Key Takeaways

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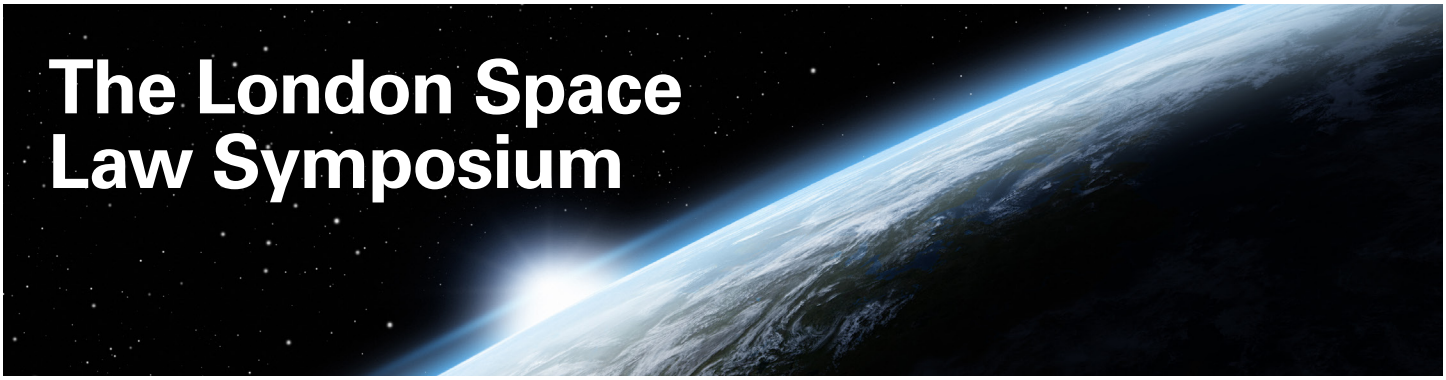

The London Space Law Symposium

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On 9 May 2024, Skadden held the inaugural London Space Law Symposium, where six panels of Skadden representatives and industry experts discussed legal aspects of the new space economy. The event was held in the Naim Dangoor Auditorium at One Wimpole Street, London.

James Anderson, a tax partner in Skadden's London office, provided opening remarks to an audience of space industry professionals representing technology, academia, government, law and business.

Other Skadden participants included:

- **David Simon**, partner and co-head, global cybersecurity and data privacy / Washington, D.C.
- **Kate Davies KC**, partner, international litigation and arbitration / London
- **Timothy G. Nelson**, partner, international litigation and arbitration / New York
- **Robert Chaplin**, partner and head of financial institutions in Europe / London
- **Nicola Kerr-Shaw**, counsel, cybersecurity and data privacy / London
- **Sahej Grewal**, trainee solicitor, international litigation and arbitration / London

Outside speakers were:

- **Audrey Schaffer**, vice president of strategy and policy, Slingshot Aerospace
- **Nadia Hoosen**, chief legal officer and group company secretary, former chief legal officer of OneWeb
- **Laura Yvonne Zielinski**, senior counsel, Holland & Knight
- **Ariel Ekblaw**, co-founder and CEO, Aurelia Institute
- **Steven Freeland**, professor of international law, University of Western Sydney
- **Brendan Plant**, barrister at Twenty Essex chambers and associate professor of law at Cambridge University
- **Shailen Patel**, head of corporate advisory, Macfarlanes
- **Matthew Cook,** head of ESA Operations at UK Space Agency
- **Mark Wheatley**, director, Delano Wheatley Consulting & DWC Space Limited
- **Sam Adlen**, co-CEO, Space Solar
- **Romain Buchs**, space policy and strategy, ClearSpace
- **Erika Isabella Scuderi**, postdoctoral associate at George Washington University (GWU)
- **Paul Kiernan**, chief technology officer, Skytek

Key Takeaways
The London Space Law Symposium

Key Takeaways:

