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ARTEMIS ACCORDS – A NEW ERA OF SPACE LAW OR AN INITIATIVE OF THE WORLD'S SUPERPOWER?

Abstract

The article below addresses the Artemis Accords. It is a non-binding act by which its signatories adopted a set of principles for space exploration. Even though it is not an international treaty, it is a controversial issue. The author presents the Artemis Accords against the background of international agreements, soft-law and domestic regulations, aiming to answer the question of their revolutionary character and of them being an agreement between states that strive for a common goal. Firstly, the author presents the problem of space mining and the related possibilities. There are numerous benefits from this new branch of economy, but there is also a risk of global conflict on the ground of a race for space resources. After this, the author presents the state of affairs of international law and tries to draw crucial conclusions on the subject of space mining. The last part of the paper is devoted to an analysis of the Artemis Accords as a non-binding agreement between states and as a new platform which allows the launch of a new era of conquest of outer space. At the end the author presents his opinion on the Artemis Accords as an instrument of a new space policy of world's superpower and its allies.

KEYWORDS

space law, Artemis Accords, space mining, responsibility and liability of state

SŁOWA KLUCZOWE

prawo kosmiczne, Porozumienie Artemis, górnictwo kosmiczne, odpowiedzialność państwa

1. INTRODUCTION

Mankind fulfilled their dream about journeys in the outer space in the 20th century. This idea was not feasible at the start, but the development of technology has brought us to a point where our civilisation is not able to function properly without space objects. Navigation, weather forecasts, television and communication, all of these innovations would not have been possible without satellites launched in outer space.

The international dimension of space activities was the reason for adopting five intergovernmental agreements which established basic rules of international law of the outer space. On 13 October 2020 yet another such agreement was signed: the Artemis Accords: Principles For Cooperation In The Civil Exploration And Use Of The Moon, Mars, Comets, And Asteroids For Peaceful Purposes. Despite the fact that it is not an act prepared by the COPUOS, its significance can be crucial for the basics of the space industry and space mining may well become part of this industry within the next decades. For some authors this is the beginning of the era of space capitalism.[1]

This text addresses the importance of rules contained in the Artemis Accords and their likely influence on international space law. The author tries to find out if the Accords are compliant with *corpus iuris spatialis* and considers the possibility of establishing an international custom for regulating the issues of space mining.

2. SPACE MINING

The development of the industry and our dependence on electronic devices means humanity needs to think about natural resources, which may be exhausted during increasingly intensive exploitation. This forces us to seek other sources of rare natural materials in places which are not subject to national sovereignty. After discovering various resources on the seabed and establishing international

[1] T. Nugraha, *Space-Centric Concept to Answer Tomorrow Space Challenge: A Small Step for Future Space Law,* 'Diponegoro Law Review' 2021, Vol. 6, No. 2, p. 191.

maritime law, which includes rules of governance of this area, people have to look for new possibilities to obtain resources necessary for the world's economy. Space industry is a branch of economy which was not stalled even by the global COVID-19 pandemic.[2]

This space where resources have not yet been exhausted is outer space. Enormous amounts of valuable materials are located on many celestial bodies. It is in particular crucial for the development of economy in the next decades because of the absence of many types of rare materials on the surface of the Earth, which are, however, present in outer space. It is important to see that sources in outer space are very valuable. Neil DeGrasse Tyson, a renowned physicist and populariser of science, stated that "The first trillionaire there will ever be is the person who exploits the natural resources on asteroids".[3] This sentence is supported by estimations which indicate that e.g. (6) the Hebe asteroid has enough iron to meet human demands for more than a million years, enough nickel for 83 million years and gold for over 700 thousands years.[4] The first company interested in space mining, Planetary Resources, was founded in 2012.[5]

Such amounts may impact imagination and inspire specific activities of states. On April 2021, a Chinese rocket Long March 6 launched a small space mining test spacecraft NEO-1 into orbit[6]. It was the next step after landing the Rosetta spacecraft on the 67P/Churyumov–Gerasimenko comet, which was the first landing of an artificial satellite on a comet in history.[7] These facts illustrate that the conquest of the outer space and the use of its assets will be a problem of the near future. In light of these circumstances, the international society has to address legal aspects of space mining.

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[2] A. Kamalnath, H. Sarkar, *Regulation of Corporate Activity in the Space Sector,* 'Santa Clara Law Review' 2022, Vol. 62, p. 377.

