

## Protection of the Common Heritage of Mankind - the Moon

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**To Link this Article:** <http://dx.doi.org/10.6007/IJARBSS/v12-i8/11310>

DOI:10.6007/IJARBSS/v12-i8/11310

**Published Date:** 05 August 2022

### Abstract

Outer space and celestial bodies are regarded as humanity's shared heritage; hence they must be preserved. The Moon, which lies 100 kilometres above the Earth, is included in outer space. Uncontrolled activities on the Moon potentially pollute outer space and cause environmental hazards. Furthermore, there is a chance that any structures or equipment taken to the Moon will disintegrate and orbit the planet as space debris or perhaps fall back on Earth and destroy it. This study intends to provide a legal analysis of the 1979 Moon Treaty, which governs the activities of states on the Moon and other celestial bodies. This study undertakes a doctrinal approach in examining the legal issues involved, the applicability and the effectiveness of the Treaty in protecting the Moon and the outer space. This study concludes that the Treaty should be extended to cover extraterrestrial materials from the Moon that reach the Earth. The fact that the Treaty has yet to be ratified or acceded to by a large number of countries is a further cause for concern.

**Keywords:** Moon Treaty, Outer Space, Heritage Protection, Space Law

### Introduction

To a layperson, the outer space refers to anything beyond the sky, but scientifically, outer space refers to the relatively empty regions of the universe outside the atmospheres of celestial bodies, which begins about 100 kilometres above the Earth, where the shell of air around vanishes (Science Daily, n.d.). Outer space can be described as a dark blanket speckled with stars, consisting of low-density particles, primarily hydrogen gas and electromagnetic

radiation (Science-Daily, n.d.). The Moon, on the other hand, is a natural satellite of the Earth and moves around the Earth in what is called an "elliptical" orbit (NASA, 2021).

It is undeniable that human operations on the Moon and outer space benefit humanity. Space exploration, for example, has resulted in the development of new knowledge and technology in solar panel systems, search-and-rescue operations, satellite technologies, robotics, computing, engineering, and numerous breakthroughs (ISECG, 2013). The technological advances from space exploration stimulate economic benefits by enlarging the hi-tech workforce, introducing new products and devices in the market, and its spillover to other sectors such as agriculture, construction, and transportation (OECD, 2020).

However, Moon and outer space activities also come with adverse effects. Pollution is a great danger that only affects the Moon and outer space but also the Earth. For instance, in 2009, the U.S. communications satellite Iridium 33 collided with a defunct Russian communications satellite named Cosmos 2251 in an accidental orbital collision. Thousands of tiny pieces of debris were formed when the two objects hit at more than 42,000 kph, roughly 50 times the cruising speed of a jet plane, and many of them are still floating around. The event drew worldwide attention to the fact that the space around the Earth is a garbage dump. Over 300,000 pieces of litter larger than one centimetre surround our planet, including old satellite fragments, wasted rocket stages, paint flecks, nuts and bolts, and other debris (Mann, 2013).

### **Regulating Moon Exploration and Activities**

#### *a. Moon and Outer Space as Cultural Heritage*

The World Heritage Convention is serious about preserving the values of natural and cultural heritage that are shared by mankind (Riedlmayer, 2002). The Convention highlights that natural and human-caused calamities, such as earthquakes, floods, fires, typhoons, thievery, and terrorism, increasingly threaten the environment. Under the principle of international law, the Convention agrees that the natural heritage needs to be protected for future generations from exploitation by individuals, corporations, and States (UNESCO, 2008).

The World Heritage Committee has taken several measures to protect movable and immovable cultural heritage from disasters and destruction (UNESCO, 2008). In its 31<sup>st</sup> session in 2017, the Committee presented and adopted the Strategy for Risk Reduction at World Heritage. The priority action under the Strategy is to strengthen the support among the relevant global, regional, and local organisations in reducing risks towards cultural heritage. It emphasises the importance of using knowledge, innovation, and education to establish a disaster prevention culture for world cultural heritage (UNESCO, 2008).

