

Rules on the Moon

A Moon Dialogs Backgrounder

This Backgrounder on lunar norms is intended to succinctly summarize the norms (rules, laws, principles, and guidelines) applicable to lunar activities (whether governmental or nongovernmental). Although legal in nature, it should be understandable to those without a legal education.

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Possible Near - Term Scenario

It is 2025, and collaborative and cooperative lunar activities are occurring at the Shackleton crater near the Moon's South Pole. Various national space agencies have landed robotically-operated rovers to work with the lunar regolith in preparation for more advanced spacecraft expected to arrive soon. In partnership with academia, scientific activities involve basic astrogeology and basic space experiments.

Commercial space companies will be arriving soon with more advanced infrastructure hardware, including more advanced rovers, drilling equipment, tunneling and boring machines, and hardware to sample and characterize lunar regolith for useful and valuable materials. These companies are acting in concert with space agencies already present on the Moon, and are being hired by space agencies for various services, such as refueling and repairing existing infrastructure, and preparing human housing facilities on the Moon's surface and subsurface (complete with life support systems).

Once completed, an international crew will arrive at the lunar facilities. They will undertake more advanced scientific investigations, including lunar geology (astrogeology), lunar geography, astrochemistry and biology experiments, and human-focused space life sciences research. A shared vision of international lunar infrastructure and economy of commercial, scientific, and governmental activities is being brought into being.

However, issues have arisen regarding whether commercial activities such as mining and manufacturing should take precedence over scientific investigations such as investigations into the Moon's chemical processes and geology. As some States wish to develop a more mature cislunar economy, and other stakeholders call for caution, these issues have become pressing. Some stakeholders have asserted that scientific investigations must not be prejudiced by commercial interests.

Norms in Practice

These activities on the Moon are undertaken because States enjoy the right to use and explore outer space (Rule 1, as explained below), and are doing so in a completely non-militarized fashion (Rule 2). States are permitting their nongovernmental entities (private companies and universities) to also conduct lunar activities, so long as States accept their own accountability (Rule 5), and fulfill their

tasks of supervision, registration, and assuring compliance with international law (Rule 5a). States are transparent and open about these activities with other States and with the international community (Rule 5c). States remain internationally responsible (Rule 5) and retain jurisdictional powers over each space object and module due to their listing on various national and international registries (Rule 5c).

No State has asserted sovereign territorial rights over any section of the lunar surface or subsurface (Rule 6), and no State has stationed or installed any prohibited weapons on the Moon or its subsurface (Rule 2). Individuals on the Moon retain the citizenship they had on the Earth (Rule 4), but there is freedom of movement and visitation between habitable stations on the Moon, on the basis of reciprocity. As individuals retain their national citizenship, and States retain jurisdictional powers over both the citizens and space objects on the Moon, States are able to fulfil their obligations of authorization, supervision, and for ensuring compliance with international law (Rule 5a).

In conformity with the principles of cooperation, mutual assistance, and a due regard for the corresponding interests of others (Rule 3), there is considerable cooperative and collaborative activities on the Moon between partners of differing nationalities, as well as between projects and actors pursuing different governmental, scientific, and commercial pursuits. However, in light of the competing interests among different stakeholders and actors, it is becoming more obvious that the existing norms - whether in clear rights and prohibitions or the more vaguely interpreted principles of cooperation and due regard - are simply not precise or adequate to mediate these emerging tensions.

Existing Lunar Norms

Developed in the context of the Cold War, the legal framework for space activities is now 50 years old and is basic and unrefined in its treatment of many activities. Since the 1960s, space activities have changed and expanded dramatically, and the existing normative framework appears increasingly outdated.

1. Freedom

Good news everyone, you are free to explore the Moon! Should you wish to, you are free to go to the Moon, enter lunar orbit, land on the Moon, explore the Moon's surface and subsurface, and do as you please. There are some subtleties to this broad freedom, as well as some obligations and prohibitions which restrict it, but these will be explained in later sections.

It was not certain that humankind could go to space without restriction, so this freedom had to be negotiated and agreed upon at the international level between States. It now exists as a clear right in international law between States. This freedom is reflected in Article 1 of the 1967 Outer Space Treaty.

The exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind. Outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies. There shall be freedom of scientific investigation in outer space, including the Moon and other celestial bodies, and States shall facilitate and encourage international cooperation in such investigation.

Keep in mind that any subsequent obligations or prohibitions are balanced against this freedom, and any restrictions of this freedom should not fundamentally undermine it.

2. Peace

The Moon shall be used purely for peaceful purposes. This obligation is directly taken from Article 4 paragraph 2 of the Outer Space Treaty, which gives specific examples of activities that are forbidden.

The Moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes. The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military manoeuvres on celestial bodies shall be forbidden. The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited. The use of any equipment or facility necessary for peaceful exploration of the Moon and other celestial bodies shall also not be prohibited.

Additionally, the first paragraph of article 4 prohibits the installing or stationing of any weapons of mass destruction (for example, nuclear weapons) on the Moon. Besides Antarctica, the Moon is perhaps the only non-militarized locale anywhere, either on or off the Earth.

3. Cooperation and Mutual Assistance

This is more of a principle, and it does not give clear guidance (telling us exactly what we must do, or not do) but it's still important. Article 9 of the Outer Space Treaty contains an obligation whereby States (and via Article 6, nongovernmental entities) must show regard towards the interests of others exploring space.

In the exploration and use of outer space, including the Moon and other celestial bodies, States Parties to the Treaty shall be guided by the principle of cooperation and mutual assistance and shall conduct all their activities in outer space, including the Moon and other celestial bodies, with due regard to the corresponding interests of all other States Parties to the Treaty.

Keep in mind that this was negotiated in 1966 - when environmental law and an understanding of 'the commons' was just emerging, so the language is not what we would negotiate today. Nevertheless, this principle of due regard is critical in preserving the peaceful and sustainable uses of the Moon. The interests of the scientific community matter on the Moon. But commercial interests also matter, as do space development interests. No particular interest is given precedence, and they all count. Consequently, the challenge of conducting activities with due regard to corresponding interests is determining how to balance these interests.

4. Citizenship

Today on Earth, almost everyone is a citizen of one country, and some people have more than one citizenship. That terrestrial citizenship will still exist on the Moon. In international space law, States have the right (some consider it an obligation) to exercise jurisdiction over the activities (including any potential personnel) of spacecraft listed on their national registry. This power of terrestrial States to exercise jurisdiction (the power to create laws, enforce laws, and settle disputes) is contained in the Outer Space Treaty. The first sentence of Article 8 reads

A State Party to the Treaty on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body.

This means that even when you are on the Moon you are still a citizen of a State back on Earth, and its laws apply to you. These are the rules until someday, perhaps, there are people on the Moon who are not citizens of any State, in which case the law will be quite unclear for them.

5. State accountability

Any space activity is the international responsibility of at least one government, and possibly more than one. This is due to a special rule in the Outer Space Treaty, which deviates from the norm in international law and places an obligation on States to be responsible (answerable) for any national space activities, whether those activities are conducted by governmental actors or by national nongovernmental actors. Article 6 of the Outer Space Treaty places responsibility on States in this fashion.

States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the Moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty.

This is different to the normal rules of the responsibilities of a State. Normally, a government is not answerable, or 'on the hook', for what its citizens do - either within the territory of that State, or once they leave that State.

The above rule was negotiated between the US and the USSR in the mid 1960s, when the Soviets did not want any private activity in outer space. The compromise was that private activity would be permitted, but that governments must ultimately be answerable for that government activity. This direct responsibility for nongovernmental activity serves as an incentive for States to supervise all of their national nongovernmental space activities.

5. a. Governmental Supervision

Besides the strong incentive of their being responsible for any national nongovernmental activity, Article 6 of the Outer Space Treaty requires that governments actively “authorize and supervise” national nongovernmental space activities, including on the Moon. The second sentence of Article 6 creates this obligation to supervise.

The activities of non-governmental entities in outer space, including the Moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty.

The first sentence of Article 6 (above) also obliges States with “assuring that national activities are carried out in conformity” with the Outer Space Treaty and other applicable laws. That obligation for assuring conformity with the law is another positive obligation. The State must make its private entities comply with international law, even though they are not direct subjects of international law.

5. b. Governmental Liability

States are also under a liability obligation for any physical damage that any space object launched from their State may cause to other States. Again, this is regardless of whether the space object was launched for governmental or non-governmental space activities. This liability obligation is based on Article 7 of the Outer Space Treaty (below), as well as the 1972 Liability Convention.

