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CENTRE FOR RESEARCH IN AIR AND SPACE LAW
MAHARASHTRA NATIONAL LAW UNIVERSITY MUMBAI

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Centre for Research in Air and Space Law,
Maharashtra National Law University Mumbai, India

Maharashtra National Law University Mumbai

Maharashtra National Law University Mumbai, established under the Maharashtra National Law University Act 2014 on 20th March 2014, is one of the premier National Law Universities in India. The Act envisaged to establish National Law University in Maharashtra to impart advanced legal education and promote society oriented research in legal studies for the advancement of societal life of the people in the country. The prime goal of the University is to disseminate advance legal knowledge and processes of law amongst the students and impart in them the skills of advocacy, legal services, law reforms and make them aware and capable to utilize these instruments for social transformation and development.

Centre for Research in Air and Space Law, MNLU Mumbai

Air and Space are pressing issues in the realm of international law. International air law deals with many topics, such as transport responsibility, the safety of passengers, hijacking, air pollution, and aerial warfare. Air law also combines public air law and private air law. Similarly, outer space is a key element in global security and sovereignty. Therefore, in order to avoid potentially devastating conflicts and to maintain global peace, there is a dire need for understanding the applicable rules of international law. In this direction, MNLU Mumbai established a Centre for Research in Air & Space Law. The Centre aims to become an ideal forum for the exchange of ideas on the international law applicable to implementing international air and space law. It shall be a centre for advanced research for those practising or studying international aerospace law.

The Centre shall engage in improving the existing legal and policy framework for facilitation and regulation of a safe, secure, affordable and sustainable space and contribute to the shaping of the legal foundation for the future of humanity that lies in space. The Centre shall seek to support education, disseminate knowledge and encourage research. The objective of the Centre is to contribute to the development of air and space law and related policy by conducting and promoting research and teaching at the graduate and post-graduate levels.

Indian Review of Air and Space Law

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To Prof. Sandeepa Bhat for his constant support and guidance

INTRODUCTORY NOTE

Starting a new journal is a serious academic endeavour, and it becomes a real challenge when the journal is devoted for in-depth research on specialised areas. Journals devoted to discourse on aviation and space laws are limited, especially due to a lack of expertise and limited scholarship. However, the situation is changing rapidly in the post-pandemic era. It is interesting to note that developments in the aviation sector and developments in the space sector are taking place in different directions. The aviation sector is busy in recovering the loss suffered by it during COVID-19; in many cases through unlawful means and consumer deception. The space sector is moving towards intensive privatization for profit maximization, and thereby, boosting economies. One common thread in this diametrically opposite race between the aviation and space sectors is the humongous increase in legal complexities. With the increasing legal complexities and litigations, research in aviation and space laws has taken centre stage. Hence, a platform to reach the public with in-depth research on legal issues relating to aviation and space sectors is timely and much-needed. I appreciate the initiative undertaken by the Centre for Research in Air and Space Law to start a new journal on the twin disciplines of aviation and space laws. With the contributions from scholars across the globe, the journal is marking the beginning of a new chapter in the Indian aviation and space laws' scholarship. I wish all success to the journal team in making the Indian Review of Air and Space Law a globally renowned publication.

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FOREWORD

The world around us is rapidly changing. In the areas of aviation and space, technology advances at a lightning pace, bringing with it promises of growth and new opportunities for science and society. Alongside these developments also come challenges, most of which require legal solutions.

Air and Space Law enables air travel and space activity; indeed, the discipline provides a range of principles, legal frameworks, and approaches to inspire and support legal academics and practitioners to devise creative answers to questions around the operation of civilian and military aircraft, pilotless aircraft, suborbital flights and the launching and activities of space shuttles, rockets, and satellites.

Air and Space Law academics and professionals historically have made, and continue today to make, a huge impact globally on the successful development of rules and policies to support safety and security in aviation and space. Air and Space Law concerns public and private law at all conceivable levels, involving State actors, non-State actors and all those in between. As the regularity and number of actors involved in aviation and space activity increases, so too do the complex interactions between those actors come into focus. In addition to safety and security, there are legal issues that arise, to name a few, in the areas of exploration and navigation, manufacturing, financing and commercialisation, competition and environmental protection. Innovation begins with creative minds that seek to untangle and reorder existing practice to suit future endeavours, often focusing on rather complicated topics. Creative minds should be enabled within academia or by it as a conduit, through the invitation to engage in open and honest academic and practical debates on societal challenges. Research-driven education plants the seeds of such creativity and should be the cornerstone of our academic practice.

Air Law has been taught at Leiden University in the Netherlands since 1938; a professor chair was established in 1947. In 1961, Space Law was added to the chair. In the decades since, Air and Space Law has grown from a ‘niche’ discipline to one that, in my view, should appear at least once in the syllabus of every law school.

To that end, I am delighted that the Maharashtra National Law University Mumbai (MNLU) has seized the opportunity to establish a new Centre for Research in Air and Space Law (CRASL) in India. As a member of its Advisory Board, I shall look forward to fruitful exchanges on the future of Air and Space Law studies.

Furthermore, the initiative by the CRASL to launch this new peer-reviewed academic journal, the Indian Review of Air and Space Law, will surely be most welcome and appreciated by the wider academic and professional legal communities alike.

With its excellent line-up of articles, this inaugural issue is sure to make for enjoyable reading!

Prof. (Dr.) Steven Truxal
Professor of Air and Space Law
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EDITORIAL

Welcome to the inaugural edition of the *Indian Review of Air and Space Law* published by the Centre for Research in Air and Space Law at Maharashtra National Law University Mumbai. As we embark on this journey through the complex and dynamic realm of aviation and space exploration, we are reminded of the ever-evolving nature of this field and its profound impact on our global society.

The discipline, continues to expand its horizons to accommodate the rapid advancements in technology, the growing interests of various stakeholders, and the complex legal, ethical, and policy challenges that arise in this context. This journal edition strives to provide a comprehensive exploration of these issues, offering valuable insights for scholars, practitioners, policymakers, and enthusiasts alike.

In this issue, you will find a diverse array of articles, essays, and commentaries that delve into critical topics on air and space law. We are honored to feature contributions from leading experts and scholars in the field, whose insights and analyses promise to enrich our understanding of Air and Space Law. Their work reflects the dedication and passion that the global community of Air and Space Law researchers and practitioners brings to the field.

As the field of Air and Space Law continues to evolve, the *Indian Review of Air and Space Law* remains committed to serving as a platform for the exchange of knowledge, ideas, and innovative solutions. We invite you to engage with the thought-provoking content in this edition, and we look forward to continuing our journey of exploration and discovery in the ever-expanding frontier of Air and Space Law.

We would also like to acknowledge my respect to Hon'ble Vice Chancellor Prof. Dilip Ukey for building up a research-friendly infrastructure and great community of academia at the Institute. This journal is an outcome of his belief in the centre.

We also thank Prof. Sandeepa Bhat for giving us his valuable time and patience to clear our doubts and streamline our arguments and teaching us the importance of doubt and scepticism, which helped us to give a proper shape to my way of thought. We thank all the contributors for accepting our invitation to contribute. They are the real stakeholders of this issue.

We thank our student editors for painstakingly going through the text. We are grateful to Khooshi Mukhi, Prakrit Patro and Mitul Bhushan for their editorial assistance and leadership. Thank you

for your continued support, and we hope you find this edition both informative and inspiring. I have no disclaimer about faults. All are to blame.

Adithya Variath & Riya Kadam
On behalf of the Editorial Board

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TECHNICALLY SPEAKING: UNCOPUOS AND THE TECHNICAL GOVERNANCE OF SPACE

P.J. Blount

I. Introduction

It is a repeated trope in articles on space law that a new treaty is needed to govern this or that emerging (or existing) problem.[1] From a legal perspective such claims ring true with the positivist nature of international law. Indeed, as Article 38 of the Statute of the International Court of Justice (ICJ)[2] indicates, treaties are a preferred method for identifying the law as they give textual embodiment to 'The Law' rendering cognizable to those that seek to apply or interpret it. At the same time, despite these repeated calls for new treaties to govern the myriad issues that may arise between and among states in the space environment, it is also common knowledge that the international community just is not doing new space treaties at the moment. There are no foreseeable negotiations on new legal texts. This could be attributed to a number of factors including geopolitics, a lack of appetite for new rights and obligations, and uncertainty regarding future developments. Whatever the cause, new treaties just do not seem like they are on the agenda.

It also seems clear that this lack of formal law building at the international level is not the result of space activities and space technology being in a static state. Quite the contrary, the users and uses of space are changing rapidly, and emerging legal issues are constantly on the horizon. It is not then a question of whether the law has stalled, but instead how the law has adapted to these issues and whether there might be new rhizomes from which the law can sprout. This chapter asserts that international law-making is currently characterized by multidimensional processes that develop governance mechanisms that sit outside the realm of traditional international law yet nonetheless affect the behaviour of actors within that system. Specifically, this chapter will address the emergence of technical guidelines in the space domain, which provide governance frameworks where legal frameworks seem unattainable, and it will argue that such guidelines emerging from the Scientific and Technical Subcommittee (STSC) of the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) represent a new source of governance within the field of international space.

[1] Brian Israel, *Treaty Stasis*, 108, AJIL UNBOUND, 63, 66-67 (2014).
[2] Statute of the International Court of Justice, Jun 26, 1945, Art. 38.

The first substantive section of this article will address the turn to governance mechanisms in the space domain and discuss their importance as quasi-legal documents. It will argue that though such mechanisms do not represent formal law as conceived within the sources doctrine of international law, they nevertheless have normative content that is relevant from a legal perspective. This article will then turn to an assessment of technical guidelines and standards and why they have served as a useful avenue for the development regulatory frameworks. Finally, this article will give some specific examples of the STSC's adoption of such mechanisms and suggest that this exhibits a new trend in technical governance as a path forward for UNCOPUOS.

II. The Bloom of Governance

The so-called 'end of the lawmaking era' of the United Nations Committee of the Peaceful Uses of Outer Space (UNCOPUOS) has been well documented and much lamented. This narrative asserts that after the completion of the 1979 Moon Agreement, UNCOPUOS ended its lawmaking activities since no new formal treaties have emerged from the forum since. UNCOPUOS then entered a phase of adopting principles through UN General Assembly resolutions, and finally entered a state wherein its activities have been predominantly in the forum of providing a forum for discussion.[3] In some respects this narrative is true, but this chapter asserts that it is an incomplete picture of how and when "law" develops. This section seeks to address the idea that space law making has come to a halt, as it seems the claims to the end of international space law making may be somewhat exaggerated.

This exaggeration is the result of a positivist understanding of international law as treaty. While such an understanding does allow for the more fluid idea of international custom as law, it tends to limit itself to the text of the law as a treaty and treats all other texts as ancillary. Custom, though acknowledged, is plagued with issues of non-textuality, but this will not be central to the ensuing argument. This is the approach taken by Art. 38 of the statute of the ICJ, which even eschews the judgements of the ICJ as law, only treating them as "as subsidiary means for the determination of rules of law."[4] Such an approach makes the law seem static and unmoving and has a tendency to depict treaties as "hard" law that solidifies legal concepts into immutable textual statements. Except that hardly anyone would recognize this as a true depiction of the law. This can easily be seen in the

[3] *See generally,* Sergio Marchisio, *The Evolutionary Stages of the Legal Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS),* J. SPACE L. 31 (2005): 219.
[4] *Supra note* 2, at Art. 38(1)(d).

great attention that international lawyers pay to the non-law source of ICJ judgements.

This is because the law does adapt, change, and grow even if the body of treaty law remains static. This can be seen across a number of lines of scholarship that all indicate that the law is still developing through other mechanisms. One of the clearest examples of this is the recent focus in scholarship on 'soft law' processes, which seeks to identify regulatory mechanisms that sit lower in the hierarchical stack than treaties yet affect state behaviour nonetheless.[5] Soft law can best be understood as a theory that accounts for legal growth without growth of formal law. This line of theory is not alone in its attempt to account for the expansion of the law. For instance, the New Haven School of international law looks to state behaviour to account for legal growth,[6] and there is fascinating work on how interpretative practices create changes and "normative twists" that develop international law.[7] This is because as Israel notes "treaty stasis may be a symptom of a functional international legal framework," and "that a period of inactivity in multilateral treaty-making does not necessarily equate to a governance stasis or a waning influence of international law."[8]

Taken as a whole these lines of scholarship should lead us to question the Sources Doctrine which suggests that Art. 38 of the Statute of the ICJ is the definitive statement of the sources of International Law, and we should seek to understand the processes and mechanisms that undergird state behaviour. This is not to say that treaties should be abandoned or that they should be thrown from their high position in international law. Treaties are still extraordinarily valuable as textual representations of international law that are coupled with clear consent by states to be bound, but if the goal is to understand frameworks that guide and influence state behaviour then it is necessary to look past the treaty. This is where the concept of governance becomes valuable as it enables us to expand the lens through which we view the state behaviour in terms of legality and see that a broader set of documents, frameworks, processes, and mechanisms contain normative content that guide states in their behaviour within the international community. Governance represents "a conceptualization that enables us to

[5] Kenneth W. Abbott & Duncan Snidal, Hard and Soft Law in International Governance, *International Organization* 54, no. 3 (2000): 421–56.
[6] *See,* W. Michael Reisman, "International Incidents: Introduction to a New Genre in the Study of International Law," *Yale J. Int'l L.* 10 (1984): 1.
[7] *See*, Ingo Venzke, *How Interpretation Makes International Law: On Semantic Change and Normative Twists* (Oxford: Oxford University Press, 2012).
[8] *Supra* note 1, at 68.

penetrate and understand the government-like events that occur in the world of states even in the absence of government."[9]

The concept of governance adds to our ability to better understand the normative structure in which states behave in a given domain or within a discrete subject area, but it is not without its problems from an analytic perspective. The Sources Doctrine and Article 38 is very clear in the line that it draws about what is law and what is not law. The same cannot be said about governance. Governance is multidimensional in the processes that lead to its development and different processes function in different subject areas. This means that governance can be very difficult to draw a line around and therefore difficult to define. Herein, the term is understood to refer to processes and mechanisms that have normative content that states have acknowledged as constituting part of the normative framework in which they operate.

The next section of this article will take up the idea of technical governance as a potential process for normative development and analyse the advantages of why states may turn to technical governance to solve coordination problems among actors. Technical governance is a single facet of overall governance frameworks, but it can be a powerful one as it allows states to effectively manage collective action problems without being mired in legal provisions.

III. Technical Governance

Technical Governance is the use of governance documents to apply to the technical nature of activities rather than their substantive content. It is submitted here that this approach to law and governance holds a great deal of value in setting up frameworks in which participants actively engage in particular in areas with rapidly changing technological means. As an extreme example, the Internet Engineering Task Force (IETF) is a body that adopts core standards for the functioning of the Internet. They operate under the idea of "rough consensus and running code."[10] This reflects a core value that most operators agree to the standards adopted and use those standards, which in turn is critical to enabling an operational system. The standards themselves do not bind the parties, and compliance is gained through the collective benefit derived from employing the standards.

[9] Lawrence S. Finkelstein, "What Is Global Governance?," *Global Governance* 1 (1995): 367–72, 368.
[10] Paul Hoffman, ed., "The Tao of IETF: A Novice's Guide to the Internet Engineering Task Force" (IETF, 2012), https://www.ietf.org/tao.html.

This is quite different from the legal framework of international law, wherein there is often rough consensus on the text of the law, but the content of the law is subject to significant debate to the point that some have questioned whether international law constitutes a "legal" system at all.[11] Such a view of international law seemingly originates from examining its most controversial areas such as human rights or the use of force, and these analyses often overlook its success stories. A number of these success stories fit squarely within the concept of technical governance. Two will be briefly examined here to illustrate this point: the International Telecommunications Union (ITU) and the International Civil Aviation Organization (ICAO). There are certainly other examples, the adjacency of aviation law and telecommunications law to the space law regime makes these two examples have particular weight and value.

A. ITU

The International Telecommunication Union (ITU) is a specialized international organization that deals directly with "the improvement and rational use of telecommunications of all kinds."[12] One of its core goals is to ensure the use of international telecommunications without harmful interference and with maximized interoperability among systems. To this end the ITU convenes, every four years, a World Radio Conference (WRC). This conference brings together the state members of the ITU to renegotiate the Radio Regulations.[13] The Radio Regulations is an international treaty among states that lays out the technical specifications for international communications technologies and the use of radiofrequency spectrum. It is quite exceptional in a number of ways. First, it is a treaty that is revised and readopted every four years, which is a rarity since most treaties tend to be negotiated once and their text remains quite static. Second, it is an exceptionally long treaty weighing in at 442 pages. Finally, and most important to this analysis, the treaty itself is technical in nature. This text, in other words, is not the subject of interpretation by lawyers and diplomats, but rather by engineers and technicians. As an example, Article 5 of the Radio Regulations includes a table of Frequency Allocation and the article itself deals with the intricacies of coordinating usage of frequencies.[14]

This makes a great deal of sense when engaging with the idea of international telecommunications. The need is for actors to be able to interconnect and avoid

[11] Anthony D'Amato, *Is International Law Really Law?*, 79, NORTHWESTERN UNIVERSITY LAW REVIEW, (1984-1985) 1293-1314.
[12] Constitution of the International Telecommunication Union (2010), Art. 1(a).
[13] Convention of the International Telecommunication Union (2010) Art. 7; Radio Regulation (2020).
[14] Radio Regulations, Art. 5.

interfering with each other, a need that is heightened within the context of communications over the limited resource of radiofrequency spectrum. This allows the ITU to keep its law and regulation squarely focused on technical aspects of telecommunications, despite the fact that it is adjacent to issues that could create significant differences among states such as freedom of conscience and freedom of speech. By focusing on technical aspects, the ITU creates a forum in which technical governance can be adopted without impeding on more fundamental interests of states. In other words, the Radio Regulations can specify how the frequency is used without touching on the content that moves over the frequency (with only narrow exceptions such as safety of life services[15]). Technical regulation geared towards the "rational, efficient, and equitable use" of the radio frequency spectrum and allows states to cooperate on these issues without opening up issues of substantive rights that cut to core and contested areas of international law. The benefit is that users are coordinated without having to engage in discussions that could lead to a deadlock.

B. ICAO

ICAO engages with similar issues when it comes to creating an interoperable framework for coordinating international civil aviation. Specifically, ICAO's mission is "[t]o serve as the global forum of States for international civil aviation. ICAO develops policies and Standards, undertakes compliance audits, performs studies and analyses, provides assistance and builds aviation capacity through many other activities and the cooperation of its Member States and stakeholders."[16] To do this ICAO operates under the auspices of a treaty, the Chicago Convention,[17] but its main tool of regulation is a body of Standards and Recommended Practices (SARPs). The SARPs are directly connected to the technical aspects and safety of international aviation. An important distinction from the Radio Regulations under the ITU is that these instruments are not legally binding international agreements, and instead sit in a quasi-regulatory space. They are adopted through the ICAO Council as Annexes to the Chicago Convention,[18] but do not rise to the level of legally binding documents.[19]

The SARPs serve as another example of the tendency of states to coalesce around technical governance. The fact that SARPs are not legally binding yet

[15] Radio Regulations of the International Telecommunication Union, Dec 22, 1992, Chapter VII.
[16] ICAO, *Vison and Mission*, https://www.icao.int/about-icao/Council/Pages/vision-and-mission.aspx (accessed 19 March 2022).
[17] Convention on International Civil Aviation, Dec 7, 1944.
[18] ICAO, *Making an ICAO SARP*, (Mar 5, 2018), https://www.icao.int/about-icao/AirNavigationCommission/Documents/How%20to%20Build%20an%20ICAO%20SARP.pdf
[19] *Supra* note 17, at art. 37-38.

serve as a powerful tool in the coordination and management of international civil aviation indicates that the driving force that pushes states towards compliance with international governance is not always rooted in the coercive nature of the law. Rather in this case it is the common benefit of compliance that draws states into a framework of reusability. The SARPs themselves steer clear of more substantive and controversial international law questions and instead build on technical issues that states are more readily able to agree upon.

IV. UNCOPUOS and Technical Governance

Technical governance can be seen as a growing trend in space law as well. Though the formal law-making functions may have come to a close and the use of UN General Assembly resolutions has become rarer though not non-existent, the governance output of UNCOPUOS has not ended. However, a significant shift has occurred. It is no longer the Legal Subcommittee that is the major output of governance documents with normative content. Instead, the Scientific and Technical Subcommittee (STSC) has stepped into the breach and now serves as a significant source for building normative content surrounding space activities.

This makes sense as space is primarily a domain that is made possible through the exploitation of technical capabilities. It is also a domain that has a high level of need for coordination among actors, thus like other areas the need for governance frameworks is evident. As a result, it shares features with the regimes discussed above in terms of needs for coordination for collective benefit. It also shares the feature that the area that is in need of coordination also touches upon substantive issues that states are unlikely to be able to come to an accord on. Namely, the military interest in security of, in, and through space makes cohesion around governance directly touching on these issues unlikely. This has been born out in the deadlock in the Conference on Disarmament[20] and the failure of the EU Code of Conduct.[21]

Technical governance has become the tool of choice for UNCOPUOS. It should be noted that such governance is not nearly as formalized as the processes found under the ITU or ICAO, which correlates to the fact that international space governance does not sit within an international organization. UNCOPUOS serves more like a forum than an international organization with a constitutive treaty that

[20] Paul Meyer, *Dark Forces Awaken: The Prospects for Cooperative Space Security*, THE NONPROLIFERATION REVIEW 23, no. 3–4 (2016): 495–503, 496.
[21] P. J. Blount, "Sorting Out Self-Defence in Space: Understanding the Conflicting Views on Self-Defence in the EU Code of Conduct," in *Conflicts in Space and the Rule of Law*, ed. Maria Manoli and Sandy Belle Habachi (Montreal: McGill University, 2017).

sets out procedures and processes for the adoption of new rules and interpretations whether they be legally binding or not. In the past, UNCOPUOS has been relatively effective in doing just this using a consensus process through which all members can come to agreement on new rules, but these are then channelled through the UNGA resolution process for further legitimation.

Technical governance seems to be the new trend within this forum and one might argue that the Scientific and Technical Subcommittee (STSC) has risen to new prominence within the governance sphere whilst the Legal Subcommittee has receded. Three prominent examples of this trend can be identified: The UNCOPUOS Debris Mitigation Guidelines, The Long-Term Sustainability Guidelines, and the Safety Framework for Nuclear Power Source Applications in Outer Space. These documents, notably, do not fall into the category law or regulation, but they do fall within the category of governance. They are technical in nature and avoid establishing hard rules instead opting for what might be characterized as good practices. This is an interesting dynamic, since one of the critical factors standing in the way of normative development in other areas of space activities is the binary between legally binding and non-legally binding mechanisms. The STSC has effectively routed around this by engaging with the technical aspects of space activities and avoiding what might be considered substantive legal issues. This has allowed it to build consensus around technical governance mechanisms.

A. Debris Mitigation Guidelines

As space debris came to prominence as a critical issue facing future space operations, there has been a corresponding increase in legal scholarship attempting to address the issues created by space debris.[22] While legal mechanisms for space debris have been implemented at the domestic level, there has been no adoption of legal mechanisms at the international level. This is, of course, interesting since space debris is a collective action problem facing all space operators, yet states have been reluctant to address this issue with legal responses. This can be attributed to the substantive issues such as liability and security that such international law would need to address and to which states are correspondingly reluctant to consent and thereby to submit.

In the vacuum of law around debris some states began to pursue technical governance of debris. This primarily came from the Inter Agency Debris

[22] *See for example*, Jean-Frédéric Morin and Benjamin Richard, "Astro-Environmentalism: Towards a Polycentric Governance of Space Debris," *Global Policy* 12, no. 4 (2021): 568–73.

Coordination Committee (IADC), which adopted a set of Debris Mitigation Guidelines in 2007[23] that have been most recently updated in 2021.[24] An interesting dynamic that can be observed with the IADC is that as a group of space agencies, it includes a number of agencies from the most prominent space faring states, which also tend to be the states that stand in the way of legal development. This illustrates that states seem able to find agreement in the context of technical governance. The adoption of the IADC guidelines was followed by a similar initiative within UNCOPUOS. The UNCOPUOS Debris Mitigation Guidelines were adopted in 2007, and though the IADC guidelines were certainly influential in this process the work of the STSC dates back to 1994 when it took up debris as an agenda item for the first time.[25] The guidelines after being adopted by the STSC were then endorsed by the UNGA in Resolution 62/217 of 22 December 2007.[26]

The guidelines themselves are "voluntary" and "reflected the existing practices as developed by a number of national and international organizations" at the time of their adoption.[27] They do not stand in opposition to the IADC guidelines but rather reflect a desire to develop "a set of high-level qualitative guidelines, having wider acceptance among the global space community."[28] The seven adopted guidelines are quite general, especially when compared to the IADC guidelines. This can likely be attributed to the need to gain consensus, a more challenging task in the more populous UNCOPUOS. Important to the argument being put forth is the applicability of the guidelines. Not only are these guidelines not legally binding, they are technical in nature since they apply "to mission planning and the operation of newly designed spacecraft and orbital stages and, if possible, to existing ones."[29] The guidelines therefore target specific technical aspects of space operations. Finally and significantly, in the history of the development of the Debris Mitigation Guidelines (recounted in the Preface to the UN Office of Outer Space version), the LSC is only mentioned once and in the context of being a recipient of an STSC report. This indicates the extent to which the Debris Mitigation Guidelines represent technical authority rather than legal authority.

[23] Inter-agency Space Debris Coordination Committee, "IADC Space Debris Mitigation Guidelines," (September 2007).
[24] Inter-agency Space Debris Coordination Committee, "IADC Space Debris Mitigation Guidelines," (June 2021).
[25] UNOOSA, Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space (2010) iii.
[26] United Nations General Assembly, Resolution 62/217: International cooperation in the peaceful uses of outer space (22 December 2007).
[27] UNOOSA, Space Debris Mitigation Guidelines, iv.
[28] *Id.,* at 2.
[29] *Id.*

B. Long-term Sustainability Guidelines

The Long-term Sustainability (LTS) Guidelines follow a similar path to the debris mitigation guidelines. LTS became an agenda item in the STSC in 2010 and a Working Group on the issue was established thereafter. The group was able to adopt two sets of guidelines, which were adopted by UNCOPUOS in 2019.[30] These guidelines are also voluntary but assert themselves to "comprise a compendium of internationally recognized measures for, and commitments to, ensuring the long-term sustainability of outer space activities and, in particular, enhancing the safety of space operations."[31] The goal of the guidelines is to assist operators in maintaining an "operationally stable and safe environment" in space.[32]

The LTS Guidelines tread much closer to legal content than the Debris Mitigation Guidelines. Specifically, the LTS Guidelines "address the policy, regulatory, operational, safety, scientific, technical, international cooperation and capacity-building aspects of space activities."[33] Despite this proximity to the law the guidelines maintain their status as technical governance in that they are designed to "support the development of national and international practices and safety frameworks for conducting outer space activities while allowing for flexibility in adapting such practices and frameworks to specific national circumstances."[34] As a result, the guidelines endorse law and policy at the domestic level with a clear goal of affecting globally safe operations. These guidelines do not endorse new international law to address LTS, but rather seek to have states implement technical regulation in order to achieve this goal. It is notable in this context though that there was dispute within the LTS Working Group was unable at the end of its work to reach consensus on a preamble and the process of submitting the guidelines to the UNGA for approval.[35]

The guidelines are focussed on capacity building in the space arena as a way to increase the sustainability of space into the future, which has obvious benefits of also increasing the safety and security of operations. While these guidelines tread close to substantive issues that states may want to avoid negotiating on in a legal context, they give a great deal of latitude to states by requesting that the guidelines be implemented through national frameworks. Many of the guidelines themselves

[30] Report of the Committee on the Peaceful Uses of Outer Space, Sixty-Second Session, U.N. Doc. A/74/20 (2019).
[31] *Id.,* at 50.
[32] *Id.*
[33] *Id.,* at 51.
[34] *Id.*
[35] Report of the Committee on the Peaceful Uses of Outer Space, Sixty-first Session, U.N. Doc. A/73/20 (2018) 27.

would be more properly implemented through technical programs rather than through legal programs.

C. Safety Framework for Nuclear Power Source Applications in Outer Space

The 2009 Safety Framework for Nuclear Power Source Applications in Outer Space[36] as a document builds directly on the Principles Relevant to the Use of Nuclear Power Sources in Outer Space adopted by the General Assembly in 1982.[37] This Framework was adopted as a collaborative effort between the STSC and the International Atomic Energy Agency (IAEA), and provides "[h]igh-level guidance . . . for both the programmatic and technical aspects of safety, including the design and application of space NPS."[38]

Again, this document has the hallmarks of technical governance rather than legal regulation. It is non-legally binding and focused on safety rather than content that states may find objectionable in a legal negotiation. Despite the fact that nuclear capabilities clearly border national security objectives, the Framework skirts these issues by focusing on safety. The Framework is clearly rooted in a "fundamental safety objective . . . to protect people and the environment in Earth's biosphere from potential hazards associated with relevant launch, operation and end-of-service phases of space nuclear power source applications."[39] Similar to the Debris Guidelines and the LTS Guidelines, the NPS Framework has allowed for proactive measures to be adopted that affect the safety and security of space operations by shifting the focus from legal content to technical content. By rooting these in the idea of safety and sustainability these documents have been able to decouple themselves from more controversial concepts that would have hampered legal negotiations.

V. Conclusions

It remains to be seen whether technical governance as discussed in this chapter will be an effective way for UNCOPUOS to continue its work. While such measures have definite benefits in helping move discourse forward on securing safety in space operations for all operators, the weakness in the adopted standards as nonbinding mechanisms is apparent. Noncompliance does not constitute an

[36] UNCOPUS & IAEA, Safety Framework for Nuclear Power Source Applications in Outer Space (2009).
[37] Resolution 47/68: Principles Relevant to the Use of Nuclear Power Sources In Outer Space (14 December 1992).
[38] UNCOPUOS & IAEA, Safety Framework, 3.
[39] *Id.*, at 2.

internationally wrongful act for which states can pursue reparations.[40] At the same time, the space law framework does adopt a novel liability regime through the Outer Space Treaty and the Liability Convention. This framework includes a fault base regime for damage caused by states in outer space. The question of fault is an important one that could lead a dispute resolution body to turn to such technical guidance to determine what a responsible or reasonable actor would have done in similar circumstances. Through such processes, technical standards become, in a sense, legalized. Their breach is not a legal one in the sense of obligation, rather the breach becomes legal in the sense of a duty of care owed to other operators. By the same notion, an operator wanting to put forward an argument of no-fault, might very well put forward compliance with technical guidelines as evidence of responsible or reasonable behaviour.

Finally, it should be noted that the STSCs role in promulgating these documents certainly evidences a shift in the output of COPUOS overall in that it has, as of late, been more effective as a forum for negotiation of 'soft law' in the form of technical governance. This effectiveness is certainly connected to the "non-legally binding" nature of its output, but also can be attributed to the technical nature that allows it to avoid more substantive issues that mire down other processes that seek to define responsible behavior. While STSC outputs alone will not be sufficient to ensure the future sustainability, safety, and security of space, such efforts must be welcomed in light of the discord and lack of movement with regards to the development of international space law.

[40] International Law Commission, Articles on State Responsibility (2001), Art. 13.

ADVANCING SPACE ACTIVITIES IN THE 21ST CENTURY: EMERGING TECHNOLOGIES AND REGULATORY CHALLENGES

Ranjana Kaul

I. Introduction

Outer Space is, yet again, at an inflection point, as it was in the 20th Century. The narrative continues to be qualified by big power rivalries[1]. In the 20th Century, faced by new challenges in 1958[2],the USA and USSR [Russia] decided to resolve the matter at the newly established United Nations, starting with the establishment of the Committee on Peaceful Use of Outer Space (UN COPUOS) and the Office of Outer Space Affairs (UN OOSA). The discussions lasted almost ten years from 1958 to 1967 to arrive at a negotiated settlement on how activities in outer space would be undertaken. The Outer Space Treaty 1967[3] (OST) laid down Principles in terms of which the parties agreed to undertake the exploration and use of Outer Space, including the Moon and other celestial bodies for *peaceful purposes*. The first of its kind, the Treaty added a new specialized branch in international law. The intended objective for the Outer Space Treaty was to ensure that neither the USA nor USSR [Russia] could extend sovereignty in outer space; would place nuclear weapons and weapons of mass destruction in outer space, and would, simultaneously, provide the superpowers the assurance of safe, secure, and unrestricted access to-in-from outer space. Needless to say, that the US and USSR found it expedient to conform with Principles. Thus, as if by default, the accumulation of consistent conduct or *state practice* by the super-powers provided the basis for the creation of binding rules of customary international law which are applicable to states undertaking exploration and use of outer space, including the Moon and other celestial bodies since 1967. Fifty-five years after The Treaty, we recognize outer space as a democratized domain, with over eighty countries accessing space-enabled services. It is well known that the 1991 US decision to allow the commercialization of space-enabled services led to an extraordinary growth of the commercial global space economy. At the end of 2021, the global

[1] Shreve , Bradley G, The US, the USSR, and Space Exploration 1957-1963, International Journal on World Peace Vol. 20, No. 2 (JUNE 2003), pp. 67-83 (17 pages), Published By: Paragon House, at https://www.jstor.org/stable/20753399 .