[3] K. Krammer, *Neil deGrasse Tyson Says Space Ventures Will Spawn First Trillionaire. A Passion for Exploration is the Fuel to an Innovative Economy, Says Astrophysicist Neil deGrasse Tyson*, NBCNEWS, 05.05.2015, https://www.nbcnews.com/science/space/neil-degrasse-tyson-says-space-ventures-will-spawn-first-trillionaire-n352271 (accessed 6.01.2023).

[4] M. Matacz, *W górnictwie kosmicznym czekają gigantyczne pieniądze,* Nauka w Polsce, 22.09.2020, https://naukawpolsce.pl/aktualnosci/news%2C83920%2Cw-gornictwie-kosmicznym-czekaja-gigantyczne-pieniadze.html (accessed 6.01.2023)

[5] M. Wall, *Asteroid Mining Venture Backed by Google Execs, James Cameron Unveiled,* space.com, 24.04.2012, https://www.space.com/15395-asteroid-mining-planetary-resources.html (accessed 20.01.2023).

[6] A. Jones, *China Launches Space Mining Test Spacecraft on Commercial Rideshare Mission,* SpaceNews, 27.04.2021, https://spacenews.com/china-launches-space-mining-test-spacecraft-on-commercial-rideshare-mission/ (accessed 6.01.2023).

[7] *Rosetta to Deploy Lander on 12 November*, ESA, 26.09.2014, https://www.esa.int/Science_Exploration/Space_Science/Rosetta/Rosetta_to_deploy_lander_on_12_November (accessed 6.01.2023).

3. FIRST ACT OF THE INTERNATIONAL LAW ON OUTER SPACE

From 1969 to 1972, during manned missions to outer space, about 400 kg of rock samples were bought to Earth. This material is still being examined and results of research are being constantly released.[8] Despite the important role these samples play in research on outer space, it is a relatively small amount of material. When space mining takes off on a large scale, the amount of space material brought back will be many times greater. It forces us to think about the legal ground of the mining activity in space under the five basic international treaties that address space law.

First of all, it is necessary to examine provisions included in the Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space as the foundation for subsequent international agreements made in the following years.[9] The text of the Declaration emphasises the common interest of humankind in exploration and use of outer space and indicates that it should be carried on for the benefit of all states irrespective of their degree of economic or scientific development.

The resolution also declares freedom of exploration and use of the outer space and celestial bodies for all states where no state is entitled to appropriate celestial bodies in any way. The Declaration contains important provisions concerning responsibility of states that carry out space activity. States are responsible for acts performed not only by their national agencies, but also by non-governmental entities. The Declaration is a modern document which imposes a requirement that states authorize and supervise private hazardous activity. This model was repeated in numerous subsequent international agreements and the International Law Commission adopted it as the ground for liability of states in its works on the draft convention on harmful effects of activity non-prohibited by international law.[10] This provision is linked with states' entitlement to request consultation in case of danger of harmful results of space activity of another state, which results from the obligation of international cooperation and mutual assistance. The launching State retains jurisdiction and control of a space object and personnel. This State is also liable for damage done to another state or its natural or juridical persons. Lastly, a very important provision states that astronauts are

[8] E. Krajczyńska, *Dr Anna Łosiak: księżycowe próbki dadzą wgląd w najdalszą historię naszej planety*, Nauka w Polsce, 29.08.2022, https://naukawpolsce.pl/aktualnosci/news%2C9-3469%2Cdr-anna-losiak-ksiezycowe-probki-dadza-wglad-w-najdalsza-historie-naszej (accessed 6.01.2023)

[9] Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, A/RES/1962(XVIII).

[10] Prevention of Transboundary Harm from Hazardous Activities, A/CN.4/L.601/Corr.1.

considered to be envoys of humankind, which shows that humanity advocates unity in matters of space.

4. THE PROBLEM OF SPACE MINING UNDER CORPUS IURIS SPATIALIS

The provisions presented above were repeated and developed by subsequent treaties that addressed space law. The problems associated with the Artemis Accord were taken into consideration in regulations on the use of outer space and celestial bodies and so was the use of materials found in space.

