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Citation: Da Vinha, L. (2026). Cosmic Disorder: The Rise of Geopolitical Rivalry and the Challenge to Global Space Governance (10.5871/globaldisorder/9780856727634). London, UK: British Academy.

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Permanent repository link: https://openaccess.city.ac.uk/id/eprint/38644/

Link to published version: https://doi.org/10.5871/globaldisorder/9780856727634

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Global (Dis)Order
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Cosmic disorder: the rise of geopolitical rivalry and the challenge to global space governance

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Abstract

This paper examines the transformation of outer space governance amidst the intensifying Sino-American rivalry and the broader erosion of the liberal international order. For decades, the 1967 Outer Space Treaty (OST) provided a stable normative framework. However, rapid technological advancements and shifting geopolitical tides have rendered this traditional order increasingly fragile. This study distinguishes between strategic competition and systemic rivalry, arguing that the contemporary landscape is defined by a profound struggle over the norms and rules that will govern future celestial activity. Central to this analysis is the emergence of competing governance blocs – specifically the US-led Artemis Accords and the China-Russia International Lunar Research Station – which threaten to fragment space policy into exclusive spheres of influence. This geopolitical tension is compounded by the rise of "New Space," characterized by a shift from state-led missions to a complex, multi-actor ecosystem dominated by commercial mega-constellations. Despite these challenges, the paper contends that rivalry does not preclude cooperation. By drawing parallels to the Cold War, the study identifies areas for potential collaboration and argues that while the foundational principles of the OST remain vital, they must be augmented by a new international space regime that prioritizes pragmatic deconfliction and technical interoperability.

Introduction

Outer space is increasingly shaped by intensifying competition and fragmented governance (Elefteriu 2024). For decades, the 1967 Outer Space Treaty (OST) and related Cold War era arrangements offered a relatively stable normative framework, presenting space as the 'province of all mankind'. These institutions were designed to reduce the risk of escalation and to promote peaceful use of the domain. However, today's geopolitical and technological environment differs markedly from the conditions that sustained this order, with the growing Sino-American rivalry transforming space into a central arena of great-power competition. This shift mirrors, and reinforces, broader currents of disorder in international politics (de Oliveira & da Vinha 2026).

The erosion of the liberal international order forms a crucial backdrop to this transformation. For over seven decades, the liberal international order embedded US power within a multilateral framework that fostered a degree of predictability in world politics (Ikenberry 2011). However, this order now faces pressures both externally – through the rise of revisionist actors such as China and Russia – and internally – through the weakening of US commitments to multilateralism (da Vinha & Dutton 2025). These combined pressures undermine global governance mechanisms, with particularly acute consequences for outer space, where rapid technological change and a new security environment have outpaced institutional adaptation.

Against this backdrop, both the US and China have placed space at the centre of their long-term strategic ambitions. Washington prioritises maintaining space superiority to deter threats and safeguard critical systems (US DoD 2020), while Beijing has articulated an ambitious plan to become the leading space power by 2045 (Pollpeter et al. 2020). China's International Lunar Research Station (ILRS), pursued in partnership with Russia, positions Beijing as the hub of an emerging multilateral space regime, an alternative to US-led initiatives such as the Artemis Accords (Wu 2025). Competition has thus evolved into a deeper struggle over the norms and rules that will govern future activity in space, raising concerns that policy divergence could generate greater instability and insecurity.

The challenges of governance are compounded by the rapid expansion of 'New Space'. Private firms, emerging national agencies, and commercial entrepreneurs have disrupted traditional cost structures and accelerated satellite deployment. This proliferation of actors has enabled unprecedented access but also increased risks, creating a more 'congested, contested, and competitive' domain (Lynn 2011). The rise in orbital debris, anti-satellite weapon capabilities, cyber vulnerabilities, and dual-use technologies highlights the fragility of existing governance frameworks (Masson-Zwaan 2025). The OST offers limited guidance on contemporary issues such as resource extraction, space traffic management, commercial security, and large-scale satellite constellations (Schrogl 2020). As national and bilateral initiatives multiply, the risk of regulatory fragmentation increases, potentially entrenching competing rule-making blocs aligned along the Sino-American divide.