[2] The launch by USSR [Russia] of Sputnik, the world's first military communications satellite in October 1958, followed in December 1958, by the launch of the world's first intercontinental ballistic missile by the USA.

[3] Outer Space Treaty, 1967: Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies , 1967; Entered into force on 10th October 1967 . UNGA doc A/6431 [hereinafter referred to as 'OST' or ' Outer Space Treaty' or 'Treaty'] http://www.unoosa.org

space economy stood at US$ 469bn[4]. In our own century, the next phase of expansion is already accelerated in the existing space-to-Earth economy and new planned activities in off-Earth orbit Space involving commercial exploitation of planetary resources on the Moon and asteroids; and the human habitation or colonization of the Moon and Mars.

In the 20th Century, notwithstanding Cold War adversarial positions, the USA and USSR [Russia] found a *modus vivendi* thereby continuing to undertake space activities for peaceful purposes as per the OST, and, also simultaneously continued unimpeded to develop military space technologies and applications. In the 21st Century, there are eleven space-faring powers – of these three are the *super space powers,* and eight are referred to as *middle space powers.* Furthermore, in the 21st Century, especially since 2004, *military space capability* has become an essential component of national security architecture in countries across the world[5]. Complex military space technologies are continuing to be developed, for commercial spacecraft as well as dual-use commercial satellite systems which could be deployed directly in terrestrial warfare. In fact, the rapid increase in activities in outer space that can only be described as the military is a cause for concern globally. At the international level, pursuant to UN General Assembly Resolution 76/231[6] and under the auspices of UNODA[7], the open-ended *working group for reducing arms threat in outer space through norms, rules, and principles of responsible behaviours* are deliberating to arrive at a consensus on this critical issue[8].

In the 21st Century, the geopolitical narrative is qualified by rivalries between the USA, China, and Russia. However, unlike in the 20th century, there is a growing international concern because the big power rivalries are increasingly resonating in outer space itself and in UN COPOUS. Furthermore, already the expansion of space activities beyond the Earth orbit is a given. Arguably, the commercial space sector backed by advanced space technology capability has emerged as a strong voice, exerting influence on national policy direction for the proposed off-Earth space economy. Several other countries have announced lunar missions in the coming year, including one national lunar project for commercial mining of lunar

[4] Michael Sheetz, *The Space Economy Grew at Fastest Rate in Years to $469 Billion in 2021, report says,* CNBC, (Jul 27, 2022, 11:42 AM EDT*),* https://www.cnbc.com/2022/07/27/space-economy-grew-at-fastest-rate-in-years-in-2021-report.html#:~:text=Investing%20in%20Space,The%20space%20economy%20grew%20at%20fastest%20rate%20in%20years,billion%20in%202021%2C%20report%20says&text=The%20global%20space%20economy%20grew,report%20by%20the%20Space%20Foundation.; Alun Williams, *Space Foundation Sizes Global Space Economy, Boosted by Gov Spending,* ELECTRONICS WEEKLY, (Jul 28, 2022), https://www.electronicsweekly.com/news/business/space-foundation-sizes-global-space-economy-2022-07/.

[5] SPACE SECURITY INDEX ANNUAL REPORTS, https://spacesecurityindex.org/ssi-archive/

[6] General Assembly Resolution, *Reducing space threats through norms, rules and principles of responsible behavior,* A/RES/76/231 (30 December 2021), available at https://undocs.org/Home/Mobile?FinalSymbol=a%2Fres%2F76%2F231&Language=E&DeviceType=Desktop&LangRequested=False.

[7] United Nations Office of Disarmament Affairs.

[8] *United Nations Office of Disarmament Affairs,* Open-Ended Working Group Reducing Space Threats, https://meetings.unoda.org/open-ended-working-group-on-reducing-space-threats-2022.

resources, leading to human habitation on the Moon and Mars which is guided by national objectives. Arguably, recent developments relating to the commercial exploitation of planetary resources and colonization of other planets have the potential to escalate geopolitical tensions, perhaps, also threatening global security.

The current phase of expansion of space activities in the Space -Earth economy is in large measure led by the 5G wireless communications revolution. The establishment of mega LEO satellite systems has become a go-to option for applications including satellite broadband communications, Earth observation, on-orbit surveillance, high altitude platforms like drones and other autonomous vehicles, and space transportation. Space tourism has become a distinct possibility in view of the successful demonstrations in 2021 by Virgin Galactic owned by Richard Branson[9] and Blue Origin owned by Jeff Bezos[10]. Space transportation will soon include a new sub-sector – *aerospace*- involving hybrid aerospace vehicles which will be capable of flying, seamlessly through airspace and outer space, at altitudes hitherto not yet utilized located in *Near Space*, the newly identified domain. There are other new activities including rendezvous and proximity operations (RPO) and on-orbit servicing, assembly, and manufacturing (OSAM) and, of course, the off-Earth space activities for the commercial utilization of planetary resources and human habitation on the Moon and Mars. It needs no reiteration that all the new technology platforms are capable of dual-use deployment.

It cannot be emphasized enough that existing and new space activities require efficient and effective space governance frameworks. That, in turn, requires timely, appropriate regulatory directions from COPOUS, duly adopted by UN General Assembly Resolutions. What are the regulatory requirements for the new space and aerospace activities? What is the pending regulatory business? In fact, questions are often asked about whether the Outer Space Treaty, 1967 is capable of fulfilling its primary mandate – that is, to regulate space objects operating in outer space to ensure the peaceful use of outer space. What is the future of space law itself? What is the future of outer space, including the Moon and other celestial bodies? Are solutions possible? These are mixed questions of fact and law.

This essay is presented in three parts. Part 1 is about New Activities in Earth orbit. Para 1 deals with space activities led by the 5G wireless communications revolution; Para 2 is about Convergence Technologies – Near Space; Para 3 discusses LEO Satellite Broadband Communication Mega-constellations; Para 4

[9] Josh Dinner, Who *is Virgin Galactic and what do they do?* SPACE, (MAY 30, 2023) https://www.space.com/18993-virgin-galactic.html.
[10] Tim Levin, *Jeff Bezos just launched to the edge of space. Here's how Blue Origin's plans stack up to SpaceX and Virgin Galactic,* BUSINESS INSIDER, (Jul 20, 2021, 7:58 PM), https://www.businessinsider.com/elon-musk-jeff-bezos-branson-spacex-blue-origin-virgin-2021-5?r=US&IR=T.

is about Rendezvous and Proximity Operations and On-Orbit Servicing, Assembly, Manufacturing (OSAM); and Para 5 is about the regulatory conundrum related to Space Traffic Management/Space Situational Management and Coordinated Controls for Near Space. Part II discusses recent developments related to the *Off* Earth Space Economy specifically related to lunar missions to the Moon, and projects specifically proposed for commercial planetary resource utilization and colonization of the Moon and Mars. The essay ends with Part III on the Future of the Outer Space Treaty, 1967. The discussion tries to find an answer to the question - *What is at Stake: Outer Space for peace, sustainability, international cooperation, and collaboration or war?*

II. Earth orbit - New Space Activities

A. Space Activities led by the 5G Wireless Communications Revolution Overview

The ITU World Radiocommunication Conference 2019 ('WRC-19)[11] paved the way for the 5th generation wireless communications revolution, including but not limited to regulatory procedures for frequency allocations, effecting coordination for NGSO satellite constellations and High-Altitude Platform stations (HAPS)[12]. Consequently, the Space to Earth economy is set for another round of expansion[13] led by the next generation of satellite communications capabilities, including international mobile telephony facilitating the development of 5G mobile and wi-fi networks; Earth exploration satellite (EESS) services. Already, satellite broadband communication mega-constellation, consisting of hundreds and thousands of spacecraft in low-Earth orbit, have become popular go-to solutions for providing global telecommunications, remote sensing, space and upper atmosphere research and meteorology, astronomy, technology demonstration, education, space transportation. It will, of course, open new opportunities, employment, governance tools, and so much more, in turn accelerating the development of new advanced technologies.

The 5th generation wireless communications revolution is well underway. *Mega satellite constellation systems need r*egulations for the efficient use and management of LEO, already getting further congested as increasing numbers of small satellite constellations are being deployed in the thousands. Time is of the essence for appropriate regulations to be established by COPOUS and adopted through UN General Assembly Resolutions. There can be no doubt that it is critical for the future of space that rule-based governance is strengthened to assure

[11] *World Radiocommunication Conference 2019 (WRC-19),* (2019), https://www.itu.int/dms_pub/itu-r/opb/act/R-ACT-WRC.14-2019-PDF-E.pdf

[12] High-Altitude Platform Systems (HAPS) are radio on aerial platforms that hover around in the stratosphere – to facilitate telecommunications within a wide coverage area below for affordable broadband access in rural and remote areas.

[13] *Global Space Economy 2019 to 2021, by sector,* STATISTA, https://www.statista.com/statistics/662231/space-economy-breakdown-globally-by-sector/.

continuing sustainability, safety, and security of space objects, most particularly in low Earth orbit. It cannot be emphasized enough that regulatory clarity and certainty are critical for commercial enterprises. The absence of consensus at the COPOUS is perhaps one of the most urgent concerns for effective space governance.

B. Convergence Technologies – Near Space (18 km – 160 km above Earth's Surface)

Referred to as *Near Space*, the domain altitude lies across *Airspace* (up to 100 km above the surface of the Earth) and into *Outer Space* (between 100 km -160km above the Earth surface). As is obvious Near-Earth traverses from airspace from 18 km to 100km to outer space up to 160 km. Currently, the altitudes between 18 km to 160 km are not yet being utilized for civilian and commercial activities. Facilitated by 5G wireless communications technology, High Altitude Platforms Systems[14] *(HAPS)* and Commercial Space Transportation including sub-orbital space tourism and space transportation using hybrid or aerospace vehicles are already poised to become available in near future.

a. Rationale for Near Space (18km to 160 km)

We know that, even though there is no written legal definition in international law, it is accepted that the notional limit of air space is at 100 km above the Earth's surface. However, the Chicago Convention, 1944[15], the applicable international air law treaty, confirms that the state exercises exclusive sovereignty over its airspace (over land and territorial seas), without providing a precise extent or limit of air space. However, practical evidence has demonstrated that the *Operational Boundary between Aviation and Outer Space* lies between 80km – 90km[16] above the earth. Thus, the concept of *Near Space* (18 km to 160 km) derives from the following propositions:

(i) Airspace: (18km – 100 km)
Commercial airlines do not fly above 18km because of risk of decompression (which occurs at 23 km). In fact, the highest altitude for a civil aviation flight has been 18km (60,000 ft) which was achieved by the iconic Franco-British supersonic airline *Concorde* which crossed the Atlantic in 3.5 hours (1969- 2003)[17]; and (b) Buoyancy at 50 km can support high altitude balloons.

[14] International Telecommunications Union: High altitude platform systems https://www.itu.int/en/mediacentre/backgrounders/Pages/High-altitude-platform-systems.aspx
[15] Convention on International Civil Aviation 1944: Doc. 7033 , see: https://www.icao.int/publications/Documents/7300_orig.pdf
[16] Jonnathan McDowell – Where Does Outer Space Begin? 20 October 2020 , Physics Today https://physicstoday.scitation.org/doi/10.1063/PT.3.4599
[17] Concord : https://www.britannica.com/technology/Concorde

(ii) Space: (100 km – 160 km)

The limit of Near Space is identified at 160 km because it is the altitude for the lowest practical orbit for satellite systems.

Furthermore, it is important to note that Re-entry of the spacecraft takes place at 120 km. It is the altitude, especially in the case of uncontrolled entry, where fragmentation or explosion of spacecraft takes place, which may fall as debris, through airspace, and on the Earth. Finally, no satellite can sustain orbital flight anywhere close to 100 km.

b. Operating Systems for Near-Space Operations

In airspace, operating systems include high-altitude drones (3-15km); autonomous UAV with or without GPS (9Km.); pseudo-satellites and balloons (14-45km); and High-Altitude Platform Systems (17-22km) which are meant to fly from a few minutes or hours to weeks, months or even years.

In outer space operating systems include (i) Suborbital rockets traveling vertically from point to point, however, the suborbital rocket or aerospace will achieve outer space altitude, without sufficient speed to orbit around the Earth; and (ii) Trans-atmospheric rockets also includes *suborbital rockets traveling point to point,* with the difference that such an aerospace vehicle will ' fly' in the airspace of some countries and achieve space altitude to 'overfly' other countries *en route;* and (iii) *orbital rockets* which will overfly foreign countries *en route*.

Information available in public domain indicates that the US is actively exploring the use of commercial suborbital flights for transporting heavy cargo on very long distances on earth, and that the US Air Force wants to access services of a commercial Rocket Cargo spaceship.

c. Delimitation of Airspace and Outer Space

It is also obvious that the matter of appropriate regulations for *Near Space* will revive the long pending question of delimitation of air space/outer space.[18] Presently, there does not exist a written definition in international law defining the limit of air space nor the altitude, above the Earth surface, where outer space begins. The so-called Kamran *Line* at 100 km above the Earth is accepted as the vertical limit of airspace and as the edge or threshold where Outer Space begins. It is named after Theodor von Karman, who first attempted to derive an altitude limit between Earth's atmosphere and outer space in 1957. The term Kamran *Line* was first used in the 1960s by the Federation Aeronautique International (FAI), the

[18] Gangale, Thomas: How High the Sky? The Definition and Delimitation of Outer Space and Territorial Airspace in International Law, 2018, Series: Studies in Space Law, Volume 13, Ed. Frans G von der Dunk at https://brill.com/view/title/37940

world record keeping body for all air sports, to distinguish the boundary or altitude for undertaking (i) *Aeronautic sports:* i.e., all air sports within 100 km of Earth's surface; and thereby excluding (ii) *Astronautic activity*: undertaken more than 100 km above Earth's surface. Presently, the notional boundary or limit of airspace is accepted, including by the UN agencies. Airspace and Outer Space are regulated under applicable international treaty frameworks, that is, the Chicago Convention 1944[19] (Airspace) and the Outer Space Treaty, 1967 (Outer Space).

Therefore, the prospect of suborbital flights[20] and space transportation will traverse both through air space and outer space that is an *aerospace vehicle* will require a conclusive determination of the delimitation of the vertical extent of national sovereignty. In any event, Near Space activities will have far reaching and significant impact on the existing applicable international treaties. These are important developments which can only be resolved only through international consensus at the International Civil Aviation Organization and the UNCOPUOS.

d. Impact of and Challenges for Utilization of Near Space

(i) The regulatory and technological challenge in respect of aerospace vehicles is they travel at vastly different velocities- short to long duration- at varying altitudes. Currently, countries are not equipped to manage control areas in the upper stratosphere –that is at altitudes more than 21 -23km [27], much less surveillance, ATM/CNS; GNSS.

(ii) For international and national civil aviation, it means that in order to provide air navigation services (ANS) to commercial aerospace services operators, the existing Global Navigation Satellite System (GNSS) and national ANS will be required to undergo required levels of upgrades in order to provide ATM/CNS services in Near Space.

(iii) The question of appropriate regulations for the new generation *aerospace* activities, involves the complex question regarding the *delimitation of outer space* for the purpose of conclusively determining the vertical extent of state sovereignty. It needs no reiteration that utilization of the Near Space domain has implications from the national defence and security perspective, especially in the context to *sovereign airspace.* Similarly, there will be significant implications from the perspective of the safety and security of space activities.

(iv) Furthermore, the emergence of Near Space, as the new *aerospace* subsector of civil aviation, will have significant implications at international and national levels

[19] Chicago Convention, 1944: Convention on International Civil Aviation signed in Chicago on 7th December 1944. https://www.icao.int/publications/Documents/7300_cons.pdf

[20] Iva Savic and Nika Petic : Commercial Suborbital Flights : Air law or Space Law? (2021) https://hrcak.srce.hr/file/379793

from legal and regulatory perspectives. This will have a significant impact on international regulatory frameworks – the Chicago Convention, 1944, and the Outer Space Treaty 1967[21]. Furthermore, there will have to be a consensus on an appropriate international regulator for aerospace activities.

C. Low Earth Orbit: Broadband Communication Satellite Mega-constellations

As the world rapidly transforms into a global digital economy, the focus has been firmly on the LEO constellations providing broadband internet services, the new sub-set of the satellite industry. Satellite broadband services are seen as a means of bringing ubiquitous internet connectivity to the under-served and unserved parts of the world. Additionally, countries are also looking for a means to protect key communication services and surveillance data and reducing dependence on foreign companies for the service. The 5G communications revolution has made this possible. Arguably, the *space internet race* is underway.

Among companies in the lead is Elon Musk's SpaceX satellite internet venture[22], which has launched 2000 small satellites – the *Starlink* satellite constellation, and has applied for a license to launch more than 40,000 satellites. Starlinks is already providing services in a few countries. The Jeff Bezoz-led Amazon proposes to launch a constellation of 3000 satellites under its *Project Kuniper* in 2022; and *OneWeb,* jointly held by Sunil Mittal's Bharti Enterprises, the UK government backed by Eutelsat of France already has 350 satellites in LEO with a plan to double that number of its constellation. *OneWeb* has received a Letter of Intent for providing satellite internet services in India and 5G spectrum allocation from the Department of Telecommunications, Government of India, following success at the recently concluded 5G spectrum auction.

However, as much as downstream satellite communications services are regulated under national laws, there is urgency in providing regulatory direction for the new mega-constellations in low Earth orbit. There is no denying that legal clarity will be most helpful particularly because the long delays or absence of appropriate regulations will adversely impact the possibility of securing high-value investments required for such activities.

Among the most critical challenges is managing or governance norms for the low Earth orbit. The obvious problem is the increasing quantum of space debris. It is self-evident that a possible solution is to strengthen mechanisms required for daily operations for Space Traffic Management (STM) and Space Situational

[21] Dempsey, Paul Stephen : The Definition and Delimitation of Outer Space , 2017 https://www.unoosa.org/documents/pdf/copuos/lsc/2017/tech-05.pdf

[22] Mann, Pultarova, Howell : SpaceX Starlink Internet: Costs, collisions, risks and how it works , 15 April, 2022, https://www.space.com/spacex-starlink-satellites.html

Awareness (SSA) capabilities. Additionally, astronomers have expressed concern over the rapid congestion of satellites in LEO which is causing light pollution, thus obstructing the view in the night sky. Regulatory interventions in these and related matters are required.

a. Role of Dual Use Commercial Satellite Internet Services

The role of Starlink satellite in providing secure strategic communication support to the armed forces of Ukraine in the war against Russia has been amplified in the public domain already. While the use of dual-use space assets by states, to provide both strategic and commercial services is very well known (for example, satellite navigation service) and also commercial remote sensing entities providing high-resolution EO data to their states, arguably, the present case involving the Starlink satellites, it is perhaps the first instance of a commercial dual-use system directly participating in hostilities, on behalf of one of the two belligerent states. Be that as it may, in the absence of any doubts or questions, or debates on the point, it is reasonable to conclude that the Starlink satellite system is duly authorized by the national regulator under Article VI Outer Space Treaty, 1967 to provide both commercial and secure communications services.

The question, however, of whether Starlink satellites were a *legitimate target* was also very much part of public news reportage on the ongoing conflict.[23] Since details are well amplified in the public domain, it does not merit repetition here. The question of '*legitimate target'* would have to be evaluated and understood in the context of humanitarian law or the Law of Armed Conflict (LOAC). As already stated, this was the first instance of dual-use commercial communications satellite constellation providing secure communication to the armed forces of one of the two states involved in the ongoing terrestrial war. It is reasonable to expect other space powers to also develop similar indigenous capabilities. It is also pertinent to note, in this context, that the Outer Space Treaty of 1967 is applicable to civilian and military space activities during peacetime, and that there are no special carve-outs for the military use of outer space.

D. Rendezvous and Proximity Operations and On-Orbit Servicing, Assembly, Manufacturing

Rendezvous and Proximity Operations (RPO) is also referred to as *On-Orbit Servicing, Assembly, Manufacturing* (OSAM), typically when undertaken for peaceful purposes. Among countries with the capability for the undertaking, RPO is Russia, the USA, and China. Several space-faring nations are said to be also developing RPO/OSAM capability.

[23] Tara Brow, *Can Starlink satellites be lawfully targeted*, LIBER INSTITUTE WEST POINT, (Aug 5, 2022), https://lieber.westpoint.edu/can-starlink-satellites-be-lawfully-targeted/ .

Rendezvous and Proximity Operations involve two space objects coming very close to each other and remaining in visual contact for long periods. RPO involves a space object performing a specific activity for which it is tasked, and such task may or may not involve physical contact with the *target or intended* space object. RPO may be deployed to undertake activities for peaceful purposes or to undertake activities for military purposes.

a. RPO for peaceful purpose – On Orbit Servicing, Assembly, Manufacturing

(i) OSAM with Physical Contact:

Robotic Operations for capturing debris. This is a possible solution for cleaning up debris that is congesting the orbits, particularly low Earth orbit. However, if the *captured debris* is not from a space object *owned* and under the *jurisdiction* of the *state party* undertaking RPO, then the absence of a specific agreement between the launching state or spacecraft operator may result in adverse inference.

Docking is when the OSAM activity involves a space object *physically joining or docking* with the target space object in orbit. *Docking* would be purposed for undertaking on-orbit-servicing and maintenance of the intended space object (OSM). OSM could involve on-orbit activities like refueling, retrofitting and refurbishing parts – including using a defunct space object to harvest usable components. Harvesting usable components from an intended defunct space object will require an agreement between the OSAM service provider and the launching state or spacecraft operator of the defunct space object. Undertaking such OSAM activity in the absence of such an agreement would draw adverse inferences.

Unintentional Collision – needs no further elaboration. However, the debris that would be generated from an unintended collision could have far-reaching consequences, inviting liability for direct damage and the possibility of third-party damage in orbit. But, by any measure, it is fair to say that such an event is likely to yield catastrophic outcomes.

(ii) OSAM Without Physical Contact

OSAM without physical contact includes undertaking inspection at close range of the intended spacecraft, typically undertaken for space situational awareness purposes or for object characterization; and for imaging and general close inspection of the intended space object.

b. RPO for the military purpose

(i) RPO with Physical Contact

Intentional collision with target space object

ASAT operation

Robotic Operations - (*i*) to disable a military or defense satellite; (*ii*) to intentionally place the target space object in a dangerous or hazardous orbit.

(ii) RPO without Physical Contact

Offensive countermeasures to interfere with the operations of the target space object for the purpose of (*i*) jamming, (*ii*) destroying; (*iii*) capturing; (*iv*) illuminating by using radio signals or laser; (*iv*) undertaking close range SSA for object characterization, imaging; general close inspection.

E. Critical Regulatory Conundrums

Space Traffic Management/ Space Situational Awareness & Coordinated Controls for Near Space

When we consider the new emerging aerospace sector, the prospect of commercial space transportation and the recent developments involving new activities in outer space including RPO and mega LEO satellite constellations, coupled with increasing military activities in outer space, it becomes self-evident that the Space Traffic Management together with Space Situational Awareness (also referred to as Space Domain Awareness) and Coordinated Controls for Near Space is an urgent regulatory requirement.

a. Accumulated and New Debris[24]:

Perhaps the most urgent corresponding regulatory conundrum also relates to strengthening debris mitigation governance. There is already international consensus that LEO required regulations to manage existing and new space objects (manmade, also natural debris)- where new activities are concentrated. To this must be added the regulatory requirement for providing coordinated controls for Near Space.

[24] US Senate : Committee on Space and Science (hybrid) : Space Traffic Management, Space Situational Awareness and Orbital Debris: Examining Solutions for Emerging Threats; (2021) , https://www.commerce.senate.gov/2021/7/space-situational-awareness-space-traffic-management-and-orbital-debris-examining-solutions-for-emerging-threats/819ef822-3e6d-4ab1-9a56-31c6d60969c9.

Needless to state that the heady prospects notwithstanding, new activities will accelerate debris accumulation in the already congested Earth orbit, exacerbating the challenge of ensuring sustainable use of space. The increased risk or damage to living satellite systems maybe the inevitable corollary. Debris is internationally recognized as a primary threat to the sustainable use of outer space. It is fair to expect '*disputes*' involving the cause of action in outer space. It is, therefore, specifically important to enhance space traffic management mechanisms and support systems, establish rules of the road for satellite operators, particularly in LEO, for proper management of on-orbit collision avoidance manoeuvres; and take steps for assuring access to necessary resources thereby to strengthen capabilities for providing more efficient active space-based space surveillance in outer space.

There have been reports in the public domain regarding the increasing frequency of *False Positives* qua conjunction warnings, and collision probability reports being provided to satellite operators in the course of day-to-day Space Traffic Management (STM). In such an event , inevitably, there is always the requirement for a satellite operator to undertake manoeuvre planning, which inevitably results in operating costs.

There is, thus, an urgent requirement for greater accuracy day to day STM operations, which suffer from the handicap that data sources that provide information regarding the identification (physical) of a space object do not have accompanying databases which provide high levels of information.

b. Identification of Space Object in Orbit

There are two ways in which a space object is capable of being identified in outer space:

(i) *Physical Identification of a* Space *Object:* The identification of a space object is governed and regulated under Outer Space Treaty, Article VIII which casts an obligation upon a State Party to register its space object in its national registry and in the international registry of space objects. The Registration Convention[25] amplifies Outer Space Treaty Article VIII. Specifically relevant for the present purpose is Article II. The OOSA maintains two online registries[26] (i) under Registration Convention, that is for countries that have ratified the Agreement, and issue an international ID for each space object so registered; and (ii) For countries

[25] Convention on Registration of Space Objects Launched into Space, 1974 : https://www.unoosa.org/pdf/gares/ARES_29_3235E.pdf .
[26] UN Office of Outer Space Affairs : UN Register of Objects Launched into Space at https://www.unoosa.org/oosa/en/spaceobjectregister/index.html .

that have not ratified the Agreement, rather pursuant to Outer Space Treaty. It is also important to note that Article VIII clarifies that the status of *ownership of* and *jurisdiction over* space objects when it is in outer space as well as on the Moon and other celestial bodies does not alter or change. The importance of registration of a space object, in providing it a physical identification number, is intrinsically linked to Outer Space Treaty Article VII pertaining to the international liability of State parties, which is further amplified in the Liability Convention, 1972.

However, as much as there are regulatory prescriptions that State parties are called upon to comply with, in good faith, it is well known that provisions of Article IV of the Registration Convention do not cast a specific obligation to register space objects within a defined timeframe. Consequently, state parties may be ambivalent and may register a space object after long delays or not at all.

It is relevant to note that the Committee for Space Research (COSPAR)[27] maintains its independent international launch list (registry) of space objects launched in outer space[28], and allots an international ID to each space object entered into its List which is available on-line. It is so important to note that the OOSA and COSPAR registry is linked so that COSPAR ID details are also available on the online OOSA registry.

It is recognized that the US-North American Defence Space Command (NORAD)[29] maintains what is accepted to be the most comprehensive catalogue of space objects or part thereof orbiting in outer space, each assigned a NORAD Catalogue Number. NORAD provides access online to its satellite catalogue data[30] which is, arguably, one of the best databases available to commercial SSA/STM data providers. It is generally also believed that China and Russia also have similar extensive catalogues of space objects. Thus, the difficulty with STM operators which must access physical identification for space objects from multiple sources, but mostly depend on their own observation database, is quite clear.

(ii) Identification of Space Object by its Radio Frequency Emissions

Although, the International Telecommunications Union, the international regulator for spectrum and GSO, as well as for international coordination of frequencies to obviate harmful interference, maintains a Master Frequency Register in which RF allocations to state parties, the details of the RF identification number is provided only to the state party in question. The ITU RF identification numbers are not linked to the OOSA international registry for space objects.

[27] Committee on Space Research, https://cosparhq.cnes.fr/.
[28] COSPAR : Launch https://cosparhq.cnes.fr/launchlist/.
[29] North American Aerospace Defense Command (NORAD) : https://www.norad.mil/
[30] Satellite Catalogue (SATCAT) : https://celestrak.org/satcat/search.php

Thus the absence of effective global structures for strengthening access to facilitate more accurate and efficient day-to-day STM operations and SSA (SDA) is a matter of serious concern. As the world moves to new technological advancements with new types of space activities, including increasing military space activities, it is evermore imperative to undertake effective tracking of satellites and launch vehicles; spacecraft launches; other direct ascents to Outer Space and to Near Earth. As has been said, the regulatory and technological challenge in respect of aerospace vehicles is they travel at vastly different velocities- short to long duration- at varying altitudes. Currently, countries are not equipped to manage control areas in the upper stratosphere–that is at altitudes more than 21 -23km [27], much less surveillance, ATM/CNS; GNSS. Thus, the imperative for providing Coordinated Controls (i.e coordinated aviation and space activities controls) is a complex task.

(iii) STM and Coordinated Controls for Near space[31]: As has already been discussed in context to Near Space, currently, countries are not utilizing altitudes more than 21 -23km [27], as such not equipped to manage control areas in the upper stratosphere. Needless to state that not only would this require significant upgradation of the Global Navigation Satellite System at the international level, and Air Traffic Management/ Communication, Navigation, and Surveillance systems at national levels, but importantly surveillance per se of national air space. Furthermore, the existing STM/SSA mechanisms would also have to develop the capability to provide STM/SSA for Near Space 100 km to 160 km.

III. *Off* Earth Space Economy

Recent Developments -Commercial Planetary Resource Utilization & Colonization

The quest for the Moon has been a long time in the making, ever since, the first time humans - Neil Armstrong and Edwin “Buzz” Aldrin – set foot on the lunar surface on 20th July 1969. Space faring powers have been routinely undertaking deep space exploration missions to the far planets. Other countries have also been participating in scientific and deep space missions by providing scientific

[31] Jakhu, Ram S and Pelton, Joseph N: Space Traffic Management and Coordinated Controls for Near space,(in Global Space Governance (2017) , An International Study. Space and Society. Springer, Cham. https://doi.org/10.1007/978-3-319-54364-2_13 https://link.springer.com/chapter/10.1007/978-3-319-54364-2_13#chapter-info

payloads. The other space faring nations Russia[32], China[33], Japan[34] and India[35] have also landed spacecraft on the Moon. Only the US has landed a man on the Moon. It is important to note that next year in addition to the US, Russia, Japan, and India, the United Arab Emirates and South Korea have also announced lunar missions[36].

The US is the first and only country to unilaterally initiate the Artemis Program lunar program in 2019[37] which aims to return humans to the moon by 2024, undertake the commercial utilization of lunar resources, and establish a crewed lunar base by 2030[38]. The Artemis Accords, bilateral political understanding engagements between the US and participating countries. The agreements are not binding in international law, contain guidelines or a code of conduct that makes references to the existing Outer Space Treaty framework, so seemingly closely tied to existing norms of space law. Indeed, several countries have raised doubts about whether the accords have been deliberately designed to reassure countries that it is not, a set of instructions to participating states on how to behave from a hegemonic power. Others have raised concerns that by establishing a *practice on the moon*, the Accords may potentially influence any subsequent governance framework for human settlements on Mars and beyond[39].