The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies[11] is the basic agreement in space law. It contains many important provisions which are not directly concerned with space mining. It establishes general principles bounding on states for the use and exploration of outer space, but they can be unclear.[12] The Treaty repeats the principles of the common interest of mankind and benefits of all states and establishes the duty of international cooperation and mutual assistance. The freedom of access to all areas of celestial bodies and prohibition of claims to any part of outer space, contrary to aerial law,[13] state that any part of space can be part of a state, but it does not determine the possibility of use of sources located in outer space. The Treaty also contains a duty of states to carry out their activities in accordance with international law whereby the use of sources should be regulated by provisions of international law. In case of lack of international treaties, it is necessary to use other sources of international law. The next important provision is the prohibition of military installations in space, but, *a contrario,* it does not exclude the possibility of civilian or mining facilities. The use of military personnel is not forbidden but only for peaceful reasons. States are responsible for their activity in space, including for the activity of their non-governmental entities and they are liable for damage that results from launching a space object. There is a repetition of the provision on jurisdiction of the state over the launched space object and its personnel. All installations in space should be open for astronauts from other states on the basis of reciprocity and activity in space shall not cause contamination and it shall be carried out

[11] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, opened for signature on 27 January 1969, Res. 2222 (XXI).

[12] R. Lee, *Law and Regulation of Commercial Mining of Minerals in Outer Space*, Dordrecht/Heidelberg/London/New York 2012, p. 163.

[13] R. Abeyratne, *Space Security Law*, Berlin/Heidelberg 2011, p. 85.

with respect for the natural environment. This last provision can be important for space mining, because it relates to the interference in the natural environment and it is not obvious whether states would be willing to provide access to their mining stations located in space.

The Outer Space Treaty does not directly refer to the use of space resources by states, but it contains many important provisions which are crucial for the exploration of space, e.g. a duty of cooperation and mutual assistance, responsibility and liability of states, protection of natural environment and access of astronauts to installations of other states. *Corpus iuris spatialis* also includes four other agreements. They are the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space,[14] Convention on International Liability for Damage Caused by Space Objects,[15] Convention on Registration of Objects Launched into Outer Space[16] and the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies.[17]

The last is the most important from the point of view of space mining, because it directly addresses obtaining sources from space. This is the reason for many controversies surrounding this Treaty and ultimately its failure. It has been ratified by only 18 states, some of which carry out the most advanced activity in outer space, so it cannot be considered a universal agreement.[18]

The Preamble of the Agreement contains the important directives for the exploration and use of the Moon and celestial bodies. The distinction of the Moon in title and in the first sentences of the agreement becomes clear when one realizes that the Moon is a unique natural satellite of the Earth. The Moon is the primary subject and its legal status is regulated similarly to the status of other celestial bodies. At first sight it is obvious that the adoption of the Agreement was mentioned as a method of prevention of future conflicts for its resources and at the same time the aim of the Agreement is to adopt a universal regulation for the exploitation of outer space materials.[19]

The Agreement relates to the Moon and other celestial bodies in the solar system, but it predicts the possibility of other international agreements that regulate

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[14] Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, Moscow, London, Washington, opened for signature 22 April 1968, Res. 2345 (XXII).

[15] Convention on International Liability for Damage Caused by Space Objects, Moscow, London, Washington, opened for signature on 29 March 1972, Res. 2777 (XXVI).

[16] Convention on Registration of Objects Launched into Outer Space, New York, opened for signature on 14 January 1975, Res. 3235 (XXIX).

[17] Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, New York, opened for signature on 18 December 1979, UNTS 1363.

[18] B. Skardzińska, *Górnictwo kosmiczne – prawo i perspektywy,* (in:) K. Myszona-Kostrzewa, E. Mreńca, P. Zientarski (eds), *Prawne aspekty działalności kosmicznej*, Warszawa 2019, p. 173.

[19] Moon Agreement Provisional agenda, with annotations, for the 18th session, 1975, A/AC.105/L.82.

the legal status of celestial bodies. One important provision is exclusion from the scope of interest of treaty materials which reach the surface of the Earth by natural means, thereby the Agreement does not address the question of possession of, for example, meteorites which fall on the Earth. It is important due to meteorites' great scientific value and due to the fact that it contains many important minerals, precious for the development of our civilisation.[20] The Agreement repeats the provisions on duty of states to carry out theirs activity in accordance to international law. The Moon and other celestial bodies shall be exploited only in peaceful purposes and any use of force or threat of it is prohibited, which is obviously a reference to the main principles of the Charter of the United Nations.[21] Partial militarization of the outer space is also prevented by a prohibition of placing of weapons, but only nuclear weapons and weapons of mass destruction, on the orbit around and other trajectories. Celestial bodies are prohibited to be fortified and the use and testing of any kind of weapons or carrying of manoeuvres are also forbidden, though the use of military equipment and personnel is possible for peaceful purposes.

