

## OUTER SPACE LAW: LEGAL POLICY AND PRACTICE

by Yanal Abul Failat and Anél Ferreira-Snyman  
(Consulting editors)  
390 pages  
Publisher: Globe Law and Business Ltd

Outer space law has always been somewhat of an esoteric subject and the natural stomping ground of a niche section of public international lawyers. However, the rapidly changing nature of space exploration and flight not only continues to fascinate the public but inexorably raises complex question with innovative legal solutions.

The consulting editors compiled a fascinating collaboration of works from authors based in the United Kingdom (UK), South Africa, Hong Kong, Switzerland, Spain, Italy, the Netherlands, Germany and Sweden. Unlike the run-of-the-mill books on outer space law, the consulting editors intended with this work to address issues relevant to an *evolving* space sector, as they view the current outer space treaties as outdated and unable to deal with legal issues arising out of military and commercial use of outer space. The relevance of this approach is evident from the remark by Starchaser's Steven Bennett in the foreword that the attitude towards space tourism changed from one of total scorn to one of eyeing it for the lucrative mass market. Uniquely, the consulting editors also consider the military side of the use of outer space, in the main as the dual-use potential of many space applications is increasingly blurring the distinction between the military and non-military uses of space.

Rationally this work starts with the basics of outer space law:

- Johnson, of the Secure World Foundation, provides a breakdown on the international law governing outer space activities, and describes the five outer space treaties developed within the UN system.
- Zhao discusses national law governing outer space activities, which demonstrates that a state is determined to implement its obligations under the international regime, and serious about implementing those obligations by laying down detailed rules. National legislation has filled the legal vacuum created after the UN proved incapable of acting on issues of privatisation and commercialisation which were not addressed in the five outer space treaties.
- One of the consulting editors, Failat, delves further into the national law theme with the licensing of outer space activities. More states and a range of other players are getting involved in the space arena with the result that many states have recently established or are in the

process of creating space agencies and laws in order to regulate and develop space-related activities. This is in line with the international responsibility of states for private activities in terms of the Outer Space Treaty. As a result, national legal frameworks now function in conjunction with international laws to protect states and private actors. However, international space law neither stipulates the legal form of such national regulatory regimes nor gives any guidance on how states should discharge their obligations under the space treaties. Failat demonstrates how these fragmented frameworks function in conjunction with the international law to protect state and private players from the legal inadequacies of the outer space treaties relating to liability, safety and environmental damage. He also provides a useful comparison of licensing regimes in, and the indemnification and insurance requirements of, regulating states.

- Antoni concentrates on the European law governing outer space activities. The European Union (EU) received an explicit legal mandate to act in the field of space policy with the Treaty of Lisbon 2009, which allowed the EU, for the first time, to adopt laws or framework laws establishing measures for a European Space Policy, including a European space programme. More importantly, the EU as an international organisation made a declaration of acceptance of the Outer Space Treaty, and of the Rescue, Liability and Registration Conventions. Practically therefore, the European Space Agency (ESA) can qualify as a launching state or launching authority for the attribution of international liability for damage caused. The ESA follows the registration process under the Registration Convention with regard to its own satellites, and settles the issues of jurisdiction and control on a case by case basis with member states concerned. Antoni provides a good description of EU competence on issues relating to space and the different EU and ESA collaborative programmes. His exposition of how EU law works, is also particularly useful for the non-EU lawyer.
- Bittencourt tackles the 50-year-old, and unsolved, question of the delimitation of outer space and Earth orbits. Few topics have deserved more attention from the international community, but decades of deliberation at the UN failed to gather enough political support around a common multilateral solution. Eventually this led to unilateral domestic delimitation in many instances. His short, sharp and to the point discussion on the main schools of thoughts (spatialists vs functionalists) is useful. This topic has acquired new relevance due to the remarkable technological progress that has narrowed the distinctions between aeronautic and astronautic activities.

