Outer Space as a Global Commons
Evolving Governance and the Challenges of the 21st Century

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Introduction

Space has long been considered a domain beyond territorial claims, governed by international treaties that emphasised cooperation and peaceful exploration. However, in the face of rapid technological advances, the increasing involvement of private entities in space, and the rise of new space powers, the concept of space as a global commons is being fundamentally redefined. While the 1967 Outer Space Treaty (OST) laid the foundational principles for the peaceful use of outer space, it has become increasingly inadequate in addressing the complex dynamics of 21st-century space exploration.[1] This commentary explores the challenges and opportunities in rethinking the governance structures for outer space, emphasising the need for updated international legal frameworks to safeguard space as a domain for the benefit of humanity.

The concept of *global commons* has traditionally referred to areas that do not fall under the jurisdiction of any one nation but are accessible for the use of all. In the case of space, the idea is that outer space—along with celestial bodies like the Moon and Mars—should be accessible to all countries

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for peaceful purposes, free from the appropriation or militarisation by any single actor. The 1967 Outer Space Treaty was the primary instrument that codified this notion, asserting that space is a ' province of all mankind'.[2]

However, as the space sector evolves, there are growing challenges to the traditional model. The increasing role of commercial enterprises, private space stations, satellite mega-constellations and space mining has raised complex issues regarding the ownership and governance of outer space. Moreover, the entrance of non-traditional space powers such as China and India complicates the governance of space activities. This expansion of space actors requires an updated approach to how we define space as a global commons.

Historical Overview of Space Law

The global nature of outer space was evident from the outset of the Space Age in the late 1950s, with the launch of Sputnik by the Soviet Union. As nations began to realise the potential benefits and risks of space exploration, the need for international governance became clear. In response, the United Nations established the Committee on the Peaceful Uses of Outer Space (COPUOS) in 1959, setting the groundwork for what would later become the Outer Space Treaty. Signed in 1967, the OST aimed to prevent the militarisation of space, ensure that space exploration was conducted for peaceful purposes, and foster international cooperation.[3]

At the time, the space activities of the US and the USSR dominated the field, and the prospect of outer space being weaponised was a significant concern. The Treaty's provisions, which prohibited the establishment of military bases on celestial bodies and the use of space for military purposes, were a direct response to these geopolitical tensions. Moreover, the Treaty emphasised the non-appropriation of outer space, declaring that space was not subject to national sovereignty and could not be claimed by any nation-state. This framework, designed during the Cold War, reflects the specific geopolitical context of the 1960s but does not account for the current realities of space exploration.

The Space Race and the Legacy of the Outer Space Treaty

The 1967 Outer Space Treaty was crafted in the midst of the Space Race, a period of intense competition between the US and the Soviet Union to demonstrate technological and ideological superiority. The Treaty sought to ensure that space exploration would remain free from the constraints

of Cold War rivalries and be used for the common good of humanity. It was clear at the time that space was a strategic asset, and both superpowers wanted to maintain dominance in space. The Treaty, therefore, was aimed at preventing the use of space for military purposes while promoting the peaceful exploration of the cosmos.

The legacy of the Space Race and the early treaties that governed space exploration provided a foundation for future cooperation. The success of subsequent international agreements, such as the Moon Agreement of 1979, demonstrated that space exploration could be governed by cooperative frameworks.[4] However, these agreements were developed in a world where the primary actors were nation-states, and the involvement of non-governmental entities, let alone private companies, was not anticipated.

The Emergence of Private Sector Space Players

By the 2000s, the landscape of space exploration began to shift dramatically with the entrance of private sector companies. SpaceX, founded in 2002 by Elon Musk, played a pivotal role in revolutionising the commercial space sector by developing reusable rocket technology, significantly lowering the cost of access to space. SpaceX, along with other companies like Blue Origin and Virgin Galactic, is not only transforming space transport but also entering areas such as satellite communications and space tourism. This commercialisation of space introduces new questions regarding the ownership of space resources, regulatory frameworks, and how existing international treaties will apply to private actors.[5]

The increasing role of private companies in space exploration challenges the traditional state-centric model of space governance. Unlike governmental agencies, private companies are driven by profit motives and may prioritise economic exploitation of space resources over international cooperation. The need for legal and regulatory frameworks that can balance commercial interests with the collective good of space as a global commons has never been more urgent.

The Role of Emerging Space Powers

In recent years, countries such as China, India and Japan have emerged as significant space powers. These nations have developed robust space programmes with ambitious goals for the future, including lunar exploration, Mars missions and space station development. As new space actors assert

their influence, questions arise about how to govern space in a way that accommodates both established space powers and emerging players.

China has become a global leader in space exploration. With its rapid advancements in space technology, China has launched manned missions, established its space station (the Tiangong Space Station), and conducted successful lunar missions. China's approach to space exploration is strategic, seeking to not only expand its scientific and technological capabilities but also enhance its geopolitical influence.[6]

China's space policy, however, has raised concerns in the West, particularly regarding its increasing military presence in space. The potential for space to become a theatre of military operations is an issue that the international community must address. In particular, China's development of anti-satellite (ASAT) weapons has raised alarms about the risks of weaponising space, a concern that the Outer Space Treaty did not fully anticipate.