Understanding the governance implications of this trend requires distinguishing between international competition and international rivalry, a distinction widely emphasised in international relations scholarship. More precisely, international competition refers to efforts by states to secure advantage and primacy in specific issue areas – such as security, economic, or technological leadership – within a structured system governed by rules and norms (Mazarr et al. 2018). In contrast, international rivalry denotes a qualitatively more antagonistic relationship marked by sustained hostility, mutual threat perceptions, and an "us versus them" framing of all policy interactions (Colaresi et al. 2008). Whereas competition is issue-specific and does not inherently imply enmity, rivalry involves enduring, mutually contingent conflict in which states prioritize countering and harming the opponent over absolute gains, and where foreign policy is heavily conditioned by the rival's actions (Vasquez 2009). Accordingly, while all great powers compete, only some develop rivalries.

Contemporary debates frequently describe the global political situation as a 'New Cold War' (Brands & Gaddis 2021; Mearsheimer 2021), with much attention focused on China's rise and its challenge to the US-led order (Hung 2022; Woodward 2017). Yet scholars caution against overstating the Cold War analogy, noting significant geopolitical, economic, and technological differences (Leffler 2019; Nye 2021; Westad 2019). Notably, high levels of economic interdependence differentiate the US-China relationship from the US-Soviet confrontation, leading some to describe the emerging landscape as bipolarity without full decoupling (Bekkevold 2022).

Nonetheless, there is broad agreement that Sino-American relations are marked by escalating uncertainty and opposition (Colby & Mitchell 2020; Grano & Huang 2023; Ikenberry 2024; Zhao 2019). This framing has been institutionalised in policy: the 2022 National Security Strategy presents the US as 'in the midst of a strategic competition to shape the future of the international order' (US President 2022: 2), while China's 2019 National Defence White Paper calls for adapting to a 'new landscape of strategic competition' (SCIOPRC 2019).

Competition need not imply hostility. Historically, states have pursued primacy within institutionalised frameworks, as seen in US-Japan economic competition in the late twentieth century (Lee & Maher 2022) and European efforts to challenge US and Japanese dominance in information technologies (Amable & Boyer 1995). Rivalry, on the other hand, represents a more dangerous and enduring form of interaction, characterised by mutual threat perception, recurrent crises, and spirals of insecurity (Colaresi et al. 2008; Diehl 1998; Thompson 1999). The concern for space governance is that Sino-American competition risks drifting towards rivalry, which could exacerbate militarisation, undermine norm development, and impede cooperation on shared challenges such as debris mitigation and planetary defence.

The Cold War illustrated that rivalry does not preclude cooperation. Despite intense hostility, the superpowers eventually recognised shared risks in space and developed mechanisms to manage them. A similar dynamic may be possible today. Realising these opportunities will depend on preserving channels for dialogue, resisting zero-sum framings, and adapting governance frameworks to the realities of the contemporary space environment.

Accordingly, this study examines how the deepening Sino-American rivalry is shaping the governance of outer space. It argues that while this rivalry presents significant challenges – fragmentation, norm contestation, and heightened insecurity – it also leaves open important avenues for cooperation. Understanding and leveraging these opportunities will be essential for sustaining a stable and inclusive space order in the decades ahead. The paper begins by tracing the Sino-American contest for primacy in space, then examines how the rise of New Space and the erosion of the liberal international order challenge existing governance arrangements. It then identifies areas in which cooperation remains possible and, in the conclusion, sets out the elements of a layered, pluralist international space regime based on shared standards and confidence-building measures, constraints on destabilising practices, infrastructure resilience, interoperability between rival frameworks, and the agency of private actors and middle powers.

Competing for primacy in outer space

Outer space is playing an increasingly important role in the emerging Sino-American geopolitical rivalry, as space power becomes an ever more important element of national power (Elefteriu 2024). The US envisions maintaining its space superiority in order to 'protect and defend U.S. and, as directed, allied, partner, and commercial space capabilities and to deter and defeat adversary hostile use of space' (US DoD 2020: 2). Similarly, China aims to be the world's leading space power by 2045, envisioning its space program driving advancements across scientific, technological, economic, and military sectors, surpassing the US in select space technologies (Pollpeter et al. 2020).

