Moon and Celestial Bodies

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A. Overview

1. The space race initiated by the Cold War (1947–91) led to an increased interest of space-faring nations in the conquest of the Moon. In 1958 the first man-made space object—Soviet Luna Z—and in 1969 the first human being—American Neil Armstrong—stood on its surface. Further exploration of outer space has opened up the possibility of settling on the Moon, exploiting its resources, and expanding human presence to other celestial bodies. These far-reaching plans required a legal framework which would make possible the coexistence of the then two military and political blocks not only in outer space but also on the Moon and other celestial bodies.

2. The main principles of what was then the future law of outer space, including the Moon and other celestial bodies, had been agreed upon already in the 1963 recommendatory UN Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space (UNGA Res 1962 [XVII]: '1963 UN Declaration'); celestial bodies had been declared free for exploration and use by all States, while not being subject to national appropriation by any means. Only four years later, these principles were transformed into binding rules: the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies ('Outer Space Treaty'; 'OST') codified and developed the main principles of the 1963 UN Declaration and became extensively accepted by the international community (as of 1 January 2009: 99 ratifications and 26 signatures). Its main provisions are mostly considered to constitute part of customary international law.

3. The endeavour to elaborate a more specific regime for the exploration and use of the Moon and other celestial bodies, with its main aim to establish an international regime to govern the exploitation of the Moon’s natural resources, appears to be more difficult the 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies ('Moon Agreement'; 'MA') has found only limited acceptance until now (as of 1 January 2010, only 13 States have ratified and 4 additional States have signed the Moon Agreement, but neither the US, nor the Russian Federation, China, India [signed], or Japan belong to the States Parties to this treaty). The reason for the hesitation to adhere to the agreement can be seen in its common heritage of mankind regime of celestial bodies and their natural resources, and the obligation to establish an international regime governed by the principle of equitable sharing by all Parties.

B. Scope of Regulation

4. The material scope of the Outer Space Treaty has not been defined precisely: the majority of its rules govern outer space, including the Moon and other celestial bodies. Some specific rules deal only with the Moon and other celestial bodies (Art IV (2), XII OST), others solely with ‘celestial bodies’ (Art I (2) OST); the special provision of Art V (1) (1) OST is limited to the ‘orbits around the Earth’. Whereas it is clear what is meant by ‘The Moon’, there is neither consent about the scope of ‘celestial bodies’, nor of the term outer space. The notion of ‘celestial bodies’ is predominantly understood as encompassing all natural objects in outer space, excluding those launched by humankind. However, there are doubts about the unlimited approach of this definition in general, and the suitability of a human-made legal order to expand into an unlimited universe in particular.

5. In contrast to this geocentric position of the Outer Space Treaty, the Moon Agreement limits the scope of its regulation to the Moon and other celestial bodies including their orbits (Art I (2) MA) ‘within the solar system’
(Art. 1 (1) MA). The Earth and extraterrestrial matter which reaches its surface by natural means (Art. 1 (3) MA), and celestial bodies out of the solar system, are clearly outside its scope of application; if such bodies should be included under its regulatory framework at a later stage, specific legal norms can be adopted extending its scope successively (Art. 1 (1) MA).

6 The addressees of the provisions of both treaties are solely States (Art. XII OST) and international intergovernmental organizations which conduct space activities (Art. 16 MA). Only the States and international organizations are internationally responsible for conducting their space activities (Art. VI OST, Arts 14 and 16 MA).

C. Contemporary Legal Framework

7 The rules of the Outer Space Treaty provide for the general and binding—either through the ratification of the Outer Space Treaty or through their character as customary international law—basis of the legal regime of the activities on the Moon and other celestial bodies. They are accompanied by the rules of the Moon Agreement and several special treaties, such as the 1963 Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water or the 1968 Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (‘Rescue Agreement’), which are binding inter partes. The main pillars of this regime are the following.

