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Humanity's second commons: A global regulatory authority for the governance of outer space

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Abstract
Outer space, once conceived as the ultimate symbol of collective human curiosity, has evolved into a contested arena of commercial ambition, technological dominance, and geopolitical competition. The legal architecture that governs this domain, The Outer Space Treaty (1967) and its companion instruments was drafted in an era that could not anticipate the twenty-first century's exponential rise in private actors, dual-use technologies, and market-driven exploitation. The growing militarisation of orbit, unregulated satellite constellations, and commercial resource extraction have exposed the inadequacies of the existing treaty framework and the fragmentation of national regulatory regimes.
This paper develops the normative case that outer space represents "humanity's second commons, necessitating a global regulatory authority, GRA, analogous yet different from structures like the IMO and ITU. It first places the theoretical underpinning of a "second commons" within classical theories of global commons and cosmopolitan justice, underpinned by Grotius's mare liberum, Ostrom's collective governance model, and Rawlsian fairness. Subsequently, it addresses institutional and legal insufficiencies of the existing regime, evaluating the gap existing between aspirational non-appropriation and practical assertions of sovereignty. It concludes by proposing an institutional model for a GSA with legislative, monitoring, and adjudicatory functions undergirded by inclusive multilateralism and technological equity.
India's emerging space policy and its 2023 Space Policy framework provide an illustrative case of how developing nations can contribute to, and benefit from, a reimagined system of global governance. Balancing theoretical reasoning with pragmatic policy design, the article contends that humanity's future in space must transcend the logic of competition and embody stewardship, sustainability, and shared destiny, principles that only a coordinated, legally empowered global regulator can ensure.

Keywords: Outer space law, global commons, international governance, space policy, india, sustainable development, space regulation, space sustainability, Outer Space Treaty, international governance

Introduction

The expansion of human activity into outer space has transformed what was once a scientific frontier into an economic and strategic theatre. Over the last decade, rapid technological advances have catalysed the rise of private corporations like SpaceX, Blue Origin, ISRO's commercial arm NewSpace India Ltd, and others, turning outer space into a potential locus of profit and geopolitical influence. Yet, the governing legal regime remains anchored in mid-twentieth-century assumptions. The Outer Space Treaty (OST), signed in 1967, enshrines lofty principles of peace, cooperation, and the "province of all mankind," but lacks mechanisms for enforcement, dispute resolution, and equitable benefit-sharing (UN 1967).
The absence of an authoritative global institution capable of supervising, licensing, and adjudicating space activities now threatens the coherence of international law. Without reform, the trajectory of outer space governance risks mirroring the unregulated commons tragedies of the high seas and atmosphere. This paper thus proposes the establishment of a Global Regulatory Authority for Outer Space, not merely as an administrative body, but as the juridical expression of collective responsibility in what may be termed "humanity's second commons."

Theoretical Foundations: From the Global Commons to the Second Commons

The concept of the global commons traditionally denotes domains beyond national jurisdiction, such as the oceans, atmosphere, and Antarctica, regulated by principles of shared stewardship. These commons embody what Rawls termed "the Law of Peoples": a moral obligation of fairness and collective well-being beyond borders. Outer space, under Article II of the OST, is subject to a non-appropriation clause prohibiting states from claiming sovereignty; yet the silence of the treaty regarding commercial exploitation and private ownership has created a grey zone where de facto appropriation takes place via orbital slots, frequency allocations, and resource claims.
The "second commons" framework advances this debate by reinterpreting space as not only a physical common but also a technological and informational commons. The orbits, frequencies, and data generated from satellites form a global infrastructure underpinning communication, climate monitoring, and navigation. The equitable use of this infrastructure is a moral and legal imperative. As Ostrom (1990) [12] argued, sustainable commons management demands clearly defined boundaries, collective-choice arrangements, and graduated sanctions, all absent from the current space regime.
Philosophically, space governance must shift from a "freedom of use" paradigm to a "duty of care" paradigm, aligning with the environmental stewardship logic found in the Rio Declaration (UN 1992). The principle of intergenerational equity, long established in environmental jurisprudence, equally applies to orbital sustainability. The argument for a global regulatory authority thus stems not from statist efficiency but from cosmopolitan ethics:

humanity's shared custodianship of a fragile extra-terrestrial environment.

Fragmentation and Legal Deficits in the Current Regime

The five core treaties underpinning international space law are: Outer Space Treaty of 1967, Rescue Agreement of 1968, Liability Convention of 1972, Registration Convention of 1975, and Moon Agreement of 1979. However, there is significant structural weaknesses in the system. Notably, the Moon Agreement, which regulates the use of resources on celestial bodies, has only eighteen ratifications, none of them from major space powers. This lack of agreement stems from deeper ideological divisions between states that advance "common heritage of mankind" versus those championing "freedom of enterprise."

Institutionally, UNCOPUOS is a deliberative body that does not have enforcement powers. Its recommendations depend on voluntary state compliance. Similarly, the ITU allocates orbital slots and frequencies but does not have jurisdiction over broader environmental or commercial issues (ITU 2022). The result is a regime fragmentation characterized by overlapping institutions governing discrete issues without systemic coordination (Fasan 2021) [4].