Article 4 contains an important yet controversial provision on the problem of exploitation of resources located on celestial bodies. Under this article, the Moon and the other celestial bodies shall be a common province of the mankind, which is a reference to the notion which ambassador Pardo used in the context of the seabed.[22] Despite the fact that there is no description of the notion of common heritage of mankind, Antarctica is considered the third such place.[23] These three areas cannot be occupied by any state.[24] It is important to highlight the use of other words which may lead to a conclusion of distinct understanding of the legal status of all of these areas despite similar or very close international regulations.[25] What is more, exploration and activities of states on the Moon and other celestial bodies shall be carried out for the benefit of all countries irrespective of their level of economic or scientific development. Activity in the outer space should be carried out to improve quality of life on Earth. Article 11 is linked with the provision discussed above and states that celestial bodies and their natural resources are com-

[20] *Ten sztylet faraona Tutanchamona pochodzi z kosmosu. Wykuto go z meteorytu*, 29.07.2019, National Geographic, https://www.national-geographic.pl/artykul/ten-sztylet-faraona-tutanchamona-pochodzi-z-kosmosu-wykuto-go-z-meteorytu (accessed 25.01.2023).

[21] United Nations, Charter of the United Nations, 24 October 1945, 1 UNTS XVI.

[22] A. Pardo, Address to the 22nd session of the General Assembly of the United Nations, U.N. GAOR, 22nd sess., U.N. Doc. A/6695 (18 August 1967).

[23] E. Franckx, *The International Seabed Authority and the Common Heritage of Mankind: The Need for States to Establish the Outer Limits of their Continental Shelf,* 'The International Journal of Marine and Coastal Law' 2010, No. 25, p. 544

[24] Y. Schmidt, *International Space Law and Developing Countries,* (in:) Ch. Brunner, A. Soucek (eds), *Outer Space in Society, Politics and Law*, Vienna 2011, p. 696.

[25] F. Lyall, P. Larsen, *Space Law: a Treatise*, Burlington 2009, p. 181.

mon heritage of mankind, which is one of the reasons of failure of the Treaty.[26] Celestial bodies cannot be subject of claims of sovereignty or occupation, but the same does apply to their resources. States are entitled to explore and use celestial bodies without any discrimination. The international society became obliged to establish an international regime concerning exploitation of natural resources, but contrary to maritime law, this regime has not been established yet. The Treaty laid down directions for future agreements, which include rational management, expansion of opportunities of natural resources and sharing of benefits from resources with other states. The last provision is especially controversial, because based on it, states, at the level that allows space activity, would be obliged to share profits from this activity with other states.

The agreement also repeats provisions of cooperation and mutual assistance in activity in outer space. The next important provision addresses transparency and duty of reporting about space activity to the UN General Secretary and other states. This is also an obligation stipulated in projects of the International Law Commission that focused on liability of states.

Space mining by definition relies on obtaining resources from outer space. Article 6 of the Moon Treaty contains permission for states to collect and remove from the Moon and celestial bodies samples of minerals and other substances. It is a problematic provision, because a sample, by definition, is not an amount that would satisfy the needs of a developed industry. States must recognize that such samples must also be available for other states and the international community interested in scientific investigations. States can use minerals and other substances to support missions, but in appropriate quantities. Moreover, this provision is used in the context of the freedom of scientific investigations without discrimination. Limitation of space mining also involves the duty of protection of the natural environment and prohibition of contaminating it.

Apart from the freedom of scientific investigation, states are also entitled to establish manned or unmanned stations and to send personnel. They are also obliged to adopt practicable measures to safeguard life and health of persons, including offering shelter for persons in distress. States also retain jurisdiction and control over their personnel, objects and any kind of installations.