- As commercial activities expand in space, state-centric laws will need updating to effectively regulate private sector involvement and mitigate potential risks while also capitalising on the opportunities for all humankind.
- The rapid evolution of the space industry, marked by increased launch activities and technological advancements, necessitates ongoing legal and regulatory adaptations. Strengthening international cooperation, regulatory frameworks and cybersecurity practices is imperative for a sustainable and secure future in space.
- Conflicts between nations on Earth that involve the use of privately provided space-based services may implicate businesses — and their home nations — in warfare under the rules of international conflict.
- New technologies and tensions are emerging in the field of space sustainability, from the prospect of massive orbital infrastructure projects to concerns that traditional debris-removal methods contribute to global warming.
- Space businesses operate under strict timelines with complex, just-in-time supply chains. While disputes arise frequently, *ad hoc* mediation, favoured for not compromising project delivery schedules, is the only practical resolution mechanism for companies.
- There is a tension between the outdated international legal system and the new realities of private space utilisation. Jurisdictions have attempted to address this tension through national legislation, which is arguably at odds with international legal requirements, unless a teleological approach is taken. For the present at least, we should expect continued legal innovation in national laws and the evolution of customary international law, rather than through changes in the treaty-based international regime.
- The terrestrial insurance market is harnessing innovative space technologies to refine its modelling, monitoring and range of products. By contrast, space insurers display uncertainty in the face of unprecedented losses, resulting in increased rates and reduced coverage. As missions grow more complex and space more contested, insurance becomes critical, although many businesses continue to launch without coverage for failures (where this is legally permissible) because of cost or lack of access to insurance.

Decade of Transformation in the Space Industry

Over the past decade, the landscape of the global space industry has transformed dramatically. From 2010 to 2020, the number of annual space launches grew by 54%, from 74 to 114, and in 2023, it soared to an all-time high of 223. This rapid increase in activity introduces a plethora of risks and demands new approaches to manage them.

Jurisdictional Challenges

Compliance with regulation is becoming increasingly challenging as the number of commercial space operators and launches grows. The allocation of jurisdiction, control and liability for space objects presents additional complications, necessitating more robust and adaptable regulatory frameworks.

Existing provisions of space law, specifically the Liability Convention and Article 8 of the 1967 Outer Space Treaty, are ill-suited for disputes between private commercial entities operating in space. The existing framework is state-oriented, a holdover from the era of its drafting.

Therefore, private actors who consider themselves aggrieved as a result of an in-orbit collision must either:

- Identify the nationality of the responsible party and then petition their own government to present a claim against the responsible party's state (the launching state) under the Liability Convention.
- Bring a claim against the responsible party in that party's home state, exposing the aggrieved party to the vagaries of international law and the domestic regime within that state. Further, while some states, such as the US or UK, may have a legal framework capable of allowing such lawsuits, others may have no relevant laws regulating space conduct.

Neither scenario offers the certainty commercial parties require to conduct their businesses with confidence.

Historical analogues, including the New York Convention, could offer solutions. This agreement provided a framework for resolving disputes between commercial entities engaged in cross-border trade in a rapidly globalising world in a way that was enforceable, neutral and flexible. A similar space treaty that contains a standing offer to arbitrate might provide parties with a forum — international arbitration — for solving disputes. Enabling parties to choose for themselves the governing law, dispute forum, and what liability and limitations should apply can help secure commercial certainty.

Enforcement, Disputes, Litigation and Arbitration

Panellist **Timothy G. Nelson**, a Skadden partner in the International Arbitration Group, noted that approaches to space policy vary widely in their prescriptiveness, reflecting attitudes that range from the purely entrepreneurial to the communitarian idea of common heritage. Debates over liability for debris, collisions and cleanup persist, and reflect a wide diversity of opinion on how to solve these problems. Consensus is unlikely to emerge

from the existing treaty mechanism for resolution: The Liability Convention involves open-textured fault requirements, politically sensitive state sponsorship and protracted time frames.