The US has a long tradition in space, dating back to the 'space race' with the Soviet Union. The first American applications in space involved the use of reconnaissance satellites to gather intelligence on the Soviets and evolved to encompass missile warning systems, communications, and weather prediction systems (Pace 2024). During the Cold War, the US also developed various programs to establish space as a strategic military domain, including testing nuclear explosions in space and creating missile defence systems to counter Soviet intercontinental ballistic missiles. When the Cold War ended, the US was left as the hegemonic space power. Projects that exhibited America's primacy in space include the space shuttle program, the construction of the International Space Station (ISS), the commercialisation of the Global Positioning System, and the Evolved Expendable Launch Vehicle program (Moltz 2019).

This dominance was further highlighted during Operations Desert Shield and Desert Storm, as America's space assets enhanced its conventional forces and helped deliver a quick military victory (Bruger 1995). Confidence in its hegemonic position led Washington to support the Russian Space Agency with contracts for flights to the Mir station and ISS cooperation, and to authorise US commercial satellite launches on Chinese Long March boosters. However, cooperation with China ended after the 'Cox Report' accused Beijing of stealing classified information critical to US national security (Moltz 2019). Concerns over competition prompted special commissions, and in 2001 the Commission to Assess National Security Space Management and Organization urged the consolidation of agencies to avert a potential 'Space

Pearl Harbor' (Pace 2024). The terrorist attacks of 11 September 2001 shifted priorities, relegating outer space to the periphery of US security policy.

During this period, China expanded its space program, driven by concerns over US military advantages. Chinese policymakers feared that Washington sought to dominate space and control access to celestial resources (Wortzel 2023). Accordingly, Beijing increased defence R&D and reoriented military doctrine towards technological superiority (Pollpeter 2024). By the mid-2000s, the People's Liberation Army's 'new historic missions' explicitly included protecting national interests in space (Lai et al. 2014).

Since Xi Jinping's rise in 2012, space has become integral to China's national strategy, featuring in economic programs such as the The National Medium- and Long-term Program for Science and Technology Development (2006–2020), Made in China 2025, and successive Five-Year Plans (Pollpeter 2024). Military priorities were formalised in white papers, and in 2015 China declared space a military domain, updating its doctrine for multi-domain warfare (Harrison et al. 2023).

Leveraging its centralised political system, China is mobilising its civilian and military resources towards becoming the leading space power by 2045 (Harrison et al. 2023; Wortzel 2023). It is now the second-largest satellite operator,[1] has developed the BeiDou navigation system, and has executed major lunar missions (Davidson 2024; Pollpeter 2024; Wortzel 2023). Beijing also targets becoming dominant in space-based manufacturing, power generation, asteroid mining, and transportation, and it possesses counterspace capabilities including cyberattacks, electronic warfare, directed energy weapons, and anti-satellite systems (Harrison et al. 2023). Accordingly, China's growing autonomy in space policy now rivals that of the US (Aliberti et al. 2023).

US responses to this rise were initially slow. Preoccupied with the 'global war on terror' and domestic challenges, America allowed its space hegemony to decline. Harrison, Garretson, and Imperato (2023: 65) attribute this to 'a persistent lack of political will among U.S. policymaking elites, the absence of a clear and objective goal to accomplish, risk averseness and fear of failure, the substantial cost of space access, and government contractors who are disincentivized, by the bureaucratic and failed acquisition process from developing technology in a timely fashion'. In 2011, the Wolf Amendment restricted NASA and the OSTP from bilateral cooperation with China unless specifically authorised by law.[2] Though renewed annually, it failed to halt the US's relative decline in space.

More recently, US interest in space has revived, shaped by security and commercial drivers (Harrison et al. 2023; Moltz 2019). The Trump administration reactivated the National Space Council in 2017, launched the America First National Space Strategy, and in 2019 created the US Space Force (Pace 2024). In 2020, the White House issued the National Space Policy and Defense Space Strategy, reinforcing its pledge to remain dominant. Bipartisan consensus viewed China's ambitions as a major threat, and the Biden administration maintained a competitive posture (US President 2021).