Already in 2015, Congress passed a law to legalize mining in outer space—the first of its kind in the world. Firms that someday manage to mine asteroids for

[32] The USSR had initiated its lunar program in the 1960's and had conducted pioneering robotic missions to bring back lunar material in 1976. The Soviet program was shut down after the last lunar mission Luna 24 in 1976. In 2022 Russia decided rekindle its lunar program pursuant to the successful Luna 25 mission. Russia also intends to collaborate with China, on an International Lunar Research Station by 2035.
See: https://www.space.com/russia-rekindle-moon-program-luna-25-launch; Russian Space Research Institute see: http://www.iki.rssi.ru/eng/moon.htm

[33] China: The Chinese lunar program started in 2007. The program includes lunar orbiters, landers, rovers, and sample return spacecraft. In January 2019 China landed a orbiter and rover on the lunar south pole, Aitken Basin. China is poised to undertake a crewed mission to the Moon. The China national Space Administration head Zang Keiian announced that China would build a scientific research station on the Moon's south pole in the Next ten years (2019-2029).
See: http://english.cssar.cas.cn/ic/CNCOSPAR/201410/W020141016603613596668.pdf; https://www.space.com/topics/china-space-program; https://spacenews.com/china-claims-progress-on-rockets-for-crewed-lunar-landings-and-moon-base/

[34] Japan: Lunar Program – Following the Hiten probe in 1990, Japan landed its second lunar probe Selene (nick named Kaguya) in 2007. For details see: https://www.planetary.org/space-images/hiten-mosaic;
and https://www.isas.jaxa.jp/en/missions/spacecraft/past/kaguya.html

[35] India: India has launched two lunar missions Chandrayaan 1 in 2008 which for the first time detected water on the lunar south pole . See https://www.isro.gov.in/water-moon. Chandrayaan 2 in 2019 which was a partial success.
See: https://www.isro.gov.in/chandrayaan2-home-0

[36] These six countries are about to go to the Moon :
See https://www.nature.com/articles/d41586-022-01252-7

[37] US National Aeronautics and Space Administration: Artemis Program at https://www.nasa.gov/specials/artemis/
Also See: The Planetary Society: Artemis, the NASA Moon Landing Program at https://www.planetary.org/space-missions/artemis

[38] Newman Christopher: https://www.space.com/amp/artemis-accords-why-many-countries-are-refusing-to-sign-moon-exploration-agreement

[39] All nineteen partners who have agreed to the accords with the US are natural collaborators on the Artemis Program and will easily adhere to the stated principles. Japan is keen to engage in lunar exploration. Luxembourg has dedicated legislation allowing for space mining and has also signed an additional collaborative agreement with the US. The UAE and Australia are both actively trying to establish collaborative links with the broader space industry, so this represents a perfect opportunity for them to build up capacity. Italy, the UK and Canada all have ambitions to develop their space manufacturing industries and will see this as a chance to grow their economies. The contents of the accords are relatively uncontentious. Throughout, there is reference to the existing Outer Space Treaty framework, as such, the accords appear deliberately designed to reassure countries that this is not an instruction on how to behave from a hegemonic power.

resources like water or precious metals would other countries are following suit: Luxembourg passed a similar measure last year and earmarked €200m to invest in space-mining companies. At the UN Committee on Outer Space, Russia criticized the US citing its "total disrespect" for international law. Critics said that the US was conferring rights that it had no authority in international law to confer. Indeed, the celebrations around the 50th anniversary of the Outer Space Treaty, 1967 were dominated by learned discussions on whether the further development of the international law of outer space should adopt the *Lex ferenda* (future law) approach or the *Lex de lege lata* (law as it exists) approach.

The main themes involved various ways for interpreting the OST in specific respect of the *explicit and implicit prohibition on acquisition of territorial property rights in outer space, including the Moon and other celestial bodies*[40] (Article II); and apparent lack of clarity on how the *common interest principle* (Article I, Paragraph 1) in context to sharing or division of space resources. Some discussions also involved the extent of applicability, or otherwise of Articles VI and VII to commercial enterprises.

F. The Future of Outer Space Treaty, 1967

What is at Stake: *Outer Space for peace, sustainability, international cooperation, and collaboration or war?*

Without going into further discussion about the Artemis Program and the Artemis Accords, or lunar projects of other states, it is pertinent and timely to recall that in 1958 the question which was thrust centre stage was *Who Owns Space?* The answer was definitely provided in the Outer Space Treaty which provides a regulatory mechanism for the exploration and use of Outer Space, including the Moon and other celestial bodies for peaceful purposes. The space treaties have served us all well for over fifty-five years since 1967, notwithstanding sharp rivalries and adversarial geopolitical relationships. How did the transformation take place given the two rival superpowers on opposite sides of the ideological divide?

The answer lies in the *State Practice* established by the USA and USSR (and subsequently other space-faring powers) through their continuing practice of undertaking the exploration and use of outer space, including the Moon and other celestial bodies, in a manner consistent with the OST *Principles*. To properly

[40] Stephan Hobe, "Adequacy of the Current Legal and Regulatory Framework Relating to the Extraction and Appropriation of Natural Resources" McGill Institute of Air & Space Law, Annals of Air and Space Law 32 (2007): 115-130.
Dr. Hobe explains that the Outer Space Treaty "explicitly and implicitly prohibits only the acquisition of territorial property rights" but extracting space resources is allowable. It is generally understood within the space law authorities that extracting space resources is allowable, even by private companies for profit. However, international space law prohibits property rights over territories and outer space land. Hobe further explains that there is no mention of "the question of the extraction of natural resources which means that such use is allowed under the Outer Space Treaty" (2007: 211). He also points out that there is an unsettled question regarding the division of benefits from outer space resources in accordance with Article, paragraph 1 of the Outer Space Treaty.

understand the essence, substance, and authority of the principles in the Treaty, it is imperative to understand the relationship between the Outer Space Treaty and international customary law.

We will recall that (i) Article 38 (1)(b) Statute of the International Court of Justice, 1945 (ICJ, The Court) specifies that customary international law is one of the traditional sources of international law; (ii) that in the 1951 Fisheries Case, ICJ settled the law that rules of customary law bind *all* states[41] *albeit*, the rule may be subject to so-called 'persistent objector' rule, and the rule may be subject to 'localized' rules in the form of local, bilateral, special or regional customary law[42]; and are, therefore, unlike the conventional rules which bind only those state parties to a relevant treaty[43]; and that (iii) the rules of customary international law are applicable to the *lex specialis* (doctrine of interpretation) of international space law[44]. Furthermore, we will note that (iv) in 1969 - ICJ in the *North Sea Continental Shelf Cases*[45] - confirmed that customary law, which generally evolves over time, is derived from sufficient evidence (in the circumstances) of both the *settled practice* and the *opinion Juris,* which is described as *a belief that this practice is rendered obligatory by the existence of a rule of law requiring it*[46] (i.e., recognition as law). Thus, to assert a claim that a particular rule of customary law exists, would require that assertion to be substantiated by the existence of related *state practice* and *opinio juris.*

When we consider state practice related to Article VI (international responsibility) and VII (international Liability) we recognize the unique transformation or evolution in context to *state responsibility* which is clearly distinguished from traditional international law as stated in the ILC *Articles on Responsibility of States for Internationally Wrongful Acts (2001)*[47] which elaborates that state responsibility arises only if there is a complaint of act or omission or commission is imputed to a state, in other words, if the such state fails to discharge its obligation[48]. However, the Outer Space Treaty contemplates the international responsibility of a state

[41] See: ICJ Rep 116, pg.131 in Fisheries Case (United Kingdom V. Norway) (Judgment)(1951) – rule may be subject to so-called 'persistent objector' rule
See: ICI Rep 6 in Rights of Passage over Indian Territory Case (Portugal v. India) (Judgment) (1960)
–Also: supra n.8 : Prof. Ram S Jakhu and Prof. Steven Freeland, ' The Relationship Between The Outer Space Treaty And Customary International Law' section 3.
[42] See: ICI Rep 6 in Rights of Passage over Indian Territory Case (Portugal v. India) (Judgment) (1960)
[43] Vienna Convention on Law of the Treaties 1969, article 31 and 32. See https://legal.un.org/ilc/texts/instruments/english/conventions/1_1_1969.pdf
[44] See: for example, Vladlen S Vereshchtin and Gennady M Danilenko, 'Custom as a Source of International law of Outer Space' (1985) ,13:1 *Journal of Space Law* 22.
Also: Prof. Ram S Jakhu and Prof. Steven Freeland, 'The Relationship Between The Outer Space Treaty And Customary International Law', presented at 59th IISL Colloquium on Law of Outer Space (2016) , pub. Eleven International Publishing
[45] ICJ Rep 3, para 77 (1969)
[46] *Id.*
[47] International Law Commission: 'Articles on Responsibility of States for Internationally Wrongful Acts' (2001) https://legal.un.org/ilc/texts/instruments/english/draft_articles/9_6_2001.pdf
Also: Ian Brownlie, *Principles of Public International Law* (7th ed. 2008), 436
[48] Bin Cheng : states that ' failure to subject non-governmental national activities to authorization and continuing supervision would constitute an independent and separate cause of liability' Bin Cheng : 'Article VI Of The Outer Space Treaty, 1967 Revisited'(1998),26 *Journal of Law* 7 ,13-14

party for its national activities (governmental and private commercial entities), without the requirement of *imputability* to that state[49]. As such, non-fulfilment of the Article VI obligation would trigger state responsibility under international law[50]. In fact, consistent state practice with *opinio juris* has evolved in respect to the Article VI such that several space-faring powers and non-space-faring powers have harmonized treaty obligation of *international responsibility* into national law, policies or other mechanisms, as the case may be.

In fact, failure on part of a state party to fulfil the obligation inherent in Article VI may also trigger international liability under Article VII provisions. As such, international liability for damage can be triggered pursuant to Article VI, when read together with Article VII which states that a '*launching state'* is one that *launches or procures the launching of a space object into outer space, including the Moon and other celestial bodies, and each state party from whose territory or facility an object is launched[51].* Furthermore, it is clear the scope international liability is limited to a *launching state* which may be held *internationally liable for damage to another state party* to the *Outer Space Treaty or to its natural or juridical persons by a such object or its component parts on the Earth, in air space and in outer space, including the Moon and other celestial bodies.* Many states have adopted national laws to give effect to Article VII.[52] It may also be noted that state liability under articles VI and VII, as well as customary international law that emerges from them, is independent of any liability that might arise under the Liability Convention,[53] or under general international law, or possibly under the national law of a defendant state. No state has expressly protested or declared its intention not to assume international responsibility for activities of its governmental (public) or non-governmental (private) as contemplated in Article VI nor in respect of international liability for damage to another state party as contemplated in Article VII.

For the last fifty years, member states, and their non-governmental entities have been undertaking space activities consistent with the *principles*, leaving no doubt that the state practice of member states amplifying the conclusion that principles and rules of customary international law are applicable to the exploration and use

[49] Prof. Ram S Jakhu and Prof. Steven Freeland, 'The Relationship Between The Outer Space Treaty And Customary International Law', presented at 59th IISL Colloquium on Law of Outer Space (2016) pub. Eleven International Publishing. See: Manfred Lachs, The Law of Outer Space: An Experience in Contemporary Law-Making (1972), 122
"…acceptance of this principle [in article VI of the Outer Space Treaty] removes all doubts concerning immutability…. States have taken upon themselves the explicit obligations that such activities will require their 'authorization and continuing supervision'…"
[50] *Supra* note 50.
[51] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, Article VII, Jan. 27, 1967, https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/outerspacetreaty.html.
[52] For analysis of national space laws of fifteen states, see Ram S Jakhu (ed.*) National Regulation of Space Activities* (2021). The text of a number of states' national space laws are available online at http://www.oosa.org/ourwork/nationalspacelaw?index.html.
[53] Convention on International Liability for Damage Caused by Space Objects, 961 UNTS 187, Mar 29, 1972, https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introliability-convention.html.

of outer space binding each and every state,[54] regardless of any specific treaty obligations, which it may, or may not, have formally accepted.[55]

As the technological capability and national space objectives advance activities beyond Earth orbit for undertaking commercial exploitation of planetary resources, including asteroids and the Moon, and for the colonization of the Moon and Mars, important and complex regulatory questions and solutions will be required. For example, there will be questions about the status of space objects or other products manufactured in outer space; registration of space objects; status of the nationality of humans living or born on other planets, law, and order, safety and security, and governance. These solutions can only be found through the international multilateral mechanism of the UN.

There is no impediment for nations to agree on an international treaty on management, and commercial utilization of planetary resources consistent with the Outer Space Treaty, 1967. Nor is there merit in criticizing the UN forums including COPOUS for the absence of consensus. That strategy is akin to the old tradition of shooting the messenger. The fact is that it is that consensus or the absence of it is the direct outcome of the conduct of the super space powers - responsible space powers that are the principle dramatis personae. In conclusion, to advance arguments as an either-or choice does warrant merit. It is, therefore, not a question of whether the development of international space law should adopt either the *Lex ferenda* (future law) approach or the *Lex de lege lata* (law as it exists) approach. The point is whichever approach is adopted by the member states, international space law must be developed must be in conformity with the Outer Space Treaty and through the UN institutional forums. That is the only way in which space activities should be advanced in the 21st century, for the benefit of the present and future generations.

[54] ICI Rep 6 in Rights of Passage over Indian Territory Case (Portugal v. India) (Judgment) (1960) – rule may be subject to 'localized' rules in the form of local, bilateral, special or regional customary law.
: the rule may be subject rule may be subject to 'localized' rules in the form of local, bilateral, special or regional customary law.
[55] Prof. Ram S Jakhu & Prof. Steven Freeland, *The Relationship Between The Outer Space Treaty And Customary International Law*, ELEVEN INTERNATIONAL PUBLISHING, (2016).

THE CASE LAW OF THE COURT OF JUSTICE OF THE EU ON THE 1999 MONTREAL CONVENTION

Michael Chatzipanagiotis

I. The EU and 1999 Montreal Convention

The 1999 Montreal Convention on the air carrier liability for the international carriage of persons, baggage and cargo[1] replaced and modernized the 1929 Warsaw Convention[2] and its amending instruments, despite retaining many provisions of the WC29. Among those instruments was the European Community Regulation 2027/1997 on the liability of Community air carriers.[3]

MC99 is open for signature by also Regional Economic Integration Organizations, such as the European Union (EU).[4] The MC99 was signed by the (then) European Community on 9 December 1999 and entered into force, regarding the European Community, on 28 June 2004. EU2027 was amended to clarify that the liability of air carriers would be hereinafter governed by MC99 and would apply also to carriage within a single Member State (MS).[5] Ever since, MC99 provisions have been an integral part of the EU legal order,[6] save for the provisions on cargo.

This rendered the Court of Justice of the EU (CJEU) competent for the interpretation of the MC99 provisions on passengers and luggage. Under Art. 19(3)(b) Treaty of the EU and Art. 267 of the Treaty on the Functioning of the EU, the CJEU can give preliminary rulings, at the request of courts the EU MS, on the interpretation of Union law. Although such ruling is binding only on the referring national court,[7] in practice national courts abide by the interpretation given by the Court.[8]

[1] Convention for the Unification of Certain Rules for International Carriage by Air, May 28, 1999, 2242 U.N.T.S. 350 [hereinafter MC99].
[2] Convention for the Unification of Certain Rules to International Carriage by Air, Oct. 12, 1929, 137 L.N.T.S. 11 [hereinafter WC29].
[3] Council Regulation 2027/97, 1997 O.J. (L 285), 1 [hereinafter EU2027].
[4] MC99, Art. 53(2).
[5] European Parliament and Council Regulation 889/2002, 2002 O.J. (L 140), 2.
[6] Case C-344/04, IATA et al. v Department of Transport, 2006 ECR I-00403, para. 36.
[7] Case C-52/76, Benedetti v Munari, 1977 ECR 163, para. 26; Case C-446/98, Fazenda Pública v Câmara Municipal do Porto, 2000 ECR I-1445, para. 49.
[8] There is no unanimity on the exact binding effect of the CJEU ruling on third parties – see European Parliament Research Service, *Briefing on Preliminary Reference Procedure*, 11, with further references (2017), https://www.europarl.europa.eu/RegData/etudes/BRIE/2017/608628/EPRS_BRI(2017)608628_EN.pdf .

II. The interpretational principles applied by the CJEU judgments on MC99

The CJEU has repeatedly underlined[9] that it applies on the MC99 the interpretational criterial of Art. 31 of the Vienna Convention on the Law of Treaties,[10] which codifies rules of general international law and stipulates that a treaty must be interpreted in good faith in accordance with the ordinary meaning to be given to its terms in their context and in the light of its object and purpose.

Furthermore, the Court has stated that the concepts contained in the MC99 must be interpreted uniformly and autonomously, so that consideration is taken not to the various meanings that may have been given to them in the internal laws of the Member States of the EU, but to the rules of interpretation of general international law, which are binding.[11]

In the following sections, we examine how the court applied these principles to individual cases regarding the MC99.

III. Scope of the MC99

In the case *Prüller-Frey*[12], the Court was asked whether the MC99 and EU2027 would apply to a claim of a passenger of a small gyroplane, who was physically injured during a domestic gratuitous flight. The aircraft was owned and operated by a physical person. The purpose of the flight was connected to the aerial view of property in the context of a real-property transaction.

The Court reminded that Article 1 EU2027 rendered MC99 applicable to carriage by air within a single MS. Nonetheless, the Regulation applies only to 'air carriers', which are air transport undertakings with valid operating licenses, and to 'Community air carriers', which are air carriers with a valid operating license granted by a Member State.[13]

The Court ruled that EU2027 and the MC99 were inapplicable to such a claim, because there was neither an 'international flight', nor reward from the passenger for the flight nor a 'Community air carrier'.[14]

In the case *Wucher Helicopter*[15] Mr. Sander, an occupant of a helicopter, was injured while flying on a flight operated by a contractor of his employer. The

[9] E.g. Case C-63/09, Walz v Clickair, 2010 I-04239, para. 23; Case C-532/18 GN v ZU as administrator in the insolvency of Niki Luftfahrt, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:62018CJ0532, para. 31 (2019).
[10] Convention on the Law of Treaties, May 23, 1969, 1115 UNTS 331 [hereinafter VC].
[11] Case C-213/18 Guaitoli v easyJet Airline, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:62018CJ0213, para. 47 (2019).
[12] Case C-240/14, Prüller-Frey v Brodnig and Axa Versicherung, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:62014CJ0240, (2015).
[13] Id., paras 25-34.
[14] Id., para. 35.
[15] C-6/14 Wucher Helicopter and Euro-Aviation Versicherungs v Santer, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:62014CJ0006, (2015).

purpose of the flight related to Mr. Sander's professional duties, which were to ensure the safety of a glacier area and the ski pistes. Mr Sander flew as a 'guide familiar with the terrain' whose task was to open the helicopter door at the pilot's direction and then hold it open in a particular manner and for a particular period of time. The question arose whether the event was an 'accident' suffered by a 'passenger'.

The Court noted that it was undisputed on the facts that the helicopter operator was an 'air transport undertaking' under Regulation 2027/97.[16] It then observed that whether Mr Santer is a 'passenger' under MC99, entails ascertaining whether the purpose of the flight was the 'carriage of passengers' under MC99. Such requirement was fulfilled, since the purpose of the flight was carrying employees to the places where they had to perform their usual tasks.[17] The Court also remarked that this does not change by the fact that no ticket was issued in that case, since under Art. 3(5) MC99, the existence or validity of the contract of carriage is not affected by the non-observance of the documentation requirements established in that Article.[18] Therefore, the Court ruled that there is a 'passenger' within the meaning of Article 17 MC99, once that person has been carried on the basis of a 'contract of carriage' within the meaning of Article 3 MC99.

This judgment is aligned with the prevailing view on the notion of 'passenger', which accepts that 'passenger' is any person, other than a crew member, carried on board the aircraft with the consent of the carrier.[19]

IV. Liability for death or bodily injury

A. "Accident"

In the case *Niki Luftfahrt*[20] the Court was called to clarify whether the concept of the 'accident' required an event stemming from a hazard typically associated with aviation. The case concerned bodily injury of a passenger caused by spilling a cup of hot coffee. It could not be established whether the event was caused by a defect in the folding tray table or due to vibration of the aircraft.

The Court noted that the ordinary meaning of the 'accident' is '*an unforeseen, harmful and involuntary event'*.[21] It then referred to the preamble of the MC99 and its preparatory works, to conclude that the balance of interests established in the

[16] *Id.*, ¶35.
[17] *Id.*, ¶40-41.
[18] *Id.*, ¶37-39.
[19] See details in SHAWCROSS AND BAUMONT, AIR LAW, para.VII [662] (David McLean ed.)(Sept. 20, 2022); Elmar Giemulla, *Art. 1 MÜ*, paras 47-49 (July 2022) *in* 3 FRANKFURTER KOMMENTAR ZUM LUFTVERKEHRSRECHT, MONTREALER ÜBEREINKOMMEN (Elmar Giemulla & Ronald Schmid eds); H. DRION, LIMITATION OF LIABILITY IN AIR LAW, 54-55, (1954).
[20] Case C-532/18, GN v ZU as administrator in the insolvency of Niki Luftfahrt, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:62018CJ0532, (2019).
[21] *Id.*, ¶35.

Convention concerned both a swift and equitable compensation of the passengers and avoiding excessive liability of the carrier. Such balance would be distorted, if a connection with typical aviation risks was required for an 'accident'.[22] Therefore, the Court ruled that such connection was not required.

The judgment on the *Niki Luftfahrt* case is important for two reasons. First, it gave an EU-wide uniform definition of an 'accident'. This definition is slightly different than the definition(s) used in other jurisdictions, in that it does not explicitly require an event 'external' to the passenger.[23] By reference to the preparatory works of the Convention, the CJEU regards that externality can be covered by Art. 20 MC99, which exonerates the carrier if the damage was caused or contributed by the negligence of the passenger.[24] This appears to create a wider scope of the 'accident' compared with the prevailing view so far. However, such difference is expected to have barely any importance in practice, because the requirement of 'externality' can be covered by the 'unforeseeability' of the event.[25]

Second, this judgment solved, concerning the EU Member States, a dispute on whether it was necessary that an event can be an 'accident', only if it regarded a risk typical in aviation. In some European jurisdictions, the prevailing view in both judicial judgments and legal doctrine was that connection with such risks was necessary, to avoid overextension of the carrier's liability.[26] However, in the UK, such requirement has been rejected.[27] In the US, courts have adopted divergent views.[28]

In the case *Altenrhein Luftfahrt*[29] the Court was asked whether physical injury sustained during a harsh landing, yet within the normal operating range of the aircraft concerned, could be an 'accident'.

The Court examined whether the unforeseeability of a harmful event as a requirement of an 'accident' must be evaluated by reference to the passenger concerned or to the normal operating range of the aircraft on board which that event occurred. To avoid paradoxical results, i.e. that the same event is foreseeable for some passengers but not for others, and to ensure legal certainty

[22] *Id.*, ¶41-42.
[23] Air France v Sacks (1985) 470 US 392, 406 'an unexpected or unusual event or happening that is external to the passenger' (US); In re Deep Vein Thrombosis and Air Travel Group Litigation [2006] 1 AC 495, at [33] (Lord Steyn) (Eng.). The same definition is applied by German courts, see Bundesgerichtshof [BGH] [Federal Court of Justice] Nov. 21, 2017, NEUE JURISTISCHE WOCHENSCHRIFT [NJW], 861, 2018 (jedes auf einer äußeren Einwirkung beruhende, plötzliche Ereignis).
[24] C-532/18 *Niki Luftfahrt*, *supra* note 20, ¶38.
[25] See comments below on the *Altenrhein Luftfahrt* case.
[26] E.g. Bundesgerichtshof [BGH] [Federal Court of Justice], Nov. 21, 2017, *supra* (Ger.); Oberster Gerichtshof [OGH] July 2, 2015, 2 Ob 58/15s, https://www.ris.bka.gv.at/Dokumente/Justiz/JJT_20150702_OGH0002_0020OB00058_15S0000_000/JJT_20150702_OGH0002_0020OB00058_15S0000_000.pdf (Austria); Erich Schönwerth, *Zur luftfahrttypischen Kausalität*, 15 TransR 11 (1992); EDGAR RUHWEDEL, DER LUFTBEFÖRDERUNGSVERTRAG, paras 330 et seq. (3rd ed. 1998), ¶330 et seq.;.
[27] KLM Royal Dutch Airlines v Morris [2001] EWCA Civ 790, at [25] (Eng.).
[28] See the analysis in Wallace v Korean Air, 214 F.3d 293, 298-299 (2d Cir. 2000).
[29] Case C-70/20, YL v Altenrhein Luftfahrt, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:62020CJ0070, (2021).

for carriers, the Court rejected from the outset a subjective interpretation of unforeseeability.[30] Moreover, the Court observed that a landing not exceeding the limits laid down by the procedures applicable to the aircraft in question and which occurs in accordance with those procedures and taking into account the rules of the trade and best practice in aircraft operation, cannot be regarded as 'unforeseen'.[31] Besides, under the facts of the case, there was no observable pilot error, while harsh landings were considered safer for the particular airport.[32] Thus, there was no "accident", although the passenger experienced the harsh landing as an unforeseeable event.[33]

The result reached by the CJEU is correct and based on the definition of 'accident' adopted by that Court. Courts in other jurisdictions, which require that the accident is also an event 'external to the passenger', have reached the same conclusion in similar cases, i.e. when a harmful event occurred during nominal operations of the aircraft, irrespective of the behaviour of any other persons, by referring to the externality, not to the unforeseeability.[34] Therefore, despite the differentiated view of the CJEU in the definition of the 'accident', in practice the outcome of the legal examination would be mostly the same as in other jurisdictions.

B. "Bodily injury"

In the *Laudamotion* case,[35] the Court was called to clarify whether pure psychological injury, i.e. without connection to any bodily injury, could be recoverable under Art. 17(1) MC99. The case concerned a passenger who developed Post Traumatic Stress Disorder after disembarking via the emergency exit, during an evacuation process, and being hurled several meters through the air by the jet blast from the aircraft engine which had not been shut down.

The Court first examined the ordinary meaning of 'bodily injury'. It noted that 'injury' refers to an impairment of an organ, tissue or cell due to an illness or accident, whereas 'bodily' refers to the physical part of a living entity, namely the human body.[36] It then observed that pure mental injury cannot fall under bodily injury.[37] Nevertheless, the fact that the concept of 'bodily injury' was used in the wording of Article 17(1) does not necessarily presuppose that the authors of that convention intended to exclude such injuries from the ambit of MC99. The preparatory works of the Convention revealed that the concept of 'bodily injury' was adopted bearing in mind that (a) in certain States, damages for psychological injuries can be recovered under certain conditions, (b) case-law develops in this area, and (c) it is not envisaged that there will be interferences with that

[30] *Id.*, ¶34-36.
[31] *Id.*, ¶37-40.
[32] *Id.*, ¶ 41.
[33] *Id.*, ¶42-43.
[34] *Air France v Sacks* (1985) 470 US 392, 406; *Barclay v British Airways Plc* [2008] EWCA Civ 1419, at [35]-[36] (Eng.).
[35] Case C-111/21 *BT v Laudamotion GmbH*, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:62021CJ0111, (2022.
[36] *Id.*, ¶23.
[37] *Id.*, ¶24.

development, which depends on case-law in areas other than international carriage by air.[38]

Subsequently the Court referred to the objective of the Convention to ensure consumer protection and equitable compensation in the form of restitution. Such need requires the equal treatment of passengers who have suffered injuries, whether bodily or psychological, of the same severity resulting from the same accident. Since psychological injury may be as severe as a bodily injury, Art. 17(1) must be interpreted as allowing recovery for pure psychological injuries.[39]

At the same time, equitable compensation of passengers needs to be reconciled with the interest of carriers to be protected from exaggerated claims and not to have their liability overextended. Therefore, the aggrieved passenger has to demonstrate, by means in particular of a medical report and proof of medical treatment, the existence of an adverse effect on his/her psychological integrity suffered as a result of an 'accident' of such gravity or intensity that it affects his/her general state of health, particularly in view of its psychosomatic effects, and that it cannot be resolved without medical treatment.[40]

This is one of the most important CJEU judgments on the MC99. Currently, the prevailing view in courts and in legal doctrine[41] is based on the judgment of the US Supreme Court in *Floyd*, according to which there could be no compensation for purely mental or psychic injuries.[42] Following *Floyd*, some courts ruled that mental injury could be compensated only if it resulted from bodily injury.[43] However, other courts accepted that mental injury is recoverable, if it results in proven physical manifestations.[44] The CJEU judgment in the *Laudamotion* case in effect largely concurs with the latter judgments, but without the elaborate justification on the need of 'bodily' injury. In legal doctrine there have been voices advocating for recoverability of damages for mental injury, based on the inseparability of body and mind.[45] This seems to be the actual approach of the CJEU, but also of the Supreme Court of Israel in an older case[46]. Hence, since the CJEU judgment in the *Laudamotion* case, pure mental injury is recoverable, at least in the EU Member States, while the influence of this judgment on the courts of non-EU MS remains to be seen.

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[38] *Id.*, ¶26.
[39] *Id.*, ¶27-29.
[40] *Id.*, ¶31-32.
[41] See Ronald Schmid, Art. 17 MÜ, ¶4-4b (November 2021) in MONTREALER ÜBEREINKOMMEN, supra note 19; PABLO MENDES DE LEON, INTRODUCTION TO AIR LAW 200, 205-209 (10th ed. 2017).
[42] Eastern Airlines, Inc. v. Floyd, 499 U.S. 530 (1991), referring to Art. 17(1) WC29.
[43] Ehrlich v. Am. Airlines, Inc., 360 F.3d 366, 368 (2d Cir. 2004), *Re Air Crash at Little Rock Arkansas, June 1, 1999; Lloyd v American Airlines Inc 291 F 3d 503 (8th Cir, 2002),* Jack v. Trans World Airlines, Inc., 854 F.Supp. 654 (N.D. California 1994), referring to Art. 17(1) WC29; Bandary v. Delta Air Lines 2019 WL 9244788 (C.D. California); Pel-Air Aviation Pty Ltd v Casey [2017] NSWCA 3; *Plourde v Service Aérien FBO Inc (Skyservice) 2007 QCCA 739 (Canada).*
[44] *King v Bristow Helicopters Ltd [2002] UKHL 7, Doe v Etihad Airways 870 F.3d 406 (6th Cir. 2017).*
[45] E.g. Ruwantissa Abeyratne, *Morris v KLM Royal Dutch Airlines: At the crossroads of Warsaw and Montreal,* 26 Annals Air & Space L. 283, 287-299; René Mankiewicz, The Application of Article 17 of the Warsaw Convention to Mental Suffering Not Related to Physical Injury, 4 Annals Air & Space L. 187 (1979)
[46] *Cie Air France v. Consorts Teichner*, 23 Europ.Trans.L. 87 (1988).

C. Exoneration of the carrier

In the *Austrian Airlines* case[47], a passenger was injured, because she fell while disembarking the aircraft via an open, mobile stairway with a handrail on each side. The passenger was holding her handbag in her right hand, carrying her son in her left arm and not using either of the handrails. The national trial court did not find any problems with the condition of the ladder. The court asked the CJEU whether there could an 'accident' under such circumstances and whether the carrier could be wholly exonerated under Art. 20 MC99[48].

The CJEU clarified that the definition of the accident did not require any fault of the carrier. Accordingly, where, for no ascertainable reason, a passenger falls on a mobile stairway set up for the disembarkation of the passengers of an aircraft and injures himself/herself, there is an 'accident' under Art. 17(1) MC99.[49]

Furthermore, the Court observed that the possibility of exoneration under Art. 20 is part of the balance of interests of the MC99. The national court has to ascertain whether the carrier has proved negligence or a wrongful act or omission by the passenger and to assess the extent to which the passenger's behaviour caused or contributed to his/her damage, in order to exonerate respectively the carrier from its liability.[50]

In this judgment the Court affirmed that the notion of 'accident' is unrelated to any requirements of fault. The 'accident' is defined by reference to only objective elements as are the rest of the requirements of Art. 17(1). Art. 17(1) governs the 'actus rei' of the carrier's liability for death or injury of passengers. At the same time, the evaluation of the passenger's behavior and its influence on the carrier liability occurs under Art. 20 MC99, on a case-by-case basis. A question in practice is how exactly to take into account the passenger's contributory negligence when calculating the compensation due by the carrier: should the total amount of damages be calculated and reduced by the percentage of contributory (comparative) negligence and then apply the liability limit or apply the said percentage to the liability limit? It is accepted that the first method is applicable.[51]

[47] Case C-589/20, JR v Austrian Airlines, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:62020CJ0589, (2022).
[48] Art. 20 MC99, entitled 'Exoneration', reads:
'If the carrier proves that the damage was caused or contributed to by the negligence or other wrongful act or omission of the person claiming compensation, or the person from whom he or she derives his or her rights, the carrier shall be wholly or partly exonerated from its liability to the claimant to the extent that such negligence or wrongful act or omission caused or contributed to the damage …'.
[49] *Id.*, ¶22-23.
[50] *Id.*, ¶28-30, 34.
[51] DRION, *supra* note 19, 124, regarding the respective provision of WC29; SHAWCROSS AND BAUMONT, AIR LAW, *supra* note 19, ¶VII [512]; FABIAN REUSCHLE, MONTREALER ÜBEREINKOMMEN, Art. 20 MÜ, ¶12 (2nd ed. 2011).

V. Delay and exclusivity of the MC99

A. Exclusivity of the MC99

The *IATA and ELFAA* case[52] was the first major CJEU judgment to clarify the relationship between the MC99 and the Regulation 261/2004 (EU261).[53] Art. 29 MC99 provides that in the carriage of passengers, baggage and cargo any action for damages, however founded, can only be brought subject to the conditions and such limits of liability as are set out in the Convention.[54] In the present case, the claimants challenged before the Administrative Court of England and Wales the validity of the measures that the UK had enacted to implement EU261, arguing i.a. that Art. 6 EU261, which established for the duty of the carrier to provide assistance and care to passengers of delayed flights, was incompatible with Arts 19, 22 and 29 MC99, as it does not limit the carrier's liability according to Art. 22(2) nor does it provide for any exoneration grounds in accordance with Art. 19 MC99.