Nadia Hoosen, the former chief legal officer of OneWeb, shared her experience with disputes in the space sector. An initial difficulty is that very few businesses understand space law and, consequently, very few parties are willing to trust existing regimes to reach a fair outcome. Ms. Hoosen also observed that space operators and manufacturers rely on just-in-time supply chains that often involve thousands of components. Given that manufacturers are often "immature" start-ups and the ever-present geopolitical challenges, disputes frequently arise. Despite this, litigation is rare, with time constraints instead resulting in closed-door mediations. In this context, the Liability Convention, with its one-year negotiation procedure, is clearly an unfit dispute resolution mechanism for commercial operators. Ms. Hoosen finished on a practical note, emphasising the importance of *force majeure* clauses and constant supply-chain monitoring.

Additionally, as interference risks in space grow — from both debris and hostile actors — commercial entities will have to enter various co-ordination agreements to mitigate their exposure. Such agreements rarely contain arbitration agreements, however.

The example of extractive industry ("space mining") was raised, with disputes likely to arise between states due to diverging interpretations of "national appropriation" (prohibited under the Outer Space Treaty) or alleged violation of other agreements, such as the Artemis Accords. Private disputes would likely be based on challenges to ownership rights to any extracted resources. The "supranational" nature of such proceedings may prove challenging to judges in domestic court litigation, and the risk of bias exists.

On a more positive note, Mr. Nelson observed that the size of the investments involved in the space sector encourages parties — including otherwise rivalrous states — to cooperate.

Brendan Plant, a professor of law at the University of Cambridge and barrister at Twenty Essex chambers, examined the impact of cross-waivers that release contracting states from liability to each other. Bilateral investment treaties may require states to agree to such a release to be effective. As a result, private operators may find themselves barred from making a claim against a state or its related entities under either the Liability Convention (which requires the sponsorship of a business' home state) or domestic legislation.

The Role of International Cooperation

International cooperation plays a crucial role in maintaining space security and communications infrastructure. The 1967 Outer Space Treaty establishes that space, including the moon and other celestial bodies, is not subject to national appropriation. This absence of sovereignty means there are no universal safety, navigation or security standards in space.

Since the late 1960s, international treaties have sought to govern safety and liability issues. Beyond the Liability Convention and the Registration Convention, the US National Aeronautics and Space Administration (NASA) has introduced the Artemis Accords setting out principles for the governance of civil space exploration, with 21 signatories currently, demonstrating a renewed commitment to international collaboration.

Geopolitical Conflicts Extend to Space

Despite recent international efforts to cooperate, space is not a conflict-free zone. Recent conflicts have seen the extension of warfare into this domain.

On the day Russia invaded Ukraine in 2022, a cyberattack on ViaSat's KA-SAT satellite network disrupted internet access across Ukraine and Europe, illustrating the vulnerability of space assets to terrestrial conflicts. In response, countries including the US and UK condemned Russia's actions and emphasised the importance of maintaining international norms against armed conflict in space.

Public-private partnerships, such as Starlink's provision of satellite support in Ukraine, highlight the critical role of commercial entities in ensuring reliable communications infrastructure during crises. Antisatellite tests, such as Russia's destruction of Cosmos 1408 in 2021, further complicate the safety and normative landscape in space by generating long-lasting debris fields.

Skadden partner **David Simon** noted that operators with ground infrastructure in a conflict zone or with assets being used in connection with a conflict will need to consider whether those assets could be targets. Further, executives of such businesses may be concerned about their own personal status and the possibility they could be targets in a given conflict.

On the same theme, **Steven Freeland**, a leading expert in international space law, discussed the possible consequences of increasingly enmeshed state-private activity in space. Dual-use operations and continuing state supervision over private space service providers are particularly problematic in conflict-related use cases.

For instance, a state (A) engaged in a military conflict may require the connectivity services of private space company (Z), which operates under the jurisdiction of state (B). State B might oppose Z enabling state A in a war, and could restrict the services Z can offer. Under the international law of state responsibility, state B may be deemed to exercise control over Z such that B is characterised as engaging in the conflict, possibly resulting in Z's employees being classed as combatants. The private sector must therefore take care not to become too close to "crossing the Rubicon" in this respect.