While some see potential for peaceful competition (Bateman 2023; Normile 2023), others warn that '[l]eft unattended, competition in key areas such as space and cyberspace have the capacity to act as catalysts driving the relationship in an undesirable direction' (Inkster 2013: 24). Chinese commentators also see limited room for cooperation (Xuetong 2019).

1 See 'UCS satellite database', Union of Concerned Scientists, last updated 1 May 2023, https://www.ucsusa.org/resources/satellite-database.
2 HR 2112, 112th Cong., 125 Stat. 552 (2011) (enacted), https://www.congress.gov/bill/112th-congress/house-bill/2112/text.

Recent developments reinforce such pessimism. In 2020, President Trump signed Executive Order 13914 declaring outer space 'a legally and physically unique domain of human activity, and the United States does not view it as a global commons'.[3] Washington has also resisted revising space governance agreements (Pace 2024), instead promoting the Artemis Accords – bilateral agreements outlining principles for civilian exploration – which are now signed by 40 states (de Zwart 2021). China, constrained by the Wolf Amendment, rejected the Accords as an effort by the US to limit its ambitions (Ji et al. 2020).

In parallel, China has intensified strategic cooperation with Russia in space-related defence and infrastructure, including ballistic missile defence, orbital debris monitoring, and satellite navigation systems – efforts designed to erode US technological and strategic advantages (Pollpeter et al. 2023). A central pillar of this partnership is the ILRS, launched by China in 2019 with the aim to establish a permanent research platform on the Moon's surface and in lunar orbit by 2035. By inviting Russia to be a co-lead and actively courting participation from developing countries, Beijing is positioning the ILRS as the flagship for an alternative, multipolar model of space governance. The initiative offers incentives such as capacity-building programs for emerging space actors, free payload opportunities, and open data-sharing arrangements – a deliberate contrast to US-led frameworks like the Artemis Accords and a direct challenge to Washington's ability to set the rules of the road in outer space (Wu 2025).

However, even as the emerging Sino-American rivalry has the potential to complicate the governance of outer space, the current political, economic, and technological contexts also create openings for constructive collaboration across a range of space-related issues.

Challenges for space governance

The governance of outer space has historically been shaped by geopolitical rivalry, most notably between the US and the Soviet Union during the Cold War. Space activity in this period was almost exclusively state-driven, motivated by military objectives and the projection of national prestige (de Zwart & Stephens 2019; MacDonald 2017). Concerns over the militarisation of space – particularly following nuclear space tests and the Cuban missile crisis – prompted the development of foundational treaties designed to prevent conflict escalation. The OST codified principles such as non-appropriation, peaceful use, and space as the 'province of all mankind' (Gupta & Rathore 2019; Meyer 2016). Together with four subsequent agreements – the Rescue Agreement (1968), Liability Convention (1972), Registration Convention (1976), and Moon Agreement (1979) – this framework established a relatively effective outer space regime that mediated competition between the two great powers (de Zwart & Stephens 2019).

By contrast, contemporary space activity is defined by the rise of 'New Space', a paradigm shift from state-led exploration to a multi-actor environment dominated by commercial ambitions and innovation (Kodheli et al. 2021). This transformation is not tied to a single technology but to new practices that emphasise affordability, scalability, and entrepreneurial risk-taking. Small satellites and CubeSats exemplify this transition: rather than relying on large, costly missions, private firms now deploy constellations of 'small, cheap, and many' satellites that expand access to space (Davis 2019). Such advances have enabled novel ventures in space

3 www.federalregister.gov/documents/2020/04/10/2020-07800/encouraging-international-support-for-the-recovery-and-use-of-space-resources.

mining (Jakhu et al. 2017), space tourism (Wouters et al. 2017), and even long-term colonisation projects (Wattles 2023).

The proliferation of actors underscores a core challenge of New Space. Alongside established aerospace companies, relatively young entrants such as SpaceX, Blue Origin, and Virgin Galactic operate with increasing autonomy, while start-ups and emerging national agencies are reshaping the global landscape. Falling costs due to reusable launch systems, energy-efficient computing, and the use of commercial off-the-shelf components have democratised access to orbit (de Oliveira et al. 2022). The result is a profound societal dependence on space infrastructure: communications, transportation, financial transactions, and energy grids all rely on satellite systems. The specialised space economy grew by over 70 per cent between 2010 and 2020 and is projected to surpass US$1 trillion by 2030 (Brukardt et al. 2022; Space Foundation 2021).