The compilation, however, concentrates on those legal questions on the use of outer space that are increasingly relevant in the more commercial age. Here the consulting editors do not shy away from including authors thinking outside the box:

- Erlank's chapter on property and ownership in outer space concludes that the field of outer space law as a whole needs to be re-evaluated, and in particular property rights in outer space. He proposes a radical approach to the current debate on the recognition or non-recognition of property rights in space. He argues that as a result of new developments and the commercialisation of outer space activities celestial objects should, in certain instances, be recognised as *res in commercium* and as such capable of being owned by an individual, national, company or mankind in general. Such an object must be impersonal, tangible, independent and susceptible to control by man, and of use and value to man.
- Newman handles the regulation of artificial satellites, the foot soldiers in the new space revolution. Newman demonstrates that the current foundation of outer space law, the Outer Space Treaty, was neither designed nor developed to operate in a multi-sectoral space environment. In terms of current geopolitical developments an entirely new and binding treaty is unlikely to be on the international agenda for the foreseeable future, and thus the soft law mechanisms, such as guidelines mitigating the creation of space debris, are increasingly playing a role in shaping normative behaviour. However, regulating twenty-first century technology solely by reference to twentieth century regulation is likely to create difficulties and uncertainties. Newman opines that such uncertainties can be ameliorated by states themselves enshrining national laws and regulatory instruments. He examines the legal and governance framework regulating the operation of artificial satellites that orbit earth, including the UK's Outer Space Act 1986; the restructuring of INTELSAT, INMARSAT and EUTELSAT from intergovernmental organisations to international space organisations (ISOs); and radio frequency and orbital slot management at the International Telecommunication Union (ITU).
- De Maestri in turn considers the regulation of remote sensing activities. Space remote sensing by artificial low polar Earth orbiting satellites equipped with passive sensors (optical) or active (radar) is regulated by only one international legal instrument, namely the 1986 United Nations General Assembly (UNGA) Resolution on Principles Relating to Remote Sensing of the Earth from Outer Space. As remote sensing trends have moved from state ownership to widespread accessibility to data, the legal regime governing remote

sensing revealed many gaps. With states having had to adopt their own special rules with regard to space activities, only a small number have opted to regulate remote sensing and to introduce a special regime regarding the dissemination of data derived from space infrastructures. De Maestri discusses the United States of America (USA) among the common-law systems, and Germany among the civil-law systems. De Maestri also looks at licence conditions for satellite imagery and international principles of data dissemination (including a detailed discussion of the EU data dissemination policy and the practice in concluding satellite imagery contracts and Copernicus licence conditions), and satellite images as evidence before courts.

- The consulting editors examine the regulation of space tourism, a sector that receives a lot of media coverage nowadays. As space tourist activities increase, some legal and regulatory concerns arise in relation to commercial space travel and space tourism, and they argue that this innovative industry needs a suitable legal framework to regulate its activities. The editors' contribution to this topic includes the main issues impacting on whether outer space law is applicable, namely defining what a space tourist is, and the delimitation of outer space. The legal definition and status of a space tourist is still lacking as there were no spacecraft passengers when the outer space treaties were drafted. It is therefore unclear as to whether the terms utilised in the outer space treaties such as 'astronaut', 'personnel of a spacecraft', or 'envoys of mankind' should be utilised. Clarification on the issues above may be quite important, as it is currently not clear in terms of the 1968 Rescue Agreement whether states have a duty to rescue space tourists as passengers (as opposed to astronauts and personnel) on a spacecraft, whether visitors to the International Space Station (ISS) enjoy the special standing and protection afforded to astronauts, and whether the duty to rescue applies only to state-sponsored missions or to commercial spaceflights as well. In order to answer such questions, the editors discuss training requirements of space tourists, how high a person must be in a space vehicle to be considered an astronaut, selection requirements for astronauts, regulation under the Intergovernmental Agreement on the International Space Station plus the Memorandum of Understanding (MoU) between NASA and the Russian Space Agency, and regulation under USA domestic law. Their conclusion is that, unless space tourists are given the status of astronaut, the current outer space law regime does not provide sufficient degree of regulation in relation to rights and obligations. The editors also discuss the thorny issue of liability under the Outer

Space Treaty and the Liability Convention, and the applicability of treaty concepts under parallel regimes found in domestic law. Here they analyse the cross-waiver of liability applicable to the ISS and the need for insurance. They conclude that clear international legal rules relating to space tourism have to be formulated, with standards set for the authorisation and supervision of these activities, and the balancing of the interests of states, passengers and private actors. They conclude that it is imperative that an international dialogue on space tourism be facilitated under the auspices of the UN Committee on the Peaceful Uses of Outer Space (UNCOPUOS) to address such legal challenges.