1. Application of General International Law

8 The principle that the activities on the Moon and other celestial bodies are governed by international law, including the United Nations Charter (‘UN Charter’), had been laid down already by UNGA Resolution 1721 (XVI) on ‘International Cooperation in the Peaceful Uses of Outer Space’ of 1961 and is now enshrined in Art. III OST and Art. 2 MA. This provision should be interpreted as a dynamic reference, which implies that all norms which at a given moment of time constitute customary international law are applicable on the Moon and other celestial bodies; this would mean that, eg, the principle of the prohibition of the use or threat of force (Art 2 (4) UN Charter; → Use of Force, Prohibition of, → Use of Force, Prohibition of Threat), or the principles embodied in the provisions of the Vienna Convention on the Law of Treaties (1969), or any other norms with the rank of customary international law are, as such, applicable to all activities connected with the exploration and exploitation of the Moon and other celestial bodies.

2. Non-Militarization of the Moon and Other Celestial Bodies

9 The principle of non-militarization of the Moon and other celestial bodies goes back to UNGA Resolution 1348 (XIII) of 1958, which had recognized the common aim that outer space should be used for peaceful purposes only, and formulated the wish ‘to avoid the extension of present national rivalries’ into this field. Article IV OST has specified the prohibition of the use of force on the Moon and other celestial bodies; whereas the orbits of the Earth are only partly demilitarized insofar as they must not be used for placing objects carrying nuclear weapons or any other kind of weapon of mass destruction, the Moon and other celestial bodies are to be used exclusively for peaceful purposes. The formulation of this imperative principle remains vague, however, leaving space for various interpretations: it could mean both the prohibition of ‘aggressive’ or ‘non-military’ uses of the Moon and other celestial bodies.

10 Article 3 MA has not closed this lacuna completely: it also specifies that the orbits around celestial bodies or the celestial bodies themselves must not be used for placing objects carrying nuclear weapons or any other kind of weapon of mass destruction. Furthermore, it also bans the establishment of military bases, installations, and fortifications, or testing of any type of weapon. The threat or use of force or any other hostile act or its threat on the Moon or other celestial bodies are prohibited, as well as the commitment or engagement in any such threat in relation to the Earth, the Moon, spacecraft, or man-made space objects.

11 The use of military personnel and equipment in space flights—the reality of space exploration and exploitation—is allowed under the condition that it takes place solely for peaceful purposes (Art. IV OST, Art. 3 MA).

3. Non-Appropriation of the Moon and Other Celestial Bodies

12 Before the space flights, the Moon and other celestial bodies were considered res nullius; this meant that claims of sovereignty on the basis of an effective occupation were theoretically possible. However, already UN resolutions dealing with outer space activities preceding the Outer Space Treaty (eg UNGA Res 1721 [XVI] of 1961) declared outer space and other celestial bodies as not being subject to national appropriation and prepared the floor for changing their regime into res extra commercium.

13 The entry into force of the Outer Space Treaty turned this rule into a binding provision of universal international law. Article II OST provides for the ban of national appropriation of the Moon and other celestial bodies by claims of sovereignty, by means of use or occupation, or by any other means. Unfortunately, the adjective ‘national’ opens the door for discussions whether an appropriation of the Moon or parts thereof by private natural or juridical persons other than States or international organizations is allowed.

14 Article 11 MA goes further: it prohibits ‘any’ appropriation of the Moon, celestial bodies, or their natural resources; the addressees of this comprehensive ban are not only States and international organizations, but explicitly also non-governmental entities or natural persons. As the exploitation of natural resources of the Moon and other celestial bodies ‘is about to become feasible’, an international regime governing such exploitation shall be established among the States Parties of the Moon Agreement (Art. 11 (5) MA).
At present, there are two exceptions from the non-appropriation rule as formulated by the Moon Agreement: one of them regards the right to use minerals and other substances of celestial bodies 'in quantities appropriate' for the support of space missions in the course of scientific investigations (Art. 6 (2) MA). The second one concerns the right to collect and remove—not closely defined or quantified—'samples' of minerals and other substances from celestial bodies (Art. 6 (2) MA).