Future Legal Frameworks and International Collaboration

Forthcoming legal frameworks and international collaborations aim to address the challenges posed by the growing space industry. The Woomera Manual and McGill Manual will clarify the application of international law to military space operations, and the US Novel Space Activities Authorization and Supervision Framework aims to align regulatory processes and bolster international collaboration.

On this point, **Mr. Simon** observed that both the effective governance and defence of satellites will require states to share high-quality information about these assets. Such data is often a nation's most highly classified information, presenting a major obstacle to the transparency that robust security measures will require and raising questions about whether such security measures can be achieved.

The Impact of Artificial Intelligence

Artificial intelligence (AI) is revolutionising the space industry, offering unprecedented operational efficiency and strategic advantages. Panellist **Audrey Schaffer** from Slingshot Aerospace observed that the vast quantity of data both concerning and derived from space essentially mandates the use AI to leverage any value.

AI's capacity for continuous learning and adaptability is particularly valuable in space operations and warfare. The US Department of Defense's Directive 3000.9, issued in January 2023, underscores the importance of minimising risks associated with AI in autonomous weapon systems, reflecting the significant implications of AI in space warfare.

Intellectual Property Challenges in Space

Intellectual property (IP) protection in space presents unique challenges due to the territorial nature of IP laws. The Outer Space Treaty and the Registration Convention establish that the country of registration retains jurisdiction over space objects, including IP rights.

While the US Patents in Space Act of 1990, which applies US patent law to space objects under US jurisdiction, is often criticised for its loopholes and limited international impact, **Nicola Kerr-Shaw**, counsel in cybersecurity, privacy and AI issues at Skadden, said such laws may drive innovation. Companies harnessing space environments to develop new technologies (from pharmaceuticals to artificial retinas) will be committed to retaining their IP, and therefore attracted to the idea of clear space IP legislation.

Other proposals to fortify IP protections in space include amending existing international treaties to cover space, creating new treaties specifically for space IP and developing international protocols for registering IP rights in space.

Cybersecurity Concerns for Commercial Operators

Ms. Kerr-Shaw and **Mr. Simon** emphasised that cybersecurity remains a critical concern for commercial space operators, who face unique challenges. While no widely adopted cybersecurity standards exist for space systems, several initiatives provide guidance. NASA's Space Security Best Practices Guide, updated in January 2024, offers comprehensive principles and controls for securing space missions. The US Department of Justice and the National Counterintelligence and Security Center emphasise the importance of protecting space-related IP from foreign intelligence threats. Their recommendations include developing anomaly logs, establishing insider threat programs, and conducting thorough due diligence on suppliers and investors.

Space operations are so closely integrated into every major sector — considering the use of communications and logistics alone — that vulnerabilities in space infrastructure can impact industries everywhere, no matter how strong their own defences may be.

Recognising Space Infrastructure as Critical

Ms. Kerr-Shaw and **Mr. Simon i**dentified a need to classify space infrastructure as critical under breach notification laws. Currently, space infrastructure is not fully recognised as critical by regulators around the globe, though reliance on space technology is increasing.

The US Cyber Incident Reporting for Critical Infrastructure Act of 2022 may extend breach notification requirements to space operators. While defence-related space assets would already be tightly regulated under existing US legislation, the line defining what qualifies for such purposes is not entirely clear.

In the EU, the space sector will be accommodated by broader security legislation, rather than its own regime. The NIS2 Directive and the draft Cyber Resilience Act impose stringent cybersecurity measures on a range of entities, including those providing space-based services. The proposed EU Space Law, however, envisages a harmonised, space-specific security framework. If adopted, this would result in a dual regime for the EU space sector, with ground operations subject to broader legislation while a tailored space regime would apply to outer space operations.