This expanding ecosystem, however, introduces vulnerabilities. Space is increasingly 'congested, contested, and competitive'. Congestion arises from the exponential growth of satellites and debris in orbit. Contestation reflects the rise of counterspace capabilities, as states test anti-satellite weapons and cyber operations against space assets. Competition is driven by the proliferation of actors able to access advanced space technologies (Lynn 2011; also see Davis et al.2018). Given that space infrastructure constitutes a single point of failure for multiple sectors, adversaries can disrupt essential services on a massive scale. The February 2022 cyberattack on ViaSat, which disabled Ukrainian government and military communications while also affecting European energy and internet systems, illustrates the global reach of such vulnerabilities (Boschetti et al. 2022).

To illustrate the profoundly transformed context of New Space, consider that fewer than 800 active satellites orbited the Earth at the turn of the century, while today that number exceeds 11,000 (NSpOC et al. 2024). This dramatic expansion reflects the shift from a state-dominated domain to a far more complex and decentralised ecosystem. In contrast to the Cold War and immediate post-Cold War periods – when only a handful of states possessed meaningful space capabilities – there are now over 70 countries with space programmes, including 16 with their own launch-capable space agencies (Seibert 2024). Equally transformative is the rise of private actors, whose scale, speed, and investment have redefined what is possible in orbit. On average, a satellite is now launched every 34 hours, a pace inconceivable in earlier decades. Commercial mega-constellations are reshaping the orbital environment, with Starlink alone operating approximately 7,400 active satellites, accounting for more than 60 per cent of all active spacecraft in orbit (Baker 2025).

These dynamics have made space security an urgent priority. Governments increasingly view space as not merely a prestige project but a domain essential to national security and economic stability (Elefteriu 2024). Many states have responded by strengthening their domestic governance frameworks. For example, the US, Luxembourg, and the UAE have passed legislation enabling private ownership of space resources, while Australia, New Zealand, the UK, and Japan have enacted laws to regulate launch and resource activities (West 2020). National strategies such as the EU Space Strategy for Security and Defence,[4] the U.S. Defense Space Strategy (US DoD 2020), and China's Space Program Perspective (SCIOPRC 2022) further demonstrate the securitisation of the domain. Calls to designate space as a critical infrastructure sector, particularly in the US and Australia, underscore its centrality to modern society (Davis et al. 2024; Reese 2023).

4 'EU Space Strategy for Security and Defence', European Commission, accessed 6 March 2026, https://defence-industry-space.ec.europa.eu/eu-space/eu-space-strategy-security-and-defence_en.

Despite these national measures, the international governance framework has failed to keep pace. No new binding treaties have emerged since 1979, leaving the OST and complementary agreements ill-equipped to address contemporary commercial exploitation, private security risks, or the sheer scale of orbital congestion (Schrogl 2020). As New Space accelerates the 'congested, contested, and competitive' character of space, global governance risks fragmentation, with states and private actors advancing divergent rules and norms. The erosion of a coherent international framework threatens not only stability in space but also the security and resilience of the terrestrial systems that depend upon space infrastructure and services.

The future of space governance is also increasingly shaped by competing conceptions of international order. At its core, an international order consists of institutionalised rules and norms that provide stability and predictability in relations among states (Malacalza 2023; Mazarr et al. 2016). Yet, in recent years, the durability of this order has been called into question (Acharya 2017; Ikenberry 2018). Externally, revisionist powers such as China and Russia increasingly contest US primacy and the institutional framework of the liberal international order. Their deepening political, economic, and military co-ordination reflect a shared ambition to promote multipolarity and allegedly strengthen the principles of sovereignty and non-interference against the liberal West (Götz & Merlen 2019; Kim & Kim 2023; Lee et al. 2020). More strikingly, the order now faces internal contestation from its very architect. Since 2016, the rise of an 'America First' agenda has called into question US commitments to free trade, alliances, and multilateralism. The Trump administration's return in 2024, with a clearer plan to prioritise unilateralism and nationalism, signals a profound shift: the US itself has adopted revisionist tendencies, directly undermining the liberal international order it once championed (da Vinha & Dutton 2025).