In the context of collecting of resources liability and responsibility of states for effects of activity in the outer space is crucial. States are obliged to authorize and supervise space activity of non-governmental entities and ensure that their activity is carried out in accordance with the Moon Treaty. This is related to the next controversial obligation to ensure access to space installations, objects etc. for other states aiming to examine compliance of their activity with international law.

[26] V. Pop, *Who Owns the Moon? Extraterrestrial Aspects of Land and Mineral Resources Ownership*, Berlin/Heidelberg 2009, p. 130.

The Moon Treaty is a broad regulation, which in the main part repeats provisions of other international agreements on space law. However, it stipulates such controversial responsibilities that it cannot be adopted by the majority of states, especially those highly advanced in space industry. Therefore, it seems that it will remain an important step but without a real impact on international society and one of the problems of international law is how to encourage further ratifications.[27] This is also the most advanced act of the space law from the point of view of protection of environment.[28]

5. SOFT LAW ON SPACE MINING

Apart from international agreements, there is also an act of soft law which is not binding for countries, but which indicates how the materials obtained in outer space should be used. Soft law in many cases can fill areas not regulated by binding international agreements.[29]

What is important, that adoption 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 on 4 February 1997 is much more recent than the Moon Treaty.[30] This fact allows us to realize that there was a problem of the lack of universality of the Moon Treaty and of increasing opportunities of space mining. These circumstances forced the establishment of soft law in this subject matter. The Declaration recalls treaties contained in *corpus iuris spatialis* and the Charter of the United Nations. Its preamble emphasizes the important role of co-operation of states and the principle of carrying out of space activity for the benefit of all states, irrespectively on their level of development. The declaration highlights that states are free in determining their participation in international co-operation, but it contains an unclear obligation to act in compliance with the interests and fair principles of co-operation. In particular, highly-developed countries are considered to be obliged to carry out space activities with consideration to developing countries,

[27] F. Tronchetti, *Fundamentals of Space Law and Policy*, New York/Heidelberg/Dordrecht/London 2013, p. 83.

[28] L. Viikari, *The Environmental Element in Space Law Assessing the Present and Charting the Future*, Leiden/Boston 2008, p. 62.

[29] M. de Zwart, D. Stephens, *The Space (Innovation) Race: The Inevitable Relationship Between Military Technology And Innovation,* 'Melbourne Journal of International Law' 2019, Vol. 20, p. 4.

[30] 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, 4 February 1997, A/RES/51/122.

which involves an obligation to use the most effective and appropriate mode in international co-operation. The declaration also indicates aims of international co-operation, but they are controversial, because it predicts that states are obliged to share technical assistance, which can lead to a conclusion that more developed countries should offer results of their scientific investigations. Moreover, states are encouraged to share their initiatives with the United Nations Programme on Space Applications and to strengthen co-operation under the Committee on the Peaceful Uses of Outer Space.

The declaration described above is an act of soft law, so its provisions are not binding. It is a very optimistic document, but it is hard to imagine a situation where states share their developed technologies in the name of the principle of international co-operation.

6. DOMESTIC REGULATIONS ON SPACE MINING

The variety of sources of international law allows researchers to look for answers not only in binding agreements adopted by the international community, but also on other grounds. Lack of practice in this regard means that there is no relevant international custom, but it is still possible to derive *opinio iuris* from states' unilateral acts. This is important, e.g. in the context of the delimitation of outer space.[31] Two such acts of law that address space mining will be discussed here.

First of all, it is the domestic law of the United States as the pioneer of space activities.[32] Apart from the primary law that governs mining in the United States the country also has the 1872 Mining Law with subsequent amendments,[33] which was a result of the 19th-century Gold Rush. There is also the 2015 U.S. Commercial Space Launch Competitiveness Act,[34] adopted as a response to the unclear legal status of space mining.[35] This act lays down provisions which oblige the state to promote and facilitate U.S. citizens' space activity and provisions which can be controversial and contrary to international law. One of them grants U.S. citizens numerous rights concerning on any asteroid resource or space resource,

[31] O. de Oliveira Bittencourt Neto, *Defining the Limits of Outer Space for Regulatory Purposes*, Heidelberg 2015, p. 65.

[32] P. Dempsey, *Overview of the United States Space Policy and Law,* (in:) R. Jakhu (ed.), *National Regulation of Space Activities*, New York 2010, p. 373.

[33] General Mining Law of 1872, Ch. 152, 17 Stat. 91.

