

**International Cooperation of States in The Study and Protection of The Lunar Space**  
*Cooperación internacional de los Estados en el estudio y protección del espacio lunar*

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**Abstract**

Despite the long history of international cooperation in space exploration, the evolution of the forms and nature of international cooperation is taking place in connection with the development of space technologies, and the emergence of new subjects of international space law. In the context of the development of scientific technologies and the unstable political situation of the world law and order, it is important for states to find diplomatic ways of international communication in space exploration. One of the sites for the exploration of outer space is the only satellite of our planet, i.e. the Moon. The literature notes that in the 21st century, a situation is emerging in international space law, in which not only new legal problems appear, but also issues of past years are being resolved. These questions arise due to the increase in the number of participants in space activities and the development of space technologies, which, from a new perspective, will allow the exploration of outer space. In the proposed paper, the authors consider the main forms of international cooperation in the development of the lunar space, study their dynamics and features. The doctrine, scientific literature, and international sources of space law dedicated to the raised topic being investigated. The paper presents the historical trends in the international interaction between states in the exploration of the Moon, and analysis of not only the legal but also the technological component of the problem. In conclusion, the authors draw their own conclusions aimed at solving the analysed problem.

**Keywords:** Moon, international cooperation, international treaty, outer space, space object, United Nations.

**Resumen**

A pesar de la larga historia de cooperación internacional en la exploración espacial, la evolución de las formas y la naturaleza de la cooperación internacional se está produciendo en relación con el desarrollo de tecnologías espaciales y el surgimiento de nuevos sujetos del derecho espacial internacional. En el contexto del desarrollo de las tecnologías científicas y la situación política inestable del orden público mundial, es importante que los Estados encuentren vías diplomáticas de comunicación internacional en la exploración espacial. Uno de los sitios para la exploración del espacio exterior es el único satélite de nuestro planeta, es decir, la Luna. La literatura señala que en el siglo XXI está surgiendo una situación en el derecho espacial internacional, en la que no solo aparecen nuevos problemas legales, sino que también se están resolviendo cuestiones de años pasados. Estas preguntas surgen debido al aumento del número de participantes en las actividades espaciales y al desarrollo de tecnologías espaciales que, desde una nueva perspectiva, permitirán la exploración del espacio ultraterrestre. En el artículo propuesto, los autores consideran las principales formas de cooperación internacional en el desarrollo del espacio lunar, estudian su dinámica y características. La doctrina, la literatura científica y las fuentes internacionales de derecho espacial dedicadas al tema planteado que se investiga. El artículo presenta las tendencias históricas en la interacción internacional entre estados en la exploración de la



Luna, y el análisis no solo del componente legal sino también tecnológico del problema. En conclusión, los autores extraen sus propias conclusiones encaminadas a resolver el problema analizado.

**Palabras clave:** Luna, cooperación internacional, tratado internacional, espacio exterior, objeto espacial, Naciones Unidas.

### Introduction

In modern conditions of development of technologies, not only the period of space exploration but also its development is not far off due to the emergence of new sources of energy, which will make it possible to direct a person further and further into the depths of space. In this situation, the only satellite of our planet, the Moon, may in the near future become a space territory, to which space ships will be sent to populate it. Colonization of the Moon is the implied establishment on the Moon, the nearest astronomical body to Earth, of a permanent human population or robotic industries.

It sometimes seems to ordinary people that the Moon is a frozen celestial body, on which life and development are not possible, but in fact, this is not entirely true. The geology of the Moon shows that the Moon consists, among other things, of volcanic rocks of basalt, under which it is possible to find shelter from sudden temperature fluctuations and cosmic radiation. Since the composition of basalts includes oxides of metals and silicon, many metals necessary for human life can be synthesized on the moon under the light of the sun. In addition, man can build comfortable housing and other objects from lunar rocks that allow them to carry out activities to explore the Moon (Bagrov, 2004).

Today, modern civilization is widely aware of the benefits for the states that have achieved victories on the Olympus of the space movement. Therefore, the Moon, as the closest satellite of the Earth, is a celestial object especially valuable for many countries. That is why, at this moment, at the initial stage, it is important to determine the legal future of the celestial body closest to us and establish the most effective international legal regime. Of particular importance to this issue is the decree signed in April 2020 by US President Donald Trump on the US right to use the resources of the Moon. According to this regulation, Americans should have the right to conduct commercial exploration, extraction and use of

resources in outer space in accordance with the applicable law (Nyka, 2018).