The UK's Space Industry Momentum

The global space industry is projected to reach $1 trillion by 2040, though investment in Europe, including the UK, has lagged behind that of other regions. Nonetheless, in the UK, the space industry is gaining momentum, driven by falling launch costs and ambitious plans for space networks.

To stimulate further development, the UK Space Agency is focusing on increasing launch capacity, developing regulations and fostering international partnerships. Building a robust space-related economy involves leveraging the UK's strengths in finance, insurance and legal services. Enhancing capital flows and exploring alternative financing structures will be key to supporting this growth.

The UK has the capability to manufacture and launch space assets, as well as process the output and data from those assets. The challenge now is to ensure the regulatory framework matches the pace of innovation so that missions in the UK — proposals for which include clearing and tracking debris, servicing active satellites and manufacturing in space environments — are both supported and examined.

Space Sustainability in the UK

UK regulators have made significant efforts to build awareness of critical issues in space, such as sustainability and liability, particularly as novel mission types are proposed. The following developments are noteworthy:

- UK proposals to limit liability and licensing fees for satellite operators that take measures to mitigate their impact on the space environment.
- The development of new space sustainability standards at the behest of King Charles III, supported by the UK's finance and insurance industries.
- UK collaboration with other nations to build best practice frameworks; for instance, the UK's work with New Zealand setting out principles to apportion responsibility and liability between state actors.

The regulatory approach to the extraction and processing of space resources is under careful consideration. This will involve stakeholder participation at all levels of the international community, not least because the vast majority of operations are likely to focus on a small area of the lunar surface, making interactions inevitable.

Rising Risks and New Regulations

The surge in space traffic significantly raises the potential for collisions between satellites and other space objects. The problem of space debris, which already endangers the international communications infrastructure, is becoming more acute. In 2020, remnants of an 18-ton Chinese rocket fell on villages in the Ivory Coast, underscoring the real-world dangers of these events. Over 1,800 defunct satellites clutter lower Earth orbit, exacerbating the debris issue.

The US Federal Communications Commission introduced new regulations in 2022 mandating that satellites be deorbited within five years of mission completion (a decrease from the previous period of 25 years). The first enforcement action under these new rules came on 3 October 2023, when Dish Network paid a $150,000 fine. The US Department of Defense's Space Surveillance Network tracks more than 27,000 pieces of orbital debris, attesting to the scale of the challenge.

International Space Sustainability

Regarding broader ambitions in the field of space sustainability, **Sam Adlen**, a co-CEO of Space Solar, discussed the ways space technology can promote a sustainable future on Earth. Massive space infrastructure projects, such as solar energy arrays, can now demonstrate both economic and technological feasibility, though political will and access to funding remain challenges.

On the theme of improving our approach to space sustainability, **Erika Isabella Scuderi**, a postdoctoral associate at GWU, commented that debris-mitigation practices should take into account various aspects of space sustainability, including economic and social sustainability as well as environmental sustainability on Earth. She noted that prioritising the use of tax incentives with sensible regulation should help address these concerns.

An alternative solution, outlined by **Romain Buchs** of ClearSpace, involves active decommissioning technologies. These can collect debris *in situ* to return to Earth whole, or delivered to repurposing facilities operating in space, forming a closed-loop system.

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Space Insurance

Robert Chaplin, a financial institutions partner at Skadden, discussed the shifting space insurance market: Heavy satellite-related losses seen in 2023 resulted in reduced coverage and rising rates. Currently, novel mission types and technologies are more likely than ever to lack any insurance beyond a statutory de minimis. Mr. Chaplin noted that developments in space situational awareness and de-orbiting technologies may transform the risk profile of commercial space activity in the near future. Despite this, space insurance remains in flux due to unprecedented demand, competition and launch volume, coupled with extensive liability potential and an unsettled regulatory environment.

The promise of space technology for terrestrial insurers, however, is vast. **Paul Kiernan** from Skytek observed that monitoring of the Earth from space has improved substantially. Insurers can use such capabilities for risk management, the quantification or dispute of claims, or to develop alternative products, such as parametric insurance.

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