

What we know about the Global Legal Landscape of Space



Introduction

Space legislation as it now exists cannot be defined as an independent legal system, but rather as a collection of public and private international law regarding the regulation of celestial bodies, space objects in outer space and carried-on space activities. The sector has gained more importance with the development of private companies sharing primacy in outer space. Companies such as SpaceX and Virgin Galactic have challenged and completely fostered a necessary evolution of the legal framework surrounding space activities. Issues such as private liability no more having a national liaison highlight the necessity to depart from the idea of space as a domain shared only by national space agencies.

The roots of space legislation were set in the Cold War era. During that time only the Soviet Union and the United States of America had the practical possibility to access spaceflight. The five United Nations foundational treaties, namely *The Outer Space Treaty*, *The Moon Agreement*, *The Liability Convention*, *The Rescue Agreement* and *The Registration Convention*, are products of their time and reflect the needs and limitations that were produced taking into consideration the few space actors present then; meaning that private companies and low- and middle-income countries did not have their say in the process. Furthermore, they also encompassed fields of legislation that were urgent at the time, such as the prevention of colonization or militarization of space; these sectors, however, now present themselves as outdated and in need of a semi-revolution, switching to the contemplation of wider fields, such as commercialization and democratization of space.

Although modernization has been showcasing its development in space more than anywhere else, and therefore unveiling some of the inefficiencies of its legislation, it is noteworthy to analyze the impressive work done in the past by international organizations such as the United Nations. The previously mentioned treaties have indeed manifested their proficiency up to now, albeit with some deficiencies, and have well-regulated space activities adjusting to modern technologies.

We shall now briefly analyze the above-mentioned deficiencies to stimulate a concrete reflection on the present legislation and its possible evolution. One aspect to consider is the lack of reference to space resources in the *Outer Space Treaty*. As we all know, the next frontier revolves around the possibility of the fruition of all those resources that through human operation can be found in outer space. However, in *Article 2* of the mentioned treaty, the only clear

prohibition stated regards the appropriation of celestial bodies, with no indication of their resources. The lack of legislation on this matter leaves the floor to broad interpretation that is mostly used by nations and private companies to favour their intents. Another issue regards space debris. Despite the absence of a legally binding definition of space debris, it is generally agreed that the term includes anything from small pieces to entire non-working satellites. Space debris poses a giant threat to operational spacecraft, especially with regard to interferences and collisions. However, this issue is tackled with the necessary efficiency neither by the United Nations Space Treaties nor by the regulations of Space Law. Why this ineptitude? Mainly because of the great confusion that lies behind the liability arising from space debris damage.

The *Liability Convention* states that the responsibility lies on the launching state if the damage is due to negligence. However, considering that most launches are pursued by private companies, on whom lies the liability if, for instance, the launch takes place outside a state's territory, such as in the high seas? This is one of the numerous issues that arise from this matter. It is worth mentioning that there have been no significant international disputes concerning in-space incidents that have created such economic damage to foster a rewriting of space legislation. However, considering the compelling development of this sector, there is the potential for these incidents to start happening.

After a brief analysis of the current situation and possible evolution of the global legal landscape of space, we shall examine in more depth the provisions put forward by Space law and the Treaties, followed by an insight into the doctrine's critique

Before focusing on the actual global legal landscape in terms of space activities regulation, it is crucial to have a look at the main UN bodies responsible for the formation of the latter.

UN Office of Outer Space Affairs (UNOOSA)

Starting from the origins, the United Nations Office for Outer Space Affairs (UNOOSA) was established in 1958 to help governments setting their legal, technological, and political infrastructure in order to promote global space operations. UNOOSA has been vital to develop a shared understanding of space law and to improve national space policy among countries. Furthermore,

UNOOSA has been active in both maintaining a registry of objects launched into Outer Space and in forming ad-hoc international organisations to face specific space law-oriented issues. As an example of the last ad-hoc entities, UNOOSA turned the International Telecommunications Union (ITU) established in 1865 into the United Nations specialised body for information and communication technology. The latter has the duty to create a globally recognised regulatory system in the field of the increased usage of geosynchronous orbit (GEO) both in the public and private sector. As a consequence, the ITU ensures a fair and efficient use of radio-frequency spectrum and related satellite orbits in the international environment, it also has authority on the prevention of physical and electromagnetic interference in geosynchronous orbit.

