

Promoting Safety and Security: Challenges for the Future Governance of Space Activities

Steven Freeland

Emeritus Professor Western Sydney University, Professorial Fellow Bond University, Co-Principal Azimuth Advisory (Sydney, Australia)
E-mail: s.freeland@westernsydney.edu.au

Freeland, Steven (2023) Promoting Safety and Security: Challenges for the Future Governance of Space Activities. *Advanced Space Law*, Volume 12, 63-68. <https://doi.org/10.29202/asl/12/8>

This paper presents a comprehensive examination of the current and emerging challenges in the governance of space activities, focusing on promoting safety and security. Key international treaties and resolutions, including those under the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS), are discussed, highlighting their evolution in response to changing geopolitical dynamics and the expansion of space activities across various sectors. The paper addresses several critical challenges: ensuring diverse global voices are heard in space governance, managing the dichotomy of space in terms of its strategic value and dual-use nature, achieving consensus among the rapidly growing number of space-faring nations, defining and delimiting space, adapting to the commercialization of space activities, and confronting the growing problem of space debris.

Keywords: Space Governance, International Space Law, Space Safety, Space Security, UNCOPUOS, Space Debris, Space Commercialization, Global Consensus, Legal Framework, Space Race.

Received: 13 November 2023 / Accepted: 25 November 2023 / Published: 30 December 2023

Introduction

In an era where space activities have become increasingly pivotal to our global society, the necessity for effective governance in this realm is more pressing than ever. From the launch of the first satellite to the adoption of various United Nations General Assembly (UNGA) Resolutions and treaties under the auspices of the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS), we have witnessed a significant evolution in space law. This evolution is reflective not only of the changing geopolitical landscape but also of the expansion of space activities into diverse sectors, including military, commercial, scientific, and cultural realms.

There is Already Much Important (and Relevant) International Space Law that regulates Safety and Security:

- Outer space is not a 'lawless' frontier ...
- Customary International Law 1957-1967
- UNGA Resolutions 1960s – major points reflected in a series of Nations Treaties
- UN Treaties – through auspices of UNCOPUOS
 - Outer Space Treaty (1967)
 - Rescue Agreement (1968)
 - Liability Convention (1975)
 - Moon Agreement (1979) – 'rejected' by major industrialized powers – inability to agree on further treaties.

1980s:

- UNGA Principles – Increasingly complemented by 'hard' and 'soft' law guidelines – including TCBMs
- Emergence of **national law** (approximately 30-40 States and counting...)

Challenge #1 – Listening to all 'Voices' (not just the loudest ones)

Space is Multi-Faceted and Ubiquitous

→ This Requires a Holistic Approach to Space Governance

- Political
- Military / National Security
- Commercial
- Legal
- Scientific
- Exploratory
- Civil
- Cultural
- Religious
- Heritage
- Other?

→ inextricably linked to human rights and the future of humanity

Challenge #2 – Addressing the Inaccurate 'Dichotomy' of Space

4 October 1957 – the 'space race' → immediate legal issues

- Geopolitical context – Cold War
- Recognition of strategic 'value' of space
 - need for legal framework
- Need for (UN) Coordinating Organizations – bifurcation of mandates
 - UNCOPUOS – law making / peaceful activities
 - Conference on Disarmament – weapons/ space security / military uses
 - Distinction blurring (particularly due to 'dual-use' nature of space activities).

Who 'Creates' the International Framework?

UNCOPUOS

- Permanent Committee 1959 – UK a Foundational Member State

- Mandate includes:
 - Study legal problems / issues
- Two Subcommittees:
 - Scientific and Technical
 - Legal
- Currently 102 members – and growing fast!
- Consensus approach to decision-making.

Challenge #3 – Achieving Consensus in a Complex and Diverse World

- UNCOPUOS Member States as at 2023:

Albania, Algeria, Angola, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahrain, Bangladesh, Belgium, Belarus, Benin, Bolivia, Brazil, Bulgaria, Burkina Faso, Cameroon, Canada, Chad, Chile, China, Colombia, Costa Rica, Cuba, Cyprus, Czech Republic, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Ethiopia, Finland, France, Germany, Ghana, Greece, Guatemala, Hungary, India, Indonesia, Iran, Iraq, Israel, Italy, Japan, Jordan, Kazakhstan, Kenya, Kuwait, Lebanon, Libya, Luxembourg, Malaysia, Mauritius, Mexico, Mongolia, Morocco, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Republic of Korea, Romania, Russian Federation, Rwanda, Saudi Arabia, Senegal, Sierra Leone, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sudan, Sweden, Switzerland, Syrian Arab Republic, Thailand, Tunisia, Turkey, the United Arab Emirates, the United Kingdom of Great Britain and Northern Ireland, the United States of America, Ukraine, Uruguay, Uzbekistan, Venezuela, Viet Nam

- What is consensus? / How to achieve consensus?
 - ‘A general agreement’
- Everyone in full agreement?
- Everyone agrees not to disagree?
- Negotiations / bargaining / ‘horse trading’

Challenge #4 – Resolving (or not) the delimitation / definition of Space

- Sputnik 1 – ‘instant’ customary law?
 - Implications for Regulation
 - Territorial / Jurisdictional issues
- Beyond National Jurisdiction
 - Definition? / Delimitation?