The CJEU first clarified that national courts do not have the power to invalidate EU acts and have to refer such issues to the Court.[55] Then the Court reiterated the objective of the MC99 to provide protection to passengers as consumers, as stated in its preamble.[56] Subsequently, the CJEU made a subtle distinction between two types of damage incurred by passengers of delayed flights: First there is damage identical for every passenger, which may take the form of standardised and immediate assistance or care for everybody concerned, through the provision, e.g. of refreshments, meals, accommodation etc. Second, there is individual damage suffered by a passenger inherent in the reason for travelling, redress for which requires a case-by-case assessment, while compensation is granted on an individual basis. The MC99 governs the latter damage, while there is no indication that the drafters of the Convention wanted to shield air carriers from any other form of intervention, to redress the former type of damage. Thus, there is no incompatibility between MC99 and EU261. The system of Art. 6 EU261 operates at an earlier stage than the MC99 system, while not preventing passengers to bring individual claims against the carrier under the conditions of the MC99.[57]

The above judgment established a complete separation between MC99 and EU261. Thereafter, every issue regarding the interpretation of a provision of

[52] Case C-344/04, The Queen, on the application of International Air Transport Association and European Low Fares Airline Association *v* Department for Transport, 2006 ECR I-00403.
[53] European Parliament and Council Regulation 261/2004, 2004 OJ (L 46) 1 [hereinafter EU261].
[54] The exact wording of Art. 29, entitled Basis of Claims is as follows: 'In the carriage of passengers, baggage and cargo, any action for damages, however founded, whether under this Convention or in contract or in tort or otherwise, can only be brought subject to the conditions and such limits of liability as are set out in this Convention without prejudice to the question as to who are the persons who have the right to bring suit and what are their respective rights. In any such action, punitive, exemplary or any other non-compensatory damages shall not be recoverable.'
[55] C-344/04 *IATA and ELFAA*, *supra*, ¶27-32.
[56] *Id.*, ¶41.
[57] *Id.*, ¶43-48.

EU261 has been disconnected from every relevant notion or provision of the MC99. This has been underlined by the CJEU in a series of instances: Art. 33 MC99 is inapplicable regarding the jurisdiction to hear claims under EU261;[58] Art. 19 MC99 may not determine the grounds for exoneration from the compensation provided in Art. 5(3) EU269;[59] the two-year limitation period established in Art. 35 MC99 is inapplicable to claims under EU261, which are governed by national law;[60] damages for delay under Art. 19 MC99 cannot include reimbursement of the expenses caused by the violation of the carrier's duty to provide assistance and care under the EU261[61].

In the *Sturgeon* case[62] and the *Nelson* case[63] the Court proceeded further on the distinction between EU261 and MC99. In *Sturgeon*, the CJEU was asked to distinguish between 'delay' and 'cancellation' of a flight under EU261, in view of the fact that under 'cancellation' passengers were entitled to a standardized compensation, unless the carrier could prove that the cancellation was due to 'extraordinary circumstances'; however, the Regulation does not foresee such right for 'delay'. The Court clarified the difference between the two concepts: a flight which is delayed, irrespective of the duration of delay, cannot be regarded as cancelled where the flight is operated in accordance with the air carrier's original planning.[64] However, it went on to indicate that in both instances the passengers suffer the same kind of damage, i.e. loss of time, which is irreversible and can be redressed only by compensation. Given the purpose of the EU261 to provide passengers a high level of protection and the principle of equal treatment, the Court concluded that also passengers of delayed flights have a right to compensation under the same circumstances as passengers of cancelled flights, i.e. if the flight to the final destination arrives at least three hours later than the original scheduled time. To maintain a balance of interests under EU261, the Court recognized that carriers could exonerate themselves by proving that the delay was due to 'extraordinary circumstances.[65]

In the *Nelson* case, which served as an informal 'appeal' to the Grand Chamber of the CJEU to re-examine the validity of the above-mentioned interpretation with explicit reference to the Art. 29 MC99, the Court affirmed its interpretation. It stated that a loss of time cannot be categorized as 'damage occasioned by delay' under Art. 19 MC99 and falls outside the scope of Article 29 MC99. The loss of time is an inconvenience, suffered identically by all passengers of the delayed flight and,

[58] Case C-204/08, Rehder v Corporation, 2009 ECR I- 06073, ¶27.
[59] Case C-549/07, Wallentin-Hermann v Alitalia, 2009 ECR I-11061, ¶28-33.
[60] Case C-139/11, Cuadrench Moré v KLM, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:62011CJ0139, (2012), ¶ 22-33 .
[61] Case C-83/10, Sousa Rodríguez v Air France, 2011 ECR I-09469, ¶39-45.
[62] Joined Cases C-402/07 and C-432/07 Sturgeon and others v Condor Flugdienst (C-402/07) and Böck and Lepuschitz v Air France (C-432/07), 2009 ECR I-10923.
[63] Joined cases C-581/10 and C-629/10 Nelson and Others v Deutsche Lufthansa (C-581/10) and TUI Travel and Others v Civil Aviation Authority (C-629/10), https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:62010CJ0581, (2012).
[64] C-402/07 *Sturgeon and others*, para. 39.
[65] *Id.*, ¶40-69.

thus, able to be remedied in an immediate and standardized manner. The right to compensation for delay arises only for a delay in arrival of more than three hours and the amount of compensation does not increase as the delay becomes bigger. Therefore, there is no incompatibility with Art. 29 MC99.[66]

These CJEU judgments have been highly controversial. On the one hand, they have received heavy criticism for, among others, disregarding clear and explicit provisions of MC99, undermining the uniform application of MC99 and contradicting the clear wording of EU261.[67] On the other hand, there have also been voices in favour of the judgments.[68]

The criticism of the CJEU judgments is not unfounded. However, it appears that the CJEU preferred a pragmatic and practicable solution, by equalizing the legal consequences of delay and cancellation under EU261, to indisputable consistency with the obligations of the EU as a party to an international treaty.

B. Legal standing for a claim

In the Air Baltic case,[69] an employer, a legal entity, had purchased flight tickets for two of its agents. The flight was delayed and the two passengers missed their connecting flight. As a result, their business trip had to be extended, which entailed extra costs for their employer. The CJEU was asked whether the employer could claim compensation under Art. 19 MC99 for the extra costs it had to incur for the two passengers.

The Court first observed that the wording of Art. 19 does not clarify the person entitled for compensation and could permit the employer to file such claim.[70] It then noted that Art. 22(1) does not restrict to passengers the damage suffered.[71] Moreover, Art 1(1) MC99, interpreted in the light of the third recital of the Convention, entails that a 'consumer', whose protection is the Convention's objective, is not necessarily a 'passenger'.[72] Besides, a series of provisions in the MC99, namely Arts 1(2), 29, 33(1) and 3(5), link the carrier's liability to a contract of carriage with a party that does not have to be a passenger.[73] Therefore, Art. 19

[66] *Id.*, ¶49-60.
[67] Paul Stephen Dempsey & Svante Johansson, *Montreal v. Brussels: The Conflict of Laws on the Issue of Delay in International Air Carriage* 35 ASL 207 (219-220, 224) (2010); Robert Lawson & Tim Marland, *The Montreal Convention 1999 and the Decisions of the ECJ in the Cases of IATA and Sturgeon – in Harmony or Discord?*, 36 ASL 99 (107) (2011); MENDES DE LEON, *supra* note **Error! Bookmark not defined.**, 265-266; Jae Woon Lee & Joseph Charles Wheeler, *Air Carrier Liability for Delay: A Plea to Return to International Uniformity*, 77 J. AIR L. & COM. 43 (2012); Stephan Hobe, Wolf Müller-Rostin & Anna Recker, *Fragwürdiges aus Luxemburg zur Verordnung (EG) 261/2004*, 59 ZLW 149 (2010); John Balfour, *Airline liability for delays: The Court of justice of the EU rewrites EC Regulation 261/2004*, 35 ASL 71 (2010).
[68] E.g. Klaus Tonner, *Die EU-Fluggastrechte-VO und das Montrealer Übereinkommen*, 7 VuR 203 (2011); ELMAR GIEMULLA *Art. 29 MÜ*, para. 17c (September 2022) *in* MONTREALER ÜBEREINKOMMEN, *supra* note 19; indirectly also Cees van Dam, *Air passenger rights after Sturgeon*, 36 ASL 259 (2012).
[69] Case C-429/14 Air Baltic v Lietuvos Respublikos specialiųjų tyrimų tarnyba, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:62014CJ0429, (2016).
[70] *Id.*, ¶27-29.
[71] *Id.*, ¶31-34.
[72] *Id.*, ¶5-40.
[73] *Id.*, ¶41-45.

applies also to damage suffered by employers who concluded a contract of carriage for passengers who are their employees.[74] Nonetheless, since the carrier's liability is limited 'per passenger', the balance of interests in the Convention requires that the employer may not receive compensation higher than the product of multiplying the number of passengers carried under the contract with the limit applicable to each passenger.[75]

The MC99 has left issues of legal standing regarding compensation and related procedural questions to be regulated by the domestic law of its States Parties. This is stated explicitly in Art. 29[76] and Art. 33(4) MC99[77]. The same conclusion as to legal standing of an employer was reached by a New York court in a case under the WC29.[78]

VI. Liability for checked baggage

A. Liability limits

In the *Sánchez* case,[79] a family of four had packed their stuff in two pieces of baggage, which were lost. The question raised was what the exact liability limit would be; in other words, whether the right to compensation and the liability limit for loss of baggage apply also to a passenger who suffered loss of baggage checked in in another passenger's name.

The Court noted that the wording of Art. 22(2) referred to a liability limit for 'each passenger', while Art. 17(2) linked the carrier liability to loss of any baggage belonging to passengers, both checked and unchecked.[80] The baggage identification tag bears no influence in this regard, since it only serves the identification of the checked baggage.[81] Thus, the wording of the Convention suggests that a passenger can be compensated for lost baggage, even when he/she has placed his/her items in the baggage checked in the name of another person.[82]

The Court confirmed this conclusion by reference to the Convention's object and purpose, i.e., the establishment of a balance of interests. This balance would be distorted, if the passenger could not claim compensation in such cases.[83] On the contrary, the carrier's interests would not be affected, because its liability is limited

[74] *Id.*, ¶46.
[75] *Supra* note 69, at ¶47-51.
[76] Art. 29, first sentence i.f. reads '… without prejudice to the question as to who are the persons who have the right to bring suit and what are their respective rights'.
[77] 'Questions of procedure shall be governed by the law of the court seized of the case'.
[78] *Pakistan Arts & Entertainment Corporation et al. v. Pakistan International Airlines Corp*, 232 A.D.2d 29 (1997), which concerned actually a cancellation of flight, brought as a case of delay.
[79] Case C-410/11 *Espada Sánchez et al. v. Iberia Líneas Aéreas de España*.
[80] *Id.*, ¶23-25.
[81] *Id.*, ¶26.
[82] *Id.*, ¶27.
[83] *Id.*, ¶31.

per passenger, the sums referred to in the Convention are maximum limits and do not accrue automatically, while the passenger carries the burden of proving the damage he/she suffered and that his/her items were placed in the baggage of another passenger.[84]

The *Sánchez* judgement enables a fair treatment of passengers. It takes a pragmatic view of cases of passengers travelling together and sharing luggage for practical reasons, e.g., families with children or couples.[85] This does not seriously affect the financial interests of carriers, since their liability is insured (Art. 50 MC99),[86] the liability limit is relatively low and, in any case, the burden of proof lies with the affected passenger.

In the *Vueling Airlines* case,[87] the Court clarified some basic parameters of its previous case law. A passenger lost her baggage and filed a lawsuit claiming the amount of 1.131 SDR as compensation for material and non-material damage. There was no proof of any particular damage (such as the contents of that baggage, its value and weight, documentation of any purchases made to replace the items in that baggage), other than an allegation that loss was the most serious case of damage to baggage under Art. 22(2) MC99. The national court, perplexed by conflicting judgments of other courts on these issues, asked the CJEU whether the amount of 1.1131 SDR was the maximum compensation a passenger could claim or whether it was a fixed sum, provided to each passenger as compensation. If that amount was not a fixed sum, the question to the CJEU was how the passenger could prove the damage suffered.

The CJEU clarified that the amount referred in Art. 22(2) was a limit, not a fixed sum, as the wording of the provision and the preparatory works of the Convention clearly indicated.[88]

For the second question, the Court referred to the principle of procedural autonomy of the EU MS, which means that domestic law would be applicable to the enforcement of the rights conferred to individuals by EU law, subject to the principles of equivalence, i.e. the domestic rules applicable to such claims must not be any less favorable than those governing similar domestic actions, and effectiveness, i.e. the applicable rules must not render in practice the exercise of these rights impossible or extremely difficult.[89] Under the principle of effectiveness, the national court may have to order the defendant to produce

[84] *Id.*, ¶28-35.
[85] See also the judgment of Bundesgerichtshof [BGH] [Federal Court of Justice], March 15, 2011, NEUE JURISTISCHE WOCHENSCHRIFT RECHTSSPRECHUNGSREPORT [NJW-RR] 787, 2011, on facts very similar to the *Sánchez* case, which arrived at the same conclusion with the CJEU.
[86] Elmar Giemulla, *Art. 22 MÜ*, ¶7b, MONTREALER ÜBEREINKOMMEN, (Sept. 2022), *supra* note 19.
[87] Case C-86/19, SL v Vueling Airlines, (2020), https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:62019CJ0086.
[88] *Id.*, ¶29-34.
[89] *Id.*, ¶38-40.

documents in its possession, which the claimant does not possess, such as proof of the weight of the baggage lost.[90]

The *Vueling Airlines* case shows that even the most fundamental parameters of the provisions of the MC99 may not be obvious to some courts and that, in practice, no issue can be taken for granted.

B. Mental injury

In the *Walz* case[91] a passenger brought a claim of € 6 400 against a carrier for loss of checked baggage, including 500 € for non-material damage resulting from that loss. The national court asked the CJEU whether 'damage' for loss of baggage under Art. 22(2) MC99 includes both material and non-material damage.

The CJEU began by examining the ordinary meaning of 'damage'. It considered the different language versions of MC99 and the use of the term in the other provisions of Chapter III of the MC99, which Art. 22(2) is part of (context).[92] It also accounted for the notion of 'damage' under the Articles on Responsibility of States for Internationally Wrongful Acts, drafted by the UN International Law Commission and noted by the UN GA Resolution 56/83 of 12.12.2001, which provides that 'injury includes any damage, whether material or moral'.[93] Moreover, the Court noted that there was nothing in the MC99 indicating that the contracting States wanted to attribute a special meaning to 'damage'.[94] Thus, the ordinary meaning of 'damage' included non-material damage. This was confirmed by the objective of the MC99 to balance the competing interests of carriers and passengers by imposing strict, yet limited per passenger, liability of the air carrier for loss of baggage.[95] Hence, the CJEU concluded that 'damage' under Art. 22(2) MC99 encompasses both material and non-material damage.

The issue of mental injury for loss of baggage is not regulated in the MC99 and is governed by national law. Therefore, there can be different interpretations as to whether moral damages for baggage are recoverable and under what conditions.[96] The CJEU interpreted the notion of 'damage' for the Union legal order, correctly underscoring that the total amount of compensation cannot exceed the limit of Art. 22(2).

[90] *Id.*, ¶43.
[91] Case C-63/09, Axel Walz v Clickair, 2010 ECR I-04239.
[92] *Id.*, ¶24-26.
[93] *Id.*, ¶27.
[94] *Id.*, ¶28.
[95] *Id.*, ¶30-38.
[96] See an overview of judgments from different jurisdictions in MENDES DE LEON, *supra* note 67, 223-224.

C. Notice to the carrier

In the *Finnair* case,[97] a passenger notified by telephone the air carrier that some of the items in the baggage she had checked in on the same day were missing. The carrier employee registered the complaint in the electronic system of the carrier and two days later the carrier issued a certificate of lodging a declaration of loss, for the passenger's insurance company. The latter reimbursed the passenger and filed a redress claim against the carrier. The carrier denied the claim based on lack of 'written notification' under Art. 31(2)-(4) MC99[98]. The national court referred to the CJEU a series of questions on the requirements of these provisions.

The first question regarded the necessity to file a complaint in writing within the deadlines of Art. 31(3), to preserve a right of action against the carrier. The Court clarified that under Art. 31(2)-(4) such a written complaint is necessary, otherwise passengers lose their right of action.[99]

The second question concerned whether the written-form requirement could also be satisfied when a complaint was recorded in the electronic information system of the carrier. The CJEU invoked the balance of interests undertaken in the MC99 and ruled that the term 'in writing' must be interpreted as referring to any set of meaningful graphic signs, irrespective of whether they are handwritten, printed on paper, or recorded in electronic form.[100]

The third question concerned whether the need for a written form could be fulfilled, when a carrier representative records the declaration of loss either on paper or electronically in the carrier's information system. The Court observed that although the responsibility for making a complaint lies exclusively with the passenger, it cannot in any way be inferred from the wording of Article 31 that a passenger cannot benefit from the assistance of other persons for making his/her complaint - including the representatives of the carrier, provided that the passenger is able to check the accuracy of the text of the complaint and amend, supplement or even replace it within the deadline of Art. 31(2).[101]

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[97] Case C-258/16, *Finnair v* Keskinäinen Vakuutusyhtiö Fennia, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:62016CJ0258 (2018).

[98] Art. 31(2) -(4)

(2) In the case of damage, the person entitled to delivery must complain to the carrier forthwith after the discovery of the damage, and, at the latest, within seven days from the date of receipt in the case of checked baggage and 14 days from the date of receipt in the case of cargo. In the case of delay, the complaint must be made at the latest within 21 days from the date on which the baggage or cargo have been placed at his or her disposal.

(3) Every complaint must be made in writing and given or dispatched within the times aforesaid.

(4) If no complaint is made within the times aforesaid, no action shall lie against the carrier, save in the case of fraud on its part.

[99] *Id.*, ¶23-31.

[100] *Id.*, ¶32-37.

[101] *Id.*, ¶38-47.

The fourth question was whether Art. 31 MC99 submits a complaint to further substantive requirements in addition to that of giving notice to the air carrier of the damage sustained. The Court clarified that the purpose of the complaint was to inform the carrier that damage has occurred and the exact requirements of filing the complaint were established in Art. 31(2)-(4). Thus, there were no further requirement in this connection.[102]

The requirement of the written form aims at ensuring proof of the fact and content of the notification to the carrier,[103] to safeguard that compensation claims will match the initially filed notification.[104] The *Finnair* judgment enables flexibility on the requirement of the written form in the case of loss, damage or delay regarding luggage. The requirement can be fulfilled also through a complaint made by telephone and registered in the electronic system of the air carrier, provided that the passenger can check the accuracy of the registration. Nevertheless, this could cause rather inconvenience for passengers in practice, since the validity of the notification depends on the carrier making it available to the passenger for verification[105] – hence, passengers would have to file an additional written notification to ensure that observance of the required form. The objective of the short deadlines foreseen in that Article is to enable the carrier to investigate the case, in order to remedy, to the extent possible, the situation, especially in cases of lost baggage, and in view of its eventual liability.[106]

VII. Judicial jurisdiction

In the ***Guaitoli* case**,[107] the flight of some passengers was delayed and had to be determined which court(s) exactly had jurisdiction to hear the claim. The question was if Art. 33(1) MC99[108] allocates also jurisdiction among the courts of a single MS (venue) or if it only determines the international jurisdiction of the courts of a particular State.

The CJEU indicated that the wording of the provision refers not only to the 'territory of one of the States Parties', but also to the court which, among those sitting in that territory, may declare itself to have jurisdiction *ratione loci*, by means of specific connecting factors.[109] In addition, the direct appointment of the venue of

[102] *Id.*, ¶48-54.
[103] REUSCHLE, *supra* note 51, Art. 31 MÜ, ¶23; Elmar Giemulla, *Art. 31 MÜ*, ¶16 (Dec. 2014) *in* MONTREALER ÜBEREINKOMMEN, *supra* note 19.
[104] Oberlandesgericht [OLG] Celle (Regional Higher Court Celle), NEUE JURISTISCHE WOCHENSCHRIFT RECHTSSPRECHUNGSREPORT [NJW-RR] 2004, 1411 (Ger,).
[105] Andreas Maurer, *Anmerkung zu EuGH Verkehrsrecht: Frist und Formerfordernis für die Beanstandung von Mängeln bei der Beförderung von Reisegepäck,* EUROPÄISCHE ZEITSCHRIFT FÜR WIRTSCHAFTSRECHT (EuZW) 2018, 453, 457.
[106] Wolf Müller-Rostin, *Art. 31 MÜ*, ¶23, 7 MÜNCHENER KOMMENTAR ZUM HANDELSGESETZBUCH, (Rolf Herber & Christine Schmidt eds) (4th ed. 2020.
[107] Case C-213/18 Guaitoli v easyJet Airline, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:62018CJ0213, para. 47 (2019).
[108] Art. 33(1) reads: 'An action for damages must be brought, at the option of the plaintiff, in the territory of one of the States Parties, either before the court of the domicile of the carrier or of its principal place of business, or where it has a place of business through which the contract has been made or before the court at the place of destination.'
[109] C-213/18 *Guaitoli*, *supra*, paras 50-51.

the case is likely to ensure, in the interests of both parties to the dispute, greater predictability and legal certainty, in line with the Convention's objective.[110] Thus the Court ruled that Art. 33(1) governs also the allocation of territorial jurisdiction as among the courts of each Member State to the Convention.

The above-mentioned judgment settled for the EU MS a long-standing dispute, existing already under Art. 28 WC29, i.e. whether these provisions determine not only international jurisdiction among the States parties to MC99, but also the venue within the territory of a single State party. While US and UK courts have ruled for the former option, courts in Europe have been divided.[111] Besides, although the CJEU does not have jurisdiction on cargo liability under MC99, it is expected that the courts of EU MS will extend the Court's interpretation also to such cases, to ensure legal certainty for carriers.

VIII. Conclusion

The case law of the CJEU on MC99 has caused mixed reactions. There are judgments in line with the prevalent legal view internationally, which have received a neutral reception (*Air Baltic, Austrian Airlines*). Then there are judgments, which appear to have differentiated the EU legal order from what seems to have prevailed so far, but which represent generally acceptable views (*Niki Luftfahrt*, *Sánchez, Walz, Finnair, Guaitoli*). And there are also judgments that have introduced either a totally new line of thinking or have adopted an until now marginal interpretation (*IATA and ELFAA, Sturgeon, Nelson, Laudamotion*).

Regarding the argumentation of the CJEU, there are two main pillars. First, the CJEU applies the interpretational criteria laid down in Art. 31 of the Vienna Convention on the Law of Treaties, starting from the wording of the provision and proceeding to its purpose and context, while also considering the preparatory works of the MC99. The Court focuses on the purpose of MC99, which is to achieve a balance of interests between passengers as consumers and carriers. However, effective consumer protection seems to be at the forefront of the Court's argumentation. Second, the Court underlines the need to respect the principle of equal treatment among passengers. This principle has played a predominant role in the delineation of the scope of MC99 and EU261.

Contrary to the practice of courts in other jurisdictions, mainly in common law, the CJEU does not comment on foreign judgments, not even on judgments of courts in the EU. This may give the impression that international uniformity of application

[110] *Id.*, paras 53-54.
[111] See SHAWCROSS AND BEAUMONT, AIR LAW, para. [VII] 419 (September 2022), and Regula Dettling-Ott, *Art. 33 MÜ*, paras 21-25 (August 2016) *in* MONTREALER ÜBEREINKOMMEN, *supra* note 19, with extensive further citations to the case law of various jurisdictions.

and international comity is not among the Court's priorities.[112] However, the reason for such omission probably lies in that the Court interprets the MC99 autonomously both as an international convention and as part of the EU legal order, in which the CJEU that has the monopoly on the authentic interpretation of EU law.[113] Moreover, as EU law belongs mostly to the legal family of civil law, the CJEU adheres to the tradition of civil law countries, in which consideration of foreign judgements when interpretating the law is rather unusual – contrary to the tradition of common-law countries. Besides, one might also argue that international comity motivates the Court to abstain from commenting on judgments of non-EU supreme courts, especially the US Supreme Court, since the CJEU has so far chosen to adopt its own, different views.

In any case, the CJEU with its series of judgments on MC99 has created legal clarity within the EU and established itself as an alternative interpretational pole of MC99. The influence of such pole worldwide remains to be seen.

[112] See John Balfour & Tom van de Vijngaart, *To whom is the carrier liable in the event of delay?*, 41 ASL 511, 514 (2016), who suggest that the CJEU should make such references.
[113] See e.g. C-63/09 *Walz*, *supra* note 91, paras 20-22; C-213/18 *Guaitoli*, *supra* note 107, ¶46-47.

"UNITED WE STAND, DIVIDED WE FALL": COOPERATIVE ARRANGEMENTS BETWEEN AIRLINES UNDER EU'S SCRUTINY

Jacomo Restellini

I. Introduction

In Europe, since the second half of the 90s, any EU national air carrier in possession of an EU operating license can not only fly anywhere within the internal market, but can also charge the price it wishes for its services.[1] These liberalized market conditions allowed the emergence of many low-cost air carriers, which have been in a position to establish bases for their crews and aircraft throughout the EU.[2]

In order to remain competitive, 'legacy carriers'[3] had to face two main challenges: expanding their global network to maintain a comparative advantage over low-cost carriers confined to short and medium-haul flights, and making their overall costs more competitive.[4] To achieve these objectives, legacy carriers have deeply modified their business model. First, by setting up a 'hub-and-spoke' network. This consists of designating a 'hub' from or to which traffic is concentrated for transport from or to another major hub, so as to optimize aircraft load factors and realize economies of scale.[5] Second, by cooperating with other airlines through various types of 'cooperative arrangements'. Such arrangements have the potential to broaden carriers' networks and rationalize their costs, without expanding their own aircraft capacities or routes offering.[6]

Cooperative arrangements between airlines can be more or less extensive and intense, ranging from a simple bilateral interline agreement to a highly integrated joint venture. The current trend, however, is clearly in favor of the latter category. In 2017, 73% of transatlantic long-haul flights were operated under a joint venture and it is expected that 35% of global long-haul traffic will be operated under a joint

[1] PABLO MENDES DE LEON, INTRODUCTION TO AIR LAW 99 (Wolters Kluwer 10th ed. 2017).
[2] JOHN MILLIGAN, EUROPEAN UNION COMPETITION LAW IN THE AIRLINE INDUSTRY 37–38 (Wolters Kluwer 2017).
[3] For the purpose of this paper, the term 'legacy carriers' refers to carriers existing before liberalization of air transport.
[4] EC & USDOT, *Joint Report: Transatlantic Airline Alliances: Competitive Issues and Regulatory Approaches*, 3 (2010), https://ec.europa.eu/competition/sectors/transport/reports/joint_alliance_report.pdf.
[5] Shelley Longmuir, *Decade of global airline alliances: Their impact on consumers, communities, carriers and competition*, 28 (2) INT'L BUS. LAW. 73, 73 (2000). *See* also James Reitzes & Diana Moss, *Airline alliances and systems competition*, 45 (2) HOUS. L. REV. 293, 298 (2008).
[6] Angela Cheng-Jui Lu, *International Airline Alliances: EC Competition Law, US Antitrust Law, and International Air Transport*, 27 ANN. AIR & SPACE L. 401, 402 (2002). *See* also OECD *Airline Competition*, 10-11 (2014), https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DAF/COMP(2014)14&docLanguage=En.

venture by 2021.[7] This trend does not go without raising legal concerns. Indeed, the more intense the cooperation becomes, the more likely it is to distort competition.[8]

The growing interest of airlines in cooperative arrangements, in particular joint ventures, deserves special attention. This paper is divided into two parts. The first part deals with the main types of cooperative arrangements between airlines and assesses the competition concerns raised by such agreements (2.). The second part – specific to the EU – analyzes the EU competition legal bases regulating cooperative arrangements between airlines (3.), before concluding with a presentation and critical discussion of the 2015 EU Commission decision – currently still in force – related to the transatlantic joint venture between Air France, KLM, Alitalia and Delta (4.).[9]

A. Types Of Cooperative Arrangements Between Airlines

a. 'Alliance' and 'Global Alliance'

The terms 'alliance' or 'global alliance' are commonly used to refer to the three global alliances, namely 'Star Alliance', 'SkyTeam' and 'Oneworld'.[10] In fact, each of these alliances is made up of a multitude of cooperative arrangements and is distinguished from the others by the level of cooperation between members and by the number of bilateral agreements between them.[11] Also, being a member of a global alliance does not generally preclude some members from cooperating even more closely, for example through a joint venture with cost and revenue sharing.[12] In practice, each cooperative arrangement contained in an alliance must be analyzed on a case-by-case basis to assess the competition issues it could potentially raise.[13]

[7] Sia Partners, *Les partenariats entre compagnies aériennes : stratégie de conquête de l'Asie*, 3 (2008), https://www.sia-partners.com/system/files/document_download/file/2020-06/sia_partners_les_partenariats_entre_compagnies_aeriennes_strategie_de_conquete_de_lasie.pdf. *See* also Alan Lewis & Peter Smith, *Reaching New Heights Together in 2017: How Airlines Can Maximize the Value of Joint Ventures*, 19(30) L.E.K. INSIGHTS, 1 (2017), https://www.lek.com/sites/default/files/insights/pdf-attachments/1930_Airlines-Joint_Ventures_Executive_Insights.pdf.

[8] OECD, *supra* note 6, at 12.

[9] The author voluntarily chooses not to address the issue of airlines mergers. Such an analysis would go beyond the scope of this paper.

[10] ICAO, *Manual on the Regulation of International Air Transport*, 4.8-1 (2004), https://www.icao.int/Meetings/atconf6/Documents/Doc%209626_en.pdf. *See* also Mathieu Strale, *Géographie mondiale des alliances de compagnies aériennes*, 4 (4) BELGEO 437, 438 (2006).

[11] Claude Abraham, *Rapport au Commissariat Géneral Français à la Stratégie et à la Prospective : Les compagnies aériennes européennes sont-elles mortelles ? Perspectives à vingt ans*, 79 (2013), https://www.vie-publique.fr/sites/default/files/rapport/pdf/134000597.pdf: For example, SkyTeam initially consisted of (*i*) reciprocal frequent flyer programs, (*ii*) joint marketing activities, (*iii*) integrated technical handling, (*iv*) shared airport equipments and (*v*) joint flight plannings.

[12] EC & USDOT, *supra* note 4, at 3.

[13] OECD, *supra* note 6, at 29.

(i) Levels of Cooperation, Economic Incentives and Competitive Concerns

Interline Agreement:

Notion

An interline agreement is a commercial agreement between two carriers under which each carrier may accept the other's tickets in exchange for transport.[14] The passenger buys a single ticket to go from one point to another on two successive flights, each of which being operated by one of the two carriers. These agreements existed before 'global alliances' and can be concluded between airlines outside such alliances.[15]

Economic incentives

For the passenger, an interline agreement offers advantages in terms of 'convenience', 'assurance' and 'price'. *Convenience*, because the passenger can make a connecting flight without having to retrieve their luggage or make a new check-in.[16] *Insurance*, because if a flight is cancelled or delayed, the passenger can be rebooked on any subsequent flight with either company.[17] *Price*, because in principle – provided that the double marginalization is reduced or eliminated[18] – the price paid by the passenger is lower than the sum of the prices of the two tickets if there was no agreement between the two carriers.[19] For airlines, an interline agreement allows them to increase traffic on their respective legs thanks to a wider offer and to the feeder traffic generated by the arrangement, while not implying any change in the organization of the flights.[20]

Competitive concerns

Interline agreements generally do not raise major competition concerns since the parties do not agree on revenue and cost sharing, nor do they jointly determine prices, capacity or frequency of flights.[21]

Codeshare Agreement:

[14] TRUXAL, COMPETITION AND REGULATION IN THE AIRLINE INDUSTRY PUPPETS IN CHAOS 121 (Routledge 2013).
[15] Abraham, *supra* note 11, at 76.
[16] OECD, *supra* note 6, at 11.
[17] TRUXAL, *supra* note 14, at 122.
[18] OECD, *supra* note 6, at 32. Double marginalization means that each airline charges its service to the other airline over and above its marginal costs; each airline seeks to maximize profits in its own segment.
[19] Abraham, *supra* note 11, at 75.
[20] *Ibidem*.
[21] ICAO Secretariat, *Overview of regulatory and industry developments in international air transport*, 16 (2016), https://www.icao.int/Meetings/a39/Documents/Overview_of_Regulatory_and_Industry_Developments_in_International_Air_Transport.pdf.