UN Committee on the Peaceful Uses of Outer Space (COPUOS)

The United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) was also established in 1958 and made permanent in 1959. COPUOS was formed “to govern the exploration and use of space for the benefit of all humanity: for peace, security, and development,”. This organization has been responsible for the creation of the five UN treaties, for the implementation of some of the fundamental principles in the field of space exploration, and for the adoption of other international agreements related to outer space activities.

The five UN Space Treaties

The global space governance system is founded on a series of treaties adopted by the United Nations General Assembly (UNGA). The “Treaty on Principles Governing States’ Activities in Outer Space Exploration and Use, Including the Moon and Other Celestial Bodies,” often known as the Outer Space Treaty (OST), is dated 1967 and is the first and most important of these agreements. In 2019 it counted 108 signatory nations, which has been considered a cornerstone achievement in modern space exploration development. The Outer Space Treaty represents a well-rounded source of principles and is considered as the basic framework for international space law. The main field addressed are the

exploration and use of outer space for peaceful purposes (Art. I); the outlaw of national appropriation or claims of sovereignty of outer space or celestial objects (Art. II); the ban on the placement of weapons of mass destruction in orbit or on celestial bodies (Art. IV); the concept of astronauts' duties and responsibilities (Art. V); and the obligation of States to supervise the activities of their national entities (Art. VI). Some of the prominent principles embodied by this treaty concern the fact that space activities are for the benefit of all nations, there is no claim for sovereignty in space, and signatory states are each responsible for their space activities. However, notwithstanding the comprehensiveness of the Outer Space Treaty, governance gaps were obvious soon after its implementation. For instance, the provisions regarding the establishment of weapons in space resulted completely useless to govern modern ground-based weapons such as anti-satellite (ASAT). Moreover, OST's vague wording on how states shall manage their space resources raises further difficulties as governments interpret terminology depending on their respective national purposes and interests. A number of expressions in the OST result outdated and incapable of reflecting today's socio-economic space reality.

Four treaties were drafted to address this issues and lack of fitness, but they encountered difficulties in gaining global support. Regarding the expansion of Articles V and VIII of the OST, the "Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space", also known as the Rescue Agreement, was adopted in 1968. It provides the necessary measures to rescue and assist astronauts in the event of an accident, distress, or emergency landing, and establishes an obligation to return them to their launching state, in addition to assisting launching states with recovering objects launched into outer space. On this ground, there is yet to be a chance for States to test the Agreement's efficacy.

The "Convention on International Liability for Damage Caused by Space Objects," also known as the Liability Convention, is the third foundational treaty by the UN. It is dated 1972 and determines a clear scheme of states' liabilities in case of damages caused by the launch of space objects, which could potentially impact or have other kinds of repercussions on goods or individuals both on Earth and in space. It also provides an ad-hoc procedure for settling claims for suffered damages. As a consequence, nations are liable even if the concerned damage was accidental, and this create an even higher burden on the nations themselves. It is peculiar that, according to the Liability Convention, in case of damage caused to the goods of another state, the relative lawsuit shall be held by a state against

the other, and no private parties shall be entitled to initiate such lawsuit. In other words, international space law establishes that governments are ultimately accountable even if an event is caused by a private actor. History registered just one event in which Liability Convention's dispositions were applied: in 1978 USSR's Cosmos 954 spacecraft reentered Earth's atmosphere by mistake, dispersing roughly 50 kg of radioactive uranium-235 across northern Canada and many persons were accidentally exposed to radiation.

In 1976 the fourth UN Treaty was concluded. The "Convention on Registration of Objects Launched into Outer Space," also known as the Registration Convention, has the intuitive goal of registering space objects. Specifically, it requires launching states to file any outer space object deployed through keeping a registry of their operations in this sense. The concerned nations shall then provide the United Nations with information on the launched objects. This provisions are significant in terms of both the Rescue Agreement and the Liability Convention because, without the registration of space objects, no State could ever be held liable if an event occurred. In case of any damage caused by a launched object, the Registration Convention is vital not only to identify the specific object involved in the accident, but also to evaluate the economic damage incurred.