One international training course on disaster risk management for cultural heritage was held in 2018. The World Heritage Committee believes that cultural heritage is vulnerable to various hazards; hence it requires suitable disaster risk reduction strategies. Furthermore, many architectural parts of damaged or destroyed structures require recording, care, and storage comparable to transportable historical assets in the aftermath of a disaster (Rohani, 2018). An integrated approach is needed for risk assessments of cultural heritage pre-, during, and post-disaster. The Committee also highlighted that due to the scarcity of human and financial resources, experts and institutions working with heritage must work together more closely

(Porter, 2015). It is submitted that the Moon and the outer space being shared heritage among humankind also requires a risk assessment strategy to be formulated.

**b. The Moon Treaty 1979**

The Agreement Governing the Activities of States on the Moon and Other Celestial Bodies 1979 (1979 Moon Treaty) is the regulating international law instrument on the exploration of the Moon and outer space. The Moon Treaty comprises 21 articles and aims to regulate the actions of States on the Moon and other celestial bodies to preserve the Moon from any undesired activity. Unlike the 1967 Outer Space Treaty and the 1968 Rescue Agreement, the Moon Treaty of 1979 did not require the United States, the Soviet Union, or the United Kingdom to sign it before it could take effect. Just five signatures were necessary for this Treaty to enter into force (Christol, 1985). As a result, it came into force on 11 July 1984, when Austria, Chile, the Philippines, Uruguay, and the Netherlands submitted ratification instruments to the United Nations Secretary-General (Christol, 1985).

Article 1 of the Moon Treaty of 1979 applies to actions on the Moon, including orbits and other courses around it and other celestial bodies in the solar system other than the Earth. As a result, it does not apply to extraterrestrial materials that reach the Earth's surface via natural processes. In practice, this refers to all meteorites that have fallen from space onto the Earth (Shoemaker, 1983; Brown et al., 1996), such as:

- i. The Cape York meteorite that fell onto Greenland 10,000 years ago (Rickard, 1941).
- ii. The Allende meteorite that fell onto Mexico in 1969 (Norton, 1998).
- iii. The Fukang meteorite that fell onto China in 2000 (Brennan, 2012)
- iv. The Carancas meteorite that fell onto Peru in 2007 (Brown et al., 2008).
- v. The Almahata Sitta meteorites that fell onto on Sudan in 2008 (Jenniskens, 2009).

All meteorite-related actions, like experiments, appropriation, and ownership, are governed by the Treaty (Brown et al., 2008).

Meanwhile, Article 2 of the Treaty provides that all activities on the Moon, including exploration and utilisation, must be conducted in compliance with international law. The activities must consider the interests of international peace and security, international cooperation and mutual understanding, and the interests of all other State parties. Article 3 of this Treaty also establishes the principle of peaceful purpose, requiring that the Moon and other celestial bodies be used exclusively for peaceful reasons (Galloway, 1984). Additionally, Article 4 adopts the premise that the exploration and utilisation of the Moon is the province of all humanity and should be carried out for the benefit and the interests of all States.

Article 4 also prohibits certain activities, including:

- i. The use of force, the threat of force, or any other hostile act or threat of hostile act on the Moon.
- ii. The commission of any act or engagement in any such threat in relation to the Earth, the Moon, spacecraft, and the personnel of spacecraft or man-made space object.
- iii. The placing in orbit around or on any other trajectory to or around the moon objects carrying nuclear weapons or other kinds of weapons of mass destruction.

Besides, the construction of military bases, installations, and fortifications, testing any weapon, and conducting military manoeuvres on the Moon are prohibited. Nevertheless, Article 3 allows the use of military personnel for scientific research or other peaceful purposes. The use of any equipment or facility required for peaceful exploration and use of the Moon is not prohibited. Hypothetically, if Country X wants to build a military station on the Moon, the purpose of the installation must be to protect the Moon's peace and security, not to cause damage to the Moon or jeopardise the security interests of other countries.