4. Freedom of Exploration

The Moon and other celestial bodies are free for exploration by all States, and the freedom of scientific investigation is guaranteed (Art. I (1) OST, Art. 6 (1) MA). There shall be free access to all areas of celestial bodies (Art. I (2) OST, Art. 8 MA). States are obliged to facilitate international co-operation in such investigation (Art. I (3) OST, Art. 4 (2) MA) and to consider requests of other States Parties to observe the flights of space objects launched by them (Art. X OST). All stations, installations, equipment, and space vehicles on the Moon and other celestial bodies shall be open to representatives of other States Parties on the basis of reciprocity (Art. XI OST). The international scientific community and the UN Secretary-General shall be informed about the results of space activities (Art. XI OST, Art. 5 MA), especially of phenomena which could endanger human life or health, as well as of any indication of organic life (Art. 5 (3) MA).

5. Freedom of Use

The Moon and other celestial bodies—as part of outer space—are, in principle, free for use by all States (Art. I OST). However, this freedom is explicitly limited by several specific provisions, the most important being the imperative to use them exclusively for peaceful purposes (Art. IV OST, Art. 3 MA), the prohibition of their appropriation (Art. II OST, Art. 11 MA), and the → due diligence rule (Art. IX OST, Art. 4 MA). Regarding natural resources of the Moon and other celestial bodies, States Parties of the Moon Agreement are additionally obliged to establish an international regime governing their exploitation (Art. 12 MA).

6. Province of All Mankind

Article I (1) OST and Art. 4 MA declare exploration to constitute the 'province of all mankind' and require States to carry it out for the benefit, and in the interests, of all countries. The Moon Agreement intensifies this approach and declares celestial bodies and their natural resources 'common heritage of mankind'. Several specific obligations have been derived from this principle: the Moon Agreement Parties are obliged to inform the UN Secretary and the scientific community of any natural resources they may discover on celestial bodies (Art. 11 (6) MA); further, as exploitation of these resources is about to become feasible, they shall establish an international regime (Art. 11 (5) MA) governed by the principle of equitable sharing by all Parties (Art. 11 (7) (d) MA). This regime has not been established as yet; this pactum de contrahendo, which should be implemented in the procedure foreseen for a revision of the Moon Agreement (Art. 18 MA), has prevented several space-faring nations from adhering to this treaty. The present state of the international regime of the seabed makes the elaboration of such a regime rather improbable.

7. Due-Diligence to the Interests of Others

The freedom of exploration and use of the Moon and other celestial bodies requires due regard to the corresponding interests of other Parties (Art. IX OST). It is reflected in the duty to allow representatives of other States to visit—on a basis of reciprocity and after notification—all installations, equipment, and space vehicles on the Moon and other celestial bodies (Art. XII OST, Art. 3 MA) or—for the Parties of the Moon Agreement—a, hardly implementable, obligation to install stations on celestial bodies in a manner not impeding the free access of personnel, vehicles, and equipment of other States Parties 'to all parts' of these bodies (Art. 9 (2) MA). The corresponding procedural regulations include an obligation to enter into preventive consultation with other Parties in case of a potentially 'harmful' interference with activities of other States (Art. IX OST), or to inform other States Parties about plans to operate simultaneously in the same area or the same orbit around, or trajectory to, or around, the Moon (Art. 5 (2) MA).

