

CHALLENGES IN INTERNATIONAL RESEARCH ON CELESTIAL BODIES. THE PROSPECTS OF THE BULGARIAN SPACE POLICY

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Keywords: *Space research, International space cooperation, Space waste, Space politics, Bulgarian space policy*

Abstract

The article explores the present political challenges in international research and exploration of states and private actors of celestial bodies. The lack of shared vision of what type of space activities should be planned and the principles of creating research facilities and scientific missions on the Moon and other celestial bodies is causing uncertainty in future space missions and increases the possibility for a military conflict. The political alliances that exclude specific states will increase the risk of a generation of unnecessary space debris and space waste on celestial bodies. This dangerous outcome could be prevented by agreeing on a shared vision of exploitation and exploration of celestial bodies that preserve the outer space environment and adopting comprehensive guidelines for space activities accepted by the leading space-faring nations.

Introduction

The international legal principles of exploration of outer space resources were adopted in the 1960s and culminated as legal norms in the Outer Space Treaty. The primary norm is in article II of the Outer Space Treaty, which foresees that “*outer space is not subject of national appropriation by claim of sovereignty, by means of use or occupation, or by any other means*” [1].

The second relevant international treaty that was supposed to regulate the utilization of the resources on the Moon is in the Moon Agreement. However, the lack of ratifications by leading space-faring nations led to the low status of the treaty and rejection of the legal principles and international institutional mechanisms agreed in it.

Since the 1980s, the preferred way of international regulation of outer space activities has been through soft law documents, which means that the norms are not legally binding. This creates uncertainty and distrust among leading space-faring nations. A recent example of this lack of cooperation and common approach is the adoption of the Artemis Accords with the exclusion of China, withdrawal of

Russia, absence of India and most EU countries. This political rivalry in space activities resulted in a new space race that could potentially lead to a significant conflict that is dangerous for all states and humanity.

The vision of outer space environment protection

Viikari correctly summarized that the dominating attitude of treating outer space, including celestial bodies, is a mere resource reserve and a dump for the refuse produced by space activities [2]. This attitude is the leading risk concerning polluting celestial bodies, and all space-faring nations share it. The plans to pollute outer space to preserve Earth were clearly expressed by one of the private pioneers in the space industry, the CEO of the space company Blue Origin — Jeff Bezos. Instead of transferring polluting industries in space, states and private actors could transform the industries by introducing holistic economic methods and preserving and being part of the environment. In this case, we could protect both Earth and outer space.

Private companies planning to use celestial bodies for research and tourism activities should be interested in a safe ecosystem and lack of space waste in the long term. The adoption of guidelines on sustainable management and exploration of celestial bodies, which complement the UN Space Debris Mitigation Guidelines, is required before the missions on those celestial bodies are initiated.

The vision of space research in the Artemis Accords

The Artemis Accords are an essential step for continuing research on the ground and the utilization of material resources on celestial bodies. The Accords are designed as a US-centric form of exploration and exploitation of outer space resources, and this is evident from the NASA official statement about the Artemis program: “*While NASA is leading the Artemis program, international partnerships will play a key role in achieving a sustainable and robust presence on the Moon*” [3]. The fact that the program does not plan to include other leading space-faring nations as equal partners is the stated reason of the representative of the Russian Space Agency to dismiss the program [4]. The format of the accords is not multilateral but instead a collection of several bilateral agreements between NASA and the respective partnering country. The Artemis Accords represent a shift in developing a global space economy [5]. In section 12 of the official document is stipulated a general norm that is relevant to the protection of celestial bodies “*The Signatories commit to limit, to the extent practicable, the generation of new, long-lived harmful debris released through normal operations, break-up in operational or post-mission 7 phases, and accidents and conjunctions, by taking appropriate measures such as the selection of safe flight profiles and operational configurations as well as post-mission disposal of space structures*” [6].

This requirement for limitation “to the extent practicable” does not provide a concrete guideline for the appropriate actions of the operator. The examples of an appropriate measure could serve as a guideline for the treatment of space waste, particularly concerning the disposal of space structures. Additional guidelines are required to cover all aspects of space debris management and waste on celestial bodies. Such a document should include standards and good practices agreed by all space-faring nations and applicable beyond the Artemis Accords themselves.

With respect to following already adopted binding norms in international space law, the Artemis Accords are problematic. NASA confirmed not so much their compliance, but their consideration of the Outer Space Treaty, emphasizing that space resource extraction and utilization “*can and will be under the auspices of the Outer Space Treaty, with specific emphasis on Articles II, VI, and XI*” [7]. The usage of the verb “can” and the phrase “under the auspices” do not provide confidence in NASA’s intention to comply with binding international space lawfully. The concretization of only three articles from the treaty is also disturbing for states that are not intending to be part of the Accords regarding the interpretation of the program’s intention. Other leading space-faring states that are not part of the Artemis Accords, like China, Russia, and India, have no legal guarantees that the program will not be used in violation of Article IV of the Outer Space Treaty specifically not placing weapons of mass destruction in outer space.