Notion

A codeshare agreement (CSA) is a commercial arrangement by which one carrier – the 'operating carrier'– authorizes a second carrier – the 'marketing carrier' – to use its airline designator code on a flight, or by which the two – or more – carriers share the same airline code on a flight.[22] The flight is operated by one airline but is jointly marketed by several airlines as if said airlines were flying the flight themselves.[23] CSAs mainly take two forms, namely 'free-flow' or 'blocked space'. The former gives the marketing carrier free access to the stock of seats of the operating carrier so as to put them on sale; in the end the operating carrier alone bears the risk of unsold tickets. The latter allows the operating carrier to determine in advance the number and the price of seats to be sold by the marketing carrier.[24]

Economic incentives

For the passenger, a CSA offers a greater choice of destinations, faster transfers and – provided that double marginalization is significantly reduced or eliminated – potentially lower fares.[25] For airlines, the conclusion of a CSA may be the right answer to expand their networks, to obtain feeder traffic from the partner(s), to operate a joint service when traffic volume does not justify each airline to fly its own aircraft, or to increase frequencies without having to invest in new aircraft.[26]

Competitive concerns

When two carriers operate on the same route, the conclusion of a CSA may diminish competition, in particular when it leads one of them to reduce its frequencies.[27] Also, the potential exchange of commercially sensitive information can foster collusion between airlines on both the routes covered and those not covered by the CSA.[28] With respect to free-flow CSAs, they are likely to distort competition since the commission received by the marketing carrier generally corresponds to a percentage of the price of the ticket it sells; the higher the selling price, the higher the commission. The risk of distortion of competition is even greater when the arrangement offers the operating carrier the option of terminating the CSA if the prices charged by the marketing carrier are significantly lower than its own, depriving the latter of a competitive pricing policy.[29]

[22] ICAO, *supra* note 10, at 4.8-2.
[23] Ceren Savaser, *Overall analysis of code-share agreements in global markets*, MONDAQ (Aug. 10, 2022, 1:35 PM), https://www.mondaq.com/turkey/Transport/277128/Overall-Analysis-Of-Code-Share-Agreements-In-Global- Markets.
[24] ECA, *Code-Sharing Agreements in Scheduled Passenger Air Transport*, 2 (2) EUR. COMPET. J. 263, 266 (2006).
[25] MILLIGAN, *supra* note 2, at 78.
[26] ICAO, *supra* note 10, at 4.8-2.
[27] Thomas A. Hemphill, *Airline marketing alliances and U.S. competition policy: Does the consumer benefit?*, 43 (2) BUS. HORIZ. 17, 23 (2000). *See* also ICAO, *supra* note 10, at 4.8-3.
[28] ECA, *supra* note 24, at 267.
[29] MILLIGAN, *supra* note 2, at 80.

Joint-venture Agreement:

Notion

A joint venture is an advanced form of cooperative arrangement, a close substitute for a merger, in which former competitors become partners. This arrangement generally results in (*i*) coordination of key competitive parameters such as prices, frequencies, schedules and capacities,[30] (*ii*) sharing of costs, revenues or profits[31] and/or (*iii*) acquisition of a (minority) interest in airlines members of the joint venture.[32] Cooperation may also extend to joint purchasing or sharing of airport facilities including ground handling.[33]

Economic incentives

The economic benefits of a joint venture must be analyzed on a case-by-case basis as they depend on the content of the arrangement. Passengers of airlines linked by a joint venture generally benefit from 'link effects' with greater connectivity of services, notably through more varied schedules and easier connections, but also from 'scale effects' coming from the size and scope of the network.[34] Also, feeder traffic generated by the joint venture increases aircraft load factors, which may result in lower ticket prices.[35] For airlines, the shared use of ground handling services, facilities and airport staff, the joint purchase of fuel, the mutual handling of baggage transfers and passenger check-in are all means that contribute to economies of scale.[36]

Competitive concerns

Coordination on all key parameters of competition, in particular prices, capacities, schedules and frequencies is detrimental to the proper functioning of competition. In addition, the sharing of costs and revenues *de facto* restricts the interest of partner airlines to compete against each other.[37]

[30] Sia Partners, *supra* note 7, at 3.
[31] TRUXAL, *supra* note 14, at 122.
[32] OECD, *supra* note 6, at 12.
[33] MILLIGAN, *supra* note 2, at 122.
[34] Charles A. Hunnicutt, *Competition policy and international airline alliances,* 29 ANN. AIR & SPACE L. 175, 177 (2004). *See* also Temel Caner Ustaömer & Vildan Durmaz & Lei Zheng, *The Effect of Joint Ventures on Airline Competition: The Case of American Airlines, British Airways and Iberia Joint Business*, 210 PROCEDIA SOC. BEHAV. SCI. 430, 432 (2015).
[35] ICAO, *Effets des alliances et fusions de transporteurs aériens sur la concurrence loyale et prévention de monopoles*, 2 (2013), https://www.icao.int/Meetings/atconf6/Documents/WorkingPapers/ATConf6-wp039_fr.pdf.
[36] Ustaömer & Durmaz & Zheng, *supra* note 34, at 432.
[37] OECD *supra* note 6, at 12. *See* also EU Commission decision of Jul. 14, 2010, Case COMP/39.596 – BA/AA/IB, para. 33.

(ii) Synthesis

Cooperative arrangements bring many economic advantages to airlines and offer a way to respond to the pressures of a liberalized market. Such arrangements allow airlines to achieve economies of scale, expand into new domestic and foreign markets, and bring new services to passengers.[38] However, the higher the level of cooperation, the greater the risk of distortion of competition. The growing interest towards highly integrated cooperative arrangements between airlines has therefore led the EU to make use of its legislative arsenal in this respect (*see* 2. and 3. below).

II. EU APPROACH TOWARD COOPERATIVE ARRANGEMENTS

A. Rule of principle

Article 101 of the Treaty on the Functioning of the European Union (TFEU)[39] is the central provision under which cooperative arrangements between airlines are likely to fail. Article 101 (1) TFEU prohibits any agreement between airlines which may affect trade between Member States and which has the 'object' or 'effect' of preventing, restricting or distorting competition in the internal market. Typical restrictions regarding 'object' are cooperative arrangements whereby airlines cooperate on key parameters of competition such as prices, schedules and/or revenue sharing.[40] If not, the agreement or concerted practice must have the 'effect' of appreciably restricting competition.[41] In principle, when an agreement presents a restriction by 'object', it is no longer necessary to take into account the concrete effects of the agreement on competition.[42]

B. Exception (selected examples)

Outside a procedure, it is up to the parties concerned – through a self-assessment – to consider whether their arrangement falls within the scope of Article 101 (1) TFEU. If so, the parties must be in a position to demonstrate that the four cumulative conditions for exemption under Article 101 (3) TFEU are met, failing which the agreement will be void:[43]

[38] TRUXAL *supra* note 14, at 154.
[39] Consolidated Version of the Treaty on the Functioning of the European Union, 2012 OJ (C 326) 47.
[40] EU Commission decision of May 23, 2013, Case COMP/AT.39595 – Air Canada/United Airlines, Inc./Deutsche Lufthansa AG, para. 36-37.
[41] *See* EU Commission notice on agreements of minor importance which do not appreciably restrict competition under Article 101 (1) of the Treaty on the Functioning of the European Union (De Minimis Notice), 2014 OJ (C 291) 1, para. 8.
[42] MILLIGAN, *supra* note 2, at 54.
[43] Art. 101 (2) TFEU.

a. *Efficiency gains*

The cooperative arrangement must generate 'efficiency gains'. This may include cost savings (*e.g.* economies of scale) or qualitative efficiencies (*e.g.* new or improved services).[44] In the context of a cooperative arrangement between airlines, the parties may allege, for instance, (*i*) time savings for passengers, where the agreement provides for coordination of the schedules of the two airlines or the addition of an extra daily flight on a certain route, (*ii*) lower prices for passengers, where the agreement generates feeder traffic that results in fuller aircraft and eliminates double marginalization[45] or (*iii*) additional services for passengers, when the agreement provides for reciprocity in frequent flyer and lounge access programs.[46]

b. Indispensability

Parties must be in a position to demonstrate that efficiency gains cannot be achieved by less restrictive means.[47] For example, where two airlines each operating on the same route (Main Route) decide to align their prices and to share revenues on the Main Route, they can potentially argue that (*i*) a mere codeshare on the Main Route would not automatically eliminate double marginalization or that (*ii*) the elimination of revenue sharing on the Main Route only may result in higher prices on behind and beyond routes (Secondary Routes). Indeed, the parties would no longer have an incentive to cooperate on Secondary Routes – for example, by means of favorable prices – should the feeder traffic generated by said routes only benefit the other party on the Main Route.[48]

c. Pass-on to consumers

Passengers must receive a 'fair share' of the efficiencies generated by the restrictive arrangement. In other words, the negative effects of the arrangement must be offset by benefits to passengers; the agreement must be at least neutral for passengers.[49] Therefore, airlines must be able to demonstrate that the new services created by the arrangement directly benefit passengers. In practice, airlines may argue that they are obliged to reflect the economies of scale generated by the arrangement on prices because of the high elasticity of demand on the routes concerned.[50]

[44] EU Commission guidelines on the application of Article 81 (3) of the Treaty, 2004 OJ (C 101) 8, para. 64 *ff*.
[45] *See* note 19.
[46] Case COMP/AT.39595 – Air Canada/United Airlines, Inc./Deutsche Lufthansa AG, para. 64.
[47] EU Commission guidelines on the application of Article 81 (3) of the Treaty, 2004 OJ (C 101) 8, para. 76.
[48] Case COMP/AT.39595 – Air Canada/United Airlines, Inc./Deutsche Lufthansa AG, para. 66-68.
[49] EU Commission guidelines on the application of Article 81 (3) of the Treaty, 2004 OJ (C 101) 8, para. 85.
[50] *Ibidem*, para. 102-104. *See* also Case COMP/AT.39595 – Air Canada/United Airlines, Inc./Deutsche Lufthansa AG para. 70-73.

d. No Elimination of Competition

The agreement must not afford the parties the possibility of eliminating competition in respect of a substantial part of the services concerned. The assessment of a potential elimination of competition depends primarily on the number of competitors in the market before and after the conclusion of the arrangement, the market shares of said competitors and the competitive constraints they impose.[51]

(i) Competent enforcement authority

Both the EU Commission (Commission) and the national competition authorities have the power to enforce Article 101 TFEU.[52] Since May 1, 2004, the Commission also has the power to investigate agreements between EU and non-EU carriers.[53] In principle, the Commission will investigate whether an agreement has or is likely to have effects on competition in more than three Member States.[54]

(iii) Standard Commission procedure

The standard Commission procedure consists of several steps that can be synthesized as follows: the Commission opens an investigation if there is reason to fear that a cooperative arrangement may infringe European competition law (*see* 3.1 below).[55] In its 'investigation phase', the Commission can request written information from interested parties and third parties or hold meetings with the parties.[56] Following the investigations, the Commission adopts a 'preliminary assessment' in which it sets out its objections to the parties (*see* 3.2 below).[57] The parties then have the opportunity to submit their 'observations', to demonstrate that the 'conditions for exemption' of Article 101 (3) TFEU are met and/or to present 'commitments' likely to counteract the anti-competitive effects of their arrangement (*see* 3.3 below).[58] If the conditions for exemption are met, the Commission issues a 'finding of inapplicability' decision.[59] If the observations and commitments are rejected, the Commission issues a 'prohibition decision', which generally requires the parties to stop the infringement, imposes remedies and/or imposes a fine.[60] If the Commission is satisfied with the proposed commitments, it will publish them in the Official Journal of the EU together with a summary of the

[51] EU Commission guidelines on the application of Article 81 (3) of the Treaty, 2004 OJ (C 101) 8. *See* also Case COMP/AT.39595 – Air Canada/United Airlines, Inc./Deutsche Lufthansa AG, para. 77.
[52] John Balfour, *EC competition law and airline alliances*, 10 (1) J. AIR TRANSP. MANAG. 81, 82 (2004).
[53] MILLIGAN, *supra* note 2, at 152.
[54] EU Commission notice on cooperation within the Network of Competition Authorities, 2004 OJ (C 101) 3, para. 14.
[55] EC Regulation No. 1/2003 on the implementation of the rules on competition in Articles 81 and 82 of the Treaty, 2003 OJ (L 1) 1 (Reg. No. 1/2003), art. 11 (6). *See* also MILLIGAN, *supra* note 2, at 153.
[56] Art. 18 Reg. 1/2003. *See* also Case COMP/AT.39595 – Air Canada/United Airlines, Inc./Deutsche Lufthansa AG, para. 10.
[57] Art. 9 Reg. 1/2003. *See* also Case COMP/AT.39595 – Air Canada/United Airlines, Inc./Deutsche Lufthansa AG, para. 9.
[58] Art. 7 and 9 Reg. 1/2003. *See* also Case COMP/39.596 – BA/AA/IB, para. 8-9.
[59] Art. 10 Reg. 1/2003.
[60] Art. 7 Reg. 1/2003. *See* also MILLIGAN (2017), p. 157.

case for comments from interested third parties. In the light of the third parties' comments, the commitments may be amended by the parties before being resubmitted to the Commission which, as the case may be, endorses them in a 'legally binding decision'.[61]

III. CASE STUDY: JV BETWEEN AIR FRANCE/KLM/ALITALIA/DELTA

A. Investigation of the Commission

In January 2012, the Commission initiated proceedings against four members of the SkyTeam alliance – Air France, KLM, Alitalia and Delta (Parties) – following the conclusion by the Parties of an agreement that was suspected of violating Article 101 TFEU (Agreement). The Agreement provided for the creation of a joint venture with profit and loss sharing for all passenger air services operated by the Parties on transatlantic, behind and beyond routes. On these routes, the Parties planned, in particular, to coordinate their prices, capacities, schedules, frequencies and frequent flyer programs.[62]

B. Preliminary assessment of the Commission

a. Market Definition

The Commission's starting point was to define the Agreement's problematic markets in accordance with the traditional city pair approach *i.e.* "point of origin/point of destination" (O&D). Under this approach, any combination of point of origin and point of destination is considered a separate market.[63] Then, the Commission fine-tuned the relevant markets by distinguishing between 'premium' and 'non-premium' passengers. The former travel for business reasons, require a higher quality of service, need flexibility and are not very price sensitive. The latter travel for leisure and are not willing to pay more for flexibility or superior services. With respect to points of origin and destination, the Commission found that both Paris airports – Orly and Charles de Gaulle – and New York airports – John F. Kennedy and Newark Liberty – had to be considered substitutable.[64] Among all the markets covered by the Agreement, the Commission eventually identified three direct routes on which the conditions of Article 101 (3) TFEU had a high probability of not being met: Paris – New York for 'premium' passengers, and

[61] Art. 9 Reg. 1/2003. *See* also MILLIGAN (2017), p. 124 and BA/AA/IB, para. 10-15.
[62] EU Commission decision of May 12, 2015, Case AT.39964 – Air France/KLM/Alitalia/Delta, para. 39: The guiding principle for sales is that each airline sells tickets irrespectively on its own or partner flights. This principle is called 'metal neutral'.
[63] *Ibidem*, para. 18.
[64] *Ibidem*, para. 29-35.

Amsterdam – New York and Rome – New York for 'premium and non-premium passengers' (Routes).[65]

b. Impact on Competition

From the outset, the Commission considered that the Agreement violated Article 101 (1) TFEU since it had the 'object' of restricting competition on all key parameters. Notwithstanding this consideration, the Commission has nevertheless carried out an assessment *in concreto* of the potential anti-competitive 'effects' of the Agreement on each of the Routes.[66]

In this context, the Commission assessed that the Agreement had anticompetitive 'effects' on the Routes, in particular because (*i*) it reduced the number of competitors; the Parties were no longer acting as true competitors on key competitive parameters, (*ii*) the Parties had combined market shares – between 60 and 75% – well above those of competitors, and (*iii*) the Parties offered similar quality 'first choice' services *i.e.* more premium services than their competitors; passengers were therefore more inclined to fly with the Parties rather than with competitors.[67]

The Commission considered that the anticompetitive effects of the Agreement were not likely to be countered due to significant 'barriers to entry' for new competitors and 'structural difficulties' of existing competitors to expand their services. Indeed, the Commission found in particular that, on the Routes, (*i*) the airports of origin and destination were congested, making it difficult for competitors to obtain slots, (*ii*) the Parties already held a large portfolio of slots at origin and destination airports – between 45% and 65% – which gave them the opportunity to reshuffle their slots to provide optimal timings as compared to the competitors, (*iii*) the Parties' hubs were positioned at origin and destination airports which generated them feeder traffic, (*iv*) the possibility for non-European or non-U.S. carriers to operate air services – by means of fifth freedom of air – was *de facto* limited by the bilateral agreements concerned, (*v*) the stopover services offered by competitors were not capable of creating sufficient competitive pressure and (*iv*) on the Amsterdam – New York and Rome – New York routes, the Parties offered more frequencies than their competitors.[68]

c. Commitments of the Parties

In order to resolve the anticompetitive concerns highlighted by the preliminary assessment, the Parties proposed four commitments to the Commission. These

[65] *Ibidem*, para. 42.
[66] *Ibidem*, para. 43 *ff.*
[67] *Ibidem*, para. 44-52; 69-77; 90-95.
[68] *Ibidem*, para. 53-65; 78-86; 96-106.

commitments were accepted and endorsed, in May 2015, in a binding 10-year decision (*i.e.* until May 2025).[69] The following is a presentation of the four main commitments of the Parties, with for each one a personal standpoint as for their potential adverse effects:

1st commitment

The provision to competitors – existing or potential – of a maximum of 7 pairs of arrival and departure slots per week on the routes Rome – New York and Amsterdam – New York. The slots are granted provided that (*i*) competitors have made all reasonable efforts to obtain slots through the normal allocation process and (*ii*) competitors have exhausted their slot portfolios at the airports concerned. Also, each additional weekly flight scheduled by competitors on the above-mentioned routes without the need for the Parties' slot allocation reduces the number of slots offered by the Parties accordingly. To be noted that no slots were proposed for the Paris – New York route since the competitors already offered more frequencies than the Parties on this market.[70]

A simple calculation shows, however, that the granting of these 7 pairs of slots by the Parties does not in any case allow the competitors to exceed the frequency rate of the Parties on the routes concerned. Indeed, the average annual frequency rate (summer and winter) of the Parties on the Amsterdam – Rome route was 80% and 85% on the Rome – New York route.[71] If the Parties were to grant competitors the 7 additional slots on these routes, their average annual frequency rate would remain well above the competitors, 67% and 65% respectively. That said, it seems highly unlikely that in practice competitors really have the possibility of increasing their frequencies since, in the Commission's own admission, the Routes do not generate "sufficient demand".[72] In this context, the first commitment may be seen much more like a 'plaster on a wooden leg".

2nd commitment

The signing of interline agreements with interested competitors – existing or potential – on the Routes. These agreements give competitors the opportunity to offer return tickets consisting of one leg (*e.g.* outward) operated by the Parties and the other leg (*e.g.* return) operated by themselves.

The purpose of interline agreements is to reduce the Parties' frequency advantage over competitors.[73] Thus, it is difficult to understand why the Commission also

[69] Case AT.39964 – Air France/KLM/Alitalia/Delta.
[70] *Ibidem*, para. 113-116; 150.
[71] *Ibidem*, para. 68 and 89.
[72] *Ibidem*, para. 83 and 103.
[73] *Ibidem*, para. 118.

imposed on the Parties the signature of interlining agreements on the Paris – New York route, even though competitors already had a frequency advantage on this market; 8 daily frequencies for competitors against 7 for the Parties.[74] In addition, the Commission agreed that the Parties benefit from a wide choice of schedules on the Routes.[75] In this context, one may legitimately wonder whether the signing of interline agreements is not more likely to favor the Parties themselves – through feeder traffic – rather than competitors who do not benefit from favorable schedules.

3rd commitment

The negotiation of interline agreements with interested competitors – existing or potential – for the routes that go behind and beyond the Routes and at favorable rates ('special prorate agreements').

The purpose of these advantageous pricing conditions is to bring more passengers in transit on the transatlantic routes operated by the competitors.[76] However, in practice, it should be clarified whether a passenger truly wishes to change carrier during his stopover in Rome, Paris or Amsterdam to continue his journey with a competitor, taking in consideration that the Parties are considered as 'first choice' airlines and offer a better service than the competitors on the Routes.[77]

4th commitment

Offering the passengers of the competitors the opportunity to accrue miles on the Parties' frequent flyer programs (FFPs) when they travel on board of the competitors, provided that said competitors do not already have their own FFPs.[78]

As mentioned, access by competitors to the Parties' FFPs is only possible for competitors who do not have a comparable FFP.[79] However, the majority of competitors are members of a 'global alliance' – 'Oneworld' or 'Star Alliance' – with their own FFPs. The measure therefore appears to be superfluous for competitors already present on the market. For the rest, one may wonder whether the accrual of "miles" on the Parties' FFPs will not encourage the passengers to use said "miles" later on by flying with the Parties – better installed on the market – and not with the competitors.

[74] *Ibidem*. para. 61.
[75] *See* note 66.
[76] *Ibidem*, para. 122-126.
[77] *Ibidem*. para. 51, 76 and 94. *See* note 65.
[78] *Ibidem*, para. 127-129.
[79] *Ibidem*. para. 129.

d. Synthesis

In this case, the Commission agreed to mitigate the anti-competitive effects of a cooperative arrangement by requiring the Parties to enter into cooperative arrangements with their competitors. It seems like the Commission had sought to "fight fire with fire". Moreover, the Parties did not even attempt to demonstrate that the Agreement offered efficiency gains – within the meaning of Article 101 (3) TFEU – that could potentially offset its anti-competitive effects. Is it to be concluded that, in the context of a cost- and revenue-sharing joint venture, efficiency gains for passengers are not likely to balance the negative effects of eliminating competition? This is at least what two previous Commission decisions on transatlantic joint ventures suggest.[80]

IV. Conclusion

The liberalization of civil air transport has forced airlines around the world to lower their costs to remain competitive. At the same time, the international regulatory regime – which requires airlines to be substantially owned and effectively controlled by nationals – has largely remained unchanged. In this context, airlines cannot rely on foreign investment for financing, at the risk of losing their traffic rights. As consequence thereof, airlines have been pushed to invent defensive mechanisms – 'cooperative arrangements' – to ensure their financial survival.

The international airline market is more and more competitive, which is prompting airlines to get together through increasingly intense cooperative arrangements. However, European competition rules prohibit overly intense cooperation that could distort competition. In the face of this somewhat paradoxical situation, there is the feeling that the Commission is trying to restore some form of competition through minimal measures whose real beneficial effects are questionable.

The COVID 19 crisis in civil air transport will certainly increase the incentive for airlines to cooperate even more intensely. In this context, two broader questions come to mind: will competition authorities around the world consider that the interest of passengers in maintaining air routes – especially secondary routes – prevails over the elimination of competition? [81] If not, should the discussions of overhauling the current international regulatory regime be accelerated so as to swiftly allow foreign investments and thus ensure the longer-term survival of airlines in financial difficulties?

[80] Case COMP/39.596 – BA/AA/IB, para. 77-80. *See* also Case COMP/AT.39595 – Air Canada/United Airlines, Inc./Deutsche Lufthansa AG, para. 78-79.

[81] On 19 November 2020, the Australian Competition Authority (ACCC) temporarily authorized a joint venture between Virgin Australia and Alliance Airlines to allow the continued operations on secondary routes in the context of the COVID 19 crisis. The ACCC considered that the interest of passengers in the maintaining of secondary routes outweighed the negative effects of reduced competition: *See* ACCC decision of Nov. 19, 2020, Virgin Australia and Alliance Airlines, para. 7 and 8.

SUSTAINABILITY IN OUTER SPACE: RESOLVING THE NEW-AGE DILEMMA BETWEEN CHALLENGES & OPPORTUNITIES

Geetanjali R Kamat

I. THE ORIGINS OF SPACE SUSTAINABILITY

A. Introduction

The wondrous realm of outer space is replete with scientific, economic, social, and strategic opportunities for humankind. It is, however, a finite resource that necessitates judicious utilisation and appropriate conservation by all space actors. In the recent past, the increasing concerns pertaining to space sustainability are attributable to the commercialization of space activities. Accordingly, it is vital to calibrate the freedom of scientific investigation such that we can safeguard the outer space environment.

Since the advent of the space age on 4 October 1957,[1] There have been more than 6000 successful rocket launches.[2] Be that as it may, the Earth is currently enveloped by a greater number of defunct spacecrafts in comparison to functional satellites.[3] This fact leads us to a simple conclusion – the ability of humankind to safely access, explore, and use outer space for peaceful purposes is in great peril. Even though space activities nowadays are largely compliant with debris mitigation measures,[4] inactive satellites that were launched decades ago continue to threaten the stability of the outer space environment. As a result, a few States and international intergovernmental organisations (IGOs) are actively pursuing debris remediation efforts, including active debris removal (ADR) and on-orbit servicing of non-functional satellites that are exclusively within their jurisdiction and control.

To give a better sense of the congested orbital environment, there are more than 31,000 debris objects that are tracked and catalogued by Space Surveillance Networks.[5] Due to the high velocities at which space objects travel, debris collisions can create havoc on life and property in space. Worsening this situation is the looming effect of the 'Kessler Syndrome', a self-sustained cycle of collisions generating additional debris, which may eventually preclude the use of outer

[1] On this date, the world's first artificial satellite, Sputnik I, was launched into outer space.
[2] European Space Agency, *Space debris by the numbers*, ESA SPACE SAFETY (Aug. 12, 2022, 8:30 AM), https://www.esa.int/Space_Safety/Space_Debris/Space_debris_by_the_numbers.
[3] ESA Space Debris Office, *ESA's Annual Space Environment Report*, 9 (2022), https://www.sdo.esoc.esa.int/environment_report/Space_Environment_Report_latest.pdf.
[4] 60-80% of all rocket mass launched in the last decade adhered to mitigation measures. *See Id*. at 6.
[5] *See* ESA Debris Statistics, *supra* note 2.

space.[67] The measures taken by the global space industry today will determine the existence and extent of such catastrophic predictions.

Whilst outer void space[8] itself may be an endless expanse, the near-Earth space is a limited region. From the perspective of resource utilisation, this observation is of great significance. Specifically, Earth orbits are used for indispensable space services such as weather monitoring in geostationary orbit, navigation in medium-Earth orbit, and communication in low-Earth orbit (LEO).[9] Since these orbits are finite resources, they need to be preserved for the benefit of future generations. Therefore, there is an urgent need to incorporate sustainability as a vital component of space missions.

B. The Early Beginnings: Space Debris

The origins of space sustainability can be traced to the latter half of the twentieth century when international organisations, such as the International Astronautical Federation (IAF) and the Committee on Space Research (COSPAR), organised scientific sessions on space debris.[10] Among other purposes, these meetings aimed to propose technical solutions to mitigate debris through techniques such as mathematical modelling. Despite the usefulness of such deliberations among experts, it soon became necessary to adopt a multilateral stance. By assigning the task to a single international organisation, the industry could rely on a uniform set of regulations governing debris. Subsequently, this responsibility was entrusted to the United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS) owing to its experience in dealing with space law matters through successful inter-governmental collaborations.[11] It is also worth noting that these dialogues did not take place in vacuum. The occurrence of in-space collisions influenced States' decisions to prioritise the problem of space junk.[12] Simply put, such incidents strengthened the political will of States and IGOs to collaborate and resolve the space debris issue.

Taking a step back, it is important to understand the context in which the earliest discussions on space debris took place. When the Scientific and Technical

[6] The Kessler Syndrome is expected to occur in LEO around 2035 or 2048. Akhil Rao and Giacomo Rondina, *Open access to orbit and runaway space debris growth*, 1 (2022), https://arxiv.org/pdf/2202.07442.pdf.
[7] W. Flury, *European Activities on Space Debris*, PROC. 1ST EUROPEAN CONFERENCE ON SPACE DEBRIS 27, 29-32 (1993).
[8] The term "outer void space," as coined by Bin Cheng, refers to the void between celestial bodies. *See* Bin Cheng, *Outer Space: The International Legal Framework – The International Legal Status of Outer Space, Space Objects, and Spacemen*, 10 Thesaurus Acroasium, 11 (1981).
[9] Elena Cirkovic, Minoo Rathnasabapathy and Danielle Wood, *Sustainable Orbit and the Earth System: Mitigation and Regulation*, PROC. 8TH EUROPEAN CONFERENCE ON SPACE DEBRIS (2021).
[10] Dietrich Rex, *The Role of the Scientific and Technical Subcommittee of UN-COPUOS for the Space Debris Work of the United Nations*, PROC. 2ND EUROPEAN CONFERENCE ON SPACE DEBRIS 759, 760-761 (1997) .
[11] *Id.* at 760.
[12] For instance, in 1993, debris had penetrated the antenna dish mounted on the Hubble Space Telescope and in 1996, fragments of a defunct Ariane satellite severely damaged part of Cerise, the French reconnaissance satellite. European Space Agency, *Space debris: assessing the risk*, ESOC, (June. 1, 2022, 5:00 PM), https://www.esa.int/About_Us/ESOC/Space_debris_assessing_the_risk.

Subcommittee (STSC)[13] of UN COPUOS negotiated the feasibility of using nuclear power sources (NPS) in space, the dangers posed by potential collisions of nuclear reactors with space debris became apparent.[14] Pursuant to this realisation, State representatives engaged in several discussions and finally, the STSC included 'space debris' as an agenda item in February 1994. In 1999, the STSC published the 'Technical Report on Space Debris' to establish the characteristics of space debris and specify a uniform basis for future deliberations.[15] Even though this report did not envisage a significant increase in debris in the short-term,[16] the STSC had the foresight to devise mechanisms for monitoring the growth of debris population. Through the modalities of international cooperation and mutual understanding, States, IGOs and other international organisations were encouraged to share their research findings and practices on space debris with each other.[17]

In this manner, UN COPUOS sought to prevent the fragmentation of laws by encouraging industry players to exchange their opinions on the issue of space debris. This objective is in alignment with the 'consensus-based'[18] decision-making process followed by UN COPUOS, which has received its own share of criticism and praise. Even though it involves procedural delays, it is a rewarding process that finds merit in considering the views of all members to represent a unified opinion on every small detail related to the matter.

C. Concerns for Sustainability

The specific issue of space debris soon extended to wider discussions for a safe, secure, and sustainable outer space environment. In 2004, the then Chairman of STSC, Karl Doetsch delivered a speech wherein he addressed the topic of Long-term Sustainability of Outer Space Activities (LTSSA). Apart from stressing the ability of UN COPUOS to encourage sustainable practices among space actors, he highlighted the significance of designing sustainable space missions.

In response, the delegates made noteworthy observations. For instance, the delegate from France opined that since exploration and innovation will guide the future of humankind, it must be actively used in the pursuit of sustainable goals. Delegates from other countries, such as India and Chile, were appreciative of the proposals made in the speech but found them to be a bit far-reaching and

[13] Due to the complexity of the space debris issue, it was agreed that a stringent scientific and technical basis was required.
[14] *See* Second ECSD, *supra* note 10, at 761.
[15] U.N. COMM. ON THE PEACEFUL USES OF OUTER SPACE, TECHNICAL REPORT ON SPACE DEBRIS, at 19, U.N. Doc. A/AC.105/720, U.N. Sales No. E.99.I.17 (1999).
[16] *Id.* at 3.
[17] For instance, countries such as Australia, Belgium, Canada, Germany, the Netherlands, Nigeria and Sweden and organisations including the International Academy of Astronautics, the IAF and COSPAR submitted several working papers on space debris. *See* 1999 Report, *supra* note 15, at 46.
[18] George D. Kyriakopoulos & Maria Manoli, THE SPACE TREATIES AT CROSSROADS: CONSIDERATIONS DE LEGE FERENDA 175 (Springer 2019).

futuristic.[19] Such apprehensions were well-founded as the space industry was still in its nascent stage. From a practical perspective, certain delegates even stressed upon the divide between developed and developing countries in terms of their ability to pursue sustainability. Interestingly, many of these arguments continue to hold relevance and find their way into discussions on space sustainability even today.

In 2007, the delegate from France expressed his intention to propose the LTSSA as a permanent agenda item of STSC. In a matter of three years, this proposal resulted in the establishment of a Working Group on the LTSSA (WG-I) which was, among other responsibilities, tasked with the preparation of a report along with a set of best-practice guidelines. [20] Notably, it was required to remain mindful of the equitable interests of developing countries, including those who were yet to enter the space industry. To this end, the WG-I established expert groups on four topics namely, sustainable space utilisation, space debris, space weather, and guidance for space actors.[21] From a legal standpoint, the 'voluntary' nature of these guidelines focused on prudent short-term and medium-term measures, albeit subject to review at regular intervals to accommodate new challenges.[22] Therefore, from the very start, a majority of the space actors preferred 'recommendatory' soft law measures over 'binding' hard law for dealing with LTSSA, as discussed in the next section.