8. Environmental Protection

With regard to the fact that the exploration of celestial bodies requires consequent protection of their environment, Art. IX OST requires States to adopt measures necessary to avoid 'harmful contamination' (forward contamination) of celestial bodies, as well as to avoid adverse changes of the environment of the Earth resulting from the introduction of extraterrestrial matter (back contamination). On the basis of this obligation, the non-governmental Committee on Space Research ('COSPAR') established by the International Council of Scientific Unions (ICSU) in 1958, develops and approves recommendatory standards which enjoy a high level of recognition in the scientific community. Additionally, several space-faring countries (eg US, France) and the → European Space Agency (ESA) have adopted specific rules aimed at the implementation of this principle. The Moon Agreement goes beyond the obligation to avoid 'harmful contamination' of the environment and requires measures against the 'disturbance of the existing balance' of the environment of the Moon and other celestial bodies by any means (Art. 7 (1) MA); these measures can involve designing some areas of special scientific interest as 'international scientific preserves' (Art. 7 (3) MA).

D. Comparison with Other International Regimes

The international regime of → Antarctica served as a model for the legal framework of the Moon and other celestial bodies. The main common features of both regimes are their → demilitarization, as well as the freedom of scientific research. The principal differences consist in the existing historical claims to territorial sovereignty in
Antarctica versus the non-existence and initial prohibition of any claims of sovereignty on the Moon and other celestial bodies, as well as the ban on all mining in Antarctica (Protocol on Environmental Protection to the Antarctic Treaty [signed 4 October 1991, entered into force 14 January 1998] (1991) 30 ILM 1455) versus the prospect of installing an international regime to govern the exploitation of natural resources of the Moon and other celestial bodies.

22 The international seabed regime and the international framework of the Moon and other celestial bodies share as their characteristics: common heritage of mankind, non-appropriation of their parts by claims of exercise of sovereignty, and the prospect of establishing an international regime to govern the exploitation of their natural resources. They differ in the intensity of demilitarization: whereas the Moon and other celestial bodies are to be used exclusively for peaceful purposes, the international seabed regime only limits the placement of nuclear weapons or weapons of mass destruction (see Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea-Bed and the Ocean Floor and in the Subsoil Thereof [concluded 11 February 1971, entered into force 18 May 1972] 955 UNTS 115).

E. Future Tendencies

23 The international legal regime of the Moon and other celestial bodies is an integral part of the international legal framework of the exploration and use of outer space based principally on the Outer Space Treaty. The disadvantage of this fact is that the system provided for by the Outer Space Treaty remains fragmentary and imprecise. The great advantage is that the fundamental rules on which this regime is based—the principles of non-appropriation, non-militarization, and freedom of exploration of the Moon and other celestial bodies—have acquired widespread international recognition as being suitable to achieve their goals and are generally considered as constituting provisions of customary international law. This situation remains unchallenged by the fact that the rule of non-appropriation is not respected by some private firms which are selling ‘plots’ on the Moon: both usus longaevus and opinio iuris of the States—the only, or at least most relevant, actors capable of creating rules of international law—speak against such a change of one of the main pillars of the present law of outer space.

24 The special rules of the Moon Agreement are binding only on a smaller number of States. Because of the difficulties connected with finding consensus on creating a just and workable system of benefiting from the exploitation of any natural resources, including those of celestial bodies, the core of this international agreement—namely the establishment of an international regime for the exploitation of the natural resources of the Moon and other celestial bodies—seems to be far from becoming reality and customary international law.

25 However, with regard to the new plans on human settlements on celestial bodies and the exploitation of Moon minerals as sources for flights to more distant space destinations, the question of the interpretation of the Outer Space Treaty provisions and the Moon Agreement provisions in accordance with such contemporary needs is again high on the international agenda. Moreover, the improvement of the present system of protection of the environment of celestial bodies turns into one of the most debated issues.

F. Conclusion

26 The hostile environment of celestial bodies and potential dangers for human beings in outer space made the borders between the then existing two strategic blocks less visible: taking into account that the creation of the international regime of the exploration and use of the Moon and other celestial bodies occurred fully in the Cold War period, its spirit and content are surprisingly non-confrontational, aimed at fostering international cooperation—and—albeit in a conditioned and cautious manner—even international co-operation. Whereas the borders between the military blocks disappeared, the alien environment and far distances from the Earth have not changed, making co-operation in the spirit of this framework necessary conditions for any legal regulation.

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