- De Man examines the other topic which is also prevalent in the media, namely the exploitation of natural resources in outer space. He demonstrates the clash between two principles of international space law, namely that outer space is free to be explored and used by all states and outer space is not subject to national appropriation, and comes to the sensible conclusion that resources from asteroids can be used, although not on the basis of property rights. This is done without a convoluted academic discussion on the common heritage of mankind principle which has bedevilled this topic for so long. His solution to the paradox lies in distinguishing between the activities of exploitation and appropriation. Although 'exploitation' is not mentioned *per se* in the Outer Space Treaty, 'use' is defined to include exploitation. The crucial questions then become when does exploitation become appropriation, and can one engage in asteroid mining without appropriation?

It was a pleasant surprise to note that this compilation does not shy away from topics not often discussed:

- Gould handles the important topic of dispute resolution in outer space. Outer space activities include both the preparatory earthbound phases such as assembly and testing, and the more traditional activities of launching, flight, orbit and recovery. There are two main legal issues in the dispute resolution of outer space activities. First, which law (the body of law or rules that govern liability and compensation) applies? Second, what is the most appropriate forum for resolving disputes? This latter question depends on the resolution of national jurisdiction. As there are many applicable treaties and reciprocal arrangements, this is one area where an express choice of law and forum, plus an agreement on a binding dispute resolution process, are normally included in supply chain contracts. Gould considers the local law in context and the applicable international law (including relevant treaties, conventions

and protocols), as well as dispute resolution processes, the international use and application of dispute escalation clauses, plus the applicable laws and arbitration rules of various fora such as the United Nations Commission on International Trade Law (UNCITRAL), the International Chamber of Commerce and the London Court of International Arbitration (LCIA). There is also a very useful discussion on the Permanent Court of Arbitration's Optional Rules for Arbitration of Disputes Relating to Outer Space Activities.

- Ferreira-Snyman, one of the consulting editors, looks at the often ignored issue of military activities in outer space. The basic problem is that most space assets have the potential to be used for military purposes, and the distinction between military and non-military uses of space is becoming increasingly blurred. The question remains whether the military use of space equipment is contrary to the requirement of Article IV of the Outer Space Treaty that outer space is to be used for peaceful purposes exclusively. She investigates the legal challenges flowing out of Article IV, namely the meanings of 'peaceful purposes' and 'space weapons', and the issue of militarisation versus weaponisation. She concludes that the Outer Space Treaty cannot adequately deal with the current issues relating to the military uses of outer space, and that this legal vacuum may have grave consequences for maintaining peace and security. In addition, she criticises the lack of coordination in relation to outer space arms control initiatives in the UN system, and pleads that an international dialogue on the issue be facilitated under the auspices of a consolidated forum in order to address the legal uncertainties that may impair the peaceful uses of outer space. She suggests that the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPOUS) should be the forum to discuss issues of military uses of outer space. This suggestion might be somewhat controversial to practitioners regularly attending UNCOPOUS meetings.
- Calvete examines the insurance of outer space activities, which has been a key enabler in the development of the space industry. Behind the public image of space operations the insurance industry has played an important supporting role in enabling technological advances. Coinciding with the growth in commercial space industry, space systems operators, launch vehicle providers, and government and national space agencies increasingly buy specialist insurance cover to protect their assets. A good discussion on the background and practicalities in the specialist space insurance industry, and the basic risk categories of first party property insurance and third party liability insurance, is provided. The author predicts that the insurance industry will evolve to enable mooted concepts such as

in-orbit servicing, space mining and the nascent space tourism industry.