Last but not least, the fifth UN treaty is headed to "Governing the Activities of States on the Moon and Other Celestial Bodies," and it is therefore known as Moon Treaty. Adopted in 1984, it affirms that all governments shall use the Moon "exclusively for peaceful purposes," and "any threat or use of force, or any other hostile act or threat of hostile act on the moon is banned." It also forbids the deployment or use of weapons of mass destruction (WMD) on the Moon, as well as the "construction of military bases, facilities, and fortifications, testing of any form of weapon, and the execution of military manoeuvres" (UN Office for Disarmament Affairs, 1979). This fifth treaty received a relatively weaker public support in respect to the other fourth

The Five Sets of UN Principles

Subsequently to the adoption of the five United Nations fundamental space treaties, the international space law community focused on the creation of voluntary consensus principles and norms for space activities, debris reduction, and space sustainability. Even though these influential voluntary consensus principles may be held as extremely competitive as per their conventional source, the actual goals are pursued through non-binding instruments.

These five sets of principles are:

- The “Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space,” the four additional declarations were
- “The Broadcasting Principles,” or Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting;
- The “Remote Sensing Principles,” or Principles Relating to Remote Sensing of the Earth from Outer Space;
- The “Nuclear Power Sources” Principles, or Principles Relevant to the Use of Nuclear Power Sources in Outer Space; and
- The “Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries.”

Conference on Disarmament

The Conference on Disarmament (CD) is not considered as a proper UN organization even if it is strictly linked to the latter through the presence of a personal representative of the UN Secretary General. Moreover, it also receives recommendation from UNGA which shall be carefully evaluated. As obvious, the CD pursue the objective of debating and negotiating arms control and disarmament agreements in the context of space. Specifically, the CD has been proudly responsible for the negotiations which led to non-proliferation treaties, namely the Treaty on the Non-Proliferation of Nuclear Weapons and the Comprehensive Test Ban Treaty (CTBT).

Among the vast list of duties embodied by the CD, the most impactful are undoubtedly represented by negotiations and discussions on “the cessation of the nuclear arms race and nuclear disarmament; the prevention of nuclear war; the prevention of an arms race in outer space; effective international arrangements to assure non-nuclear-weapon States against the use or threat of use of nuclear weapons; and new types of weapons of mass destruction.”

Non-UN Measures

The above-mentioned UN provisions provide for a comprehensively ruled environment, which is capable of influencing national's binding governances and enforcement mechanisms. The latter is crucial to reflect each state's peculiar necessities in the concerned space field. However, those peculiarities could potentially lead to the adoption of the so called “flags of convenience”, which have the purposes of avoiding and circumventing the strictest regulations. As a consequence, space operators favour non-binding voluntary industry best practices and self-governance since they logically ensure a more flexible approach, which lead to fewer legal restrictions governing space operations.

In these last decades the United Nations produced further resolutions to regulate space threats as a whole, Resolution A/RES/75/36 in December 2020, titled “Reducing space risks via norms, regulations, and principles of responsible behaviour”, is a perfect example. Another new UN's objective concerns the need of an increased transparency and of confidence-building measures (TCBMs) in the space exploration industry, with a preference for international cooperation. The latter objective is largely chased through bilateral and multilateral agreements.

Conclusions

States today have shifted their attention to creating norms through voluntary, non-legal measures with the goal of achieving mutual understanding and reducing suspicion, competition, rivalry between states bypassing international legal bodies altogether. For space governance to continue being successful,

states must think through modern challenges creatively and collaboratively—in the long-run, strictly bilateral agreements, national policies, and passive support on non-binding agreements will not be sufficient.

Of the many challenges facing global space governance—growing space debris, over-populated orbits, radio frequency interferences, issues of spectrum allocation, and the development of counter-space capabilities—none can be addressed without reinstating intergovernmental bodies with the ability to develop an effective outer space regime. Outdated provisions whose definitions and vague language are left up to the interpretation of states must be reviewed and new rules of engagement need to be developed. Despite all political obstacles, decision leaders must give priority to the development of effective international space law first and foremost by committing to strengthening international dialogues, encouraging openness, greater transparency and information-sharing, and avoid pushing national agendas in lieu of ensuring space remains a global commons.

Sources

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