This dual erosion – by external challengers and by the US itself – poses significant challenges to global governance. The institutions of the liberal international order, once pillars of cooperation, face crises of legitimacy and functionality, precisely when governance is most needed to address transnational issues such as outer space. As James Rosenau ([1992] 2000: 8) reminds us, 'There can be no governance without order and there can be no order without governance'. With rival powers advancing competing visions of order and the US retreating from its leadership role, it is becoming increasingly challenging for the international community to regulate outer space in a cooperative and predictable fashion.

Opportunities for space governance

However, as the Cold War demonstrated, geopolitical rivals can still find ways to cooperate. Even within an ostensibly zero-sum rivalry, the Cold War demonstrated that adversaries could identify shared interests and cooperate when necessary. As Larson (1999: 381) notes, 'Over time, the two sides adjusted to each other and learned to cooperate when they had an interest in doing so', a dynamic reflected in their agreements to demilitarise Antarctica, ban atmospheric nuclear testing, and freeze the build-up of offensive nuclear weapons. In fact, amid the rising tensions, space emerged in the later Cold War as a rare domain for cooperation (Elefteriu 2024).

Today, there are several issues that can further promote international cooperation in outer space. Rather than seeking to develop and institute new formal mechanisms such as international treaties to provide an overarching framework for global space governance, there are several distinct, specialised issue-areas that collectively can contribute to an international outer space regime – understood as a set of binding and non-binding principles,

norms, and rules around which actors' expectations converge (Krasner 1983). More precisely, future international cooperation in outer space will need to address a diverse set of emerging challenges, including the management of new technological risks, the regulation of increasingly complex commercial activities beyond Earth orbit, and the equitable distribution of space-derived benefits across the globe. As multiple governmental and commercial actors intensify their ambitions for the Moon and deep space, new governance frameworks will be required to regulate the extraction and use of extraterrestrial resources and to manage the implications of a more permanent human and robotic presence.

One of the most significant issues concerns the development of internationally agreed rules for the safe extraction and processing of natural resources from the Moon and asteroids. Although the Moon Agreement contains relevant provisions, future cooperation must clarify critical questions such as the right to exclude others from interfering with property use, the territorial scale necessary for operations, and whether a new international cooperative mechanism should be established to facilitate resource exploitation, particularly for non-signatories of the Agreement such as the US, China, and Russia (Jakhu et al. 2017). As deep space activity expands further, cooperation will also be necessary to determine the nationality status of humans living or born beyond Earth and to establish principles concerning law, order, safety, and security for eventual space migration and colonisation (Kaul 2023).

A parallel challenge arises in space traffic management (STM), for which international co-ordination is essential to ensure safe operations in an increasingly congested orbital environment. Effective STM requires enhanced information-sharing on space objects and events, as well as efforts to integrate aspects of air traffic management with space traffic control. Developing common international standards for pre-launch conjunction assessment would help establish more predictable and mutually supported procedures (Jakhu et al. 2017). Global cooperation is similarly indispensable for mitigating cosmic hazards, particularly near-Earth objects. Improved tracking, detection, and data-sharing mechanisms – including the enhancement of networks such as the International Asteroid Warning Network – will be central to managing such planetary security risks (Jakhu et al. 2017).

New technological capabilities also underscore the need for cooperative governance. On-orbit servicing, assembly, and manufacturing (OSAM) technologies – such as refuelling, component replacement, and retrofitting – promise major advances but would bring significant legal and security challenges, especially given their potential for dual-use. International cooperation will be required to clarify that servicing actions are permissible only when explicitly authorised by the launching state(s) and to build broad agreement on how OSAM activities can be safely executed and internationally co-ordinated (Jakhu et al. 2017).