The position of the President of the USA, expressed in Executive order from April 2020 [8], illustrates an understanding of the US government that article II of the Outer Space Treaty permits appropriation of space resources and complete rejection of the Moon Agreement and objection to its capacity to reflect international legal custom [9]. Mosteshar rightly concludes that this is a unilateral attempt to circumvent the Outer Space Treaty and general international law. Even if we accept that the argument that initial bases on the Moon might be in compliance of art. II of the Outer Space Treaty, in time, that national settlement would violate this norm that prohibits national appropriation and occupation on celestial bodies [10]. The norms of Article II of the Outer Space Treaty have been accepted as international legal custom, and they carry the obligations for non-appropriation and non-occupation of the outer space to all states, private organizations and people [11].

Establishing a facility, also named “Moon Base Camp”, is also a clear violation of Article II of the Outer Space Treaty, as this is a form of occupation and appropriation of parts of the Moon. The purpose of the rejected Moon Agreement [12] was to avoid such initiatives led by a group of countries competing with other countries. The Russian and Chinese responses to the accords culminated in deeper cooperation between the two states and the formation of a solid Sino-Russian alliance. Both countries initiated the International Lunar Research Station, consisting of a space station in Moon’s orbit, a moon base, and mobile rovers and robots on the surface.

Other countries are invited to join this initiative as well. It remains to be seen the attitude of India and most European countries.

The political strategy of Bulgaria in space research

Bulgaria is a country with severe accomplishments in space research from the 1970s and 1980s. The logical future of space research and national space policy is to be integrated into the European Space Agency as a full member, to participate in the EU Space Program with well-identified research and business capacity to contribute. At the same time, the Bulgarian government could continue its good relationships with Russia and build new relationships with states like India, Japan, China and countries from the Middle East.

A critical red line for the Bulgarian space policy is to be fully compliant with the principles of the Outer Space Treaty, Rescue Agreement, Registration Convention and Liability Convention, which means supporting the Artemis Accords should be avoided.

The Artemis program envisions a fundamentally different approach to utilizing the Moon's resources than the one provided in the Moon Agreement. One of the significant differences is that the Artemis accords are non-binding policy documents implemented by several bilateral agreements [13] between the USA and its partners. In contrast, the Moon Agreement foresees a unique multilateral mechanism and the establishment of an international regime with appropriate procedures [14]. The last aims to achieve equitable sharing by all state parties in the benefits from these resources [15]. Another significant difference of the principles of usage of the resources of the Moon in both documents is that the Moon Agreement considers the interest of the present and future generations, whereas the Artemis Accords do not have such an obligation. The common heritage of mankind principle which is stipulated in the art. 11 of the Moon Agreement, usually foresees the establishment of an international legal regime that considers humankind's interests and considers the interests of all nations [16]. The participation of Australia in both the Artemis Accords and the Moon Agreement brings a lot of controversial issues [17] and ambivalence that ultimately probably will result in Australia withdrawing from the Moon Agreement. Such an act would signify the further deterioration of international space law because of preferences of states to participate in alliances that compete with others instead of participation in mechanisms that legitimize equitable ways of distribution of resources.

The Artemis accords validate the transfer of competition and rivalry of mundane national relations in outer space instead of setting a new global venture which is formed based on the common heritage of mankind principle.

The existence of at least two parallel programs with different participating organizations will result in dispersing all nations' financial, technological, scientific, and human resources into similar activities. This situation would lead to

the creation of at least two times more space debris in the Moon's orbit and on the Moon's surface. The risk of accidental collision of assets of either programs or even military conflict on the Moon would result to even more generation of space waste on the celestial surface, and this status quo would lower the safety of both space programs.

Conclusion

The planning of future missions to the Moon and later to Mars and other celestial bodies should be conducted by states on the principles of global cooperation and inclusiveness instead of the present competition and exclusion of rival states. The adoption of comprehensive guidelines for utilization and scientific exploration on celestial bodies should clarify what type of pollution is legally allowed because of the current development of technologies and what type of pollution should be considered legally as legally banned. The most significant step that should be made to achieve transparency and compliance with international legal norms and soft law guidelines is for states to rebuild their level of trust and strengthen international cooperation by including all relevant stakeholders in the process.

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ПРЕДИЗВИКАТЕЛСТВА НА МЕЖДУНАРОДНИТЕ ИЗСЛЕДВАНИЯ НА НЕБЕСНИ ТЕЛА. ПЕРСПЕКТИВИ НА БЪЛГАРСКАТА КОСМИЧЕСКА ПОЛИТИКА

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Резюме

В статията се анализират настоящите политически предизвикателства в международните изследвания на небесните тела от държави и частни космически компании. Липсата на споделена визия за това какъв тип космически дейности трябва да се планират и принципите за създаване на изследователски съоръжения и научни мисии на Луната и други небесни тела причинява несигурност в бъдещите космически мисии и увеличава възможността за военни конфликти. Политическите съюзи, които изключват отделни държави, ще увеличават риска от генериране на ненужни космически отпадъци върху небесните тела. Този опасен резултат може да бъде предотвратен чрез съгласуване на споделена визия за експлоатация и изследване на небесните тела, които запазват космическата среда, и приемане на изчерпателни насоки за космически дейности, приети от водещите космически нации.