In this paper, the author seeks to analyse the key contributors of unsustainable behaviour in outer space in the current era. Before analyzing this question in greater detail, it is essential to understand and appreciate the circumstances that led to the 'long-term sustainability of outer space' being recognized as an agenda item by the UN Committee on the Peaceful Uses of Outer Space. Part II of this paper discusses the legal framework pertaining to sustainability in outer space, comprising 'hard law' in the form of the space law treaties and 'soft law' in the form of principles, resolutions, guidelines, and technical standards. Part III of this paper evaluates the efficacy of measures taken by international bodies and spacefaring nations to prevent injudicious space activities. The author concludes the paper in Part IV by setting out the challenges faced by the international community and proposing solutions for ensuring the safety and stability of outer space. The need of the hour is to implement an international framework based on principles of equality, accountability, and transparency, which would effectively monitor the

[19] Unedited Transcript of the U.N. Committee on the Peaceful Uses of Outer Space (10 June 2005), https://www.unoosa.org/pdf/transcripts/copuos/COPUOS_T538E.pdf.
[20] The effectiveness of COPUOS is limited by its rules of agenda-setting. *See* MARIETTA BENKO, KAI-UWE SCHROGL, DENISE DIGRELL & ESTHER JOLLEY, SPACE LAW: CURRENT PROBLEMS AND PERSPECTIVES FOR FUTURE REGULATION 69 (Eleven International Publishing 2005).
[21] Laura Delgado Lopez, Christopher D. Johnson, Victoria Samson, Michael Simpson & Brian Weeden, *The Importance of the United Nations Guidelines for the Long-Term Sustainability of Space Activities and Other International Initiatives to Promote Space Sustainability*, SECURE WORLD FOUNDATION 1, 6 (2014), https://www.researchgate.net/publication/338253174_The_Importance_of_the_United_Nations_Guidelines_for_the_Long-Term_Sustainability_of_Space_Activities_and_Other_International_Initiatives_to_Promote_Space_Sustainability.
[22] Committee on the Peaceful Uses of Outer Space, Rep. of the Scientific and Technical Subcommittee on its Forty-Seventh Session and the Legal Subcommittee on Its Forty-Ninth Session, U.N. Doc. A/65/20 (2010).

steps taken by the global community to preserve the outer space environment for future generations.

II. Legal Framework

A. Deconstructing Sustainability

The long-term sustainability of outer space activities is defined as follows:

"*the ability to maintain the conduct of space activities indefinitely into the future in a manner that realizes the objectives of equitable access to the benefits of the exploration and use of outer space for peaceful purposes, in order to meet the needs of the present generation while preserving the outer space environment for future generations.*"[23]

Based on the aforementioned definition, it can be inferred that space sustainability places a strong emphasis on intra-generational and inter-generational equity for accessing the benefits of outer space. Analogous to the models adopted for Earth's sustainability, the 'outer space' needs of the present generation must be met while keeping in mind such needs of future generations. However, with the increasing commercialisation of space, such as the mega-constellations in LEO, it is perhaps worth re-assessing the interpretation of the 'needs' of the present generation.

As per the 1987 Brundtland Report, sustainable development is a process wherein resource exploitation, investment purposes, technological development and institutional change do not compromise the needs of future generations.[24] To achieve this outcome, it is necessary to modify existing processes and behavioural patterns as participants in the space industry. At the same time, along with scientific and technical solutions, space sustainability demands a comprehensive legal regime. As mentioned previously, it currently comprises a combination of provisions that are legally binding, such as the UN space treaties,[25] as well as non-binding.

With regard to sustainability, the Outer Space Treaty includes certain overarching principles. Like any other international convention, the provisions of this treaty are

[23] U.N. Working Group on the Long-term Sustainability of Outer Space Activities: Preambular Text and Nine Guidelines, *Conference room paper by the Chair of the Working Group on the Long-term Sustainability of Outer Space Activities*, ¶5, U.N. Doc. A/AC.105/C.1/2018/CRP.18 (Feb. 7, 2018).

[24] Rep. of the World Commission on Environment and Development, U.N. Doc. A/42/427 (1987).

[25] For the purposes of the discussion in this paper, the relevant UN space treaties include: (a) Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies, Jan. 27, 1967, 610 U.N.T.S. 205 (Outer Space Treaty); (b) Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, Apr. 22, 1968, 672 U.N.T.S. 119 (Rescue Agreement); (c) Convention on International Liability Caused by Space Objects, Mar. 29, 1972, 961 U.N.T.S. 2389 (Liability Convention); and (d) Convention on Registration of Objects Launched into Outer Space, Jan. 24, 1975, 1023 U.N.T.S. 15 (Registration Convention).

binding on States that have ratified it.[26] Fortunately, this is not a matter of concern since most States, especially the spacefaring ones, are parties to the Outer Space Treaty. In any case, over the years, many provisions[27] thereunder have acquired the status of customary international law as a result of consistent State practice and *opinio juris*. Although there are no definitions for LTSSA in the UN space treaties, there are relevant principles under the Outer Space Treaty, as discussed below.

B. The *Magna Carta* of Space Law

Firstly, the use and exploration of outer space must comply with the principles of equality and non-discrimination.[28] Such an approach of 'material equality' entails that even if States currently do not have the capability to use and explore space to their benefit, they are entitled to, and must be able to, do so in the future.[29] This principle acknowledges the disparity existing between countries on the basis of their scientific and economic progress. Thus, a country's existing development status should not prevent it from undertaking space missions in the future. Accordingly, there is a greater onus on spacefaring States to ensure space sustainability as this burden must not be disproportionately borne by States that are new entrants in the space arena.

Secondly, all outer space activities must be carried out in accordance with international law, including the UN Charter, with the aim of fostering international cooperation and understanding.[30] Through this provision, principles of environmental law can be extrapolated to the outer space domain. For example, Principle 21 of the 1972 Stockholm Declaration of the United Nations Conference on the Human Environment establishes the responsibility of States to avoid damage to territories beyond the confines of their national jurisdictions.[31] In addition, the 'no harm' rule has been validated by the International Court of Justice in the *Gabcikovo-Nagymaros Project* case[32] wherein it was held that States are obliged to exercise vigilance to minimise the risks of environmental damage.[33]

Under the UN space treaties, a State is not legally bound to engage in environmentally sustainable practices such as debris mitigation and

[26] As of 1 January 2022, the Outer Space Treaty has been ratified by 112 States and signed by 23 States. *See* Comm. on the Peaceful Uses of Outer Space, Status of International Agreements relating to activities in outer space as at 1 January 2022, U.N. Doc. A/AC.105/C.2/2022/CRP.10 (2022).
[27] Examples include Arts. I, II, VI and VII of the Outer Space Treaty. *See* Prof. Ram S. Jakhu and Prof. Steven Freeland, *The Relationship Between the Outer Space Treaty and Customary International Law*, 59TH IISL COLLOQUIUM ON THE LAW OF OUTER SPACE 1, 5-9 (2016).
[28] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, Article I, Jan. 27, 1967, https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/outerspacetreaty.html.
[29] Stephan Hobe, *Article I*, in: Cologne Commentary on Space Law – Outer Space Treaty, 190 (2017).
[30] *Supra* note 28, at art. 3.
[31] U.N. Conference on the Human Environment, *Stockholm Declaration on the Human Environment*, U.N. Doc. A/CONF.48/14/Rev.1 (June, 1972).
[32] Gabcikovo-Nagymaros Project (Hung. v. Slovk.), Judgment, 1997 I.C.J. Rep. 3 (Feb. 5).
[33] Mara Tignino & Christian Brethaut, *The role of international case law in implementing the obligation not to cause significant harm*, 20 INT ENVIRON AGREEMENTS 631, 643-644 (2020), https://doi.org/10.1007/s10784-020-09503-6.

remediation.[34] The obligations of a State towards the outer space environment are however rooted in Articles III and IX of the Outer Space Treaty. States have, at an international level, been held liable for "*[…] using their territory to the detriment of another State*"[35], as held in the *Trail Smelter Arbitration*[36] or "*[…] using their territory to damage another State*",[37] as held in the *Corfu Channel Case*.[38] Thus, States must consciously work towards tackling the debris that may cause damage to, or hinder the rights of, other space activities. Furthermore, given that the exploration and use of outer space is the 'province of all mankind', all States have vested rights in common resources, and one cannot be disadvantaged on account of another's benefit.[39] Therefore, compliance with environmental safety measures is necessary to avoid risking the interests of the entire community.

Thirdly, States must discharge their international responsibility for national space activities by authorising and continually supervising such missions.[40] The obligation to do so lies on the 'appropriate State' which usually refers to the State in which the non-governmental entity in question is incorporated.[41] In furtherance of this provision, States are encouraged to implement national regulatory frameworks, and include 'internationally recommended' sustainable practices as a compulsory licensing condition for missions. At the same time, the licensing authorities must refrain from imposing restrictive thresholds for compliance. As will be discussed in Part IV of this paper, a clear regulatory framework provides a conducive environment for New Space actors to build and further develop their space programmes.

Fourthly, States must conduct outer space missions with due regard to the corresponding interests of all other States.[42] Whilst the principle of due regard remains undefined in international space law, the Outer Space Treaty envisages a system of international consultations to bring it into effect. Such consultations are *mandatory* if a State believes that its planned space activities could potentially cause harmful interference with the activities of other States. On the other hand, consultations are *recommendatory* if a State believes that the space activities carried out by other States could potentially cause harmful interference to its own activity. The main purpose of these good-faith consultations is to preserve the interests of all concerned parties.

[34] Francis Lyall & Paul B. Larsen, SPACE LAW: A TREATISE 270 (2nd ed. 2018).
[35] *Id.* at 246.
[36] Trail Smelter Arbitration (U.S. v. Canada), 1938 and 1941 3 RIAA 1905.
[37] *Supra* note 34, at 246.
[38] United Kingdom of Great Britain and Northern Ireland v. People's Republic of Albania, Judgment, 1949 I.C.J. 4 (Apr. 9).
[39] J. I. Gabrynowicz, *The "Province" and "Heritage" of Mankind Reconsidered: A New Beginning*, 2ND CONFERENCE ON LUNAR BASES AND SPACE ACTIVITIES OF THE 21ST CENTURY 691, 692 (1992).
[40] *Supra* note 28, at art. VI.
[41] Neta Menashy Palkovitz, *Regulating a revolution: small satellites and the law of outer space*, LEIDEN UNIVERSITY REPOSITORY 67, 76 (2019).
[42] *Supra* note 28, at art. IX.

Lastly, the dissemination of information among States regarding the nature, conduct, locations, and results of their respective space missions[43] enhances transparency and confidence. In addition, it promotes international cooperation, which is necessary to succeed in a hostile environment such as outer space. Moreover, information and data sharing has also proven to enhance the ability of the space industry to gather orbital data, predict collisions, and take appropriate actions to ensure space safety.[44] Even though the Outer Space Treaty provides for binding provisions, it consists of a 'framework of principles'. Therefore, it needs the support of detailed rules to guide space actors in their activities in the form of resolutions, guidelines, and standards.

C. UN General Assembly Resolutions

The UN General Assembly (UNGA) has, by way of resolutions, reinforced the provisions of the Outer Space Treaty in a bid to achieve sustainable development goals by 2030. In terms of sustainability in space, strengthening LTSSA requires cooperation through efforts at the national, regional, inter-regional, and international levels.[45] If, for example, Country A has the infrastructure to gather space surveillance data and Country B has the expertise to analyse such data, both countries should be willing to cooperate with each other to expedite sustainable efforts, subject to national security interests.

Often, States have also recognised the need to maintain the sustainable use of outer space by ensuring that their space missions are safe and minimising potential harm to the environment.[46] In this regard, it may be argued that setting out detailed mechanisms to bring these principles into action will result in uniform implementation. However, the truth of the matter is that States have different economic, social, and scientific abilities to translate a policy measure into action. These practical challenges cannot be ignored for the sake of consistency. Thus, by offering a certain level of flexibility, States are able to take these broad principles and fine-tune them in accordance with their needs and priorities.

Although UNGA resolutions are criticised for not possessing the power to compel States to act in a certain manner, they represent the views of the international space community at large.[47] Over a period of time, such resolutions help crystallise opinions that can potentially evolve into binding law in the form of a treaty, a principle of customary international law, or even as a part of the national legislative framework.[48] Therefore, UNGA resolutions play a substantial role in the

[43] *Supra* note 28, at art. XI.
[44] CASSANDRA STEER & MATTHEW HERSCH, WAR AND PEACE IN OUTER SPACE 78-82 (Oxford University Press 2021).
[45] G.A. Res. 72/78, ¶ 8 (Dec. 14, 2017).
[46] G.A. Res. 68/74, Preamble (Dec. 16, 2013).
[47] Gabriella Rosner Lande, *The Changing Effectiveness of General Assembly Resolutions*, 58 A.S.I.L. PROC. 162, 164 (1964).
[48] Bin Cheng, THE EXTRATERRESTRIAL APPLICATION OF INTERNATIONAL LAW 7 (Oxford University Press 1997).

development of international space law and their significance must not be undermined.

D. UN COPUOS LTSSA Guidelines

In 2016, the recommendations of the WG-I were compiled into the first set of guidelines on which a consensus had been reached (2016 LTSSA Guidelines). In addition to the findings of the WG-I, several States[49] submitted working papers, conference room papers, and proposals pertaining to LTSSA before the STSC.[50] In this manner, State practices were reviewed during the finalisation of these guidelines. Broadly, the 2016 LTSSA Guidelines are categorized into (a) policy and regulatory procedures; (b) safety of space operations; (c) international cooperation, capacity building and awareness; and (d) scientific and technical research development.[51] Despite the voluntary nature of these guidelines, a closer examination reveals their nexus with binding legal obligations under the UN space treaties and the framework of the International Telecommunication Union (ITU).[52]

Guideline 1 recommends States to adopt, revise or amend domestic regulatory regimes in light of their obligations as 'appropriate States' responsible for national space activities[53] and as 'launching States' liable for damage caused by space objects.[54] Primarily, domestic laws have the capacity to enforce generally accepted norms for safe space activities, including LTSSA. For instance, national rules could mandate enforcement of the UN COPUOS Space Debris Mitigation Guidelines and the ISO standards.[5556] Accordingly, non-legally binding practices can be used to elaborate upon the processes for authorising and continually supervising national space actions.

Guideline 4 advises States to ensure the equitable, rational, and efficient use of the radio frequency spectrum and orbital slots used by satellites, without causing harmful interference to other States and IGOs. This is in tune with the requirements set out under the ITU Constitution and the ITU Radio Regulations. For instance, Article 45 of the ITU Constitution requires stations to be operated without causing harmful interference to the services and communications carried out by other entities in accordance with the ITU Radio Regulations.[57] It can, therefore, be concluded that using soft law to supplement existing hard law

[49] Interestingly, the proposal made by Russia required States and IGOs to develop processes for conducting active debris removal activities in space.
[50] Committee on the Peaceful Uses of Outer Space, Rep. of the Scientific and Technical Subcommittee and the Legal Subcommitte on Its Fifty-Third Session, U.N. Doc. A/71/20 (2016).
[51] Guidelines for the long-term sustainability of outer space activities, *Working paper by the Chair of the Working Group on the Long-term Sustainability of Outer Space Activities*, U.N. Doc. A/AC.105/C.1/L.354 (June 20, 2016).
[52] Guidelines 4 and 19 of the 2016 LTSSA Guidelines.
[53] *Supra* note 28, at art. VI.
[54] Convention on International Liability for Damage Caused by Space Objects, arts. II and III, Mar 29, 1972, https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introliability-convention.html.
[55] Committee on the Peaceful Uses of Outer Space, Rep. of the Scientific and Technical Subcommittee. on Its Fifty-Fifth Session, U.N. Doc. A/AC.105/1167 (2018).
[56] United Nations Office for Outer Space Affairs, Inter-Agency Space Debris Coordination Committee (IADC): Space Debris Mitigation Guidelines, https://www.unoosa.org/documents/pdf/spacelaw/sd/IADC.pdf.
[57] CONSTITUTION OF THE INTERNATIONAL TELECOMMUNICATION UNION, Art. 45.

strengthens the overall impact of sustainable efforts. Moreover, as stated previously, the voluntary nature of these guidelines permits States and IGOs to enforce measures based on their needs and capabilities.

Guideline 28 highlights the need to address policy and legal issues to ensure that scientific and technical measures comply with the UN Charter and international law.[58] The reference to Article III of the Outer Space Treaty ties in with attempts to achieve sustainability with the help of international cooperation. However, when compared to technical solutions for sustainability, efforts on the legal front are not as developed. This dichotomy will be elaborated in Part IV of this paper.

In 2018, the WG-I agreed upon a preamble and an additional nine guidelines which, unfortunately, did not represent the complete set of second guidelines. In particular, it stated how factors such as the proliferation of space debris, large constellations, and increased collision risks hinders the LTSSA. Accordingly, among other measures, these nine guidelines included: (a) enhancing registration practice; (b) updating information on space objects and orbital events; (c) addressing risks associated with uncontrolled re-entry of space objects; (d) facilitating international cooperation in support of LTSSA.[59]

The WG-I viewed the 2016 LTSSA Guidelines as a living document that must be periodically reviewed and revised to effectively promote sustainability.[60] Finally, in 2019, UN COPUOS finalized and adopted the preamble along with the 21 guidelines for LTSSA (2019 LTSSA Guidelines).

E. Promoting A Sustainable Space

a. The New LTSSA Working Group

In 2019, UN COPUOS decided to establish a new working group to work on LTSSA under a five-year workplan (WG-II). As sustainable measures become more evolved and prominent, questions such as the definition of space debris, ownership of debris objects, prior consent of the debris creator, and liability concerns will need to be addressed. At this juncture, it is important to kickstart this process as a part of the WG-II workplan so that legal procedures can encourage space actors to actively participate in initiatives for space sustainability.

Similar to its predecessor, WG-II has been mandated to produce a detailed report on LTSSA which includes, *inter alia*, the practices and experiences of the 2019 LTSSA Guidelines for their further development. In this manner, the 2019 LTSSA Guidelines can be reviewed and suitably amended to accommodate new

[58] *Supra* note 50, at 56.
[59] Comm. on the Peaceful Uses of Outer Space, Rep. of the Scientific and Technical Subcommittee on Its Fifty-Sixth Session and Legal Subcommittee on Its Fifty-Eighth Session, U.N. Doc. A/74/20 (2019).
[60] *Supra* note 23, at 5.

developments, if any. It is therefore worth discussing key measures that have thus far been taken by IGOs and States to ensure a sustainable outer space environment.[61]

b. European Space Agency

In February 2022, the European Space Agency (ESA) submitted a report which mapped its initiatives against each of the 2019 LTSSA Guidelines. At the outset, it is worth noting that as an IGO, ESA has declared its acceptance of the rights and obligations under the Rescue Agreement, the Registration Convention, and the Liability Convention. By doing so, it has established itself as a responsible space actor in the industry.

In terms of the internal governance framework for sustainable space missions, ESA has a separate set of policies governing various aspects of a space mission, namely: space debris mitigation, registration of space objects, the safety of NPS, re-entry safety, planetary protection, and frequency management. Furthermore, all ESA missions are mandatorily required to comply with the requirements set forth under ISO 24113 on 'Space Systems – Space Debris Mitigation'. By supplementing the existing provisions under the UN space treaties in this manner, ESA is offering space operators with clarity and certainty in terms of expectations from such regulatory processes. Such well-defined legal requirements incentivise NewSpace entities to be incorporated in an ESA member State.[62] Additionally, ESA engages in international cooperation by entering into joint initiatives with public and private stakeholders on key topics of space sustainability. As an example, the ESA 'operational collision avoidance service' is used not only for ESA missions but also for a few third-party missions operated by other States. It also furthers capacity building and awareness on sustainability by organising conferences such as the 'European Conference on Space Debris' or even giving lectures at universities. The comprehensive nature of these actions has been an exemplary indication of bringing the 2019 LTSSA Guidelines into effect.

In accordance with Article 189 of the Treaty on the Functioning of the European Union, 'space' is a shared competence between the European Union and its member States.[63] However, not all member States of the European Union are members of ESA and vice-versa.[64] Nevertheless, the national space agencies of ESA member States can take assistance from ESA to implement similar sustainable measures for their space missions. With a strong membership of 22

[61] Draft terms of reference, methods of work and workplan of the Working Group on the Long-term Sustainability of Outer Space Activities, *Conference room paper by the Chair of the Working Group on the Long-term Sustainability of Outer Space Activities*, U.N. Doc. A/AC.105/C.1/2022/CRP.13 (Feb. 7, 2022).
[62] Long-term sustainability of outer space activities, *Report on the implementation of the Guidelines for the Long-term Sustainability of Outer Space Activities in the European Space Agency*, U.N. Doc. A/AC.105/C.1/2022/CRP.14/Rev.1 (Feb. 7, 2022).
[63] Art. 189, Treaty on the Functioning of the European Union.
[64] The European Union has 27 member States out of which 19 member States (along with Norway, Switzerland, and the UK) are member States of ESA.

States, ESA views itself as "*[…] a socially responsible organisation, taking maximum account of the needs of future generations regarding the sustainability of its activities vis-à-vis the environment, the economy and society at large.*"[65] ESA has therefore been able to enforce the 2019 LTSSA Guidelines in letter and spirit.

c. France

From the very beginning, France has played an active role in promoting sustainability in discussions at UN COPUOS. The 2008 French Space Operations Act requires all space operators to conduct an environmental impact assessment to ensure the safety of their missions. By doing so, they must be able to effectively demonstrate the manner in which they will "*avoid, reduce or offset adverse effects on the environment.*"[66] By setting such a benchmark for operators, the French government is ensuring that only sustainable missions are licensed for launch. It further authorises and supervises the activities of French space actors by giving due consideration to the UN COPUOS Space Debris Mitigation Guidelines, along with other international standards that exist in this regard. In this way, voluntary guidelines have been made legally binding for domestic operators. The national space agency of France, the National Centre for Space Studies, has a Space Situational Awareness Center, which offers a collision avoidance service that enables it to interface with other European and international partners.[67] Accordingly, by promoting international cooperation with other countries on space activities, France discharges its obligation under Article III of the Outer Space Treaty.

d. United Kingdom

In the recent past, outer space initiatives undertaken by the UK have been focused on LTSSA, including the implementation of the 2019 LTSSA Guidelines. In addition to having 'Space Surveillance and Tracking' capability, the UK is currently developing its orbital regulatory requirements to keep pace with innovation in the space sector. Particularly, to ensure an efficient implementation of the 2019 LTSSA Guidelines, the UK government has expressed, among other matters, the need to: (a) consider multilateral mechanisms for exchanging relevant information on space objects; (b) develop common standards to ensure coherency.[68]

Thus, the UK space industry endorses multilateralism and consistency. One of the major disadvantages of having divergent standards and practices is that it leads

[65] European Space Agency, *ESA Annual Report 2021*, 46, (2022), https://esamultimedia.esa.int/docs/corporate/ESA_2021_Annual_Report.pdf.
[66] Willy Mikalef, *The Space Law Review: France*, THE LAW REVIEWS (Dec. 9, 2021), https://thelawreviews.co.uk/title/the-space-law-review/france.
[67] Long-term sustainability of outer space activities, *General Presentation of French activities and views concerning the long-term sustainability of outer space activities, in relation with the implementation of the 21 Guidelines*, U.N. Doc. A/AC.105/C.1/2022/CRP.20 (Feb. 7, 2022).
[68] Long-term sustainability of outer space activities, *United Kingdom Update on its Reporting Approach for the Voluntary Implementation of the Guidelines for the Long-Term Sustainability of Outer Space Activities*, U.N. Doc. A/AC.105/C.1/2022/CRP.22 (Feb. 14, 2022).

to a situation of forum shopping.[69] Instead of instituting a hierarchy of regimes wherein some States have a better regulatory environment than others, a uniform approach would create a level-playing field, at least in terms of general policy measures. Nonetheless, this has to be balanced with the equitable differences that exist between countries. In order to bridge this gap, countries like France and the UK can enter into joint missions with other developing countries and collectively enable the creation of an efficient system for future deliberations on LTSSA.

F. Way Forward

a. International Collaborations

Under the aegis of UN COPUOS, States and IGOs have entered into initiatives to enhance the implementation of the 2019 LTSSA Guidelines. The recently launched 'Space Sustainability Rating' (**SSR**) seeks to incentivise operators to exhibit sustainable behaviour in outer space.[70] By quantifying sustainable conduct in terms of ratings, it becomes easier to verify compliance with LTSSA. When companies such as Airbus, SpaceX, and Lockheed Martin support SSR and participate in the testing phase of this initiative, it strengthens the political will of States to adopt sustainable measures.[71]

At the 59th session of the STSC, States exchanged various measures that they had undertaken to implement the 2019 LTSSA Guidelines, including the creation of a national space policy, the ratification of international treaties, improved registration practice in respect of new space objects, and enhanced partnerships between the public and private sector.[72] Following a 'bottom-up' approach will also be an efficient way of realising LTSSA as it aids the consensus-based decision-making process at UN COPUOS. Besides, creating equal opportunities between developed and developing countries, the use of technology transfer has also been expressed to be an effective way of assisting emerging space actors. By promoting equitable access, such recommendations enable less scientifically/economically developed countries to avail of the benefits arising from the use and exploration of outer space.

Additionally, since the ITU has had extensive experience in dealing with key sustainable principles such as 'harmful interference', UN COPUOS must liaise with such organisations. It must avoid re-inventing the wheel and instead, seek to

[69] Dimitri Linden, *The Impact of National Space Legislation on Private Space Undertakings: Regulatory Competition vs. Harmonization*, 8 JSPG, (2016).
[70] Bruce Mc Clintock, Katie Feistel, Douglas C. Ligor & Kathryn O'Connor, *Responsible Space Behavior for the New Space Era: Preserving the Province of Humanity*, RAND CORPORATION 1, 17, (2021), https://www.rand.org/content/dam/rand/pubs/perspectives/PEA800/PEA887-2/RAND_PEA887-2.pdf.
[71] Florian Micco, *Space Sustainability Rating is Now Live*, Press Releases (2022), https://spacesustainabilityrating.org/space-sustainability-rating-now-live/.
[72] Comm. on the Peaceful Uses of Outer Space, Rep. of the Scientific and Technical Subcomm. on its Fifty-ninth Session, U.N. Doc. A/AC.105/1258 (2022).

introduce new guidelines or modify existing guidelines in a manner that is consistent with the approach taken by international fora.

G. Legal Limitations: The ADR Model

The element of innovation plays a key role in the development of space-based technologies and services for sustainability. The complexities of such missions warrant international consensus on legal concerns. Therefore, as a part of its workplan, WG-II must work more closely with the Legal Subcommittee of UN COPUOS such that legal developments can take place alongside scientific solutions. Given that there are a few innovative missions that are slated to be launched in the next few years such as ClearSpace-1[73] and Commercial Removal of Debris Demonstration, the sustainable space industry is progressing at a steady pace. The WG-II must account for the results of these missions to improve the 2019 LTSSA Guidelines and create a suitable legal regime accordingly. The legal limitations posed by such sustainable activities are discussed below by taking the example of the ADR model.

a. Defining 'Space Debris'

The term 'space debris', although lacking a binding legal definition, is widely interpreted as the 'component part of a space object'.[74] At first glance, this definition appears to resolve liability concerns in case of damage caused by space debris. However, by equating 'space debris' to a 'space object' without any additional qualifications, there is no distinction established between 'functional' and 'non-functional' space objects. Since the starting point for an ADR mission is ascertaining the target, it is essential to assign a precise meaning to space debris.

The IADC Debris Mitigation Guidelines attempt to clarify this term by classifying a 'non-functional' space object (i.e., when it is incapable of fulfilling its intended mission) as 'space debris'. However, if the spacecraft is in reserve/standby mode awaiting a possible reactivation, it must be considered functional.[75] This caveat is ambiguous as it neither specifies the circumstances that would justify a reserve/standby mode[76] nor does it state the duration for a possible revival.[77]

[73] As a part of enforcing new measures to manage debris population, ESA is also working on its first active debris removal mission titled 'Clearspace-1' to de-orbit a part of VESPA, which is space debris owned by ESA.
[74] Convention on Internation Liability for Damage Caused by Space Objects, Art. I(d), Mar 29, 1972, https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/liabiliy-convention.html.
[75] *IADC Space Debris Mitigation Guidelines*, IADC Steering Group and Working Group, 6-7 (2020).
[76] Peter Stubbe, STATE ACCOUNTABILITY FOR SPACE DEBRIS: A LEGAL STUDY OF RESPONSIBILITY FOR POLLUTING THE SPACE ENVIRONMENT AND LIABILITY FOR DAMAGE CAUSED BY SPACE DEBRIS 387 (Brill Nijhoff 2017).
[77] After losing contact with its ENVISAT satellite on 8 April 2012, ESA declared its 'end of mission' on 9 May 2012. However, ESA stated that it would continue its attempts to regain contact for another 2 months. *See* the press release here: https://www.esa.int/Applications/Observing_the_Earth/Envisat/ESA_declares_end_of_mission_for_Envisat.

Furthermore, the scope of non-functionality remains unclear – whether it means non-manoeuvrability,[78] a non-operational payload, or both.

Irrespective of the functionality of the space object, space debris may continue to be valuable due to sensitive data or intellectual property rights. More importantly, States may be hesitant to share information about the configuration of their space objects due to strategic benefits derived from reverse engineering. These apprehensions contribute to the significance of 'consent' for ADR operations.

b. To Consent or Not?

One of the necessary prerequisites for conducting ADR is obtaining the prior consent of the State of the registry which retains jurisdiction and control[79] over the defunct space object.[80] The basic assumption in such a case is that the identified State of the registry exercises permanent ownership even over inactive satellites. A multinational effort undertaken by a consortium revealed that 30 *statistically-most-concerning* debris in LEO weighs more than 2000 kilograms.[81] Therefore, from the perspective of tackling such space debris, the State of the registry is limited to a few countries and organizations.[82] Nonetheless, the element of consent plays an important role because unlike the law of the sea, there is no concept of 'abandonment of wreckage' in space law. Therefore, the State of registry needs to expressly authorize the removal of its debris. Broadly, the following situations, as mentioned in the table below, can arise in this context:

SCENARIO	STATUS OF DEBRIS	CONSENT OF STATE OF REGISTRY	STATUS OF ADR
A	Registered	Given	Can be implemented
B	Registered	Not given	Cannot be implemented
C	Unregistered	State cannot be identified	Cannot be implemented

Table 1

[78] In Belgium, while the operator of a 'manoeuvrable' space object is the person exercising 'effective control' over it, the operator of a 'non-manoeuvrable' space object is the person who ordered its launch to orbit. *See* Art. 3.2 of the Belgian Space Act (2013).
[79] The term "control" refers to the legitimacy of jurisdiction and not factual capability to control. *See* Bernhard Schmidt-Tedd & Stephan Mick, *Article VIII*, in: Cologne Commentary on Space Law – Outer Space Treaty, 523 (2017).
[80] *Supra* note 28, at art. VIII.
[81] Darren McKnight, Rachel Witner, Francesca Letizia, Stijn Lemmens, Luciano Anselmo, Carmen Pardini, Alessandro Rossi, Chris Kunstadter, Satomi Kawamoto, Vladimir Aslanov, Juan-Carlos Dolado Perez, Vincent Ruch, Hugh Lewis, Mike Nicolls, Liu Jing, Shen Dan, Wang Dongfang, Andrey Baranov, Dmitriy Grishko, *Identifying the 50 statistically-most-concerning derelict objects in LEO*, ACTA ASTRONAUTICA, 290 (2021).
[82] In terms of 'number', the major debris contributors are the U.S., Russia, and China. However, the contributors of 50 'strategically-most-concerning' debris in LEO include Russia, ESA, Japan, and China.

In Scenarios B and C, if consent is not provided or it cannot be obtained, then one cannot proceed with an ADR mission. All outer space activities, including ADR, must be conducted in accordance with international law, including the UN Charter.[83] If a State, whether acting on behalf of its governmental or non-governmental entity,[84] removes space debris which belongs to another State/organization without its consent, it may amount to an infringement of sovereignty and therefore, a violation of international law.[85]

Currently, the ADR industry is at a nascent stage where States and commercial entities are focusing on removing space debris that is solely within their jurisdiction and control. Notably, a common element in the three scenarios in Table 1 is the significance of complying with Article IV of the Registration Convention and following a good registration practice,[86] including by way of updating the status of the space object (i.e., whether it has decayed or de-orbited or shifted to a graveyard orbit). This is also the underlying rationale for encouraging good registration practice as a way of bringing LTSSA into effect.

H. Concluding Remarks

At the international level, the first step taken towards addressing the space debris issue was to actively conduct scientific research.[87] Owing to the limitations of existing technology, however, not all space debris can be tracked and even among those that can be tracked, it might be impossible to trace its genesis to a specific launch event.[88] Therefore, improvisation of statistical models, technology, and equipment will lead to an improved space surveillance system. In parallel, members of COPUOS must deliberate and address pertinent legal questions related to LTSSA, as mentioned previously.