Perhaps the most immediate challenge arises from the growing congestion of Earth orbits due to large satellite constellations and accumulating space debris. The scale of the problem is significant: there are an estimated 1.2 million debris objects larger than 1 cm and more than 50,000 larger than 10 cm (ESA 2025). Robust collective action will be required to manage this risk. International procedures for active debris removal could be elaborated through bodies such as the Space Data Association or the Inter-Agency Space Debris Coordination Committee and subsequently advanced within the United Nations Committee on the Peaceful Uses of Outer Space (Jakhu et al. 2017). A recent example illustrates the continued potential for cooperation even amid strategic competition: in November 2025, China and the US co-ordinated a satellite manoeuvre to avoid an orbital collision, marking the first time China directly contacted NASA to recommend an avoidance action (Sankaran 2025). This incident underscores the possibility of pragmatic communication and deconfliction, even as both countries pursue increasingly sophisticated and competing capabilities.

Cooperation is also needed to limit practices that increase the risk of escalation, notably destructive anti-satellite tests, which add to the debris problem, and unsafe rendezvous and proximity manoeuvres. Because such manoeuvres can be difficult to distinguish from legitimate servicing operations, transparency and incident-reporting measures would help reduce misperception and the risk of inadvertent escalation. National moratoria on destructive tests, once aggregated, can also create de facto global norms. The November 2025 collision-avoidance episode suggests that channels of communication on which such measures could build already exist, even between rivals.

Moreover, cooperation need not be confined to the two main geopolitical rivals. Commercial operators, whose standards and practices increasingly shape the space domain, can contribute to norm-making through the multi-stakeholder approach advocated by the United Nations, integrating commercial technical standards into international law (UNOOSA 2023). Likewise, middle and regional powers can shape governance by promoting multilateral solutions, pursuing compromise in disputes, and upholding the principles of good international citizenship (Kim 2022; Robertson 2017).

Conclusion: managing rivalry, sustaining cooperation

The challenge to outer space governance has become inseparable from the broader crisis of international order. Once envisaged as a domain of scientific cooperation and collective progress, space is now a theatre of systemic competition. The unfolding rivalry between the US and China has elevated space to the forefront of strategic contestation, while erosion of the liberal international order has undermined the multilateral frameworks that once provided a measure of predictability in global politics (de Oliveira & da Vinha 2026). The result is a fragmented environment in which governance is fragile, as norms are faltering and the risks of disorder are mounting.

Historically, governance frameworks such as the 1967 OST provided stabilising principles – non-appropriation, peaceful use, and common benefit – that moderated the Cold War rivalry. The expansion of 'New Space', however, has radically altered the domain. The proliferation of commercial actors, the diffusion of dual-use technologies, and the increasing securitisation of space assets have created challenges that existing treaties are ill-equipped to address. The failure to update global space law since 1979 has left a vacuum that national initiatives and ad hoc arrangements only partially fill (Schrogl 2020).

The dual erosion of the liberal international order – through external contestation by revisionist powers and internal retreat by its principal architect – further compounds these dynamics (da Vinha & Dutton 2025). Space is now both a reflection of systemic disorder and a critical arena in which struggles over the rules and norms of order are being played out. As the preceding analysis of rivalry, New Space, and the contest over order suggests, that while governance could fracture along geopolitical lines, new mechanisms for cooperation may yet be established to mitigate greater instability and insecurity.

Accordingly, to address these challenges, policymakers must confront several hard questions each arising from the analysis above:

- While the core principles of the OST remain foundational, do they still provide adequate regulatory capacity for contemporary space activities, or do they now operate as a ceiling that inhibits the evolution of new governance norms in critical areas such as debris mitigation, anti-satellite testing, and traffic management?
- Are the competing lunar programmes – Artemis and the ILRS – destined to fragment lunar governance, or can they be leveraged to develop plural but interoperable regimes? If framed as exclusive blocs, they will harden divisions; if treated as 'functional clubs', they may enable cooperation on shared risks such as safety zones, deconfliction, and scientific data-sharing (de Zwart 2021; Wu 2025).
- Where should deterrence end and governance begin? Current doctrines blur the boundary between civilian and military space activities. Without clearer delineation, escalation risks will spill over into commercial and scientific endeavours, undermining confidence in cooperative use (US DoD 2020; SCIOPRC 2022).
- How should policymakers engage major private space actors in shaping norms and rules for outer space? With commercial operators now driving launch capacity, satellite proliferation, and lunar infrastructure, their technical choices and business models increasingly shape de facto standards (Manoli 2024). UN recommendations for a multi-stakeholder governance model that integrates commercial technical standards into international law can offer private actors a more active role in shaping the rules and norms for outer space (UNOOSA, 2023).
- What is the role for regional and middle powers, such as the UK and its allies? Can they act as 'norm entrepreneurs', bridging divides and forging consensus on specific technical and safety issues to prevent a complete collapse of cooperation, or are they destined to be junior partners in a bipolar struggle?