[34] U.S. Commercial Space Launch Competitiveness Act, Pub. L. No. 114-90, 129 Stat. 704 (2015).

[35] L. Byrd, *Soft Law in Space: A Legal Framework for Extraterrestrial Mining,* 'Emory Law Journal' 2022, Vol. 71(801), p. 818.

including the right to possess, own, transport, use, and sell the asteroid resource or space resource. The act invokes international law, but compliance of this provision with international law is doubtful, because it is not obvious whether natural or juridical persons are entitled to obtain resources from space, even though there is no explicit prohibition of doing so. These doubts cannot be removed by a provision stating that the United States does not assert sovereign or any kind of jurisdiction or ownership of any celestial body.

This short act inspired numerous objections from, e.g., Russia and Brazil, which pertained to the lack of possibility of space mining on the ground of the Outer Space Treaty.[36]

Luxembourg has also adopted its own regulations on space mining. It was the first European state which established rules of space activity.[37] Article I of its space statute states that space resources are capable of being owned. There is no definition of space resources like the one included in the U.S. law,[38] so there is no distinction between biotic and abiotic resources. Entities have to obtain permission from the government to carry out space activity, excluding this pertaining to space communication satellites and frequencies. The act indicates administrative obligations imposed on entities which are compatible with the principles of international law relevant to extra-hazardous activity. In particular, it imposes responsibilities concerning financial stability, which involves insurance and capability to pay compensation for victims of space damage.

The acts of domestic law resented above are not exclusively concerned with space mining, but they contain provisions that refer to this subject matter. Both of them invoke international law, but it is important to highlight that neither the United States nor Luxembourg are parties to the Moon Treaty. From this point of view, they are not bound by many provisions relating to space mining, but only by general responsibilities imposed by other treaties of *corpus iuris spatialis*, especially the Outer Space Treaty.[39]

[36] F. von der Dunk, *Asteroid Mining: International and National Legal Aspects,* 'Michigan State International Law Review' 2017, Vol. 26(1), pp. 96 – 99.

[37] Law 674 of 20 July 2017 on the exploration and use of space resources, Journal Officiel du Grand-Duché de Luxembourg (Official Journal of the Grand Duchy of Luxembourg).

[38] T. Cheney, *There's No Rush: Developing a Legal Framework for Space Resource Activities,* 'Journal of Space Law' 2019, No. 43, p. 9.

[39] P. de Man, *Working Paper No. 189. Luxembourg Law on Space Resources Rests on Contentious Relationship with International Framework,* July 2017, https://ghum.kuleuven.be/ggs/publications/working_papers/2017/189deman (accessed 21.01.2023)

7. ARTEMIS ACCORDS

The Orion spacecraft mission, part of Artemis I, lasted from 16 November to 11 December 2022.[40] It was the beginning of series of activities that aim to take humans to the Moon again. After installing a permanent base on the Moon, the next step of the programme is to reach Mars.[41]

This programme is the realization of the Artemis Accords Principles for Cooperation in the Civil Exploration and Use of the Moon, Mars, Comets, and Asteroids for Peaceful Purposes.[42] This non-binding agreement[43] was signed on 13 October 2020 by directors of space agencies of the United States and seven other countries.[44] In fact, there are 23 signatories of the agreement, among them Poland.[45] Despite the fact that the provisions of the Artemis Accords are not binding on their parties, many important states that carry out space activity, China and Russia to name just two, have not signed them.[46] This is the reason why this agreement is not universal.[47] Parties to the agreement are mostly allies of the United States, whereby this is an example of a new political division of the world and another example of competition between the U.S. and China.[48]

The Artemis Accords emphasise in their preamble values known from *corpus iuris spatialis,* such as the benefit for humankind, and invoke bilateral agreements while at the same time recognize the not common, but mutual interest in the exploration and use of the outer space. This may be a crucial difference, because it may limit the interest to the parties to the agreement. The Artemis

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[40] M. Tuttle, *Artemis I Orion Spacecraft Returns to Kennedy Space Center*, 30.12.2022, NASA Blogs, https://blogs.nasa.gov/artemis/2022/12/30/artemis-i-orion-spacecraft-returns-to-kennedy-space-center/ (accessed 21.01.2023).