While the 'responsible' debris contributors are obliged to engage in LTSSA, international cooperation among space actors is necessary for any LTSSA measure to be a feasible long-term solution. As an example, Article 55(1)(d)(ii) of EU Regulation 2021/696, includes '*space debris remediation*' as a component of 'Space Sustainability and Tracking' (SST) services. Based on principles of equality and non-discrimination enshrined in Article I of the Outer Space Treaty, even

[83] *Supra* note 28, at art. III.
[84] *Supra* note 28, at art. VI.
[85] Patricia M. Sterns & Leslie I. Tennen, *Orbital Sprawl, Space Debris and the Geostationary Orbit*, 6 SPACE POLICY 221, 224 (1990).
[86] At the 61st Session of the COPUOS Legal Subcommittee 2022, the UK expressed the importance of good registration practice for enabling ADR. *See* the statement here: https://www.gov.uk/government/speeches/uk-statement-on-legal-mechanisms-relating-to-space-debris-and-remediation-measures-at-the-61st-legal-sub-committee-of-copuos.
[87] G.A. Res. 48/39, ¶9, (Feb. 10, 1994).
[88] ESA Space Debris Office, *ESA's Annual Space Environment Report*, 10 (April 2022), https://www.sdo.esoc.esa.int/environment_report/Space_Environment_Report_latest.pdf.

international SST users[89] will have conditional access[90] to such remediation activities. Therefore, for endorsing LTSSA, the tools of 'international cooperation' and 'mutual understanding' between States will continue to remain the cornerstone for success in outer space.

[89] This group comprises countries, organizations, and private entities that are not established in the European Union.
[90] Subject to an international agreement concluded by European Union in accordance with Art. 8.2 (i.e., concluding an agreement in accordance with Art. 218 of The Treaty on the Functioning of the European Union) and entering into an international agreement with EU in exchange of "classified information".

INDIAN SPACE POLICY 2023: COMMENTS AND SUGGESTIONS

G. S. Sachdeva

I. Introduction

Promulgation of Indian Space Policy (ISP)[1], which was awaited for years,[2] has happened in April 2023, albeit rather abruptly. It has been widely welcomed by the private sector and the start-ups with mixed comments and diverse views. To any new initiative, such varying and conflicting reactions are normal and understandable. The variations are caused by alignment of self-interest, the character of impetus, the nature of incentives, the quantum of bounty and the motive behind the response. Different groups at different thresholds tend to perceive the same initiative differently and so are their reactions. The Policy has certainly evoked a wide response from different sectors of the economy and market regulatory agencies. Some exalt its benignity and initiative while others highlight its weaknesses and deficiencies. A strong argument goes that it can hardly be called Space Policy because it lacks a comprehensive and holistic approach, has little statutory support of law or long-term assurance on promises. Possibly, the obsession of the Policy has been with the creation, formalisation of and legitimation of new organisations. Even the present hurry may have this vested purpose. However, by now, the euphoria or the uproar created by the Policy has subsided to return to normal sense and sensitivities. Hence, a sagacious evaluation can be undertaken.

A. Narrative of the Policy

In general, the ISP encourages space industry, assures incentives to start-ups, offers ease in business through single-window operations and attempts to impart accelerated traction to an eco-system of space economy. It has thus focussed on creating an awareness of opportunities, stimulation of domestic entrepreneurial participation and striving to capture a reasonable share of international space market. In consequence, providing a boost to space hardware sales, launch services, system applications and consultancy services to indenters floating in the uncommitted market. The aim is, indeed, laudable and deserves to be pursued with verve and nous.

[1] Hereafter referred to as 'the Policy' or ISP.
[2] G. S. Sachdeva, *Outer Space: Law, Policy and Governance,* New Delhi, KW Publishers, 2014, pp. 63-100; Also refer G. S. Sachdeva, "Space Policy and Strategy of India", in Eligar Sadeh, ed. *Space Strategy in the 21st Century: Theory and Policy*, Routledge, 2013, pp. 303-321.

The Preamble to the Policy loftily states that it is a follow up on the reforms initiated by the Government in 2020 to welcome enhanced participation by non-governmental entities (NGEs) "and to provide them a level playing field."[3] Additionally, the Preamble assures a stable regime with regulatory certainty towards a thriving space eco-system and asserts that the Policy has been "formulated as an overarching, composite and dynamic framework to implement reforms…"[4] for economic development, national betterment and commercial visibility in international space market.

The vision of the Policy is, "To augment space capabilities; enable, encourage and develop a flourishing commercial presence in space; use space as a driver of technology development and derived benefits in allied areas;…and create an ecosystem for effective implementation of space applications…"[5] This vision intends to achieve "nation's socio-economic development and security, protection of environment and lives pursuing peaceful exploration of outer space, stimulation of public awareness and scientific quest."[6] To this end, the Policy espouses privatisation and commercialisation of not only manufacturing and software applications, as existing, but the entire gamut of space activities without any major restrictions.

The strategy evolved in the Policy "seeks to pursue a holistic approach by encouraging and promoting greater private sector participation in the entire value chain of the Space Economy, including in the creation of space and ground-based assets." This approach would permit "Indian consumers of space technology or services [such as communication, remote-sensing, data-services, launch services, etc.], whether from public or private sectors, shall be free to directly procure from any source…" To implement this strategy, the Government shall "[e]ncourage advanced Research and Development in space sector…[p]rovide public goods and services using space technology for national priorities." This strategy also promises to create "…a stable and predictable framework to provide a level playing field to the Non-Government Entities in the space sector through IN-SPACe." Other strategies include "space-related education and innovation…for overall technology development, nurture scientific temperament in the society, and increase awareness on space activities."[7]

Another important aspect of the Policy, para 9, pertains to its applicability and implementation. Accordingly, it covers and regulates any space activity "to and from Indian territory or within the jurisdiction of India, including areas to the limit of its exclusive economic zone." This focus on territoriality is restrictive and thus fails

[3] *Indian Space Policy,* 2023, p. 5.
[4] *Id.*
[5] *Id.*
[6] *Id.*
[7] *Id.*, p.6.

to recognise extra-territorial jurisdiction over its space objects, astronauts, future space stations and space assets to be created on celestial bodies. Further, Policy states that notwithstanding anything contained in this policy, Government of India reserves its right to provide exemptions to the provisions contained herein on a case-to-case basis.[8] This aspect seems to be well framed and phrased in legalese but this self-assumed authoritative discretion is pregnant with discord under the existing non-legislated regimen.

II. Institutions under the ISP

The ISP has listed five crucial components or institutions, each one of which has been allocated its tasks and sphere of influence. All these stakeholders are expected to work in harmony to create synergy to impart high traction to the space eco-system and space market forces, nationally and internationally. Department of Space (DoS) will be the over-arching monitor and supervisory agency for the implementation of the Policy. It will, thus, oversee the distribution of responsibilities, adequacy of empowerment, discharge of respective functions and resolve disputes, if any. Besides, DoS will participate in international efforts for achieving sustainable development goals enunciated by the UN and other international programmes in coordination with the Ministry of External Affairs. Additionally, DoS will establish a framework to ensure safe and sustainable space operations and compliance with space debris mitigation guidelines.

A. Non-Governmental Entities

The core stakeholders and beneficiaries of this Policy are non-governmental entities that comprise a company incorporated in India or a registered Trust or an association of persons incorporated under relevant Indian statutes. The fundamental aim of the Policy is to encourage and allow NGEs to undertake end-to-end activities in space sector through establishment and operation of space objects, ground-based assets and related services subject to guidelines/regulations as prescribed by IN-SPACe. However, to caution, space manufacturing is not like ordinary products in the market with ISI logo but requires stringent checks, inspection and count-down for space-worthiness.

Nevertheless, the Policy allows NGEs to establish and operate the full-range of space activities comprising hardware manufacture, launch facilities, develop space situational awareness capabilities; and commercially operate space transportation systems or engage in the commercial recovery of an asteroid resource or a space resource, operate planetary residencies, among other

[8] *Id*., p. 11.

futuristic activities. This oneiric vision or surreal aspirations seem to be a promised agenda for the next several decades.

B. Indian National Space Promotion and Authorisation Centre (IN-SPACe)

This Centre shall function as an autonomous Government organisation, mandated to promote, hand-hold, guide and authorise space activities in the country.[9] It shall introduce ease of doing business by being a single-window agency for authorisation of space activities for all interested parties, albeit ensuring safety, national security, international obligations and/or foreign policy considerations. Permissible space activities have been broadly listed in the Policy. For the above purposes as well as for regulatory controls, it shall periodically issue guidelines and procedures as necessary. These are yet to be put in place for the Centre to work or be effective.

Among its important duties, IN-SPACe will "act as the single window agency for the authorisation of space activities by government agencies [this implies including ISRO] as well as NGEs…"[10] Besides, it will "identify technologies developed by ISRO that are ready for transfer to NGEs and facilitate the transfer of such technologies." Further, it will "authorise launch manifests for launch-infrastructure created through public expenditure, to ensure equitable access for NGEs to such infrastructure" and "the decisions of IN-SPACe shall be binding on the operators of such facilities" (para 5.7). The Centre will "prescribe guidelines to address liability aspects…"[11] However, most of this procedural and regulatory work is yet to be completed and may require legislative approval for implementation.

Frankly, the nomenclature of Centre hardly evokes the right sense of dignity or esteem nor does it convey an impression of a government authority discharging official duties under the Indian Constitution or exercising powers downloaded from an international treaty (OST). Hence to call such a crucial organisation and powerful edifice a "Centre" would be inappropriate and inaccurate by many standards. It has to be an authoritative institution, with the blessings of law, that rightfully controls, facilitates and authorises space activities and has competent power to make concessions and exceptions without getting unnecessarily mired in legal wrangles and unsavoury disputes. The chasm of statutory approval stares in the face and may derogate its disputed directions or decisions relating to state responsibility ultra vires at competent courts.

Further, the tone and tenor of the related policy provisions are vague, casual and cavalier on issues affecting treaty obligations, statutory mandates and

[9] Outside this policy, Defense Space Agency (DSA) has been established to give boost to satellite production capabilities.
[10] *Supra* note. 3, p. 7.
[11] *Supra* note 4, p. 8.

constitutional dictates. Moreover, the remit of the Centre is wide, thickly populated and bundled with strange bed-fellows. And it also seems as if IN-SPACe, without any statutory benediction for its establishment and operation, is nuanced to act as supra-ISRO under evolved regime and equations. In fact, this Centre was established in 2020 but has been in existence since June 2022. An adjustment and separation of functions and powers was essential to some extent, but here, seeds of discord are sown without placatory measures.

C. Indian Space Research Organisation (ISRO)

"ISRO, as the National Space Agency, will focus primarily on research and development of new space technologies and applications, and for expanding the human understanding of outer space."[12] ISRO over the last half a century has grown many adjuncts of infra-structure and facilities and has become a monolith. If it is to devote its energies solely to research and development, who will control, operate and maintain non-R & D and engineering work-stations, presently supporting ISRO duties.

The truncation of ISRO charter, in the face of its statutory basis, seems ill-conceived and ill-considered decision. Separation of in-house engineering and support sections may cause a set-back to its coordinated efforts, prompt snag rectification and quality assurance. Even if this work-load is taken over by IN-SPACe and NSIL, the latter too will become similar monoliths, over time, with added technical adjuncts lacking co-ordination experience or trained manpower. It will also need capacity-building in space law and treaty nuances. Successful organisations are not born in a day but demotivation takes no longer than that. In fact, ISRO over the years had evolved a subdued style of authority, synergistic cohesion with an aggressive and innovative work-culture. This may be disturbed and distorted to national detriment.

In elaboration, ISRO shall "carry out applied research and development of newer systems so as to maintain India's edge in the sector, in areas of space infrastructure, space transportation, space applications, capacity building and human spaceflights." The rest of the listing of its duties is either duplication with IN-SPACe or inane repetition without much consideration. This distribution seems pregnant with discord and may show symptoms of detrimental individual or organisational withdrawal. For example, at para 6.3 ISRO is expected to provide availability of remotely sensed data at fair and transparent pricing to the NGEs. It is a commercial function and further it imposes no restriction for sensitivity of data or security considerations. Again, at para 6.8, it abolishes the practice of site supervision of manufacturing yet it makes no mention of space-worthiness

[12] *Id*., p. 11.

considerations nor attributes any accountability for local failures or space accidents.

D. New Space India Limited (NSIL)

NSIL shall be a Public Sector Undertaking under Department of Space. Presumably, it is a successor entity to Antrix Ltd that has been liquidated, but not held under ISRO umbrella. Perhaps, by hindsight, it remembers Devas Multi-media deal by the erstwhile Antrix. Or maybe, this change of alignment makes DoS, as oversight agency, accountable for NSIL actions. In fact, commercial organisations have a different business approach, motivation and work culture that may not always conform with the spirit and integrity of public policy or diplomatic pressures of the realpolitik. Rationalised autonomy and reasonable accountability seem more suited.

In general, it is expected that NSIL, the business arm for space activities in India, will be working on sound commercial principles. It shall "be responsible for commercialising space technologies and platforms created through public expenditure."[13] But this task overlaps with the duty of IN-SPACe under para 5.5. Again, NSIL shall also "manufacture, lease, or procure space components, technologies, platforms and other assets from public or private sector" to "service the space-based needs of users, whether government entities (GEs) or NGEs…"[14] The responsibility for "manufacture" seems broad and irksome, as a result, the dilemma confounds the Policy.

This provision harbours an incongruity; whether NSIL is to act as manufacturing hub, or leasing entity or serve as a store outlet or mart for off-the-shelf purchase and sales of specified requirements by GEs and NGEs. This seems confusing and is not going to be an easy task either as a seller or as an intermediate purchaser because products with exact specifications may not be available in the market or manufacturable on demand. Thus, a new procedure and procurement entity has been interposed for indenting of requirements instead of direct purchases by the users and this newly introduced process will be endemic of delays with relayed consequences on target achievement.

E. Department of Space (DOS)

Department of Space will be the over-arching and control set up of the government for oversight of space activities in general and regulating the entities in particular. As such, it shall "oversee the distribution of responsibilities outlined in this policy and ensure that the different stakeholders are suitably empowered to discharge

[13] *Id*., p. 10.
[14] *Id*.

their respective functions, without overlapping into other's domain."[15] It has also reserved for itself the duty to "coordinate international cooperation and coordination in the areas of global space governance and programmes in consultation with Ministry of External Affairs."[16] But the sensitivity of space diplomacy must be appreciated because it can be far more influential, effective and conducive to build long-term, durable relations.

Apart from the above, there is a long charter of duties for DOS which looks impressive. However, without being judgmental, it contains innocuous listing and unnecessary repetition of obvious responsibilities, like compliance of the mandates of international treaties, soft law guidelines or sustainable development goals of the United Nations. Whereas, it does not dwell on the international liability for, direct or indirect, damage in significant detail or the modus of sharing with private entities launching and operating space objects. Even with other newly introduced organisations, DOS reveals a peculiar circularity where same or similar portfolios are repeatedly distributed. Another pertinent aspect, yet missing, concerns creation of a responsible agency or methodology for investigation of accidents to or by space objects and associated insurance imperatives. There may creep in a conflict of interest here which deserves sensible separation.

III. Some Additional Comments

A. Comments in General

In a country where pomp and show mean a lot to the people, this usual accompaniment to this government announcement has been missing. Surprisingly, without imputing motive, the promulgation has been sudden and sober. Even in the face of welcome and exuberance shown towards the Policy, the stakeholders, the Press guild and the business world have pointed out a few shortcomings and expressed higher expectations which have been belied. Dissatisfaction has been widespread over its constructional scope and fractional effect despite usual salutary comments. With mixed reactions, it is a bouquet of flowers albeit not without uncut thorns.

It is wisely said that the government only needs to show light to the economy and the business will find its way to progress and growth. At the same time, it also needs to be appreciated that Musks, Bransons and Bezos are not created or nurtured by sheer written words of a policy but by sharing a vision with men who are visionary. Despite state patronage it takes them decades to mature in business with expertise and experience. Besides all of them, the stakeholders, the

[15] *Id*.
[16] *Id*., p. 11.

regulators and the infra-structure operators, are so intimately connected by a commonality of view and have to be imbued with similar zeal for advancement so that all have to remain on the same page to march in step.

Space activities are multi-dimensional and call for different models of management at different stages. Considering its peculiarities, three factors rise in sharp focus: first, technical competence to research, engineer and produce a space object; second, to launch and operate in space with dependence on ground facilities and infra-structure; third, the financial model that determines the business activity. The first factor assumes importance because space object is a result of integrated sub-systems and composite of sub-technologies that need continuous research and updation of hardware and applications. This needs huge expenditure in capital outlays, recurring expenditure in research and improvement with a long gestation period. Private enterprise would prefer to take to transfer of technology and manufacturing till launch.

The second stage of space activities from launch, its operation till demise of the object requires extensive infra-structure, ground facilities and monitoring stations, and would be best suited for public agencies controlling such facilities, unless private enterprise wishes to hire services and operate independently. The third aspect relates to financial funding and expected returns on capital investment and operational costs, including insurance and liability which may mount upto billions of dollars. This is a tall demand and may call for different patterns of funding like state subsidies, advances against contracts, venture capital or pure corporate finance.

In nutshell, space industry is serious business with equally serious consequences of incompetence, inadvertence or neglect. The zeal for encouraging start-ups is thus over-enthusiastic and may best be fostered in gradual growth with assimilated expertise. Even in motor vehicle industry or aircraft manufacture start-ups are not allotted an open field of total manufacturing, system integration and inspection of air-worthiness. Only big players like Tatas, Ambanis or HAL may venture into such fields and they are just beginning to evaluate space industry from business angle. Hence, opening of the entire spectrum of space activities to the novice and inexperienced without strong financial backing would not only be premature but immature. Though not too comparable example, yet one may cite the case of Virgin Orbit of Branson that is packing up after one failure only. And Indian start-ups would not have cushions of that order.

The Policy has also does not given enough thought to the problem of aggravation of space debris which may occur with liberalised space authorisations and increased space launches. The problem of space debris has gotten so bad that it threatens the survival of even current satellites in orbit. Considering the gravity,

the United Nations General Assembly (in 2022) passed a resolution that voiced worry over space debris, calling it the "most significant threat to the space environment." Further, if polluter pays principle is accepted for scavenging of space debris, our share in remediation may escalate, uncontributed by the launch-companies.

The policy lays great emphasis on transfer of home-grown ISRO technologies that are ripe for commercial usage and their dissemination to the private sector and the start-ups. Indeed, a laudable step in national development but it loses focus on the fact that some of these may permit dual-use and may be abused in an unregulated business environment. Moreover, some of these, though fit for immediate usage, yet may require continued protection as intellectual property. In case these protected technologies fall into unauthorised hands or are illegally sold to dubious buyer for gains or are pirated, the situation can be serious with security implications. Hence, transfer of technology needs regulatory measures and a *specialis* legal regimen to safeguard all relevant interests. ISP must build on this pertinent aspect with potential risks.

We seem to be imitating advanced economies and business captains of the US without first achieving parity in the technological research, industrial threshold, market expanse or finance spare-ability of the big players like Musk or Bezos. We need to be cautious that even European Union comprising nations with advanced technologies and known financial resources have not displayed such liberalism in the domain of space industry. Ergo, start-ups in India need to graduate with steady uplift, gradual accumulation of experience and a mindset to stake funds for the possible experimental failures and sundry liabilities. Based on this premise, the existing ISRO policy of sustained transfer of technology with contracted-out manufacturing jobs that prepared and nourished small enterprise and start-ups for a bigger role is appropriate and sagacious.

In India, we do not have corporate conglomerates like Mitsubishi or Boeings nor independent entrepreneurs like Musk or Bezos while fledgling start-ups seem too young in mustering technical competence, composite expertise in system integration, anticipation of liability or attracting requisite venture funds from the market. Therefore, despite facilitative policy and propagation of opportunities, the response from the private enterprise for such a capital-intensive, long gestation and risk-laden industry seems uncertain and unenthusiastic. The fund market has not yet sown Bransons or Bezos who have the financial capacity to undertake risks and blow them away. Therefore, the impetus to Indian space sector needs different leverages, drivers and vision. Thus, the ISP seems to have come a decade earlier without first preparing the market scenario from all angles.

Another weak character of this Policy is that it stands on no statutory crutches of judicial legitimisation or a domestic legislation. Further, a lot of discretionary powers relating to imposition of variable liability for third-party damages, prioritisation in use of state-established-owned facilities or preferences in launch manifests have been vested in IN-SPACe. Human perceptions tend to differ. Therefore, despite guiding rules and governing norms, disputes under these heads are bound to occur and will be open to legal scrutiny, while the case of Devas Multi-media vs. Antrix and its prolonged legal battle and financial consequences are still fresh in our memory.

Ergo, certain doubts may persist in the minds of the captains of space industry and business about the efficacy, transparency and uniformity in the application of the policy. Such possibilities and risks of uneven and favourable treatment are real and ominous in human decision-making. Surrounding embarrassment in such cases may have international fall out and equally depress the business sentiment in Indian space market. It would thus have been preferable to legislate Space Activities Bill[17] first rather than promulgate the Policy in a surprising hurry. We have now put the cart before the horse and traction is uncertain. A few specific observations and my views are expressed in succeeding paragraphs.

B. Specific Comments on the Policy

The general nuance of the ISP focusses on commercial façade of space activities. It flags impetus to space industry, single-window contact and ease in business but business community recognises tangible benefits like monetary incentives, tax concessions, subsidies to start-ups and eased-up loans for investment. However, space activity is not all commerce and salesmanship, it is multi-disciplinary activity that starts from research and ends in successful space operation under legal mandates, with sales and commerce in the bargain. Thus, space activity is a unity in vision, commonality of aim and synergy in effort. The enthusiasm for emphasis on space business ignores the fundamentals of the core activity to reach such a threshold or culmination. We, of course, cannot operate with the wisdom of hindsight, though experience from the past is a good teacher and a reliable guide. Manufacturers and entrepreneurs would have to ensure marketable standards, consistent reliability and operational credibility of the offered hardware products, launch services and space applications. The drivers of private enterprise and business world are competition and profitability in a level playing-field, but it often leads to veiled compromises. These can be cause of serious drawbacks for operations in space environment which is unsparing in its treatment of lapses, advertent or inadvertent, while collateral damages may lead to the incurrence of international liability by the state.

[17] A thoroughly revised draft of this Bill by a team of legal experts was submitted in June 2022.

The Policy claims to be "holistic" but hardly seems so. It is lop-sided with obsession for commercial aspects and espousal of space business in negation of other elements of facilitation like international legal mandates or technical issues of innovation and engineering or the necessities of operational safety. Thus, the policy is neither comprehensive in content nor multi-dimensional in approach. For example, the Policy least realises that private business is not a public service and shall cut corners for economy of material, cost saving in quality or engineering effort of labour. Towards this end, the policy has not envisaged checks and procedures necessary in discharge of the duty of "continued supervision" under Article VI of the Outer Space Treaty. The cavalier treatment of this aspect can have serious repercussions on international liability and brand reputation while domestically such instances may create constitutional conflict in discharge of imposed liability.

This obligatory duty of continued supervision should be deemed sacrosanct and imperative which may call for on-site inspection on manufacture and product inspection for quality assurance. This points to a need for a check of operational fitness and space-worthiness of the space objects by an independent authority. Treaty law treats all space assets, private or governmental, alike for liability considerations. Any lapses in this may lead to international liability for third-party damage payable from the Consolidated Fund of India under the Constitution. Such important responsibilities cannot be taken lightly without legislative sanction, stipulated provisions, over-riding rules and enforced clauses in contractual documents. Therefore. a policy must visualise impending contingencies and put the right emphasis on crucial aspects and not rest with a mere cursory reference.

Further, outer space is now an autonomous domain and an independent dimension in war. Defence effort no longer works in silos of land, sea and the air but with an integrated and synergistic thrust. Space is a new frontier which makes it imperative for the forces to be nimble, adjustable and cooperative with multi-domain expertise and multi-disciplinary capabilities. This mandate of national security and strategic defence requires forces to be resilient with cost-effective architecture that is 21st century compatible.[18] Yet this imperative has been miniaturised to a mere mention in the ISP 2023 instead of according this compulsive call its due merit and importance.

General Anil Chauhan, Chief of Defence Staff has also thrown a poser in this regard. He said, "The very nature of warfare is on the cusp of a major transformation and what is being witnessed is militarisation of space and a steady progress towards weaponization."[19] Thus, the battlespace is expanding in another dimension. Hence, India's efforts should be towards developing dual-use

[18] Arjun Subramaniam, *Making India's National Security 21st Century Compatible*, TIMES OF INDIA, (June 1, 2023), https://timesofindia.indiatimes.com/blogs/toi-edit-page/making-indias-national-security-21st-century-compatible/.
[19] During address to Indian Space Association on 11 April 2023.

platforms with special focus on incorporating cutting-edge technology. This approach would necessitate an expansion of NAVIC constellation, provide an agile space-based intelligence, surveillance and reconnaissance (ISR), and ensure secure satellite-assisted communication. Thus, there is greater need for understanding and interaction with Ministry of Defence than currently envisaged in the Policy.

C. Comments on the Institutions

The policy delineates the objects and functions of certain space-related institutions, existing and new. But the Policy reveals some vital shortcomings, e.g., provisions for international liability or overlap of duties in respect of IN-SPACe, NSIL and DOS. These are only illustrative inconsistencies, albeit highly pertinent and need to be resolved, soonest, before misunderstandings pervade and reactionary attitudes harden on issues. A few points are discussed in succeeding paragraphs.

a. IN-SPACe

The Centre is a multi-disciplinary, highly professional organisation with a wide gamut of inter-related but diverse duties which would require considered decisions from different angles and divergent nuances. This is not going to be easy nor as fast as pretended by a single-window business dealing or promised ease of business. To achieve this mission, IN-SPACe would need professional managers with broad understanding and motivated with pro-active approach. Further, it will be helpful if the Centre can rationalise its duties into definable cadres and shed off not-too-intimately related or tangential duties. For example, on-site checks, inspection of space-worthiness and investigation of space accidents, among others, may be abandoned to ISRO or a new organisation. A broad-spectrum of controlled measures certainly imparts authority but may generate more unhappiness or annoyance among the facility-users causing dissatisfaction and affecting reputation. Under the existing regime of Indian Space Policy, this anomaly needs to be corrected.

b. New Space India Limited

First, NSIL is to work as a commercial entity under the DOS. Secondly, the role and task of NSIL appears rather limited in business content and scope of territory. Thirdly, its charter overlaps in parts with IN-SPACe. Fourthly, the problems may arise because NSIL is a commercial-oriented organisation with different motivations, work-culture and profit-orientation. Time is of essence in commercial contracts and it may not be able to brook delays of inter-organisation clarifications

and long bureaucratic considerations. Thus, its working is pregnant with handicaps.

c. Indian Space Research Organisation

ISRO, for so long, has been the well-recognised and well-respected face of India in the space-world, having achieved many firsts in space activities. However, in the new policy, its task and role has been very roughly cut into a faceless, domestic and backroom research and development organisation. Its interaction or lines of contact with domestically nurtured industry bestowed with transfers of technology have narrowed or been truncated. Its progressively built credibility with product reliability and mission successes in the world space market has been jolted and its status as the Indian space agency in its global fraternity seems to be highly dented and, possibly, beyond redemption.

The pity is that the damage caused is little understood and hardly appreciated with total lack of accountability. It may be easy to demoralise the scientist-fraternity with one stroke of pen but it may not be easy to revive or resuscitate or persuade to the age-old motivation and the work-culture tradition of dedication. This move is fraught with uncertainties and may set-in 'degrowth'. It seems the damage has been done and, in a few decades, India may not have much advanced, innovated or state-of-the-art products to offer or redeem its share in the international space-market to brag about. The apprehensions and angst could, indeed, be real.

D. Views of the Law Scholars

A few law scholars have highlighted some anomalies and inconsistencies in the Policy for reconsideration and remedial action. Even if these have been alluded to or flagged in earlier articulation yet these deserve independent citation and due emphasis.

a. Legislative Void

The Policy document is a mixed framework offering regulatory certainty and legal stability. Whereas some aspects of promotion and incentives are well within the competence of the executive, but legal and regulatory framework fall within the domain of legislature. "Authorisation and continued supervision of space activities are treaty mandated obligations of India. Failure to discharge these obligations as the burden of state responsibility under Article VI of the Outer Space Treaty1967…the legislature is competent to do [this] under Article 253 of the Constitution of India."[20] Further, "Conferring powers to frame guidelines and

[20] Sandeepa Bhat, *Outlining Inconsistencies in the Indian Space Policy 2023*, CASL, NUJS BLOG, (May 1, 2023), https://caslnujs.in/2023/05/01/outlining-inconsistencies-in-the-indian-space-policy-2023/.

regulations are essential functions of the legislature."[21] There are umpteen cases where courts have struck down executive actions beyond legislative framework under the doctrine of *ultra vires*. This policy carries this risk in ample measure.

b. Compatibility with Treaty Obligations

Regarding para 4.14 of ISP, "A much greater concern is found in…following the footsteps of the United States in…exploiting resources available in outer space…[and encouraging to] engage in the commercial recovery of an asteroid resource or a space resource…It goes on to copy…the US Commercial Space Launch Competitiveness Act, 2015."[22] The enactments of the US, UAE, Luxembourg and Japan postulate individualistic rights to its citizen to appropriate space resources in contradistinction to the collective right for common benefit enshrined in the UN space treaties. Such defiance may undermine the dignity of the international space law and lead to chaos in outer space domain. The inconsistency is glaring and damning and clamours for a viable solution and not emulation.

c. Planetary Habitations and Rights on Celestial Realty

Again, the Policy in para 6.7 dares a dream towards celestial residencies and makes ISRO responsible to realise this. A great vision but is presently denied by the Treaty on the principle of non-appropriation or non-claims of national sovereignty. The propounded idea itself is in breach of current law (Article II of OST) and inconsistent with the Constitution of India that mandates abidance of treaties ratified by the state. Bhat comments, "…Policy mandates ISRO to carry forward this dream through research and innovation. This brings forward the question relating to land property rights on celestial bodies…Hence, any aspect relating to property rights in space should be left to international negotiation rather than addressing it under national laws, much less as a part of a policy document."[23] The poser is pertinent.

d. Incidental Comments

Bhat observes that internationally accepted treaty definition of space objects and component parts has been mutated. 'Component parts' has been changed to "constituent elements" under Definitions 12 (ii). This change is confusing and unnecessary. Again, the sub-clause 12 (iii) under Definitions authorises that "any other object as may be notified from time to time." This self-assumed authority to 'reduce or enlarge' the scope of the definition is presumptuous and incongruent

[21] *Id.*
[22] *Id.*
[23] *Supra* note 24.

with international space law. It fails to recognise its international implications thereunder for registration, liability, recovery and return of space objects. In fact, this additional sub-provision itself is superfluous and tends to confound.

E. *Comments from the Concerned*

A few comments of the Press, views of market-operators and opinions of stakeholders, as published, are narrated in succeeding paragraphs.

a. Comments in the Press

The Policy purports to yield more access to the private sector in ISRO controlled infra-structure, technology and expertise to help in space related activities with an intention to engage them in space missions and thus expand Indian space economy and capture a rightful share in global space market. It is hoped that this step will stimulate and institutionalise private sector participation.[24] The centre-piece of this Policy is IN SPACe which shall authorise all space activities in India including those to ISRO and other governmental agencies. However, its organisational structure, appointments and related details are unclear.[25] Hence, its competence to discharge this duty is in doubt.

Again, the assessment reads that the Policy has its thrust on privatisation which will enable space sector to be more innovative and sustainable. It is crucial if India wants to be competitive in global space eco-systems. So far, space sector has flourished within confines of ISRO with full budgetary support from the government; but "by institutionalising the sector, the ISP breaks the monopoly of ISRO-driven space sector."[26] Of course, the apparent monopoly may have been breached but the institutional and emotional damage so caused is inestimable. One wonders, how long private sector would take to build a brand value, achieve manufacture of sustained quality of products, assure reliability of applications and gain credibility for almost faultless launch services. Time alone will tell, albeit with no accountability for the damage.

Another media giant has remarked that a lot has changed with ISP 2023 in that "its focus is on commercialisation of space, ensuring that it is the private sector that takes the lead in building end-to-end space systems."[27] It considers that a scramble for the space resources will be a game-changer and identifies nationalism and entrepreneurship as drivers of the policy. At the same time, it also

[24] Sangeet Kumar Sanu, *BW Explains: What is Space Policy and how it will Bolster India's Private Space Industry*, BUSINESS WORLD, (Apr 29, 2023), https://www.businessworld.in/article/BW-Explains-What-Is-Space-Policy-How-It-Will-Bolster-India-s-Private-Space-Industry/22-04-2023-473771/.
[25] *Id.*
[26] Manish Kumar Jha*, Indian Space Policy 2023 takes off; a new era of space technology for private industries*, FINANCIAL EXPRESS, (Apr 27, 2023),
[27] Namarata Goswami, *India's Space Policy and National Security Posture: What can we expect*, THE SPACE REVIEW, (Apr 24, 2023), https://militaryspacepost.wordpress.com/2023/04/25/the-space-review-indias-space-policy-and-national-security-posture-what-can-we-expect-2/.

laments that it fails to find uniform criteria and a methodology for allocation of missions to GEs and NGEs, whether by applicant's choice, national priority, public policy or business profitability. Whatever be the criteria or howsoever objective be the allocation, clashes seem inevitable.