India has made significant strides in space exploration, particularly through its national space agency, ISRO (Indian Space Research Organisation). India's Mars Orbiter Mission (Mangalyaan), launched in 2013, was a historic achievement, making India the first Asian country to reach Mars. India's focus on cost-effective space missions has garnered international attention, with ISRO becoming a key player in global satellite launches.[7]

Despite its successes, India faces challenges in developing a regulatory framework for its growing space sector. The lack of a comprehensive space law in India has led to calls for stronger governance to ensure that space activities are conducted sustainably and responsibly. India's growing space ambitions will likely necessitate new legal and diplomatic initiatives to ensure that space remains a peaceful and accessible global commons.

Security Concerns: The Militarisation and Weaponisation of Space

The militarisation of space has become one of the most pressing issues in contemporary space governance. While the Outer Space Treaty explicitly prohibits the placement of nuclear weapons in orbit and the militarisation of celestial bodies, it does not address the development of conventional weapons in space or the use of space for military purposes. The development of anti-satellite (ASAT) weapons, the potential for space-based missile defence systems, and the deployment of other military assets in orbit have raised significant security concerns.

The deployment of ASAT weapons and other space-based military systems threatens to turn space into a battlefield.[8] In 2007, China conducted an ASAT test by destroying one of its own satellites, sending a large cloud of debris into orbit. Other countries, including the United States and Russia, have also developed ASAT capabilities. The proliferation of such technologies raises the spectre of space becoming a theatre of conflict, with potentially catastrophic consequences for civilian satellites, space exploration and international security.[9]

Moreover, space debris created by the destruction of satellites and spacecraft poses an ever-growing risk to other satellites and space infrastructure. The creation of space debris from military activities could lead to a cascade effect, where the increasing amount of debris in orbit makes space increasingly hazardous for all actors, both governmental and private.

The militarisation and weaponisation of space call for a new international treaty focused specifically on space security. A Space Security Treaty could address the development and use of space-based weapons, promote the demilitarisation of space, and create protocols for preventing conflicts in space. This treaty would need to be inclusive, involving not only space-faring nations but also emerging powers and private sector actors.[10]

The Role of International Institutions: UNOOSA and Beyond

The United Nations Office for Outer Space Affairs (UNOOSA) plays a crucial role in facilitating international cooperation in space exploration. UNOOSA promotes the peaceful use of outer space, fosters transparency and confidence-building measures, and helps establish legal frameworks for space governance. However, UNOOSA lacks the enforcement mechanisms necessary to ensure compliance with space treaties. As space exploration becomes more complex, the international community must consider new governance structures and institutions to ensure effective regulation.[11]

The rise of private actors and emerging space powers has highlighted the need for stronger international collaboration. While the Outer Space Treaty provides a framework for cooperation, the growing commercialisation of space and the involvement of private companies necessitate a more robust governance structure. International institutions must evolve to address the complexities of space exploration, balancing the interests of both governmental and non-governmental actors.

The Need for New Legal Frameworks: Beyond the Outer Space Treaty

While the Outer Space Treaty laid the foundation for space law, it has become increasingly insufficient in addressing the rapid changes in the space sector. Issues such as space resource utilisation, satellite mega-constellations and space debris management were not foreseen when the Treaty was drafted.

One of the most significant challenges facing space governance is the utilisation of space resources, such as mining asteroids or extracting resources from the Moon. A new legal framework, such as a Space Resources Utilization Treaty, could regulate space mining activities to ensure that space resources are used sustainably and equitably. This treaty could also address the ownership and commercial exploitation of space resources, ensuring that the benefits of space exploration are shared by all nations.

Recommendations for Future Global Space Governance

To ensure that space remains a global commons and does not become a domain of conflict and commercial exploitation, several reforms are necessary:

1. *Updating Space Law*: Revising the Outer Space Treaty to include provisions on space resource utilisation, satellite constellations and the role of private companies in space.
2. *Establishing a Global Space Licensing Authority*: This body would regulate the activities of both government and private space actors, ensuring that space exploration is conducted responsibly and sustainably.
3. *Creating a Space Security Treaty*: A comprehensive treaty dedicated to space security, addressing the militarisation of space, the development of space-based weapons and the prevention of space conflicts.
4. *Promoting Space Equity*: Ensuring that space remains accessible to all nations, particularly developing countries, by establishing programmes that promote equitable access to space technologies and benefits.

Conclusion

As humanity continues to explore outer space, it is essential to rethink the governance structures that have traditionally governed space activities. The growing involvement of private sector actors, new space-faring nations and the militarisation of space require new legal frameworks and international cooperation. Through updated treaties, stronger international institutions

and the promotion of equitable access to space, the global community can ensure that space remains a peaceful and accessible domain for the benefit of all.

Notes

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