[41] A. Ochman, *Misja Artemis 1: Ostatni rozdział, czyli powrót do domu,* 11.12.2022, Nauka to lubię, https://naukatolubie.pl/misja-artemis-1-ostatni-rozdzial-czyli-powrot-do-domu/ (accessed 21.01.2023).

[42] The Artemis Accords Principles for Cooperation in the Civil Exploration and Use of the Moon, Mars, Comets, and Asteroids for Peaceful Purposes, signed 13th October 2020.

[43] R. Deplano, *The Artemis Accords: Evolution or Revolution in International Space Law?,* 'International and Comparative Law Quarterly' 2021, Vol. 70, p. 801.

[44] C. Warner, *International Partners Advance Cooperation with First Signings of Artemis Accords*, NASA, 13.10.2020, https://www.nasa.gov/press-release/nasa-international-partners-advance-cooperation-with-first-signings-of-artemis-accords (accessed 23.01.2023).

[45] *Poland Signs Artemis Accords at IAC*, NASA, 26.10.2021, https://www.nasa.gov/feature/poland-signs-artemis-accords-at-iac (accessed 23.01.2023).

[46] E. Taichman, *The Artemis Accords: Employing Space Diplomacy to De-Escalate a National Security Threat and Promote Space Commercialization,* 'American University National Security Law Brief' 2021, Vol. 11, No. 2, p. 129.

[47] M. Piotrowski, S. Zaręba, *Artemis Accords: Towards New Rules for the Exploitation of Space,* 'The Polish Institute of International Affairs Bulletin' 4 March 2021, No. 47 (1743).

[48] P. Larsen, *Is There a Legal Path to Commercial Mining on the Moon?,* 'University of Pittsburgh Law Review' 2021, Vol. 83, p. 11.

Accords directly invoke former international agreements and emphasize the value of compliance with *corpus iuris spatialis.*[49] The agreement is considered to be the implementation of other international treaties but it also aims to establish beneficial practices for future exploration and use of outer space. The preamble contains aims of the programme, which include exploration of the Moon, Mars and beyond and consideration of coordination and cooperation among present and future actors in space. Moreover, it reemphasizes the collective interest of space exploration and commerce.

The Artemis Accords are not a treaty but a set of principles, guidelines and best practices for the civil exploration and use of outer space, considering principles established in former treaties, aiming to increase the safety of operations, reduce uncertainty, and promote the sustainable and beneficial use of space for all humankind.

Section I lists areas where the relevant activities may be carried out. It is the Moon, Mars, comets, and asteroids, including their surfaces and subsurface, as well as in orbit of the Moon or Mars, in the Lagrangian points for the Earth-Moon system, and in transit between these celestial bodies and locations. This enumeration limits the possibility of carrying out space activities, because there is no mention of other planets or celestial bodies. It also emphasises states' intention to implement measures such as mission planning and contractual mechanisms with entities acting on their behalf. The Artemis Accords allow states to adopt their individual agreements not determining their form, but indicating obligatory provisions of such agreements. There are descriptions of the nature, scope, and objectives of the civil cooperative activity, provisions referred to cooperation, liability, intellectual property and the transfer of goods and technical data. An important rule relates to compliance with legal obligations applicable to each signatory, which means the Accords prescribe liability for breaching international law. Any activity of signatories should be carried out for peaceful purposes and in accordance with relevant international law.

The Artemis Accords contain an interesting provision which is very similar to the Moon Treaty. It states that signatories should act in transparency and they should inform each other about theirs space activities, but also about national space policies. There are also provisions under which signatories plan to share scientific results of their activities with the public and the scientific community. This is an interesting section, in line with *corpus iuris spatialis*, but it may lead to conflicts relating to the sharing of knowledge obtained by states. It is possible in the case of common, limited activity, but it is not possible under a universal agreement. This is comparable to the section devoted to the development of interoperability and common exploration of infrastructure and standards, which is important for coopera-

[49] R. Neef, *Artemis Accords: A New Path Forward For Space Lawmaking?*, 'Adelaide Law Review' 2021, No. 42(2), p. 576.

tion of entities.[50] Section 5 enumerates materials, systems and installations which should be used commonly by signatories, but this list is not exhaustive. The Artemis Accords encourage states to establish proper standards if there are no proper regulations in place already. The Signatories to this agreement retain the right to communicate about their activities and they intend to coordinate with each other their information policy with regard to protection of information. The agreement stipulates open sharing of data and information obtained during joint space activities. What is important, private sector operations are excluded from this provision if provided they are not conducted on behalf of states.