The Hindu has congratulated Pawan Kumar Goenka, Chairman, INSPACe and has expressed a considered opinion with measured optimism on the ISP. Apart from oft-repeated comments, it highlights that ISRO will share technologies, products, processes and best practices with NGEs, which step, no doubt, would be an enabler; but it remains moot whether foreign direct investment (FDI) will be permitted, to what extent and through which route.[28] It has also cited the success of telecom sector in comparison, but it needs to be appreciated that space activities are a different ball-game with peculiar characteristics, endemic risks and incidence of international liability.

F. *Comments of Stakeholders*

Geo-spatial World has elicited comments from the start-ups which may be summarised in general. The Policy enunciates a vision, strategies and guidelines to carry out end-to-end activities in the space domain assuring a level playing field. The vision is to augment space capabilities by enabling, encouraging and developing a flourishing commercial presence in space. Skeptical of the assurances, start-ups have also expressed an apprehension that in the level-playing field, the business sharks may not gobble up or scare away smaller players to usher monopolisation and cartelisation.[29] In a way, in this domain, business oligarchies have been making good participation and useful contribution in sharing of the routine transportation burden of NASA.

Awais Ahmed, CEO of Pixxel, has commented, "With clarity around Policy, more investors in India and from abroad will likely invest more money into space technology start-ups. More companies will come up. And overall, we'll see more progress."[30] The comments appear impromptu.

However, Kranthi Chand of Dhruva has stated that INSPACe will be able to lead start-ups and private space enterprise and make them part of vital international collaborations, trade bridges and joint R & D programmes for next generation technologies.[31] However, sanguine impression about the Policy and optimism

[28] Jacob Koshy, *Space Policy draws cautious optimism*, THE HINDU, (April 22, 2023), https://www.thehindu.com/news/national/space-policy-draws-cautious-optimism/article66764525.ece.
[29] Nibedita Mohanta, *Indian Space Policy, 2023: What start-ups think,* GEO-SPATIAL WORLD, (April 24, 2023), https://www.geospatialworld.net/prime/indian-space-policy-2023-what-startups-think/.
[30] *Id.*
[31] *Id.*

relating to the overall capabilities and financial capacities of the start-ups merit caution.

Dr Prasad of Satsearch has remarked that with this policy, the government signals creation of a larger and participative eco-system to open up demand for and from different users. Howsoever correct in approach, the core point remains creation of demand yet avoiding a gap either way so that the two match for genuine progress and capital inflow into India.[32] The impression confuses the public more than clarify the issue.

These are initial comments that are customarily salutary and eulogistic albeit cursory and off-the-cuff. The focus is on the lead role of INSPACe, and with a smirk that ISRO has been cut to size, not realising a national loss and an impending set back that will become apparent a decade later, and there will be no accountability for the damage so caused. The action could be partly justified but not the rude manner and abruptness. It had to be remedied tactfully and gradually. We have always taken for granted that ISRO products and services have been cost-effective comparably, highly trusted globally and successful operationally. These qualitative parameters are yet to be found in the offerings of private enterprise. Let us honestly accept that business culture is characteristically different from public policy.

While reacting to the Policy, stakeholders have seen only on its superficial surface that the policy defines and delineates the individual and symbiotic role of the DOS and its subaltern organisations but have failed to undersee the overlaps and duplication of tasks that may be endemic of discord. Besides, in their enthusiasm, they have not realised the technical gaps of continued supervision under the OST and the imperative of inspection of space-worthiness of space objects prior to launch. These chasms, and others like incurrence of international liability, deserve to be highlighted for their absence of consideration with a call to be remedied.

IV. An Evaluation Regarding ISRO

The policy has laid great emphasis on privatisation of end-to-end space activities and encouragement to start-ups in many ways. Both are excellent initiatives to boost national space economy and to integrate into the global space eco-system, soon expected to be trillion-dollar industry. The aim is brilliant and nationalistic with indomitable hope. It, however, faces several imponderables in the achievement of its avowed objectives.

[32] *Id.*

First, ISRO over the decades has built up its reputation for quality assurance of hardware, reliability in operations and consistent successes in missions. It has certainly been a long haul with indigenisation, innovation and dedication. But how long would private sector and start-ups take to reach that cusp of credibility in the international market when there is end-to-end privatisation of manufacturing, launch services, operational command and ground infra-structure. Gaining of experience and expertise are linear in time and afford little short-cuts.
Secondly, business operates on the calculus of profitability and a work culture of cost reduction. So, it would not be suitable for space industry which is hazardous and unsparing in its operational environment. Product has to provide six-sigma reliability assurance, no inadvertence in operations and due diligence in ground support facilities. Public policy and budgetary support are different systems than justifying failures and facing the wrath of profit-hungry shareholders.

Thirdly, ISRO had achieved a reputation for its work culture and brand-value for its products and services. ISRO has set high standards, and it may not be easy or possible in the short-term for private sector and the start-ups to achieve, despite following ISRO footsteps and best practices. The dynamics of the situation is that private sector would be starting from a low threshold while space technology would not remain static to enable them reach the goalpost together with other global competitors.

Lastly, ISRO could attain with sustained hard work, dedication and patriotic pride, break-throughs in technology, iconic successes in missions and near flaw-less space operations with minimal incurrence of international liability. To expect similar standards from the private sector seems a tall order at the present stage of gestation of Indian business devoted to space activities. No doubt, the path is cut and ISRO example can be emulated but who will bear the cost of endemic failures or third party liability for their faults and defaults, whether inadvertent or advertent.
Therefore, under the present scenario, the best option would be to actively incentivise private sector and the start-ups and to let them groom themselves under the tutelage of ISRO for a decade or so to learn and practice on the transferred technologies and imbibe its work-culture. These can also gain experience from contracted out manufacture and allied services of launch and ground control as also elicit their own projects for consultation and execution. In this manner, the private sector would gradually learn the ropes of its specialisation whether fabrication or integration, launch services or ground control or data facilities and understand the importance of quality control.

Secondly, under the present policy framework, INSPACe has been made the central agency for authorisation of space activities for the governmental agencies as well as NGEs. This demeans the standing and expertise of ISRO, DRDO and

others in this niche. This could be demotivating because these state agencies work under the wings of respective government department, operate as per governmental direction and sustain on budgetary sanctions. Thus, any of their space activity would already have prior governmental go-ahead in principle or approval and to subject this tacit go-ahead from a superior authority to a further scrutiny and authorisation by INSPACe would be meaningless. It could, however, be informed for record purposes with due confidentiality about the secrecy of the project, if any.

V. Some Suggestions

In the light of the above discourse, it will be appropriate to make some suggestions for moderation of institutional roles, amendments in certain provisions and, with time and experience to effect reformation of the Policy. The revision should take into account new operational challenges, advancements in technology, opening up of new vistas of commercial exploitation of space and changing legality pertaining to appropriation of its mineral resources. Any policy must work in continuum and adapt to changes in the best interest of the state and, in tandem, for the common benefit of mankind.

First, even with the truncated task and role, ISROs international image should not be smeared nor its technical standing under-rated for any reason. ISRO may be made to work in coordination and cooperation as also under the umbrella of DOS to ensure and maintain secrecy about its scientific initiatives, test research, lead projects, security applications and strategic imperatives. Hence, governmental agencies should be taken off the joint silo of private sector and from the listing for INSPACe authorisation. Thus, the independence and authority of ISRO and other GEs regarding initiation, innovation and execution of space activities would be restored to original status and style of functioning. Moreover, these may already have an a priori sanction and budgetary allocation from the government for their space projects and such routine disclosure at an early stage may compromise intellectual secrecy and national security.

Second suggestion is to legislate on space law of India, which has been mooted and drafted and yet pending for successive actions like governmental consideration, legislative approval and executive enforcement. The process may be initiated at the earliest to provide the Policy necessary crutches of legality and a halo of certainty to dispel doubts expressed in certain sections of the industry. Enacted law would also cover the flanks of the policy legally and protect it from being mauled by judicial commentary. Such a law would also authenticate decision-making by the institutions reaffirmed, redefined and re-delineated under the Policy.

Thirdly, state is internationally responsible and equally liable under treaty-law for any third-party damage in space, in the air and on ground by its space objects. Therefore, international liability incurred in space activities is an unavoidable incidental. This liability may be fault-based, system-based, advertent or inadvertent or due to lack of *abundanti cautela*. Such incurrence of liability by the private operators needs to be formalised in modalities of sharing and methods of discharge of the same, whether by insurance or guarantees.

Fourth suggestion relates to introduction of positive actions to minimise the incidence of liability. Howsoever, procedurally provided for in protocols and regulations, private enterprise will normally not be strict enough on internal inspections for quality control. This lurking suspicion calls for a binding culture of accountability and an independent system or authority for inspection of space-worthiness of space objects of private manufacture or origin. And the authority so entrusted or system so evolved should bear reasonable accountability for untoward consequences due to its failure of oversight.

Fifthly, start-ups may find space-market environment difficult for harbouring aspirations and for growth. A few examples are adduced to vindicate this hypothesis. India is an hierarchical culture where generally father becomes the role model, irrespective of his avocation or achievements. Again, we may masquerade as a free society yet we are bugged by elder-ism, boss-ism, ego-fetish and are generally intolerant of differing or contrary opinions. This calls for a shift of mindset and a new focus of perception towards management of space business and industry as also in our regulatory and entrepreneurial eco-systems. Even the ISP should not view start-ups as a vessel that needs to be filled with freebies and bounties but as excited minds that are fired up and ready to be kindled with vision and reality. Thus, INSPACe needs to be an enabler and motivator rather than necessarily bountiful.

Sixthly, we also tend to harp on the wisdom of our past and eulogise our heritage rather than looking ahead and innovating with inquisitive mindset and scientific temper. Further Indians are known for "*jugaad*" which is a tendency to somehow get things working for the time being rather than ensuring proper remedial action and permanent correction of the fault. These short-cuts will certainly not work for space activities and the private sector will face significant challenges including lack of an evolved ethos for techno-culture and space commercialisation.

Seventhly, India has, today, attained an international standing as a space power where it can boldly express its stance on defence orientation of space activities. Not recommending weaponization or militarisation, other defensive and military uses of space technology and applications can, permissibly, be harnessed to the specific advantages of defence forces and national security. This will build latent

coercive capability, help expansion of influence and facilitate diplomatic state-craft.

Eighthly, a boost under the policy would encourage more launches and its escalated numbers would cause adverse impact also. For example, increase in space debris can be a serious concern unless UN Debris Mitigation Guidelines and IADC recommendations are meticulously complied with by the private space sector because some of these are cost-inflationary. Nevertheless, responsible utilisation of space is recommended. Again, depletion in atmospheric ozone layer over spaceports, based on Florida studies, and ambient noise effect of launches would be serious matters. In our enthusiasm, we may now brush aside such objections, but their long-term, adverse environmental impact cannot be wished away without detriment to health and welfare of the locals. This cautions for pro-actively and progressively suitable measures from now onwards.

Lastly, other incidental reforms, as suggested in the earlier discussion, be considered by subject-experts and concerned bureaucrats for their relevance and necessity, and may be incorporated in the Policy or its subaltern regulations for essential improvement, as and when deemed appropriate. Such changes, when introduced, would make the Policy more efficient, holistic and cognisant of technological advancement, futuristic vision and nationalistic aspirations.

VI. Conclusion

The stakeholders in space activities had for long been waiting for clarity and stability in this domain of economy and then almost suddenly Indian Space Policy 2023 was announced. It was indeed commendable in principle, was received with exuberance and generally welcomed as enabling and benign. More mature minds, however, lamented that it has preceded the Indian Space Act, which would have laid a stronger foundation for the policy. Even now the latter action can be duly hastened. Of course, there are other pertinent aspects like international liability and space-worthiness which deserve equitable treatment in operator-sharing and workable procedural modalities.

The promulgated policy, however, deserves a relook for its over-emphasis on privatisation, commercialisation and the role of start-ups. Most of the weaknesses have been discussed earlier and important issues crystallised as suggestions. Based on comments in the Press and the advice of the scholars, the Policy needs certain changes and amendments to remedy domestic concerns and allay international apprehensions. Preferably, policy-makers should constantly remain vigilant of new opportunities, shifting bottlenecks and responsive to emerging contingencies so as not to lose focus on our innovative temper, technology

leadership, commercial traction and cost-effective edge in manufacturing and launch services.

THE LICENSING REGIME FOR AVIATION OPERATIONS UNDER TURKISH LAW

Serap Zuvin & Ilke Isin Suer

I. INTRODUCTION

The aviation sector constitutes a source of considerable economic activity that does not only contribute to the growth of aviation specific industries, but also to the industries related to it; such as technology, manufacturing, tourism, *etc*. Even in a time of crisis and global standstill of travel due to the outbreak of the Covid-19 pandemic, the aviation sector showed resilience and got adjusted to the situation by increasing cargo and freight flights, including most importantly medical equipment and personnel all over the world.

Being a dynamic industry mostly due to its rapid adaptation to technological advancements, air transport continues to be an industry attracting investment. The global nature of aviation justifies continued and effective efforts towards the harmonization of rules governing the overall aviation sector, while some differences remain in particular legislation of different jurisdictions. This issue is particularly true for the rules applicable to licensing and permit requirements for commercial or general aviation operations, which is of interest regarding legal and business concerns of international stakeholders and investors.

Aviation, and more particularly, the operation of aircraft involves high-value assets, complex technology and significant safety concerns, which is why such operations are subject to strict regulatory requirements on the international and domestic level.

In order to ensure safety and operation standards, national aviation authorities issue certificates globally referred to as air operator's certificates ("**AOC**") in order to authorize an operator to engage in the air carriage of passengers, mail and/or cargo either for commercial or general aviation purposes. AOCs confirm that the operator has the professional ability and adequate organizational structure to ensure the safe performance of the operations as specified in the certificate and operational specifications.

This article will provide a general overview of the licensing and permitting regime applicable in Turkey in relation to commercial as well as general aviation operations by providing insight into the provisions of main pieces of legislation applicable to air carriage enterprises in Turkey.

II. PERTINENT LEGISLATION

Air carriage enterprises are entities engaging in (i) passenger and cargo carriage for commercial purposes against a specific fee for commercial purposes, (ii) passenger and cargo carriage other than for commercial reasons, and (iii) air services and educational activities irrespective of whether or not subject to a fee. Air carriage enterprises are categorized in four groups, consisting of airline, air taxi, general aviation and balloon operators.

The operation of aircraft requires obtaining a relevant aircraft operator's certificate which is issued by Turkey's regulatory authority for aviation, namely the Directorate General of Civil Aviation of the Ministry of Transportation, Maritime Affairs and Communication ("DGCA"), on the basis of the Turkish aviation legislation which contains provisions that are parallel to the legislation applicable throughout the European Union. The licensing procedures vary depending on the particular operational activity involved with stringent requirements. The main pieces of legislation on the licensing of aircraft operations are the General Aviation Regulation (SHY-6B)[1] and the Commercial Air Carriage Enterprises Regulation (SHY-6A)[2]. While commercial air carriage is defined as the carriage of passengers and/or cargo on a civil aircraft against payment, general aviation activities are defined as those operations other than commercial air carriage. Such general aviation operations, therefore, include, for instance, non-commercial private flights (*e.g.,* operation of business aircraft, acrobatic flights, scientific research flights, etc.) and training operations. Commercial aviation operations are further divided into sub-categories such as airline and air taxi operations. As such, the particulars of the licensing regime (*e.g.,* minimum capital and equipment requirements) are different according to the projected aviation activity.

III. LICENSING FOR GENERAL AVIATION OPERATIONS

The purpose of the General Aviation Regulation (SHY-6B) is the regulation of the principles regarding the license for general aviation operators and maintaining the same. The Regulation provides a non-exhaustive list of private operation types and sets forth the applicable criteria in determining whether a given activity constitutes a private operation or not and includes considerations such as the operation of low-altitude flights and implementation of special manoeuvres.

License applications are evaluated by the DGCA on the basis of the relevant criteria set out in detail in the General Aviation Regulation (SHY-6B) and may be rejected for national security and public order concerns and in case the applicant or the founding partners and authorized representatives of corporate applicants

[1] General Aviation Regulation (SHY-6B) [*Genel Havacılık Yönetmeliği (SHY-6B)*], Official Gazette No. 31108, Apr 24, 2020, (Republic of Türkiye).

[2] Commercial Air Carriage Enterprises Regulation (SHY-6A) [*Ticari Hava Taşıma İşletmeleri Yönetmeliği (SHY-6A*], Official Gazette No. 28823, Nov 16, 2013, (Republic of Türkiye).

have been convicted of certain crimes.

The application by the interested party is initiated by the submission of a request file to the DGCA, containing *inter alia* corporate documents such as the articles of association and documents pertaining to the shareholders, résumés of the personnel to be employed during the operations, registration certificates of the relevant aircraft to be operated, insurances as well as operation and maintenance manuals. The evaluation committee of the DGCA is authorized to decide on the license applications and also to suspend or cancel the previously granted ones. While the evaluation time may take longer depending on the particulars of each application, the general rule is that applications are finalized within 60 days. The license to be granted demonstrates the compliance of the operator with the general standards required by the Regulation and is granted for an indefinite period, provided that the license holder complies at all times with the provisions of the Regulation. The DGCA is authorized to examine any documentation submitted or requested by operators on a regular or irregular basis. The DGCA or any entity appointed by it is at all times entitled to inspect all activities of operators both prior to and after the issuance of operations licenses.

The General Aviation Regulation (SHY-6B) further includes detailed provisions on the organizational structure of operators and the qualifications of key personnel to be employed during the operations. While real-person applicants must be Turkish citizens, at least 51% of the shares of corporate applicants must be registered shares, the majority of their authorized representatives must be Turkish citizens and the majority of shares as set out in the company's articles of association must belong to Turkish shareholders. Operators are further required to notify the DGCA of any change in their shareholding within one month of any such change.

The issuance of a license further depends on the existence of at least one aircraft in the possession of the operator either by way of ownership or a lease structure. Such aircraft is also explicitly referred to in the operational specifications. In the event that no aircraft remains in the operator's fleet after the issuance of the license, the operator is granted a period of six months to remedy such a situation by including at least one aircraft in its fleet. Failing to do so will lead to the cancellation of the license by the DGCA.

IV. LICENSING FOR COMMERCIAL AVIATION OPERATIONS

The Commercial Air Carriage Enterprises Regulation (SHY-6A) sets out the licensing requirements for commercial air carriage enterprises established or to be established for cargo and passenger carriage on domestic and international routes through scheduled or non-scheduled flights against a fee. The Regulation further encompasses provisions in relation to the suspension and cancellation of the relevant licenses as well as the qualification, duties and responsibilities of

operators and their personnel. Given the nature of commercial aviation operations, the Commercial Air Carriage Enterprises Regulation (SHY-6A) contains stricter and additional requirements in comparison to the General Aviation Regulation (SHY-6B).

The commercial headquarters of applicants applying for a license within the scope of the Commercial Air Carriage Enterprises Regulation (SHY-6A) must be within Turkey. While operators applying for the commercial carriage of passengers and cargo with aircraft with a seating capacity of less than 20 seats may be established in the corporate form of a joint stock company (*anonim şirket)* or a limited liability company (*limited şirket*), operators intending to engage in a cargo-only carriage or operate aircraft with a seating capacity of 20 seats or higher must be incorporated in form of a joint stock company. Approved operators are required to maintain the relevant corporate status throughout their operating term. Moreover, the field of activity set out in the articles of association of cargo-only carriers or passenger carriers with a seating capacity of over 20 seats, cannot include any activity other than aviation or aviation-related operations.

Except for certain specific exceptions pertaining to public aviation companies listed on Istanbul Stock Exchange (*Borsa Istanbul*) (bringing together all the exchanges operating in the Turkish capital markets under a single umbrella) or international stock markets; the companies intending to engage in commercial air carriage operations must satisfy the following criteria: (i) at least 51% of their shares must be registered shares, (ii) the majority of shares, board of directors members and voting rights, as well as their control, must belong to Turkish nationals. Furthermore, save for certain provisions of the privatization legislation, the transfer of registered shares by shareholders or the increase of shareholding percentages, as well as the public offering of shares on the Istanbul Stock Exchange are subject to the prior approval of the DGCA. The Regulation further provides that the new shareholders to acquire relevant shares in the operators must submit all information and documents requested from founders and shareholders during the application stage.

A. Minimum Capital Requirement

The Commercial Air Carriage Enterprises Regulation (SHY-6A) provides for different minimum capital requirements and minimum aircraft numbers according to different enterprises, namely airline enterprises intending to operate scheduled and non-scheduled passenger as well as cargo carriage, airline enterprises intending to operate only non-scheduled passenger and cargo carriage, airline enterprises intending to operate scheduled and non-scheduled cargo-only carriage and air taxi enterprises. For instance, airline enterprises to operate with aircraft with a seating capacity of over 100 seats need to have a paid capital of at

least 15 million USD (while such capital requirements are set forth in the Regulation in USD, the Regulation clarifies that the USD equivalent of the Turkish Lira capital of companies is calculated on the basis of the selling rate of exchange of the Turkish Central Bank on the date the capital instalments are paid in cash) and have at least five aircraft registered in their names in the Aircraft Registry maintained by the DGCA. Accordingly, mandatory rules on minimum capital requirements and the number of aircraft registered in the airline operator's name vary according to the anticipated seating capacity of its operations. The Regulation contains specific requirements for each of the aforementioned commercial enterprises and their anticipated operations. Pursuant to the common provisions of the Regulation applicable to all commercial enterprises stated in the foregoing, in the event of a decrease in the minimum number of aircraft in an operator's fleet, the DGCA grants the operator a grace period of up to six months to remedy the decrease by adding such number of aircraft to its fleet to satisfy the minimum requirement. The operator's failure to do so within the granted grace period will lead to the suspension of its license for three months. The license will ultimately be cancelled by such authority if the minimum aircraft number is not reached during such suspension period.

B. Insurance

In terms of mandatory insurances, commercial operators are further required to comply with the provisions of the Regulation on Civil Aircraft Third Party Liability Insurance[3] and the Regulation on Passenger, Baggage, Freight and Mail Liability Insurance for Aircraft Operating in Turkey.[4] As such, operators are *inter alia* required to take out adequate insurance for any loss caused to third parties in connection with their activities, which must also cover risks of war, terror, hijacking, sabotage, illegal confiscation and civil commotion.

The Aircraft Registry maintained by the DGCA constitutes an operator-based registry, meaning that an aircraft's registry in Turkey will require the registration of an operator, in addition to the owner of the relevant aircraft (while the operator and owner may also be the same entity). Hence, the insurance obligation will rest with the operator of the aircraft.

C. Performance Bond Requirement

Another requirement as a measure to ensure the financial stability of applicants is the obligation of companies applying for a license to demonstrate their ability to cover their fixed and operational costs such as aircraft rentals, fuel, personnel,

[3] Regulation on Civil Aircraft Third Party Liability Insurance [*Sivil Hava Araçlarında Üçüncü Şahıs Mali Sorumluluk Sigortası Hakkında Yönetmelik*], Official Gazette No. 30136, Jul 27, 2017, (Republic of Türkiye).

[4] Regulation on Passenger, Baggage, Freight and Mail Liability Insurance for Aircraft Operating in Turkey [*Türkiye'de Faaliyet Gösteren Hava Araçları İçin Yolcu, Bagaj, Yük ve Posta Mali Sorumluluk Sigortası Hakkında Yönetmelik*], Official Gazette No. 30136, Jul 27, 2017, (Republic of Türkiye).

maintenance, insurance, ground services, airport and Eurocontrol for at least three months, without taking into consideration any of their income from their operations following the issuance of their operating license. Furthermore, companies intending to operate scheduled and non-scheduled passenger transportation as well as cargo carriage and airline enterprises intending to operate only non-scheduled passenger and cargo carriage are required to provide the DGCA with a performance bond in the value of 500,000 USD prior to the licensing stage and maintain the validity thereof during their operations. Such a performance bond may be liquidated by the DGCA, without the need for any additional procedure or judgment, to cover any cost arising in connection with, for instance, the suspension of the operator's flights or operating license.

D. Employment

Mandatory legal regulations further include provisions on key personnel. Operators are required to procure the employment of flight crews, technical and administrative staff as well as dispatcher staff that is qualified and certified according to the particulars of the relevant air carriage operation involved. The Commercial Air Carriage Enterprises Regulation (SHY-6A) sets out detailed rules on the need of specific key personnel and their qualification as per the specific operations of the relevant type of commercial air carrier. Operators are entitled to employ foreign personnel, provided that they comply with the legal rules on the employment of foreign nationals.

E. Approval Committee

Operating license applications are reviewed by an evaluation committee consisting of five permanent members and two substitute members, appointed upon the proposal of the Civil Aviation Director General and the approval of the Minister of Transportation, Maritime Affairs and Communication. The Civil Aviation Director General heads the committee and is a permanent member thereof. While the committee convenes with the presence of all members, decisions are adopted by the majority. The licensing steps consist of the following stages: (i) application, (ii) preliminary permit, (iii) document compliance, (iv) main license, (v) inspection, (vi) evaluation, (vii) issuance of the operating license.

Consequently, when reviewing and evaluating applications, the committee takes into consideration *inter alia* the following issues: (i) the applicant's administrative, financial and technical qualifications as set out in the Regulation as well as determined by the DGCA and the international organizations Turkey is a member of, (ii) the particular contribution of the applicant enterprise to Turkey's transportation, economic and social needs; (iii) number, education and

procurement status of the flight crew and technical personnel, (iv) procurement status of aircraft, and (v) the evaluation of the aviation-related experience of the enterprise's shareholders, authorized representatives and responsible managers in light of aviation safety concerns.

V. CONCLUSION

Taking into consideration the value, technical and safety issues inherent in the aviation sector and the importance of the industry both in domestic economies and worldwide; the aviation sector, and particularly the licensing regime of aviation operations, is subject to strict and detailed regulatory requirements and inspection. Compliance with those specifications can prove the domestic licensing regime of aircraft operators quite onerous, which is particularly true for commercial air carriers.

In Turkey, different rules and requirements exist for the licensing of commercial air carriage and general aviation operations, each of which is again divided into specific sub-categories, subject to different mandatory rules and requirements. Turkey's civil aviation authority, the DGCA is the relevant regulatory authority handling applications for operating licenses in accordance with the provisions of the General Aviation Regulation (SHY-6B) and the Commercial Air Carriage Enterprises Regulation (SHY-6A) – the main pieces of legislation on the licensing of aviation operations.

SPACE AND BEYOND: PROFESSIONAL VOYAGE OF K. KASTURIRANGAN BY B. N. SURESH. SPRINGER SINGAPORE, 2021. XXXV + 478 PP. HARDCOVER: EUR 44.99

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Space and Beyond: Professional Voyage of K. Kasturirangan edited by B.N. Suresh is a work that centres around 12 public-invited lectures delivered by Dr. K. Kasturirangan. The book has 22 chapters ranging from developing hi-tech space systems to stories of India's nuclear deal. Dr. K Kasturirangan in this book shares his experience during his tenure at ISRO, Rajya Sabha, the Planning Commission. The book also brings together the stories of his mentors, including Vikram Sarabhai and Satish Dhawan, among others. The discourse of the book will find readers amongst policymakers, researchers and people having an interest in issues of space exploration and engineering.

The present book review analyses Chapter 15 of the book 'Space Cooperation - Some Interesting Dimensions' written by Dr. K Kasturirangan and Dr K.R. Sridharamurthy. International cooperation has been a key to India's success in the space endeavour. This journey starts with the setting up of the Thumba Equatorial Rocket Launching Station at Thiruvananthapuram. The editor writes that "this aspect of linking national effort with international programs has evolved over decades both in scale, character, and broader considerations of political and economic nature."

The principle of cooperation and mutual assistance have been the foundation of the international law governing outer space.[1] The Outer Space Treaty in its Preamble reaffirms "the importance of international cooperation in the field of activities in the peaceful exploration and use of outer space, including the Moon and other celestial bodies, and the importance of developing the rule of law in this new area of human endeavour."[2] Article 1 of the Outer Space Treaty states that "States shall facilitate and encourage international co-operation in the scientific investigation."[3] Article 3 states that "States Parties to the Treaty shall carry on

[1] See also Lincoln P. Bloomfield, *Outer Space and International Cooperation*, 19 INTERNATIONAL ORGANIZATION, 603–621 (1965); *International Cooperation in the Peaceful Uses of Outer Space Report of the Legal Sub-Committee of the U.N. Committee on the Peaceful Uses of Outer Space on the Work of its Sixth Session*, 6 INTERNATIONAL LEGAL MATERIALS, 1086–1116 (1967); Manfred Lachs, *The Treaty on Principles of the Law of Outer Space, 1961–1992*, 39 NETHERLANDS INTERNATIONAL LAW REVIEW, 291–302 (1992); D. Goedhuis, *An Evaluation of the Leading Principles of the Treaty on Outer Space of 27th January 1967*, 15 NEDERLANDS TIJDSCHRIFT VOOR INTERNATIONAAL RECHT, 17–41 (1968)

[2] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, opened for signature Jan. 27, 1967, 18 T.I.A.S. 2410, 610 U.N.T.S. 205.

[3] *Ibid.*

activities in the exploration and use of outer space, including the moon and other celestial bodies, in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international co-operation and understanding."[4]

International cooperation has resulted in large-scale human exploration to help states build diplomatic relations and also assist states to work together on lunar landings and human expeditions to Mars. Reading the chapter and understanding how these collaborations work also shows that international cooperation in space exploration is a core political exercise. Many states have used international cooperation as a form of bridging and building soft power relations. As the authors write "this 'soft-power' dimension is an important lever in evolving international norms and eventually in binding agreements too."[5]

In terms of law-making, international cooperation has resulted in international commitments to develop the norms of international space law. In terms of building visionary programmes, countries like India have received help from developed space-faring nations. For instance, "the Chandrayaan-1 mission of India is another example that provided an opportunity for instruments from the United States, Europe, and India for scientific observations of the Moon and yielded very significant results at a modest budget."[6] Cooperation is built on various commonalities and common interests which could be diplomatic, commercial, scientific, and legal interests. The authors also talk about when the Indian space programme in its initial experimental phase, "India received more than it could give to its collaborators."[7]

The chapter also devotes a section to understanding how India's space diplomacy and ISRO's idea of collaboration with other countries is influenced by political as well as scientific and technological factors. As the authors note "over the years, as ISRO has matured in experience and technological capabilities, the scope for cooperation has become multifaceted and while exploratory missions beyond the earth are the natural candidates for such cooperative efforts, there are many other themes like climate change impacts on earth, space science and planetary exploration that are of interest to international cooperation because of their global impact."[8] India's space programmes since its inception from projects like the establishment of Thumba Equatorial Rocket Launching Station, launches of Aryabhata, Bhaskara, IRS-IA, IRS-IB satellites, Mission to Moon, etc., have a strong presence of international cooperation.

[4] *Ibid.*
[5] K. Kasturirangan & K.R.S. Murthy, *Space Cooperation - Some Interesting Dimensions*. In Suresh, B.N. (eds), SPACE AND BEYOND 317-331 (2021).
[6] *Ibid.*
[7] *Ibid.*
[8] K. Kasturirangan & K.R.S. Murthy, *Space Cooperation - Some Interesting Dimensions*. In Suresh, B.N. (eds), SPACE AND BEYOND 317-331 (2021).

ISRO has strong bilateral and multilateral relations with space agencies and it has also influenced space policies and defining international frameworks. Considering the geopolitical space that India occupies in South Asia, India's journey of becoming a space-faring nation that is capable of producing cost-effective and time-efficient results also sends a strong signal to neighbouring states to build ties with India. Sharing of space technology also acts as a form of diplomacy. The Department of Space Annual Report for 2021-22 reported that "India has signed space cooperation documents with agencies of 60 countries and five multinational bodies."[9] The report also revealed that "India also entered into formal cooperative instruments with international multilateral bodies like European Centre for Medium-Range Weather Forecasts (ECMWF), European Commission, European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), European Space Agency (ESA) and South Asian Association for Regional Cooperation (SAARC)."[10]

The chapter concludes by analysing the global scenario of how the State behaviour of major spacefaring nations, such as the United States, China, and Russia especially their outlook towards the use of space as a theatre to project military power has created distrust in international cooperation. International collaborations and cooperation often happen between nations having different social and cultural backgrounds. For instance, the International Space Station was set up with partnerships among the United States, Canada, Europe, Japan, and Russia. In this chapter, the authors highlight Dr. K. Kasturirangan's cultural dimensions of international cooperation by drawing upon his personal experience in dealing with the USSR.

[9] ISRO, DEPARTMENT OF SPACE ANNUAL REPORT FOR 2021-22 (2022)
[10] *Ibid*.

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