente vincolante, ma un codice di condotta nello spazio esterno, basato su principi condivisi all'interno della comunità internazionale e volti ad inserirsi nel diritto internazionale consuetudinario attraverso la pratica degli stati e l'opinio iuris.

Poiché non vincolanti, non sono soggetti alla registrazione presso il segretariato delle Organizzazione delle Nazioni Unite (ONU), ciò li differenzia dai trattati precedenti e li svincola dalle norme previste dalla Carta delle Nazioni Unite, oltre a renderli non-invocabili davanti agli organi dell'ONU.

Gli Accordi Artemis non sono totalmente avulsi dal contesto dell'ONU, infatti all'interno delle undici sezioni da cui sono composti, ricorre il riferimento a trattati precedentemente adottati e l'obbligo di informare il segretario delle ONU delle attività intraprese nello spazio esterno. Inoltre, nella sezione 10 degli Accordi è stabilito che i firmatari intendono contribuire agli sforzi multilaterali volti a sviluppare regole internazionali applicabili all'estrazione e all'utilizzo delle risorse spaziali anche attraverso gli sforzi in corso presso il COPUOS.

Da un punto di vista contenutistico, gli Accordi presentano molti principi già precedentemente elaborati dal diritto spaziale internazionale, in primo luogo ricordando che tutte le attività nello spazio esterno devono essere condotte con finalità pacifiche e a beneficio di tutta l'umanità.

Tuttavia si presentano come un punto di partenza per ulteriori discussioni volte a stabilire un quadro internazionale sulle attività relative alle risorse spaziali e sulla deconflizione delle attività spaziali, che negli ultimi anni hanno rappresentato le questioni più salienti delle regolamentazioni spaziali.

Gli Accordi Artemis, sostituiscono il concetto di regolamentazione anticipata con il principio della governance adattiva come base della cooperazione internazionale, favorendo dunque un approccio graduale alla regolamentazione delle risorse spaziali.

Il passo fondamentale che gli Accordi Artemis compiono in quest'ambito è la determinazione che l'estrazione delle risorse spaziali non costituisce appropriazione nazionale, tuttavia essi non comprendono disposizioni tecniche su come estrarre ed utilizzare le risorse spaziali.

In correlazione con tale questioni è stato avviato il dibattito sulla creazione delle safety-zones, in analogia con quanto è previsto dal diritto del mare per le zone che richiedono degli standard particolari per l'utilizzo economico dell'Alto Mare.

Entrambi i dibattiti richiedono un'ulteriore elaborazione e una discussione multilaterale dei benefici, delle implicazioni e delle specifiche tecniche.

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