Each State Party to the Treaty that launches or procures the launching of an object into outer space, including the Moon and other celestial bodies, and each State Party from whose territory or facility an object is launched, is internationally liable for damage to another State Party to the Treaty or to its natural or juridical persons by such object or its component parts on the Earth, in air space or in outer space, including the Moon and other celestial bodies.

For damage in space, liability would be based on a fault-based analysis, looking to the Launching State of the space object causing damage and assessing if their activities were at fault.

5. c. Governmental Registration & Transparency

Outer space is outside any State’s national territory. As such, outer space is a shared “common space”, and some amount of transparency and coordination between actors are crucial. States

provide the United Nations (UN), including specialized UN agencies like the International Telecommunications Union (ITU), with basic details regarding their space activities. They also register their launched space objects with the United Nations Office for Outer Space Affairs (UNOOSA) and present their national space activities at the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS). Article II of the Outer Space Treaty also reflects this obligation to share information about national space activities.

In order to promote international cooperation in the peaceful exploration and use of outer space, State Parties to the Treaty conducting activities in outer space, including the Moon and other celestial bodies, agree to inform the Secretary-General of the United Nations as well as the public and the international scientific community, to the greatest extent feasible and practicable, of the nature, conduct, locations and results of such activities. On receiving the said information, the Secretary-General of the United Nations should be prepared to disseminate it immediately and effectively

6. No National Territorial Appropriation

Under the current international legal framework, territorial claims by States to areas in outer space (including planets and parts of planets, or locations on planets) is illegal. This is a foundational pillar of international space law, as the governments who negotiated and drafted the Outer Space Treaty wanted to prevent a new era of colonization in outer space by the major world powers. In order to prevent the acquisition of territory in space, they drafted Article 2 of the Outer Space Treaty.

Outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.

The sentence is quite short and meant to be all inclusive, but it has left many wondering what exactly is prohibited, and permitted under the term “national appropriation”. Can private entities, including corporations and even individuals, own and/or use resources extracted from the Moon as their own, with or without the right to exclude others from the same privileges? Both the US and Luxembourg have created laws permitting this usage (the 2015 US Commercial Space Act, and the Luxembourg Draft Space Law, respectively).¹ These national laws do not give exclusive and absolute rights to anyone, because of the freedom of exploration and use of space (Rule 1, above), but they appear to represent an attempt by these states to clarify some of the rights and obligations of activities on the lunar surface. Additionally, while on the Moon, there is still the freedom to visit installations and outposts, on the basis of exchanging similar privileges, reflected in Article 12 of the Outer Space Treaty.

¹ US Commercial Space Launch Competitiveness Act (2015, <http://bit.ly/USSpaceResourceLaw> ; See also Grand Duchy of Luxembourg, Exploring New Frontiers - Draft Law on the Exploration and Use of Space Resources (2017), <http://bit.ly/2zy8lka>

All stations, installations, equipment and space vehicles on the Moon and other celestial bodies shall be open to representatives of other States Parties to the Treaty on a basis of reciprocity. Such representatives shall give reasonable advance notice of a projected visit, in order that appropriate consultations may be held and that maximum precautions may be taken to assure safety and to avoid interference with normal operations in the facility to be visited.

Conclusion

In conclusion, the Moon is open. At present, there exists a quite modest and lenient governance framework for the Moon. These existing norms serve as “guardrails” for our activities. The norms we have are sensible and will prevent much that could go wrong. Not much is prohibited, and not much is mandatory. Additionally, while not much is expressly permitted and regulated, we can see that the broad freedoms of space exploration provide sufficient leeway for a wide variety of activities by a wide variety of stakeholders. Looking ahead, as lunar activity intensifies and diversifies, this existing governance framework will have to be greatly expanded and clarified.

Appendix 1: Further Reading

United Nations Office for Outer Space Affairs, INTERNATIONAL SPACE LAW: UNITED NATIONS INSTRUMENTS, at <http://bit.ly/UNOOSASpaceLaw>

Martin Elvis et. al., The Peaks of Eternal Light: a Near-term Property Issue on the Moon, at <https://arxiv.org/abs/1608.01989>