The policy implications of this analysis are clear: the governance vacuum cannot be addressed through ad hoc or nationally driven initiatives alone. What is required is a shift towards an international space regime – understood as a set of binding and non-binding principles, norms, and rules around which actors' expectations converge for the safe, secure, and sustainable use of outer space. Such a regime would not replicate the universalism of the early space treaties but instead offer a flexible yet authoritative framework capable of co-ordinating diverse actors, mitigating rivalries, and embedding predictability into an increasingly contested domain. At its foundation, this regime would be based on shared standards and confidence-building measures, including obligations for space traffic management, debris mitigation, the licensing of space resource extraction, and incident reporting. Alongside these shared actions, governments would institutionalise constraints on destabilising practices, including destructive anti-satellite tests and unsafe rendezvous manoeuvres – after all, national moratoria, once aggregated, can create de facto global norms. This would be an international space regime built for pluralism, not uniformity. Parallel frameworks are likely to persist; rather than harmonisation, the priority would be interoperability without alignment – ensuring basic co-ordination on safety and emergency measures even amidst geopolitical rivalry. Notably, outer space would be recognised as critical infrastructure, with integrated planning for cyber resilience, redundancy, and mutual assistance in the event of disruption.

In such a regime, policymakers would engage major private space actors to establish the predictable and flexible regulatory frameworks necessary to support emerging commercial activities, such as in-orbit servicing and debris removal, as the rapid growth of private sector activities is outpacing existing international legal structures (Undseth et al. 2021). Such

engagement is critical because the immense financial and social empowerment afforded by public-private partnerships risks emboldening entrepreneurs to influence international norms and national policies in ways that diverge from public interests (Melamed et al. 2024). Given that the inherent dual-use nature of commercial space infrastructure contributes to militarisation, new global regulations are urgently needed to prevent runaway escalation of overtly militarised partnerships. Furthermore, engaging with private space actors is essential to address major challenges such as space debris and increased traffic management demands, ensure the long-term sustainability of outer space, and account for liabilities that fall upon the host state (Melamed et al. 2024).

Finally, such an international space regime would require leveraging the agency of middle and regional space powers. Middle powers can help shape international governance by employing specialised strategies that focus on pursuing multilateral solutions, embracing compromise positions in disputes, and adopting the behavioural standards of good international citizenship (Kim 2022; Robertson 2017). Europe, India, Brazil, and new entrants to the space sector can exercise normative influence by conditioning access to their markets, finance, and partnerships on compliance with baseline standards. Such leverage could provide stabilising incentives even if Sino-American relations are adversarial (da Vinha & de Oliveira 2025). The UK's leading role in sponsoring UN General Assembly Resolutions A/RES/75/36 (2020)[5] and A/RES/76/231 (2021)[6] illustrates how middle powers can play a consequential role in shaping the evolution of international rules and norms governing the global space sector (da Vinha 2025).

In short, outer space governance cannot be insulated from systemic rivalry; even so, fragmentation is not inevitable. The challenge is to develop mechanisms that are resilient to geopolitical rivalry while pragmatic enough to secure incremental cooperation. The evidence suggests that standards-based approaches, constraints on destabilising practices, infrastructure resilience, pluralist interoperability, and middle-power agency represent practical pathways forward. If pursued, these measures would not restore a universalist framework of governance, but they could create a layered international regime capable of managing rivalry and competition and minimising disorder.

The choice before policymakers is therefore stark. Without proactive adaptation, outer space risks becoming the archetype of systemic breakdown – an arena in which the absence of rules and norms multiplies insecurity and undermines the very infrastructures on which modern societies depend. With timely action, however, space could yet serve as a laboratory for pragmatic governance in an era of disorder. The tools exist; the question is whether political will can match the urgency of the challenge.

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Published October 2026

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doi.org/10.5871/global-disorder/9780856727634

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