- Germann & Pecujlic demonstrate that intellectual property laws are applicable in outer space. It is accepted that sustainable technologies have to be utilised on a global scale to make any significant climate change, but there are interconnected obstacles. The main aim of the Outer Space Treaty is international cooperation, but the technologies aimed at mitigating or monitoring pollution cannot be transferred to developing countries due to the grant of Western and Japanese monopoly patents as well as the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) that has not efficiently facilitated the transfer of technology. The international space community tried to find a global solution for technology transfer relating to climate change, but these attempts generally failed, with few transfers taking place, because they were too complex and the licences too costly. The authors suggest a project-based approach to transfer technology, which would not require consensus from all UNCOPUOS member states, and would only be applicable to the relevant states involved. The authors suggest that an International Space Station (ISS) Intergovernmental Agreement (IGA)-type three-tier structure should be used which would entail an umbrella agreement on the legal issues, followed by MoUs setting out more practical details on how to develop the project, and finally MoU implementation agreements. Therefore, a project-based, small-scale and regional solution is proposed.

The last tranche deals with some novel subjects not normally found in texts on outer space law:

- The mitigation of space debris is very much a staple in the diplomatic calendar, but it is seldom addressed from the environmental-responsibility angle, as Ferreira-Snyman does. The potential adverse effects on the environment resulting from outer space activities are self-evident; the most significant of these is space debris. The potential environmental hazards, especially from radioactive material or toxic fuels, are obvious. Yet there are no UN treaties hereon, and this area is regulated by voluntary soft-law guidelines. With the guidelines having a moral and political value, there are expectations that states will comply. The author discusses the lack of legal definitions for space and space debris, examines whether international environmental law is applicable also to space activities, and how this interacts with the common heritage of mankind principles. UN space law is, according to her, of little assistance in the environmental management of space activities and has in practice

not been extended to apply to outer space. She also examines state responsibility for environmental damage in terms of international law and the outer space treaties: A polluting state would probably not be liable for environmental losses, due to the fact that any damage to the environment is excluded in terms of the Liability Convention. She calls for a new treaty binding on all UN member states to regulate all aspects on the use of outer space.

- Helder, Klaui, McCarthy and Powell look at international trade aspects of outer space activities. International trade laws and regulations affect many outer space activities. Supply chain, sourcing, vendor and customer decisions cannot be made without reference to the export control laws that regulate technology and hardware flow between companies, or customs duties, taxes and requirements involving relevant countries. Information Technology (IT) network structures and access controls have to be made with expert control considerations in mind. Thus, the issue of compliance in this area is growing in importance for outer space activities. The authors discuss key international trade regulatory areas, focusing on the US and EU legal regimes with regard to export and import controls, and sanctions, in particular dual-use and military items regulations. Useful case studies are provided to illustrate the issue.
- Diniss examines the legal framework governing cyber operations in outer space, which consists of a mix of space law, general public international law, international telecommunications law and domestic and international criminal laws dealing with cybercrime. The legal regulation of cyber operations in relation to space activities is largely unexplored; the relatively modern field of outer space law simply did not envisage the ability of malicious users being able to affect physically the space objects of a launching state without detection or knowledge. There are therefore gaps in the legal framework governing such activities and uncertainties, which this chapter flags.
- Bielicki demonstrates the usefulness of evidence from space in cases before international courts and tribunals. Incredibly, there has not been a single case before an international court strictly relating to space law. On some occasions courts have referred to certain aspects of space technologies, mostly space applications, while considering their cases. This chapter gives a very handy insight into the use of space technologies at the ICJ (border/frontier disputes, delimitation of fishing rights and continental shelves, whaling, ecosystem monitoring, environmental disputes, and conflict resolution); International Tribunal for the Law of the Sea (delimitation



of maritime boundary); and the ICTY and the ICC (international criminal law).

If any criticism can be levied, it is that this work is a tad light on the development of outer space law, but then again, this compilation was never intended to be a treatise on the past but rather on the new fields developing in a very specialised field. This change in emphasis is demonstrated by new approaches to old issues such as environmental responsibility for space debris, intellectual property law in the context of climate change etc. Unfortunately, there is a general lack of understanding of the complexity in the multilateral methodology of creating outer space law treaties – calling for a UN treaty to solve a developing issue in outer space is easy, but effecting that is quite another matter. Hopefully, this can be addressed in a later edition.

This book will prove a handy reference work on outer space law for the practitioner, academic and government lawyer.

*Theunis Kotzé*

*Blur LLB LLM Attorney of the High Court of South Africa*