Note that in 2010, on the basis of Resolution 64/86 of the UN General Assembly, the UN Outer Space Committee introduced the issue of the long-term sustainability of outer space activities into the discussion plan. In this regard, the main purpose of the created Working Group was to collect proposals to resolve controversial issues to ensure the long-term sustainability of outer space activities through the creation of a plan involving optional guidelines of international space law (Hofmann & Bergamasco, 2020; Takeuchi, 2019; Yan, 2019). One of the issues discussed was the issue of determining the legal regime of outer space.

### Objective

The authors identify the key modes of international cooperation in the development of lunar space in the proposed paper and study their dynamics and characteristics. It explores the doctrine, scientific literature, and foreign sources of space law devoted to the subject presented. The paper presents the historical trends in the international engagement in the exploration of the Moon between states, and analyses not only the legal but also the technical aspect of the issue.

### Material and Methods

The work uses general and special methods of scientific knowledge. Analysis and synthesis are central research methods. Also, the work widely uses such methods as the historical, systemic, and comparative legal method, and also formal-logical method.

### Results and Discussion

Among the sources of international space law aimed at regulating the lunar space, one should first highlight the 1967 Outer Space Treaty (Gugunskiy et al., 2020; Ireland, 1967; Kopal, 1966). In accordance with it, the use of outer space for military purposes is imperatively prohibited, but freedom of any research is allowed. Article 2



of the treaty under consideration provides that no state, by any means, can nationalize or appropriate all outer space as a whole or its individual parts. But at the same time, this provision runs counter to article 8 of the same treaty, according to which any state that owns the launched space object retains its jurisdiction over the object while it is in space or in any space territory. Thus, if in the process of exploring the Moon, a state would arrange a base on the Moon and build the necessary infrastructure there, then these structures will be subject to the legal regime of the owner state.

In 1979, the Agreement on the Activities of States on the Moon and Other Celestial Bodies (hereinafter referred to as the Moon Agreement) was developed, which is directly aimed at regulating any human activity on the Moon (Butler, 2017; Commerce & Assessment, 1980). The Agreement governing the activities of States on the Moon and other celestial bodies, better known as the Moon Treaty or the Moon Agreement, is a multilateral treaty which transfers jurisdiction to the participating countries overall celestial bodies (including orbits around these bodies). Both actions must therefore comply with international law, including the Charter of the United Nations. The Moon Treaty proposes the creation, within the Solar System, of an "international regime" or "framework of rules" applicable to the Moon and other celestial bodies, including orbits or other trajectories to or from them. The history of the creation of the Moon Agreement dates back to 1966 when the USSR submitted a draft agreement on the exploration of the Moon for discussion by all states. The most important issue that arose as a result of the discussion on the adoption of the agreement proposed by the USSR was the issue of the mandatory establishment of a moratorium on the development and operation of the lunar mineral resources. As a result, a provision was established according to which the Moon and its natural resources were recognized as the joint heritage of mankind.

Note that the question of the natural resources of the Moon has become the most important for many states, including the USA and the USSR. As a result of diplomatic negotiations, an exchange of views was made between representatives of Argentina and the USSR, where the parties discussed the meaning of the definition of "common heritage of all mankind". The golden mean, which suits all parties, was found thanks to the productive activities of the Austrian mission (Gaspari & Oliva, 2019; Mashkovtsev, n.d.). In this matter, one should note the opinion of the Netherlands (Mavroeidi, 2019; Nelson, 2010;

Tronchetti, 2010), which, not being a space power, ratified the Moon Agreement.

Of interest is paragraph 5 of Article 11 of the Moon Agreement, according to which, when establishing the technical feasibility of exploiting the mineral resources of the Moon, countries undertake the obligation to form an international legal regime and a corresponding mechanism to consolidate the rules of the game for the extraction of the natural resources of the Moon.

Note that the history of the legal regulation of the deep seabed is very similar to the fate of the legal regulation of the lunar space. After more than five years of difficult negotiations, the 1982 UN Convention on the Law of the Sea (Simmonds, 1985) had to introduce a compromise solution regarding the seabed of the World Ocean. Under article 137, paragraph 2 of the treaty, humanity is the owner of all rights to the resources of the Area. At the same time, the Convention on the law of the sea thoroughly discloses the practice of applying this mechanism in relation to the exploitation of seabed resources. Contrary to the opposition of the industrialized countries, this point was reflected in the convention. The resistance of this group of countries was based on the same reasons that were observed in relation to the Moon Agreement: who will have the right to own the resources and in what order to use them.

Bilateral cooperation is actively developing in modern conditions of the exploration of the Moon; it is aimed at researching and studying this celestial body. In the literature, it is noted that such programs create state practice on the implementation of space activities, as they touch upon the issues consolidated by several countries on production, scientific events and information interaction, which may have a positive effect, not on the activities of individual countries (Ferrazzani, 1997). A striking example of bilateral cooperation in the study of the Moon can be the mission Chandrayan-2 realized by Roscosmos and the Indian Space Research Organization.