Private participation further complicates governance. National licensing frameworks such as the U.S. Commercial Space Launch Competitiveness Act (2015) or Luxembourg's Space Resources Act (2017) grant quasi-property rights over extracted resources, arguably contravening Article II of the OST. This "juridical unilateralism" risks transforming a cooperative regime into a competitive marketplace. The proliferation of mega-constellations, especially Starlink and OneWeb, raises concerns about orbital congestion, light pollution, and interference with astronomical research (ESA 2022).

India has been relatively cautious in its approach. The Indian Space Policy 2023 aims at liberalising private participation with continued state supervision through IN-SPACe (Department of Space 2023) [2], but it operates within a national framework and thus underlines the need for global harmonization.

Toward a Global Regulatory Authority for Outer Space

A Global Regulatory Authority should serve as the institutional anchor of a reconstituted space governance regime. It finds its rationale in meeting three gaps: normative coherence, regulatory enforcement, and distributive justice.

First, normative coherence involves the crystallization of various basic principles through a single treaty framework. GRA can do this by developing, through legally binding instruments, standards on satellite deployment, debris mitigation, and planetary protection that will work similarly to the MARPOL Convention of the International Maritime Organization on pollution control. IMO 2021

Second, regulation needs to go beyond voluntary guidelines. It could have a global licensing system where all launches-state or private-are registered through the GRA based on environmental and safety standards. Funding can come from launch levies and orbital-use fees that internalize the growing externalities of orbital congestion.

Third, distributive justice requires fair access to orbital resources and data. Developing countries, such as India, should have guaranteed capacity-building programs and technology transfers, similar to the International Seabed Authority under UNCLOS (Jaeckel 2017) [8].

Institutionally, the GRA could be structured along three pillars:

- A Legislative Council with state parties in membership and proportional voting to reflect regional representations,
- A Regulatory Secretariat responsible for implementation, data management, and certification; and
- An Adjudicatory Chamber modelled on the ITLOS with powers to settle disputes and interpret the law relating to space.

Such a body would not replace UNCOPUOS or ITU but would coordinate them through a meta-governance mechanism with the aim of policy convergence.

India's Role and Contribution

India's trajectory concerning space governance illustrates the Global South's potential to formulate equitable norms. Since the launch of Aryabhata in 1975, India has pursued a scientific ambition in close harmony with developmental ethics. Through the Mars Orbiter Mission in 2013 and Chandrayaan-3 in 2023, the Indian Space Research Organisation stands out as a pioneer in cost-effective innovation, underscoring the feasibility of inclusive technological advancement.

The Space Policy 2023 enunciates four verticals: research, commercialisation, capability building, and international cooperation. While it highlights private participation, it certainly reiterates India's commitment to the OST principles. India has repeatedly advocated the "peaceful uses of outer space" doctrine in UNCOPUOS sessions, urging restraint on weaponization (MEA 2022) [11].

India could leverage its diplomatic capital within the Global South to champion the establishment of a GRA through the G-20 or BRICS framework. By promoting a treaty-based multilateral process, India would not only safeguard its developmental interests but also reinforce its image as a responsible space power. Moreover, aligning its domestic regulatory institutions IN-SPACe and the proposed Space Activities Bill with international sustainability standards could position India as a normative bridge between developed and developing space actors.

Challenges and Ways Forward

Creating a global authority inevitably encounters political, legal, and ethical problems. Major powers may be reluctant to give up their regulatory sovereignty. For example, the United States insists on a "sectoral governance" model dominated by national control, while China and Russia prefer intergovernmental consensus through the UN system (Johnson 2020) [10]. Reconciling these positions requires diplomatic innovation akin to the Paris Agreement's NDCs model, flexible yet collectively accountable.

Legally, amending or supplementing the OST would require wide-ranging negotiation. A far more pragmatic way forward might be to adopt a Framework Convention on Outer Space Sustainability, which would set up the GRA by protocol without reopening the whole treaty. Normatively, "common but differentiated responsibilities" (CBDR) - a principle from environmental law - could ensure fairness

between technologically advanced and emerging spacefaring nations (Rajamani 2016) [13].

The creation of a GRA is ethically a question of legitimacy and representation. For making decisions, democratic multilateralism would be necessary to avoid neo-colonial hierarchies. Civil society, academia, and the private sector should be integrated into such a process by consultative mechanisms similar to those under UNFCCC. Transparency, open data access, and inclusivity are important to prevent regulatory capture by the dominant space corporations.

Finally, there is a related technological verification challenge. Ongoing monitoring of compliance, in particular with bans on debris mitigation and anti-satellite testing, relies on real-time infrastructure tracking. Cooperative data-sharing via the Secretariat of the GRA might operationalize this function by building on systems such as India's NETRA space surveillance programme. This way, national capabilities would reinforce global oversight rather than compete with it.

Conclusion

The governance of outer space has reached a constitutional moment in international law. The metaphor of "humanity's second commons" encapsulates both the promise and peril of human expansion beyond Earth. The first commons, the oceans taught that unregulated freedom leads to depletion and conflict. In order not to repeat that tragedy, it is necessary that a Global Regulatory Authority for Outer Space be established, with legality, equity, and sustainability as founding principles.

Such an institution would reconcile national interests with collective stewardship, ensuring that the benefits of space exploration extend to all humanity. India’s evolving role illustrates how emerging powers can drive normative innovation transforming the discourse from access and control to responsibility and care. The future of space governance, therefore, lies not in sovereignty but in solidarity; not in competition, but in cooperation; not in possession, but in preservation. Outer space is humanity’s shared horizon. Governing it wisely may well determine the survival of our planetary and cosmic civilisation.

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