Article 5 of the Treaty obligates the State party to inform its activities to the U.N. Secretary-General, the public, and the international scientific community. The required information includes the time, purpose, location, orbital parameters, and results of each mission, including scientific results and any phenomena discovered in outer space, including the Moon, that could endanger human life or health. If a State party is aware that another State party is planning to operate in the same area, in the same orbit around, or on the same route to or about the Moon, it must quickly advise the other State of its timing and plans.

Under Articles 6 and 7 of the Treaty, All States Parties are free to conduct scientific investigations without discrimination, on an equal basis, and in line with international law. They have the right to collect and remove samples of the Moon's minerals and other substances for scientific reasons and make a portion of those samples available for scientific inquiry to other interested States Parties and the international scientific community. Nonetheless, when exploring and exploiting the Moon, States Parties must take precautions to avoid disrupting the environment's present balance, whether by introducing harmful pollution through extra-environmental matter, extraterrestrial matter, or other means.

The application of this principle to protecting the environment of outer space, the Moon, and its celestial body can be seen in the national jurisdiction of the United States through the case of *Environmental Defense Fund v. Massey* 986 F. 2d 528 (D.D.C., 1993), where one of the principles established by this case is that harmful contamination must not be introduced to outer space, and if such activity is initially thought to be necessary, consultation with the appropriate body must be taken.

Furthermore, Article 8 of the Treaty permits state parties to conduct activities related to the exploration and use of the Moon anywhere on or below its surface, including landing and launching spacecraft on the Moon, as well as placing personnel, space vehicles, equipment, facilities, stations, and installations anywhere on or below the Moon's surface. However, these operations must not interfere with the activities of other States Parties on the Moon, and if they do, the affected States parties must have talks. States parties are also authorised to build manned and unmanned stations on the Moon, but they must only use the space required for the station's needs.

Articles 10 to 16 of the Treaty stipulate the State Parties' obligations. They must take steps to protect the lives and health of astronauts on the Moon, including maintaining jurisdiction and control over their personnel and all equipment related to their activities on the Moon. They must also notify the launching State Party and the United Nations Secretary-General if they learn of a space object crash landing on the Moon. National activities on the Moon are the responsibility of states, whether government agencies or nongovernmental organisations

carry them out. In terms of the Moon and other celestial bodies within the solar system, their surface and subsurface are not subject to national acquisition by any claim of sovereignty because they constitute the common heritage of mankind. Another example illustrating the idea of the non-appropriation of the Moon and other celestial bodies is the 'Yemenis Claim,' in which the principle established in this incident is that celestial bodies are recognised as the property of all humanity hence cannot be held by anybody (CNN, 1997). Besides, State parties must also allow other States to visit their space vehicles, equipment, facilities, stations, and installations on the Moon to protect the interests of all State parties (Virgiliu, 2008).

### Conclusion

This paper aims to provide a legal analysis of the 1979 Moon Treaty to assess the content and applicability of its responsibilities. According to the findings, the current legal framework has potential for improvement and can be altered and examined. Any State that does not join this Treaty before it enters into force may do so at any time, and signatory States may ratify it. Any State Party to the Treaty may also notify the other States of its intention to withdraw.

To date, the Treaty has been ratified by 18 countries and signed by four others. It is suggested that the 1979 Moon Treaty be expanded to include activities linked to meteorites, such as experiments, appropriation, and ownership, and activities such as extraterrestrial elements that reach the Earth's surface via natural methods. The efforts and obligations to protect the Moon's peace and security can be sustained in this setting. As a result, this idea is consistent with the 1979 Moon Treaty's mandate that the Moon and other celestial bodies be utilised exclusively for peaceful purposes because they represent humankind's shared heritage.

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