The Artemis Accords repeat provisions of the Rescue and Return Agreement and the Registration Convention. It is important to note that there is an obligation of registration of relevant space objects which may lead to misunderstandings in interpretation of the agreement. "Relevant" may mean that not every object should be registered. There is also a provision on the protection of heritage, which should be done by using applicable practices and rules.

Section 10 of the Artemis Accords deals with space resources. This provision may be unclear, because first of all it emphasizes that utilization of space resources should be used to provide critical support for safe and sustainable operations. This sentence poses the question about the use of space resources for purposes other than operations in space. These doubts are strengthened by subsequent provisions, which emphasize compliance of extraction and utilization of space resources with the Outer Space Treaty and the use of resources for needs of space activities. It is reserved though that extraction of resources does not constitute national appropriation. To do so, extraction of resources should be notified to the Secretary-General of the United Nations and to the public and the international scientific community. It is also contrary to the obligation to establish a special regime for extracting space resources.[51]

The Artemis Accords contain an important and very broad Section 11. This is a provision which addresses security and safety in outer space and avoiding harmful interference. It highlights the duty of authorization of space activities by the state, which may involve a request for consultation in case of harmful interference or threat of it. The signatories state that they shall refrain from harmful actions and they will inform in case of harmful interference or hazards to other states. An interesting provision lays down safety zones, which are described as areas where nominal operations of a relevant activity or an anomalous event could reasonably cause harmful interference. Section 10 also provides general demands for establishing safety zones. Establishment, alteration, or end of any safety zone should be

[50] M. de Zwart, *To the Moon and Beyond: The Artemis Accords and the Evolution of Space Law,* (in:) M. de Zwart, S. Henderson (eds), *Commercial and Military Uses of Outer Space*, Springer 2001, p. 72.

[51] C. Finnegan, *Indigenous Interests in Outer Space: Addressing the Conflict of Increasing Satellite Numbers with Indigenous Astronomy Practices,* 'Laws' 2022, No. 11(26), p. 5.

notified to Secretary-General of the United Nations. Safety zones should be made available for the public and signatories should take any appropriate measures to ensure safety for the personnel, equipment and operations. The last point of the section talks about the purpose of safety zones. This can be controversial, because there is a chance they will be used not only for scientific discovery and technology demonstration, but also for the safe and efficient extraction and utilization of space resources. Even limitation of the use of space resources to support sustainable space exploration and other operations cannot be recognized as the possibility to extract space resources on a large scale. The existence of safety zones is not an obstacle to the principle of free access to all areas of celestial bodies, but it still can be recognized as an attempt of appropriation, which is contrary to the Outer Space Treaty.[52]

The Artemis Accords are an important agreement from one more point of view. Section 12 addresses orbital debris, which poses a danger not only to the environment, but also to human activities in space. Signatories express their intention to mitigate the amount of space debris, including to remove spacecraft. Another important provision lays down the responsibility of a state which plans and implements the end of mission in the case of cooperative missions.

8. CONCLUSION

The Artemis Accords are not a binding agreement adopted by a few states. In fact, there are about 20 signatories to it, which is why it cannot be recognized as a universal act such as the treaties adopted during the Cold War. Apart from political aspects, the Artemis Accords touch upon controversial issues such as extraction of space resources, which is recognized as violation of international law, despite there being a provision on compliance with the Outer Space Treaty. It also crucial that this is the only agreement invoked in the provisions of the Artemis Accords. When it comes to responsibility and liability of states, there are many provisions on the possibilities of sharing information and informing about threats. This is another problematic question, because it is not possible to encourage the majority of states to exchange scientific data which are an effect of high-level research. Controversies can also be expressed in the subject of safety zones. This is a notion not recognized in binding international law.

Given these doubts, it does not seem that the Artemis Accords will ever be part of international law. It may provide a legal ground for an activity of a few states in their common goal, but it is not a collection of principles for space activities.

[52] J. Lee, E. Magilton, A. Ruffolo, *Diplomatic Impact in the Stars? A Review of the Impact of the Artemis Accords on Global Relationships,* 'Catholic University Journal of Law and Technology' 2022, Vol. 30(2), p. 21.

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