Challenge #5 – Adapting to the Commercialisation of Space (and its role)

- Originally considered purely a State activity – but ...
- Legal possibility for non-governmental entities engages in space activities
- 2022 – Global ‘Space Economy’ approximately US\$430+ billion, 76% of which involved commercial space activities

- Projected to grow to US\$1-3 trillion by 2040
- Involvement of Private Sector in conflict → implications
- Fast forward to 2023:
 - States → Civil / Commercial / Military activities
- originally only a small number of (industrialised) States
 - now c. 70-80 active space-faring States
 - State / non-State military actors
 - IGOs
 - Commercial Entities (increasingly providing ‘dual use’ services)
 - Research Institutions / Universities / Not-for Profits
 - Individuals / Entrepreneurs etc

Challenge #6 – Addressing the (existential) Problems of Space Debris

- The numbers:
 - 7,100+ ‘live’ satellites
 - 36,500 debris pieces > 10 cm (10,500 tonnes)
 - 1,000,000 debris pieces 1-10 cm
 - 130,000,000 debris pieces < 1 cm
 - Exponential increase in number of space objects
- Collisions: eg 2009 Iridium 33 and inactive Kosmos 2251
- Near Collisions: eg 2020 IRAS and GGSE-4 / regular need to move ISS
- Break-up in orbit: eg 2021 NOAA-17 / Yunhai 1-02 polar-orbiting satellites
- Deliberate destruction of space objects – the space ‘club’
- Debris falling to Earth: eg 2021 Long March 5B Rocket / 2022 SpaceX debris in Australia
- Orbital velocity → collisions lead to cascading effect of more debris → possible ‘Kessler effect’ → challenge to sustainability / accessibility / navigability of space

Other Strategic Issues and Challenges: All related to Safety and Security

- Long-term sustainability of space / space activities
- Small satellite technology / mega/large constellations
- Space traffic management
- Congestion issues – use of spectrum / ‘crowding’ of orbits
- Militarization / Weaponization of space → PAROS → a ‘Peace Race’
- Human (aero)space flight
- Commercial exploitation of natural space resources
- High Altitude Platforms / Drones etc
 - (not space law but ...)

Regulating Space Now and into the Future: Strategic Challenges

Why? How?

Understanding the ‘questions’ that space technologies pose:

- Enabling and ‘future-proofing’ International and National regulatory frameworks
- Involving all aspects of the ‘space-sector’ – listening to all voices

The need for multilateralism

- ‘buy in’ of all stakeholders
- Delays – inherent and deliberate – but have to get it as ‘right’ as possible
- Language of ‘lowest common denominator’

Effective implementation by States?

- Relationship between international law and national law
- Individual interpretation
- ‘Cherry picking’ of obligations
- Influence of domestic factors – economy, industry, risk profile, culture, strategic alignment etc.
- Fragmentation?

Conclusions

In summarizing we conclude that the future of space governance is an intricate and multifaceted endeavor. The exploration of international space law, under the guidance of UNCOPUOS and various UNGA resolutions, has revealed a dynamic and evolving landscape shaped by geopolitical changes and the diversification of space activities into commercial, military, and cultural sectors.

The challenges identified in the paper – from ensuring diverse global perspectives in space governance to tackling the commercialization of space and the ever-increasing issue of space debris – call for a strategic and holistic approach. The importance of adapting legal frameworks to the fast-paced evolution of space activities cannot be overstated. This adaptation requires a keen understanding of the unique dynamics at play, including the intricacies of international consensus, the blurring of military and civilian space uses, and the complexities of territorial jurisdiction in space.

Moreover, the role of national and international entities in shaping the future of space governance is crucial. The interaction between international treaties and national laws plays a pivotal role in creating a coherent and effective governance structure. As space activities expand, encompassing everything from satellite deployment to human spaceflight and the utilization of space resources, the need for robust, inclusive, and forward-looking governance mechanisms becomes increasingly apparent.

In navigating these challenges, we should underscore the necessity for multilateral cooperation and the involvement of all stakeholders in the space sector. The future of space governance lies not only in the creation of comprehensive legal frameworks but also in fostering a culture of collaboration and mutual understanding among the diverse array of actors involved in space activities.

In conclusion, as we venture further into the cosmos, our approach to space governance must evolve in tandem with our expanding capabilities and aspirations. The preservation of space as a realm of peace, exploration, and opportunity for all humanity hinges on our collective efforts to address these challenges effectively.

References

Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (1979)
United Nations Office for Outer Space Affairs. Available online: <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/intromoon-agreement.html>

- Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (1967) United Nations Office for Outer Space Affairs. Available online: <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introrescueagreement.html>
- Committee on the Peaceful Uses of Outer Space: Membership Evolution (2023) United Nations Office for Outer Space Affairs. Available online: <https://www.unoosa.org/oosa/en/ourwork/copuos/members/evolution.html>
- Convention on International Liability for Damage Caused by Space Objects (1971) United Nations Office for Outer Space Affairs. Available online: <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introliability-convention.html>
- Space debris by the numbers (2022) European Space Agency. Available online: https://www.esa.int/Space_Safety/Space_Debris/Space_debris_by_the_numbers
- Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (1966) United Nations Office for Outer Space Affairs. Available online: <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetreaty.html>