## Conclusions

It is safe to say that the Moon Agreement today is a legal obstacle to the exploitation of the natural resources of the Moon, since the norms laid down more than 40 years ago do not meet the modern needs of states.

As a result, the Moon Agreement has been signed and ratified by 13 states as of today, while this list does not include a single UN Security Council state or a single space power. Thus, although the Moon Agreement has entered into force, its



provisions are not mandatory for most of the countries that have not ratified it.

According to the well-known American international lawyer, attorney Timothy Nelson, the legal gaps in the Moon Agreement lead to that the development of the natural resources of the Moon becomes an "intermediate zone." It should be agreed that if investors are required to make large investments in the exploration of the natural resources of the Moon, the intermediate zone concerning the legal status of the Moon will create a risk for them, which makes the reality of obtaining benefits from resource extraction vague and unclear. "Ideally," he believes, "we would like to get laws that describe the rights of property, extraction and sale of resources, if only because some concepts and provisions for these three areas of activity intersect and condition each other" (Schrunk et al., 2007).

There is an opinion expressed in the literature that the most successful way to include countries participating in the unified code of international space law into the orbit of the Moon exploration is not a change in the course on interpreting the rules of the Moon Agreement or the adoption of amendments to it, but the creation of another mutually beneficial Agreement dedicated to the legal status of a single natural Earth satellite (Caminos & Molitor, 1985; Csabafi, 2012). However, in our opinion, it is necessary to reconsider the basic principles and provisions of the Moon Agreement and to reconsider the possibility of signing and ratifying the Moon Agreement, taking into account the current progress in space activities.

It should be noted that a major drawback of the Moon Agreement is the lack of content in the "celestial body" definition. This can cause different approaches to the same issues upon the most favourable coincidence of circumstances in the exploration of celestial bodies not only in our solar system but also in other stars closest to us. This, ultimately, will lead to the emergence and need to resolve international disputes.

We believe that the legal vacuum in lunar exploration and the loss of relevance of the Moon Agreement are the reasons destabilizing the world legal order and pushing some countries to nationalize space assets. So, already today in the legislation of some states, the regulatory legal acts have occurred that allow these countries to mine space minerals. In 2015, US President Barack Obama signed bill HR2262, according to which US citizens are the rights holders of the assets they received in space. This law provides the right of US citizens to protect their resources from confiscation (Commercial, 2015). It should be

noted that despite the fact that the US Congress reports that there are no violations of Article 2 of the Outer Space Treaty, nevertheless, many scientists do not agree that this law denies the declaration of sovereignty (O'Brien, 2018). The Luxembourg government also followed the path of the United States and included in its national legal system the law on mining on asteroids, which provides an opportunity for any Luxembourg citizen to extract and own space minerals without any restrictions (Foster, 2016). In this regard, it should be noted that "Even the law of the state cannot serve as an excuse for refusing to comply with international obligations" (Schwebel, 1984; Shore, 1988; Wintermeyer Jr, 2020). It should be assumed that the emergence at the domestic level of legislation that contradicts the norms of international treaties is associated not only with the expansion of the technical capabilities of many states but also with the involvement of private companies in the field of space development (Berkman et al., 2018).

The Moon Agreement is not a sufficiently effective instrument of international law due to the following circumstances. Firstly, the reflection in the document of the scientific and technological progress at the level of the 70s of the XX century, which did not allow the extraction of space resources, and, secondly, the presence of only primary ideas from the developers about the possibilities of further exploration of outer space. The proof of these provisions in Article 11.5 of the Moon Agreement, which provides that states undertake obligations if there are objective possibilities to establish an international regime to resolve the issue of exploitation of the natural lunar resources. We believe that in modern conditions of technology development, the application of Article 11.5 of the agreement will become relevant in the near future, upon the creation of new spacecraft, including by private companies.

In our opinion, the Moon Agreement is one of the most underestimated sources of international space law. It contains progressive ideas about the establishment of an international regime for the exploration of lunar space and the use of the natural resources of the Moon. We believe that states should revise their approach to the application of the agreement under consideration, and take part in its ratification while developing international norms that would allow the extraction of useful space resources on the basis of consensus. Thus, it is possible to end the debate over the adoption by individual countries of national laws allowing the extraction of space resources. At the same time, increasingly frequent mentioning in the reports of the UN Committee on



the Peaceful Uses of Outer Space of the issue on the development of space resources is an unconditional proof of the importance and urgency of this issue for states (Space, 1997).

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